

# MATHEMATICS A

Paper 1FR  
2015 — Winter 2019

|            |                                         |          |
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1 - (4MA0-S 2015-Paper 1FR-Q1) - NUMBER

The table shows the numbers of performances of six musicals on Broadway, New York.

| Musical        | Number of performances |
|----------------|------------------------|
| A Chorus Line  | 6137                   |
| Miss Saigon    | 4092                   |
| 42nd Street    | 3486                   |
| Cats           | 7485                   |
| Les Misérables | 6680                   |
| Grease         | 3388                   |

(a) Write the number 6137 in words.

.....  
(1)

(b) Which number in the table is the largest number?

.....  
(1)

(c) Write down the value of the 9 in the number 4092

.....  
(1)

(d) Which number in the table is a multiple of 10?

.....  
(1)

(e) The number of performances of one musical, when written correct to the nearest hundred, is 3400  
Write down the musical.

.....  
(1)

(Total for Question is 5 marks)

exam m (A+) te

2 - (4MA0-S 2015-Paper 1FR-Q4) - NUMBER

Here is a sequence of patterns made from dots.



Pattern  
number 1



Pattern  
number 2



Pattern  
number 3

(a) In the space below, draw Pattern number 4

(1)

This rule can be used to find the number of dots in a pattern of the sequence.

Multiply the Pattern number by 3 and then add 2

(b) Work out the number of dots in Pattern number 7

(2)

A pattern has exactly 41 dots.

(c) Work out the Pattern number.

(2)

$T$  is the number of dots in Pattern number  $n$ .

(d) Write down a formula for  $T$  in terms of  $n$ .

(3)

(Total for Question is 8 marks)

exam m (A+) te

**3** - (4MA0-S 2015-Paper 1FR-Q6) - *NUMBER*

Simon wants to buy a computer.

He can choose to pay the cash price of £520 or pay by using the credit option.

**Credit Option**

First pay £100  
and then 6 monthly payments of £78.24

Work out the difference in cost between the cash price and the credit option.

£.....

**(Total for Question    is 3 marks)**

**4 - (4MA0-S 2015-Paper 1FR-Q7) - NUMBER**

The table shows the maximum and minimum temperatures recorded in 5 cities during one year.

| City     | Maximum temperature (°C) | Minimum temperature (°C) |
|----------|--------------------------|--------------------------|
| Paris    | 32                       | – 4                      |
| Sydney   | 38                       | 8                        |
| Ottawa   | 21                       | – 17                     |
| Helsinki | 22                       | – 16                     |
| New York | 34                       | – 12                     |

(a) In which city was the lowest temperature recorded?

.....  
(1)

(b) Work out the difference between the maximum temperature and the minimum temperature recorded in New York.

..... °C  
(2)

In the same year, the minimum temperature recorded in Oslo was 7 °C lower than the minimum temperature recorded in Helsinki.

(c) Work out the minimum temperature recorded in Oslo that year.

..... °C  
(2)

(Total for Question 4 is 5 marks)

exam m (A+) te

5 - (4MA0-S 2015-Paper 1FR-Q10) - NUMBER

- (a) Write these fractions in order of size.  
Start with the smallest fraction.

$$\frac{7}{8}$$

$$\frac{3}{4}$$

$$\frac{11}{12}$$

$$\frac{13}{16}$$

.....  
(2)

- (b) Show that  $\frac{2}{5} \div \frac{6}{7} = \frac{7}{15}$

(2)

- (c) Show that  $\frac{2}{5} - \frac{1}{6} = \frac{7}{30}$

(2)

(Total for Question is 6 marks)

exam m (A+) te

6 - (4MA0-S 2015-Paper 1FR-Q12) - NUMBER

|                                           |
|-------------------------------------------|
| 1 United States dollar = 98 Japanese yen  |
| 1 United States dollar = 60 Indian rupees |

(a) Change 85 United States dollars into Japanese yen.

..... Japanese yen  
(2)

(b) Change 784 Japanese yen into Indian rupees.

..... Indian rupees  
(2)

(Total for Question is 4 marks)

7 - (4MA0-S 2015-Paper 1FR-Q16) - NUMBER

Use your calculator to work out the value of

$$\frac{12.5 \times 4.5}{6.8 + \sqrt{67.24}}$$

.....

(Total for Question is 2 marks)

8 - (4MA0-W 2015-Paper 1FR-Q1) - NUMBER

(a) Write in figures the number **fourteen thousand and twenty six**.

.....  
(1)

(b) Write the number 6539 correct to the nearest hundred.

.....  
(1)

(c) Write down the value of the 2 in the number 12 430

.....  
(1)

(d) Write a number on the dotted line so that the calculation is correct.

$$282 + \text{.....} = 650$$

(1)

The International Commerce Centre in Hong Kong is 484 metres tall.

The Burj Khalifa building in Dubai is 346 metres **taller** than the International Commerce Centre.

(e) Work out the height of the Burj Khalifa building.

..... metres  
(1)

(Total for Question is 5 marks)

9 - (4MA0-W 2015-Paper 1FR-Q4) - *NUMBER*

(a) Which two of these numbers are even numbers?

5      9      12      15      19      26      27

..... , .....  
(2)

(b) Write down a multiple of 8 that is between 10 and 30

.....  
(1)

(c) Write down all the factors of 40

.....  
(2)

(d) Which two of these numbers are prime numbers?

15      21      27      29      33      37      39

..... , .....  
(2)

(Total for Question 9 is 7 marks)

exam m (A+) te

**10** - (4MA0-W 2015-Paper 1FR-Q5) - *NUMBER*

Here are the first five terms of a number sequence.

17      21      25      29      33

(a) Write down the next two terms of the sequence.

....., .....

(2)

(b) Explain how you found your terms.

.....

(1)

(c) Work out the 12th term of the sequence.

.....

(1)

(d) Explain why 70 is not a term of this sequence.

.....

(1)

(Total for Question 10 is 5 marks)

**11** - (4MA0-W 2015-Paper 1FR-Q10) - *NUMBER*

In a school, there are 320 girls and 500 boys.

- (a) Write down the ratio of the number of girls to the number of boys.  
Give your ratio in its simplest form.

.....  
(2)

In a different school, there is a total of 640 children.

In this school, the ratio of the number of girls to the number of boys is 7 : 9

- (b) How many boys are there in this school?

.....  
(2)

**(Total for Question is 4 marks)**

**12** - (4MA0-W 2015-Paper 1FR-Q15) - *NUMBER*

- (a) Use your calculator to work out the value of

$$125^2 + \frac{173}{9.3 - 6.8}$$

Give your answer as a decimal.

.....  
(2)

- (b) Write your answer to part (a) correct to 3 significant figures.

.....  
(1)

**(Total for Question is 3 marks)**

exam m (A+) te

**13** - (4MA0-W 2015-Paper 1FR-Q18) - *NUMBER*

Lisa sees a dress in a sale.

The normal price of the dress is \$45

The price of the dress is reduced by 12% in the sale.

(a) Work out the price of the dress in the sale.

\$ .....

(3)

Lisa's weekly pay increases from \$525 to \$546

(b) Calculate her percentage pay increase.

..... %

(3)

(Total for Question is 6 marks)

exam  
m (A+) te

**14** - (4MA0-W 2015-Paper 1FR-Q19) - *NUMBER*

Show that  $7\frac{1}{2} - 4\frac{2}{3} = 2\frac{5}{6}$

(Total for Question is 3 marks)

## 15 - (4MA0-S 2016-Paper 1FR-Q2) - NUMBER

The table shows the distance from London to each of three cities and the time taken by planes to fly from London to these cities.

| City       | Distance from London (km) | Time taken to fly  |
|------------|---------------------------|--------------------|
| Manchester | 237                       | 1 hour             |
| Moscow     | 2460                      | 4 hours 40 minutes |
| New York   | 5570                      | 6 hours 20 minutes |

(a) Write the number 2460 in words.

.....  
(1)

(b) Write down the value of the 7 in 5570

.....  
(1)

(c) Write the number 237 correct to the nearest 10

.....  
(1)

The distance from London to New York is greater than the distance from London to Moscow.

(d) How much greater?

..... km  
(1)

(e) Change 4 hours 40 minutes to minutes.

..... minutes  
(1)

A plane flew from London to New York.

The plane left London at 02 50

The plane landed in New York 6 hours and 20 minutes after it had left London.

(f) What was the time **in London** when the plane landed in New York?

.....  
(1)

(Total for Question is 6 marks)

exam m (A+) te

**16** - (4MA0-S 2016-Paper 1FR-Q4) - *NUMBER*

Complete the following sentences by writing a sensible metric unit on each of the dotted lines.

(a) (i) The length of a bus is 12 .....

(ii) The amount of milk in a full cup is 270 .....

(2)

(b) Change 8 kilograms into grams.

..... grams

(1)

**(Total for Question is 3 marks)**

exam  te

17 - (4MA0-S 2016-Paper 1FR-Q5) - NUMBER

- (a) Write these decimals in order of size.  
Start with the smallest decimal.

0.62      0.5      0.043      0.06

.....  
(1)

- (b) Write down the value of the 4 in the number 7.41

.....  
(1)

- (c) Write down the number that is exactly halfway between 2.24 and 2.25

.....  
(1)

Here are four cards.  
Each card has a number on it.

|   |   |   |   |
|---|---|---|---|
| 7 | 8 | 4 | 3 |
|---|---|---|---|

These four cards are arranged to make the number 7843  
The four cards can be rearranged to make other numbers.

- (d) (i) Write down the smallest number that can be made using all four cards.

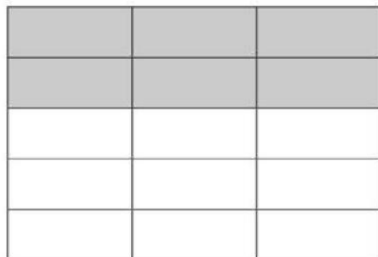
- .....  
(ii) Write down the largest **even** number that can be made using all four cards.

.....  
(2)

(Total for Question is 5 marks)

exam m (A+) te

18 - (4MA0-S 2016-Paper 1FR-Q6) - NUMBER



- (a) What fraction of this shape is shaded?  
Write your fraction in its simplest form.

.....  
(2)

- (b) Write  $\frac{7}{25}$  as a percentage.

.....%  
(1)

- (c) Write  $\frac{3}{20}$  as a decimal.

.....  
(1)

42% of the houses in a street have gardens.

- (d) What percentage of the houses in the street do **not** have gardens?

.....%  
(1)

- (e) Write a number on the dotted line so that the calculation is correct.

.....  $\div 4.7 = 1.5$

(1)

(Total for Question is 6 marks)

exam m (A+) te

19 - (4MA0-S 2016-Paper 1FR-Q7) - NUMBER

Here are the first five terms of a number sequence.

18    22    26    30    34

(a) Write down the next two terms of the sequence.

.....  
(2)

(b) Explain how you found your terms.

.....  
(1)

(c) Work out the 20th term of the sequence.

.....  
(2)

(Total for Question    is 5 marks)

20 - (4MA0-S 2016-Paper 1FR-Q13) - NUMBER

|   |   |   |    |    |    |
|---|---|---|----|----|----|
| 2 | 8 | 9 | 27 | 40 | 56 |
|---|---|---|----|----|----|

From the numbers in the box, write down

(i) the square number

(ii) the multiple of 7

.....  
.....  
(Total for Question    is 2 marks)

exam m (A+) te

21 - (4MA0-S 2016-Paper 1FR-Q14) - NUMBER

(a) Work out the value of  $2^5$

.....  
(1)

(b) Find the cube root of 64

.....  
(1)

(Total for Question is 2 marks)

22 - (4MA0-S 2016-Paper 1FR-Q17) - NUMBER

Rafael and Roger played tennis against each other 30 times.

Each of the times they played, either Rafael won or Roger won.

The ratio of the number of times Rafael won to the number of times Roger won is 7 : 3

(a) Work out the number of times Rafael won.

.....  
(2)

In a school, there are 75 girls in the tennis squad.

The ratio of the number of boys in the tennis squad to the number of girls in the tennis squad is 4 : 3

(b) Work out the number of boys in the tennis squad.

.....  
(2)

(Total for Question is 4 marks)

exam m (A+) te

**23** - (4MA0-S 2016-Paper 1FR-Q19) - *NUMBER*

In a sale, normal prices are reduced by 8%

(a) The normal price of a jacket is £28

Work out the price of the jacket in the sale.

£ .....  
(3)

(b) In the sale, the price of a shirt decreases by £3

Work out the normal price of the shirt.

£ .....  
(3)

(Total for Question is 6 marks)

exam m (A+) te

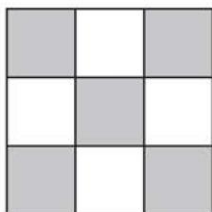
**24** - (4MA0-S 2016-Paper 1FR-Q21) - *NUMBER*

Write 792 as a product of its prime factors.  
Show your working clearly.

.....  
(Total for Question    is 3 marks)

25 - (4MA0-W 2016-Paper 1FR-Q2) - NUMBER

(a) What fraction of this shape is shaded?



.....  
(1)

(b) Shade 25% of this shape.



(1)

(c) Write  $\frac{18}{20}$  as a decimal.

.....  
(1)

(d) Write  $\frac{3}{25}$  as a percentage.

..... %  
(2)

(Total for Question is 5 marks)

26 - (4MA0-W 2016-Paper 1FR-Q3) - NUMBER

- (a) Write down two whole numbers, both greater than 1, that multiply to give 63

$$\dots \times \dots = 63$$

(1)

- (b) Write down the number between 50 and 60 that is a multiple of 11

.....

(1)

- (c) Write down the square number that is between 35 and 45

.....

(1)

- (d) Write down the prime number that is between 48 and 58

.....

(1)

(Total for Question is 4 marks)

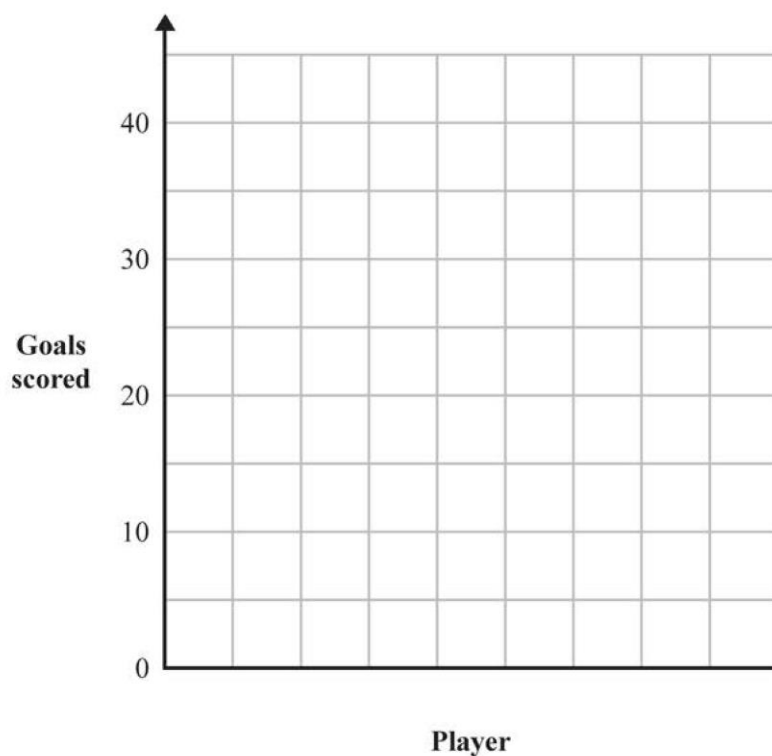
exam m (A+) te

27 - (4MA0-W 2016-Paper 1FR-Q4) - NUMBER

The table shows the number of goals scored for a football team by each of four players during part of a football season.

| Player | Goals scored |
|--------|--------------|
| Ben    | 20           |
| Dale   | 15           |
| Matt   | 5            |
| Ronald | 35           |

(a) On the grid, draw a bar chart to show this information.



(3)

(b) Work out the mean of the numbers of goals scored by these players.

(2)

exam m (A+) te

- (c) Work out the range of the numbers of goals scored by these players.

.....  
(2)

- (d) Write down the ratio of the number of goals scored by Ronald to the number of goals scored by Dale.  
Give your answer in its simplest form.

.....  
(2)

**(Total for Question is 9 marks)**

**28** - (4MA0-W 2016-Paper 1FR-Q5) - NUMBER

- (a) Write 4.513 correct to one decimal place.

.....  
(1)

- (b) Write 8479 correct to the nearest ten.

.....  
(1)

- (c) By rounding each number to one significant figure, estimate the value of

$$\frac{9.64 \times 21.3}{37}$$

Show your working clearly.

.....  
(2)

**(Total for Question is 4 marks)**

exam m (A+) te

29 - (4MA0-W 2016-Paper 1FR-Q6) - NUMBER

Here are the first five terms of a number sequence.

6            12            18            24            30

(a) Write down the 6th term of the sequence.

.....  
(1)

186 is a term of the sequence.

(b) Write down the next term of the sequence after 186

.....  
(1)

(c) Find the 20th term of the sequence.

.....  
(2)

The  $n$ th term of the sequence is  $T$ .

(d) Write down a formula for  $T$  in terms of  $n$ .

.....  
(2)

(Total for Question 29 is 6 marks)

exam m (A+) te

30 - (4MA0-W 2016-Paper 1FR-Q7) - NUMBER

The table shows the boiling points and the melting points of five elements.

|                 | Boiling point (°C) | Melting point (°C) |
|-----------------|--------------------|--------------------|
| <b>Bromine</b>  | 59                 | −7                 |
| <b>Chlorine</b> | −34                | −101               |
| <b>Mercury</b>  | 357                | −39                |
| <b>Nitrogen</b> | −196               | −210               |
| <b>Oxygen</b>   | −183               | −218               |

(a) Which of these elements has the lowest boiling point?

.....  
(1)

(b) What is the difference in temperature between the boiling point of chlorine and the boiling point of oxygen?

.....°C  
(2)

(c) What is the difference in temperature between the melting point of mercury and the boiling point of mercury?

.....°C  
(2)

(Total for Question is 5 marks)

exam m (A+) te

**31** - (4MA0-W 2016-Paper 1FR-Q9) - *NUMBER*

(a) Find the value of  $9^4$

.....  
(1)

(b) Find the cube root of 6859

.....  
(1)

(c) Work out the value of  $\frac{21.89 - 7.75}{0.65 + 2.85}$

.....  
(2)

**(Total for Question is 4 marks)**

exam m (A+) te

32 - (4MA0-W 2016-Paper 1FR-Q14) - NUMBER

In 1981, the population of India was 683 million.

Between 1981 and 1991, the population of India increased by 163 million.

- (a) Express 163 million as a percentage of 683 million.  
Give your answer correct to 3 significant figures.

..... %  
(2)

In 2001, the population of India was 1028 million.

Between 2001 and 2011, the population of India increased by 17.6%

- (b) Increase 1028 million by 17.6%  
Give your answer to the nearest million.

..... million  
(3)

(Total for Question is 5 marks)

exam m (A+) te

**33** - (4MA0-W 2016-Paper 1FR-Q17) - *NUMBER*

- (a) Express 600 as a product of powers of its prime factors.  
Show your working clearly.

.....  
(3)

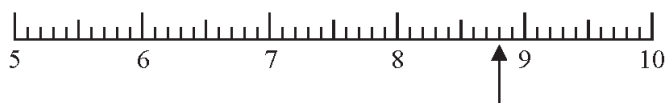
- (b) Simplify  $\frac{5^{12}}{5^2 \times 5}$   
Give your answer as a power of 5

.....  
(2)

.....  
(Total for Question is 5 marks)

34 - (4MA0-S 2017-Paper 1FR-Q1) - NUMBER

- (a) Write down the value marked with an arrow.



.....  
(1)

- (b) On the number line, mark with an arrow the number 2.92



(1)

- (c) Write 5.72 correct to the nearest whole number.

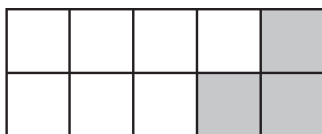
.....  
(1)

- (d) Work out the number that is exactly halfway between 1.4 and 4.8

.....  
(2)

**35** - (4MA0-S 2017-Paper 1FR-Q2) - NUMBER

Here is a rectangle made from centimetre squares.



- (a) Find the area of this rectangle.

.....  $\text{cm}^2$   
(1)

- (b) What percentage of the rectangle is shaded?

..... %  
(1)

60% of a triangle is shaded.

- (c) What percentage of the triangle is not shaded?

..... %  
(1)

- (d) Write 60% as a decimal.

.....  
(1)

- (e) Change 60% to a fraction.  
Give your answer in its simplest form.

.....  
(2)

**36** - (4MA0-S 2017-Paper 1FR-Q13) - *NUMBER*

Here is a menu for a cafe in Cairo, Egypt.  
All the prices are in Egyptian pounds.

|         |       |
|---------|-------|
| Chicken | 34.00 |
| Burger  | 43.00 |
| Kofta   | 39.00 |
| Falafel | 10.50 |
| Fries   | 9.20  |
| Salad   | 8.75  |
| Cola    | 9.50  |
| Coffee  | 12.20 |
| Tea     | 6.85  |

Omar and Khaled each want to buy a meal.

Omar chooses Chicken, Fries and Coffee.

Khaled chooses Kofta, Salad and Cola.

Omar has 70 Egyptian pounds and Khaled has 50 Egyptian pounds.  
They put their money together to pay for the meals.

How much change should they get?

..... Egyptian pounds

**4 marks)**

**37** - (4MA0-S 2017-Paper 1FR-Q15) - *NUMBER*

(a) Write down a prime number between 14 and 20

.....  
(1)

(b) Find the two prime numbers that have a sum of 25

.....  
(1)

(c) Find the two numbers that have a sum of 60 and a difference of 2

.....  
(2)

exam m (A+) te

**38** - (4MA0-S 2017-Paper 1FR-Q19) - *NUMBER*

The currency in Bangladesh is the taka.

1 pound (£) = 119 taka

(a) Change 3500 taka to pounds.

Give your answer correct to 2 decimal places.

£ .....  
(2)

The currency in Thailand is the baht.

1 pound (£) = 52 baht

(b) Change 8500 baht to taka.

Give your answer correct to the nearest whole number.

..... taka  
(3)

An aeroplane takes 2 hours and 24 minutes to fly from Bangkok to Dhaka.

The aeroplane flies a distance of 1534 km.

(c) Work out the average speed of the aeroplane.

Give your answer in kilometres per hour correct to 3 significant figures.

..... kilometres per hour  
(3)

exam  
m (A+) te

**39** - (4MA0-S 2017-Paper 1FR-Q22) - *NUMBER*

Write 336 as a product of its prime factors.  
Show your working clearly.

.....  
3 marks

**40** - (4MA0-S 2017-Paper 1FR-Q25) - *NUMBER*

The price of 1 kg of silver on 1st January 2010 was \$607

By 1st January 2015, the price of 1 kg of silver had decreased by 9.4%

- (a) Work out the price of 1 kg of silver on 1st January 2015.  
Give your answer correct to the nearest dollar (\$).

\$ .....  
(3)

Between 1st January 2010 and 1st January 2015, the price of 1 tonne of copper decreased by 20%

This was a decrease of \$1320

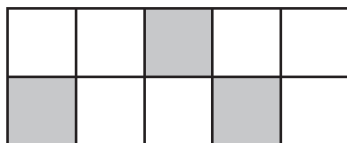
- (b) Work out the price of 1 tonne of copper on 1st January 2010.

\$ .....  
(3)

exam m (A+) te

**41** - (4MA0-W 2017-Paper 1FR-Q1) - NUMBER

(a) (i) What fraction of this shape is shaded?



(ii) Write your fraction as a decimal.

.....  
(2)

(b) Find a fraction that is equivalent to  $\frac{2}{7}$

.....  
(1)

(c) Write 65% as a decimal.

.....  
(1)

72% of a shape is coloured red.  
The rest of the shape is coloured blue.

(d) What percentage of the shape is coloured blue?

..... %  
(1)

(Total for Question is 5 marks)

exam m (A+) te

42 - (4MA0-W 2017-Paper 1FR-Q2) - NUMBER

Jan recorded the number of steps she took each day last week.  
This information is shown in the table.

| Day       | Number of steps |
|-----------|-----------------|
| Monday    | 9780            |
| Tuesday   | 4853            |
| Wednesday | 12038           |
| Thursday  | 15243           |
| Friday    | 4695            |
| Saturday  | 4801            |
| Sunday    | 11856           |

(a) On which day did she take the least number of steps?

.....  
(1)

(b) Write the number 12038 in words.

.....  
(1)

(c) Round the number 4853 correct to the nearest hundred.

.....  
(1)

Two of the numbers in the table are multiples of 5

(d) Write down these two numbers.

..... , .....  
(2)

Jan takes 1200 steps to walk one kilometre.

(e) Use this information to work out how many kilometres Jan walked on Thursday.  
Give your answer correct to the nearest kilometre.

..... kilometres  
(2)

exam m (A+) te

(f) Work out the mean number of steps per day Jan took last week.

.....  
(2)

**(Total for Question is 9 marks)**

**43** - (4MA0-W 2017-Paper 1FR-Q5) - *NUMBER*

(a) Write down a prime number between 20 and 40

.....  
(1)

(b) Work out the cube of 7

.....  
(1)

**(Total for Question is 2 marks)**

exam m (A+) te

44 - (4MA0-W 2017-Paper 1FR-Q6) - NUMBER

(a) Change 8 metres into centimetres.

..... centimetres  
(1)

(b) Change 9500 cm<sup>3</sup> into litres.

..... litres  
(1)

(c) Complete the sentence by writing a suitable metric unit on the dotted line.

The weight of a car is 2500 .....

(1)

A train arrived in Islamabad at 23 45

(d) Write 23 45 as a time using the 12-hour clock.

.....  
(1)

Jim goes to sleep at 9 30 pm.

He wakes up the next morning at 7 15 am.

(e) For how long did Jim sleep?

.....  
(2)

The area of the floor of a room is 12 m<sup>2</sup>

(f) Change 12 m<sup>2</sup> into cm<sup>2</sup>

..... cm<sup>2</sup>  
(2)

(Total for Question is 8 marks)

exam m (A+) te

45 - (4MA0-W 2017-Paper 1FR-Q10) - NUMBER

(a) Work out  $\frac{2}{9}$  of 738 kg.

..... kg  
(2)

There are 24 horses in a field.  
17 of the horses are brown.

(b) What fraction of the horses in the field are **not** brown?

.....  
(2)

(c) Show that  $\frac{10}{21} - \frac{1}{3} = \frac{1}{7}$

(2)

(Total for Question is 6 marks)

exam m (A+) te

46 - (4MA0-W 2017-Paper 1FR-Q14) - NUMBER

There are 80 counters in a bag.  
The counters are either red or blue.

The ratio of the number of red counters to the number of blue counters is 3 : 1

Michael takes 15% of the red counters out of the bag.

Alison takes  $\frac{1}{5}$  of the blue counters out of the bag.

How many counters are now in the bag?

.....  
(Total for Question is 5 marks)

exam m (A+) te

**47** - (4MA0-W 2017-Paper 1FR-Q13) - *NUMBER*

A plane flew 8740 km from Nairobi to Hong Kong.  
The flight time was 13 hours 15 minutes.

Work out the average speed of the plane.

Give your answer, in kilometres per hour, correct to the nearest whole number.

..... kilometres per hour

**(Total for Question    is 3 marks)**

exam  te

48 - (4MA0-W 2017-Paper 1FR-Q17) - NUMBER

A lion is 224 cm long.

Simon makes a scale model of the lion.

He uses a scale of 1 : 8

(a) Work out the length of the scale model.

..... cm  
(2)

In 2010, there were 411 Asiatic lions in India.

In 2015, there were 523 Asiatic lions in India.

(b) Work out the percentage increase in the number of Asiatic lions in India from 2010 to 2015

Give your answer correct to 1 decimal place.

..... %  
(3)

(Total for Question is 5 marks)

exam m (A+) te

**49** - (4MA0-S 2018-Paper 1FR-Q1) - *NUMBER*

|    |    |    |    |    |
|----|----|----|----|----|
| 16 | 19 | 24 | 27 | 42 |
|----|----|----|----|----|

From the numbers in the box, write down

(i) the multiple of 7

.....

(ii) the factor of 72

.....

(iii) the square number

.....

(iv) the cube number

.....

(v) the prime number.

.....

**(Total for Question is 5 marks)**

50 - (4MA0-S 2018-Paper 1FR-Q3) - NUMBER

(a) On the dotted line, write the number so that the two fractions are equivalent.

$$\frac{40}{100} = \frac{\dots\dots\dots}{25}$$

.....  
(1)

(b) Write  $\frac{11}{4}$  as a mixed number.

(c) Write  $\frac{6}{20}$  as a percentage.

.....  
(1)

(d) Write  $\frac{18}{100}$  as a decimal.

.....%  
(1)

(e) Work out  $\frac{5}{9}$  of 72

.....  
(1)

.....  
(2)

exam m (A+) te

51 - (4MA0-S 2018-Paper 1FR-Q6) - NUMBER

Potatoes cost 1.20 euros per kilogram.

(a) Work out the cost of 5 kilograms of potatoes.

..... euros  
(1)

Courgettes cost 2.55 euros per kilogram.

(b) Work out the cost of 0.6 kilograms of courgettes.

..... euros  
(1)

Carrots cost 0.84 euros per kilogram.

Onions cost 0.92 euros per kilogram.

Anna buys 500 grams of carrots and 750 grams of onions.  
She pays with a 5 euro note.

(c) Work out how much change Anna should receive.

..... euros  
(3)

exam m (A+) te

**52** - (4MA0-S 2018-Paper 1FR-Q8) - *NUMBER*

(a) Work out  $(-9) - (-15)$

.....  
(1)

(b) Work out  $6 \times (-8)$

.....  
(1)

(c) Work out  $(-64) \div (-4)$

.....  
(1)

53 - (4MA0-S 2018-Paper 1FR-Q11) - NUMBER

(a) Find the value of  $\sqrt[3]{59.319}$

.....  
(1)

(b) Find the value of  $6^4$

.....  
(1)

(c) Work out the value of  $\left(\frac{125.6}{4.7}\right)^2$

Write down all the figures on your calculator display.

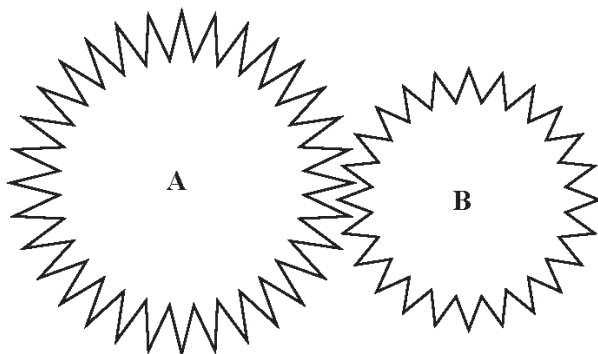
.....  
(2)

(d) Write your answer to part (c) correct to 3 significant figures.

.....  
(1)

54 - (4MA0-S 2018-Paper 1FR-Q13) - NUMBER

The diagram shows two cogs, **A** and **B**.



There are 32 teeth on cog **A**.

There are 24 teeth on cog **B**.

- (a) Write down the ratio of the number of teeth on cog **A** to the number of teeth on cog **B**.  
Give your ratio in its simplest form.

.....  
(2)

The two cogs both rotate.

Cog **A** completes 12 full turns while cog **B** completes 16 full turns.

- (b) Work out the number of full turns that cog **A** completes while cog **B** completes 60 full turns.

.....  
(2)

55 - (4MA0-S 2018-Paper 1FR-Q19) - NUMBER

Show that  $3\frac{3}{8} \div 2\frac{1}{4} = 1\frac{1}{2}$

(Total for Question is 3 marks)

exam m (A+) te

56 - (4MA0-W 2018-Paper 1FR-Q1) - NUMBER

- (a) Write the number **eight thousand and twenty four** in figures.

.....  
(1)

Here are some numbers.

38      5043      623      540

- (b) Write these numbers in order of size.  
Start with the smallest number.

.....  
(1)

There were 76385 spectators at the 2015 football Asian Cup Final.

- (c) (i) Write down the value of the 3 in the number 76385

.....

- (ii) Write the number 76385 correct to the nearest 1000

.....  
(2)

exam  
m (A+) te

**57** - (4MA0-W 2018-Paper 1FR-Q3) - *NUMBER*

There were 28 men at a tennis match.

The number of women at the tennis match was 3 times the number of men.

The number of children at the tennis match was half the number of men.

Work out the total number of people at the tennis match.

.....  
(Total for Question is 3 marks)

**58** - (4MA0-W 2018-Paper 1FR-Q6) - *NUMBER*

The lowest temperature ever recorded in Saudi Arabia is  $-11^{\circ}\text{C}$ .

The highest temperature ever recorded in Saudi Arabia is  $51^{\circ}\text{C}$ .

Work out the difference between these two temperatures.

..... $^{\circ}\text{C}$

exam m (A+) te

59 - (4MA0-W 2018-Paper 1FR-Q14) - NUMBER

In Jordan, the total cost of 2.5 kg of potatoes and 3 kg of onions is 3.55 dinars.

The cost of  $\frac{1}{2}$  kg of onions is 0.30 dinars.

Work out the cost, in Jordan, of 1 kg of potatoes.

.....dinars

60 - (4MA0-W 2018-Paper 1FR-Q16) - NUMBER

Faisal lives in the USA.

He wants to buy one cotton sheet.

In the USA one sheet costs 79 US dollars.

Faisal knows that the same type of sheet costs 210 Egyptian pounds when bought in Egypt.

He also knows these exchange rates.

|                               |
|-------------------------------|
| 1 euro = 1.10 US dollars      |
| 1 euro = 9.72 Egyptian pounds |

How much cheaper is the cost of one sheet when bought in Egypt than when bought in the USA?

Give your answer in US dollars correct to the nearest dollar.

.....US dollars

(Total for Question is 4 marks)

61 - (4MA0-W 2018-Paper 1FR-Q21) - NUMBER

Ahmed bought one box of lemons.

The box of lemons cost \$4

There were 24 lemons in the box.

Ahmed sold  $\frac{3}{4}$  of all the lemons he bought for 30 cents each.

He then sold the rest of the lemons for 20 cents each.

Calculate the percentage profit that Ahmed made.

Use \$1 = 100 cents.

..... %

(Total for Question is 4 marks)

exam m (A+) te

**62** - (4MA0-W 2018-Paper 1FR-Q22) - *NUMBER*

The scale of a map is 1:50 000

The length of a road on the map is 30 cm.

Work out the length of the real road.

Give your answer in km.

.....km

(Total for Question    is 3 marks)

exam  
m (A+) te

**63** - (4MA0-W 2018-Paper 1FR-Q23) - *NUMBER*

There are 320 students at a school.

$\frac{5}{8}$  of these students are girls.

$\frac{3}{4}$  of the girls have blue eyes.

$\frac{2}{3}$  of the boys have blue eyes.

What fraction of the students at the school have blue eyes?

.....  
(Total for Question      is 4 marks)

exam  te

1 - (4MA0-S 2015-Paper 1FR-Q13) - ALGEBRA

(a) Simplify

(i)  $t^3 + t^3 + t^3 + t^3$

.....

(ii)  $10x - 4y - 2x - y$

.....

(iii)  $e \times e \times 7$

.....

(4)

(b) Factorise  $g^2 + 4g$

.....

(2)

(Total for Question is 6 marks)

2 - (4MA0-S 2015-Paper 1FR-Q20) - ALGEBRA

(a)  $A = 2^2 \times 3 \times 5^2$

$$B = 2^3 \times 5$$

(i) Find a common factor of  $A$  and  $B$ .

(ii) Find a common multiple of  $A$  and  $B$ .

(b)  $\frac{8^2 \times 8^3}{8^4} = 2^n$

Find the value of  $n$ .

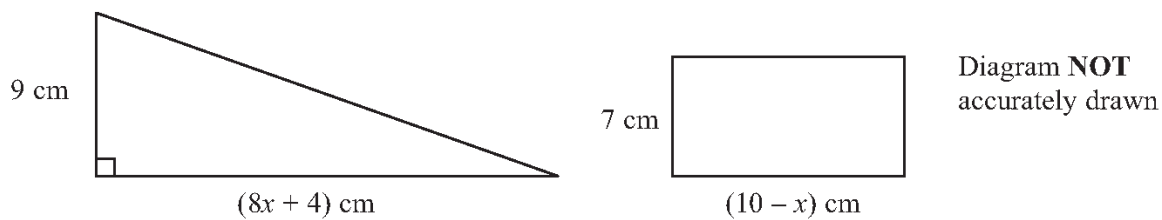
.....  
(3)

$n =$  .....  
(2)

(Total for Question is 5 marks)

3 - (4MA0-S 2015-Paper 1FR-Q21) - ALGEBRA

The diagram shows a right-angled triangle and a rectangle.



The area of the triangle is twice the area of the rectangle.

(i) Write down an equation for  $x$ .

(ii) Find the area of the rectangle.  
Show clear algebraic working.

.....  $\text{cm}^2$

(Total for Question is 7 marks)

4 - (4MA0-W 2015-Paper 1FR-Q8) - ALGEBRA

(a) Solve  $x + 4 = 17$

$$x = \dots\dots\dots$$

(1)

(b) Simplify  $4e + 6f + 3e - 2f$

$$\dots\dots\dots$$

(2)

(c) Factorise  $6w + 15$

$$\dots\dots\dots$$

(1)

(d) Expand and simplify  $(x + 4)(x + 7)$

$$\dots\dots\dots$$

(2)

(Total for Question is 6 marks)

5 - (4MA0-W 2015-Paper 1FR-Q13) - ALGEBRA

$$M = 4g - 3h$$

(a) Work out the value of  $M$  when  $g = -5$  and  $h = 8$

$$M = \dots\dots\dots$$

(2)

(b) Work out the value of  $g$  when  $M = 30$  and  $h = 6$

$$g = \dots\dots\dots$$

(3)

(Total for Question    is 5 marks)

6 - (4MA0-W 2015-Paper 1FR-Q21) - ALGEBRA

Solve  $3(x - 5) = 7x + 12$

Show clear algebraic working.

$$x = \dots\dots\dots$$

(Total for Question    is 3 marks)

exam m (A+) te

7 - (4MA0-S 2016-Paper 1FR-Q11) - ALGEBRA

(a) Simplify  $8e + 2f - 11e + 3f$

.....  
(2)

(b) Expand  $2y(3y - 7)$

.....  
(2)

(Total for Question is 4 marks)

exam m (A+) te

8 - (4MA0-S 2016-Paper 1FR-Q12) - ALGEBRA

Here is a number machine.



(a) Work out the output when the input is 21

.....  
(1)

(b) Work out the input when the output is 30

.....  
(2)

The input is  $x$ .

(c) Find an expression, in terms of  $x$ , for the output.

.....  
(2)

(Total for Question is 5 marks)

9 - (4MA0-S 2016-Paper 1FR-Q15) - ALGEBRA

(a)  $A = 2p + 3q$

Work out the value of  $A$  when  $p = -5$  and  $q = 7$

$$A = \dots\dots\dots$$

(2)

(b) Solve  $5(x - 4) = 14$

$$x = \dots\dots\dots$$

(2)

(Total for Question is 4 marks)

exam m (A+) te

10 - (4MA0-S 2016-Paper 1FR-Q20) - ALGEBRA

(a) Solve the inequalities  $-4 < 3x + 5 \leq 11$

.....  
(3)

(b) Write down the integer values of  $x$  which satisfy  $-4 < 3x + 5 \leq 11$

.....  
(2)

(Total for Question is 5 marks)

exam m (A+) te

**11** - (4MA0-W 2016-Paper 1FR-Q12) - ALGEBRA(a) Solve  $x - 9 = 15$ 

$$x = \dots\dots\dots$$

(1)

(b) Solve  $\frac{3}{4}y = 12$ 

$$y = \dots\dots\dots$$

(2)

(c) Factorise fully  $18c - 27$ 

$$\dots\dots\dots$$

(2)

(d) Expand and simplify  $(t - 4)(t + 5)$ 

$$\dots\dots\dots$$

(2)

**(Total for Question is 7 marks)***exam m (A+) te*

12 - (4MA0-W 2016-Paper 1FR-Q18) - ALGEBRA

(a) Solve the inequality  $e - 2 < 0$

.....  
(1)

(b) Solve the inequality  $5 - 3e < 4$

.....  
(2)

(c) Write down the integer value of  $e$  that satisfies both of the inequalities

$$e - 2 < 0 \quad \text{and} \quad 5 - 3e < 4$$

.....  
(1)

(Total for Question is 4 marks)

**13** - (4MA0-S 2017-Paper 1FR-Q6) - ALGEBRA

Here are the first four terms of a sequence.

5      9      13      17

One of these four terms is a square number.

(a) Write down this square number.

.....  
(1)

(b) Write down the next term of the sequence.

.....  
(1)

150 cannot be a term of this sequence.

(c) Explain why.

.....  
(1)

14 - (4MA0-S 2017-Paper 1FR-Q14) - ALGEBRA

Here is a square.

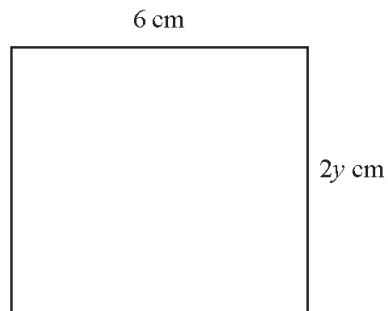


Diagram **NOT**  
accurately drawn

(a) Find the value of  $y$ .

$$y = \dots\dots\dots (1)$$

Here is a rectangle.

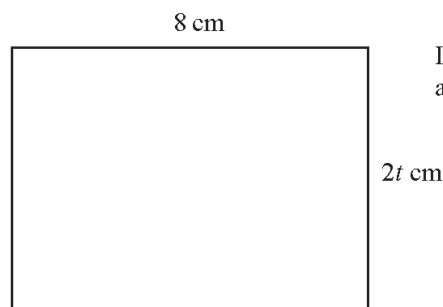


Diagram **NOT**  
accurately drawn

The rectangle has an area of  $80 \text{ cm}^2$

(b) Find the value of  $t$ .

$$t = \dots\dots\dots (2)$$

**15** - (4MA0-S 2017-Paper 1FR-Q16) - ALGEBRA

$$a = 6 \quad b = 2.84 \quad c = \sqrt{5}$$

Work out the value of  $\frac{a-b}{c^2}$

.....  
**2 marks**

**16** - (4MA0-S 2017-Paper 1FR-Q17) - ALGEBRA

Solve  $5x - 8 = x - 10$

Show clear algebraic working.

$x =$  .....

**3 marks**

exam m (A+) te

**17** - (4MA0-S 2017-Paper 1FR-Q24) - ALGEBRA

Simplify  $2e^2f \times 5e^3f$

.....  
**2 marks)**

**18** - (4MA0-W 2017-Paper 1FR-Q8) - ALGEBRA(a) Simplify  $p + p + p + p - p$  $\frac{\dots\dots\dots}{(1)}$ (b) Simplify  $6 \times e \times 5 \times f$  $\frac{\dots\dots\dots}{(1)}$ (c) Solve  $8m = 40$  $m = \frac{\dots\dots\dots}{(1)}$ (d) Solve  $20 - k = 16$  $k = \frac{\dots\dots\dots}{(1)}$ 

$$a = 3c + f$$

(e) Work out the value of  $c$  when  $a = 23$  and  $f = 5$  $c = \frac{\dots\dots\dots}{(3)}$ **(Total for Question is 7 marks)**

19 - (4MA0-W 2017-Paper 1FR-Q20) - ALGEBRA

(a) Solve 
$$\begin{aligned} 7x + 2y &= 16 \\ 5x - 2y &= 20 \end{aligned}$$

Show clear algebraic working.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(3)

(b) Expand and simplify  $(k + 9)(k - 5)$

$$\dots\dots\dots$$

(2)

(Total for Question is 5 marks)

**20** - (4MA0-S 2018-Paper 1FR-Q4) - ALGEBRA

Here are the first five terms of a number sequence.

96      90      84      78      72

(a) Write down the 6th term of the sequence.

.....  
(1)

(b) Explain how you found your answer to part (a).

.....  
(1)

The 15th term of the sequence is 12

(c) Work out the 14th term of the sequence.

.....  
(1)

**21** - (4MA0-S 2018-Paper 1FR-Q9) - ALGEBRA(a) Simplify  $g + 2g + 3g - 4g$  $\dots\dots\dots$   
(1)(b) Solve  $6m = 18$  $m = \dots\dots\dots$   
(1)

$$P = 46 - 3st$$

(c) Work out the value of  $P$  when  $s = 2$  and  $t = 5$  $P = \dots\dots\dots$   
(2)

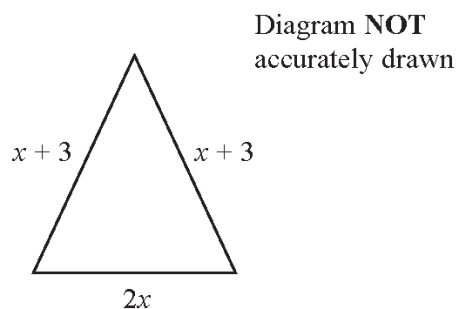
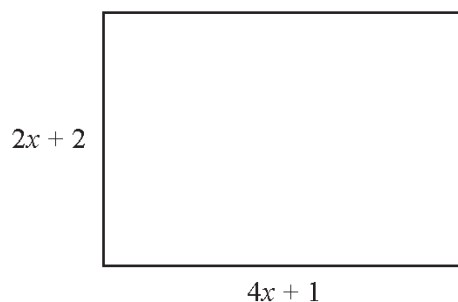
$$Q = 4e + 3f$$

(d) Work out the value of  $e$  when  $Q = 43$  and  $f = 7$  $e = \dots\dots\dots$   
(3)

exam m (A+) te

22 - (4MA0-S 2018-Paper 1FR-Q17) - ALGEBRA

The diagram shows a rectangle and an isosceles triangle.  
All measurements are in centimetres.



(a) Write down an expression in terms of  $x$  for

(i) the perimeter of the rectangle,

..... cm

(ii) the perimeter of the triangle.

..... cm

(2)

The perimeter of the rectangle is equal to 2 times the perimeter of the triangle.

(b) Work out the value of  $x$ .

Show clear algebraic working.

.....

(4)

exam m (A+) te

**23** - (4MA0-W 2018-Paper 1FR-Q4) - ALGEBRA

Here are the first four terms of a number sequence.

3      7      11      15

(a) Write down the next term of the sequence.

.....  
(1)

(b) Write down the 10th term of the sequence.

.....  
(1)

Ali says that 102 is a term of the sequence.

Ali is wrong.

(c) Explain why.

.....  
(1)

exam m (A+) te

24 - (4MA0-W 2018-Paper 1FR-Q8) - ALGEBRA

- (a) Write these numbers in order of size.  
Start with the smallest number.

$$\frac{3}{8}$$

38%

0.146

$$\frac{1}{3}$$

.....  
(2)

Two factors of 24 have a sum of 18

- (b) Find these two factors.

..... and .....  
(2)

25 - (4MA0-W 2018-Paper 1FR-Q11) - ALGEBRA

(a) Solve  $\frac{x}{2} = 8$

$$x = \dots\dots\dots (1)$$

(b) Solve  $8 - y = 5$

$$y = \dots\dots\dots (1)$$

(c) Solve  $2t + 2t = 18$

$$t = \dots\dots\dots (2)$$

26 - (4MA0-W 2018-Paper 1FR-Q13) - ALGEBRA

$$y = 2w$$

- (a) Work out the value of  $y$  when  $w = 30$

$$y = \dots\dots\dots (1)$$

$$t = 2c + 3d$$

$$c = 8$$

$$d = 5$$

- (b) Work out the value of  $t$ .

$$t = \dots\dots\dots (2)$$

Here is a straight line  $ABCD$ .

Diagram **NOT**  
accurately drawn



$$AB = x \text{ cm}$$

$$BC = 2AB$$

$CD$  is 5 cm longer than  $AB$

The total length of the line  $ABCD$  is  $L$  cm.

- (c) Find an expression for  $L$  in terms of  $x$ .  
Give your answer in its simplest form.

$$L = \dots\dots\dots (3)$$

exam m (A+) te

27 - (4MA0-W 2018-Paper 1FR-Q17) - ALGEBRA

(a) Expand and simplify

$$5(x + y) - 3x + 3y$$

.....  
(2)

(b) Simplify  $t^3 \times t^7$

.....  
(1)

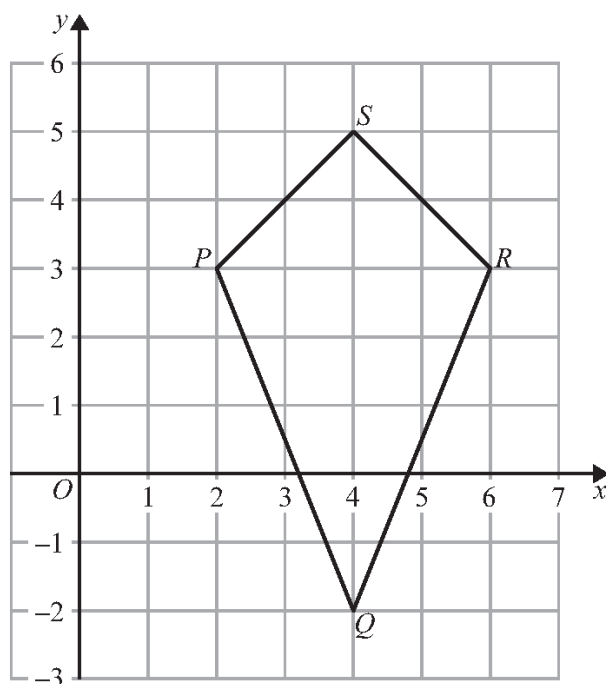
(c) Simplify  $(m^4)^3$

.....  
(1)

exam m (A+) te

## 1 - (4MA0-S 2015-Paper 1FR-Q3) - FUNCTIONS &amp; GRAPHS

The diagram shows a quadrilateral  $PQRS$  drawn on a centimetre grid.



- (a) Write down the mathematical name of the quadrilateral  $PQRS$ .

.....  
(1)

- (b) Measure the length of  $PQ$ .  
Give your answer in millimetres.

..... mm  
(1)

- (c) Write down the coordinates of

(i) the point  $P$ ,

(....., .....)

(ii) the point  $Q$ .

(....., .....)

(2)

- (d) On the quadrilateral  $PQRS$ , draw the line of symmetry.

(1)

- (e) Work out the area of the quadrilateral  $PQRS$ .

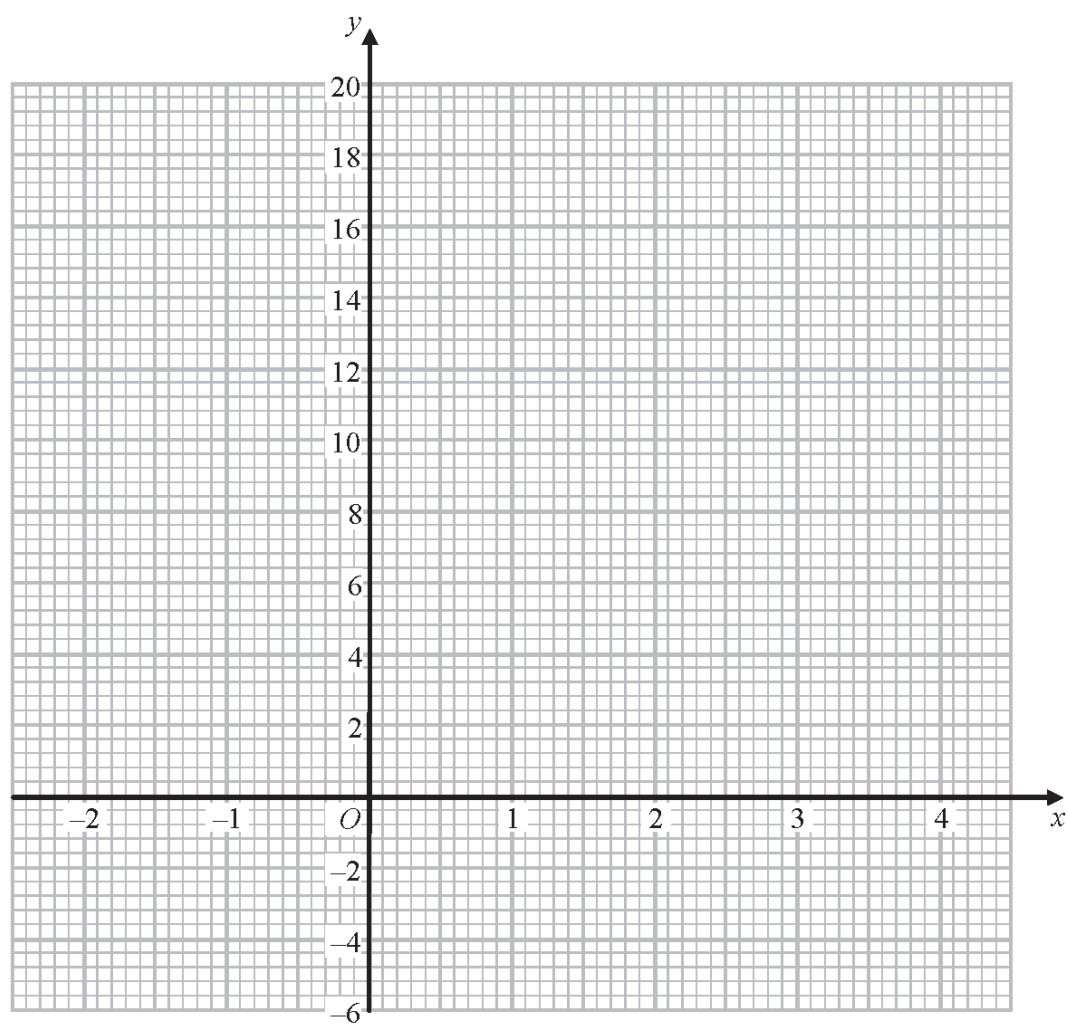
.....  $\text{cm}^2$   
(2)

(Total for Question 1 is 7 marks)

exam m (A+) te

2 - (4MA0-W 2015-Paper 1FR-Q17) - FUNCTIONS & GRAPHS

On the grid, draw the graph of  $y = 3x + 2$  for values of  $x$  from  $-2$  to  $4$

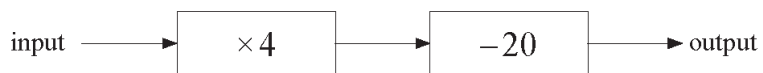


(Total for Question is 4 marks)

exam m (A+) te

**3** - (4MA0-S 2017-Paper 1FR-Q7) - *FUNCTIONS & GRAPHS*

Here is a number machine.



(a) Find the output when the input is 30

.....  
(1)

(b) Find the output when the input is  $-8$

.....  
(1)

(c) Find the input when the output is 10

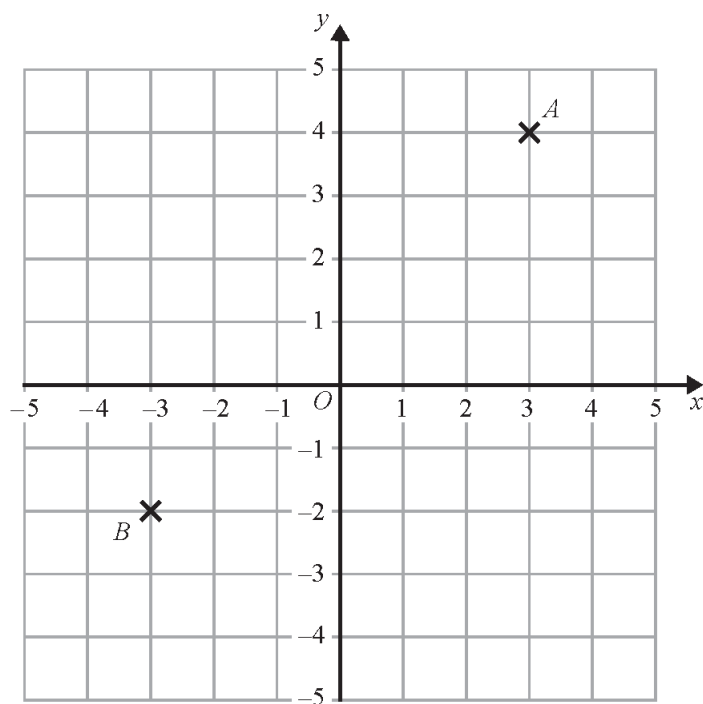
.....  
(1)

The input is  $x$   
The output is  $y$

(d) Write down a formula for  $y$  in terms of  $x$ .

.....  
(2)

## 4 - (4MA0-S 2017-Paper 1FR-Q8) - FUNCTIONS &amp; GRAPHS



- (a) Write down the coordinates of point  $B$ .

(....., .....)  
(1)

- (b) On the grid, mark with a cross (x) the point with coordinates  $(-4, 1)$   
Label the point  $P$ .

(1)

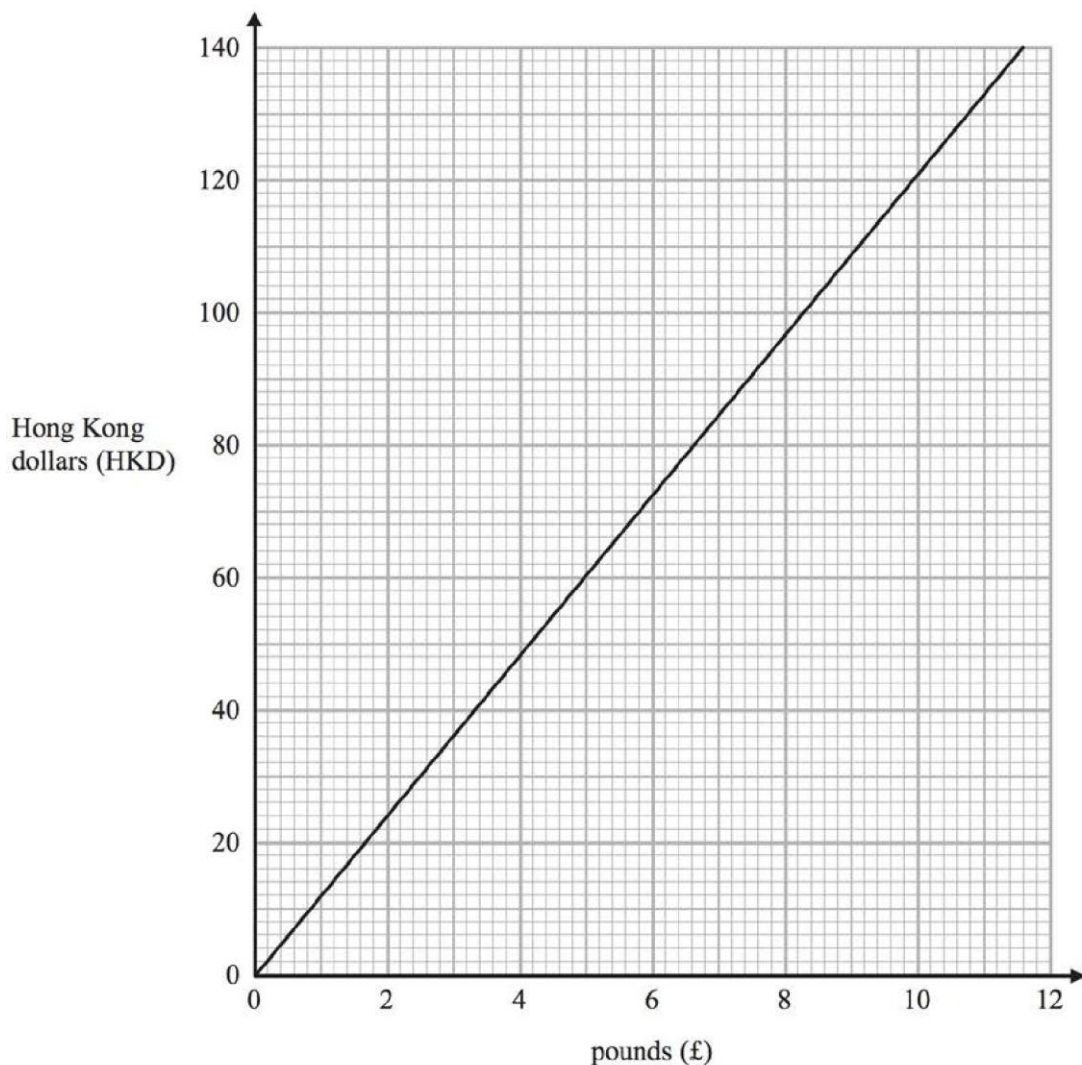
$C$  is a point so that angle  $ACB$  is a right angle.

- (c) Find the coordinates of a possible position for  $C$ .

(....., .....)  
(2)

5 - (4MA0-W 2017-Paper 1FR-Q9) - FUNCTIONS & GRAPHS

You can use this graph to change between pounds (£) and Hong Kong dollars (HKD).



(a) Change 120 Hong Kong dollars into pounds.

£.....  
(1)

(b) Change £6 into Hong Kong dollars.

..... HKD  
(1)

(c) Change 1000 Hong Kong dollars into pounds.

£.....  
(2)

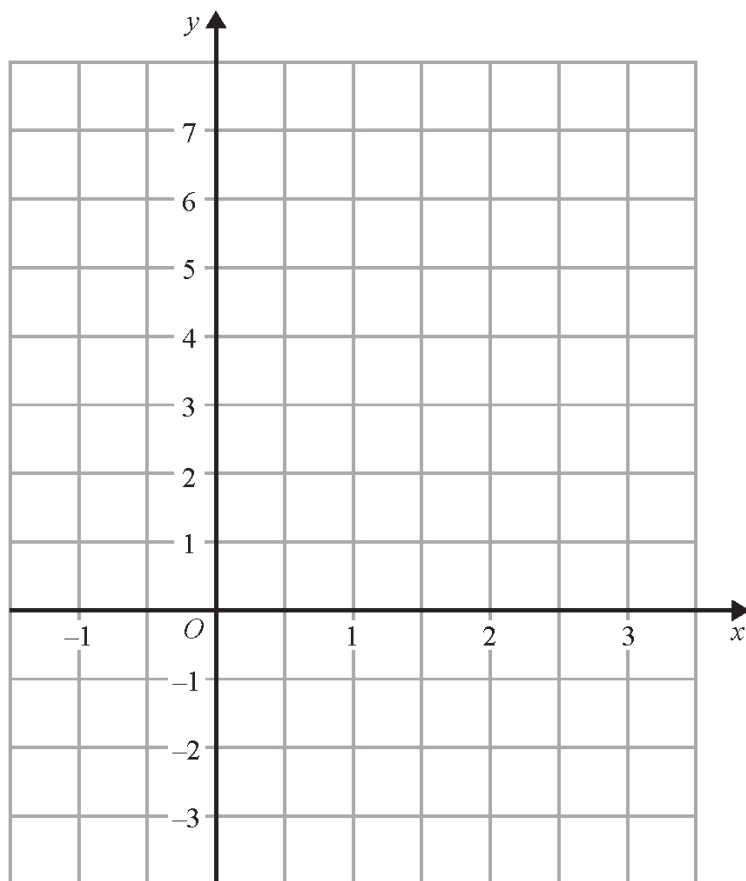
(Total for Question is 4 marks)

exam m (A+) te

6 - (4MA0-S 2018-Paper 1FR-Q12) - FUNCTIONS & GRAPHS

(a) On the grid, draw

- (i) the line  $y = 1$
- (ii) the graph of  $y = 4 - 2x$  for values of  $x$  from  $-1$  to  $3$



(4)

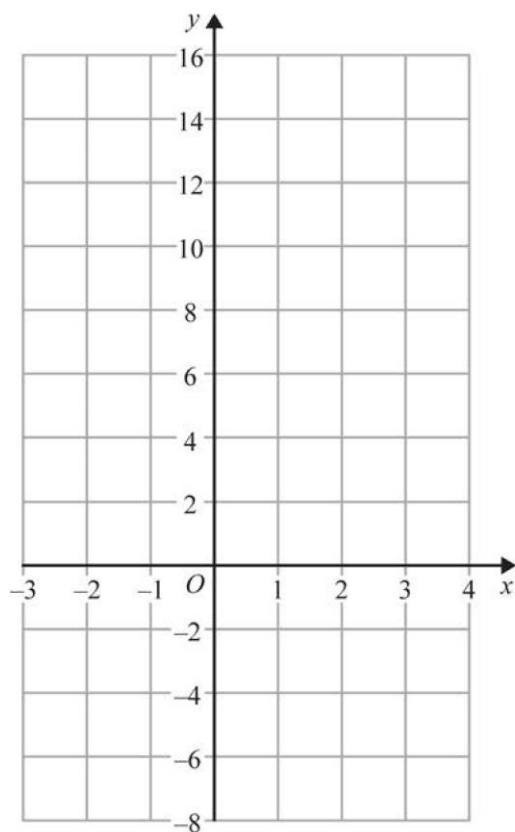
(b) Write down the coordinates of the point where the graph of  $y = 4 - 2x$  crosses the line  $y = 1$

(....., .....)  
(1)

exam m (A+) te

7 - (4MA0-W 2018-Paper 1FR-Q18) - FUNCTIONS & GRAPHS

- (a) On the grid, draw the graph of  $y = 4x + 2$  for values of  $x$  from  $-2$  to  $3$



(3)

The point with coordinates  $(p, 50)$  lies on the line with equation  $y = 4x + 2$

- (b) Work out the value of  $p$ .

$p = \dots\dots\dots$   
(2)

exam  
m (A+) te

**1** - (4MA0-S 2015-Paper 1FR-Q5) - MENSURATION

The diagram shows a solid cuboid.

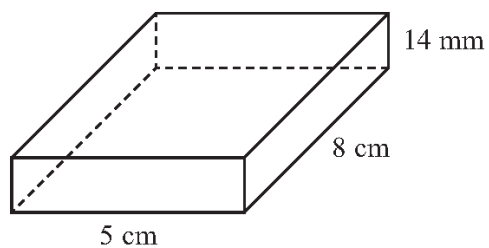


Diagram **NOT**  
accurately drawn

(a) How many faces has this cuboid?

.....  
(1)

(b) How many edges has this cuboid?

.....  
(1)

The cuboid has width 5 cm, length 8 cm and height 14 mm.

(c) Work out the volume, in  $\text{cm}^3$ , of the cuboid.

.....  $\text{cm}^3$   
(3)

(Total for Question is 5 marks)

exam m (A+) te

2 - (4MA0-W 2015-Paper 1FR-Q20) - MENSURATION

The diagram shows a solid cylinder.

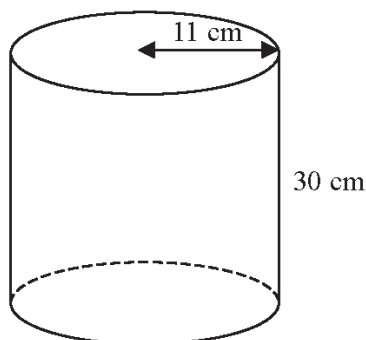


Diagram **NOT**  
accurately drawn

The cylinder has a height of 30 cm and a radius of 11 cm.

- (a) Work out the **total** surface area of the cylinder.  
Give your answer correct to 2 significant figures.

..... cm<sup>2</sup>  
(4)

- (b) The height of the cylinder is 30 cm, correct to the nearest centimetre.

- (i) Write down the lower bound of the height of the cylinder.

..... cm

- (ii) Write down the upper bound of the height of the cylinder.

..... cm  
(2)

(Total for Question is 6 marks)

exam m (A+) te

3 - (4MA0-S 2016-Paper 1FR-Q8) - MENSURATION

Here is a solid prism.

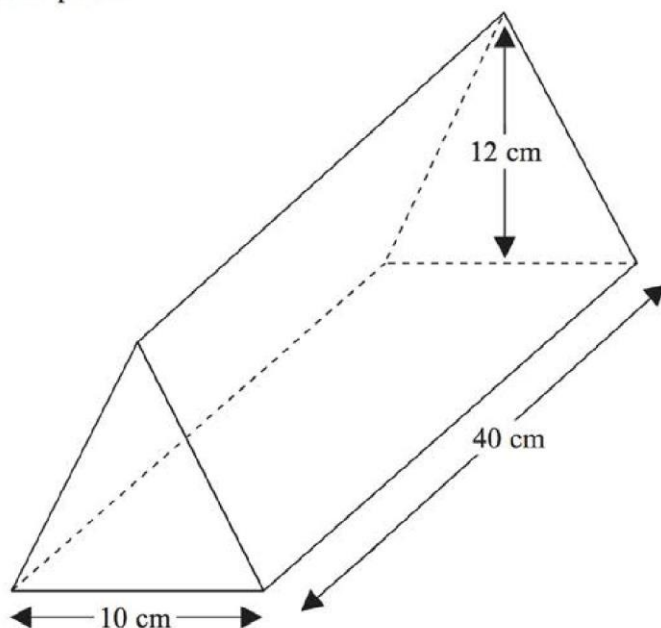


Diagram **NOT**  
accurately drawn

The cross section of the prism is a triangle.

(a) How many edges has this prism?

.....  
(1)

(b) How many faces has this prism?

.....  
(1)

The base of the triangle is 10 cm.  
The height of the triangle is 12 cm.  
The length of the prism is 40 cm.

(c) Work out the volume of the prism.

.....cm<sup>3</sup>  
(2)

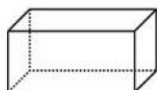
(Total for Question is 4 marks)

exam m (A+) te

4 - (4MA0-W 2016-Paper 1FR-Q1) - MENSURATION

(a) Write down the mathematical name for each of these 3-D shapes.

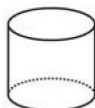
(i)



(i)

.....

(ii)



(ii)

.....

(iii)



(iii)

.....

(3)

Here is a solid prism made from centimetre cubes.

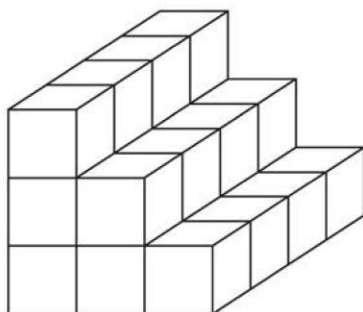


Diagram **NOT**  
accurately drawn

(b) Work out the volume of the prism.

.....  $\text{cm}^3$

(2)

(Total for Question is 5 marks)

**5** - (4MA0-S 2017-Paper 1FR-Q20) - *MENSURATION*

There is a World Peace Bell in South Korea.

At its widest, the bell has a circular cross section with a diameter of 2.5 m.

- (a) Work out the circumference of a circle with diameter 2.5 m.

Give your answer correct to 3 significant figures.

..... m  
(2)

The World Peace Bell in South Korea has a height of 4.7 m.

At its widest, the bell has a circular cross section with a diameter of 2.5 m.

A scale model is made of the bell.

At its widest, the scale model has a circular cross section with a diameter 10 cm.

- (b) Work out the height of the scale model.

Give your answer in centimetres.

..... cm  
(2)

6 - (4MA0-S 2018-Paper 1FR-Q14) - MENSURATION

The diagram shows a solid triangular prism  $ABCDEF$ .

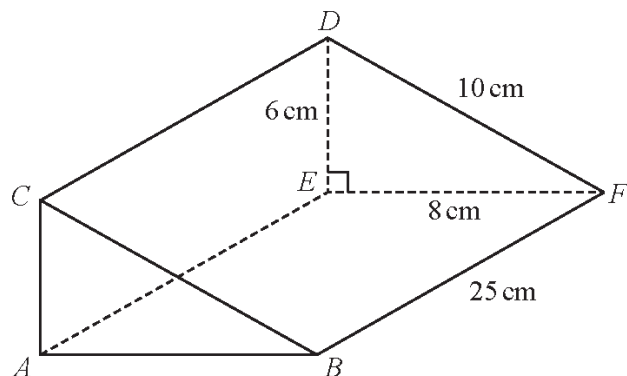


Diagram **NOT**  
accurately drawn

$EF = 8\text{ cm}$ ,  $DE = 6\text{ cm}$ ,  $DF = 10\text{ cm}$  and  $BF = 25\text{ cm}$ .  
Angle  $DEF = 90^\circ$

(a) Work out the area of triangle  $DEF$ .

.....  $\text{cm}^2$   
(2)

(b) Work out the volume of the prism.

.....  $\text{cm}^3$   
(2)

(c) Work out the total surface area of the prism.

.....  $\text{cm}^2$   
(3)

exam m (A+) te

7 - (4MA0-W 2018-Paper 1FR-Q19) - MENSURATION

Here is a trapezium and a square.

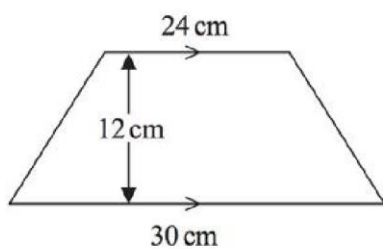


Diagram **NOT**  
accurately drawn

The lengths of the parallel sides of the trapezium are 24 cm and 30 cm.  
The height of the trapezium is 12 cm.

The area of the square is equal to the area of the trapezium.

Work out the perimeter of the square.

.....cm

(Total for Question is 4 marks)

exam m (A+) te

8 - (4MA0-W 2018-Paper 1FR-Q20) - MENSURATION

Here is a field in the shape of a circle.

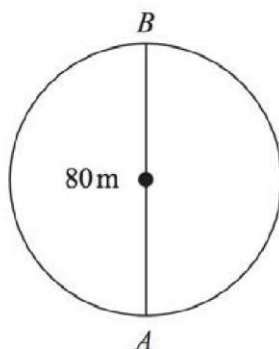


Diagram **NOT**  
accurately drawn

The field is crossed by a path  $AB$  where  $AB$  is a diameter of the circle.  
 $AB = 80$  metres.

Anil runs once around the circumference of the circle.

Sachin runs along the path from  $A$  to  $B$  and then runs back along the path to  $A$ .

Anil runs further than Sachin.

How much further?

Give your answer in metres, correct to 1 decimal place.

.....m

(Total for Question is 3 marks)

exam  
m (A+) te

## 1 - (4MA0-S 2015-Paper 1FR-Q9) - GEOMETRY

$CDF$  and  $DEF$  are isosceles triangles.

$CD = DF = EF$ .

$ACDE$  and  $BCF$  are straight lines.

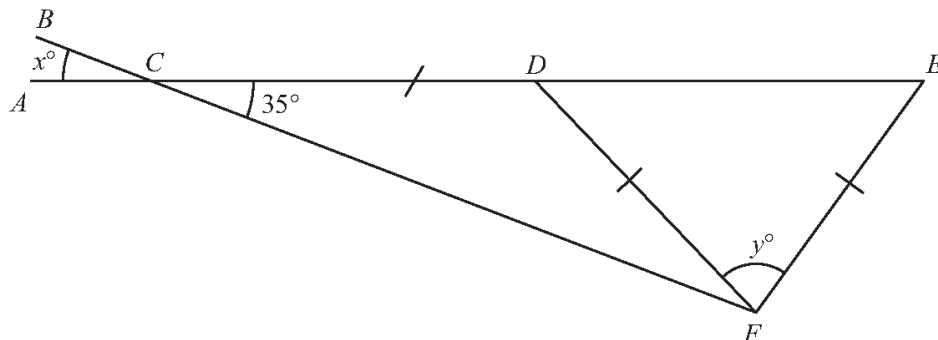


Diagram **NOT**  
accurately drawn

- (a) (i) Find the value of  $x$ .

$x = \dots\dots\dots$

- (ii) Give a reason for your answer.

.....

.....

.....

(2)

- (b) Calculate the value of  $y$ .

$y = \dots\dots\dots$

(3)

(Total for Question 1 is 5 marks)

2 - (4MA0-S 2015-Paper 1FR-Q15) - GEOMETRY

Each exterior angle of a regular polygon is  $15^\circ$

(a) How many sides has the regular polygon?

.....  
(2)

The diagram shows 3 identical regular pentagons.

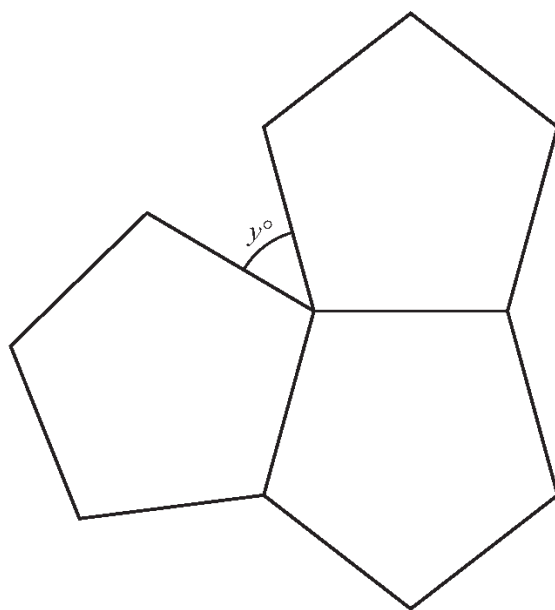


Diagram **NOT**  
accurately drawn

(b) Work out the value of  $y$ .

$y = \dots\dots\dots$   
(3)

(Total for Question 2 is 5 marks)

exam m (A+) te

3 - (4MA0-S 2015-Paper 1FR-Q19) - GEOMETRY

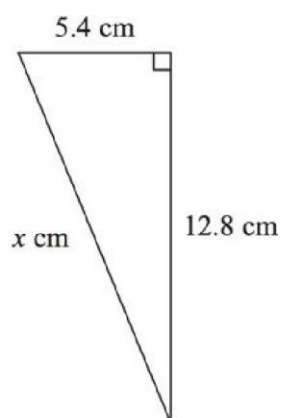


Diagram **NOT**  
accurately drawn

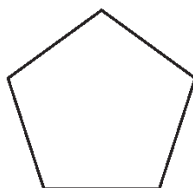
Work out the value of  $x$ .  
Give your answer correct to 3 significant figures.

$x = \dots\dots\dots$

(Total for Question is 3 marks)

4 - (4MA0-W 2015-Paper 1FR-Q3) - GEOMETRY

(a) The diagram shows a regular polygon.



(i) Write down the mathematical name of this polygon.

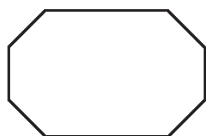
.....

(ii) Write down the order of rotational symmetry of this polygon.

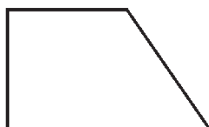
.....

(2)

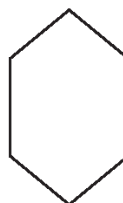
(b) Here are six more polygons.



A



B



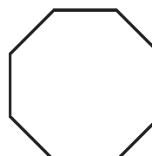
C



D



E



F

(i) Write down the letter of the polygon that has exactly one line of symmetry.

.....

(ii) Write down the letters of the two polygons that have rotational symmetry of order 2 **and** exactly 2 lines of symmetry.

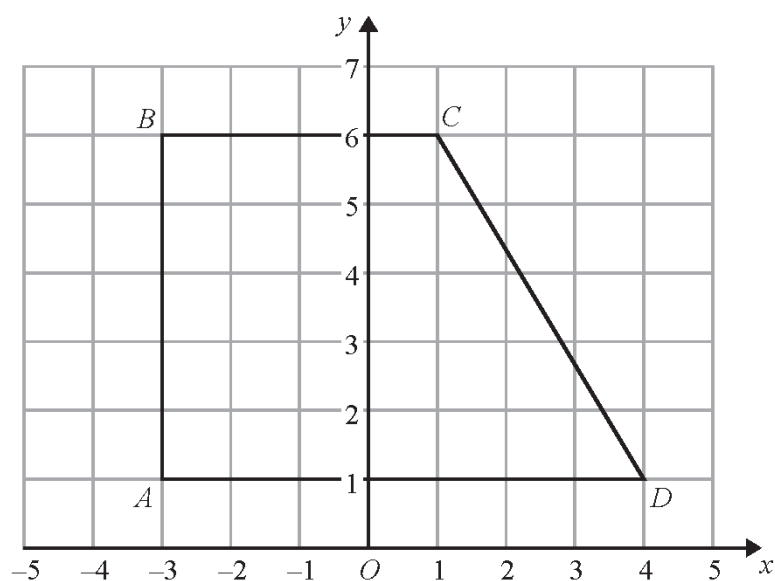
..... , .....

(3)

(Total for Question is 5 marks)

## 5 - (4MA0-W 2015-Paper 1FR-Q6) - GEOMETRY

The diagram shows a quadrilateral  $ABCD$  drawn on a centimetre grid.



(a) Write down the coordinates of the point  $C$ .

(....., .....)  
(1)

(b) Measure the length of  $CD$ .

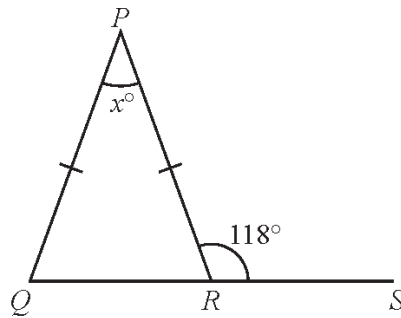
..... cm  
(1)

(c) Work out the perimeter of quadrilateral  $ABCD$ .

..... cm  
(2)

(Total for Question is 4 marks)

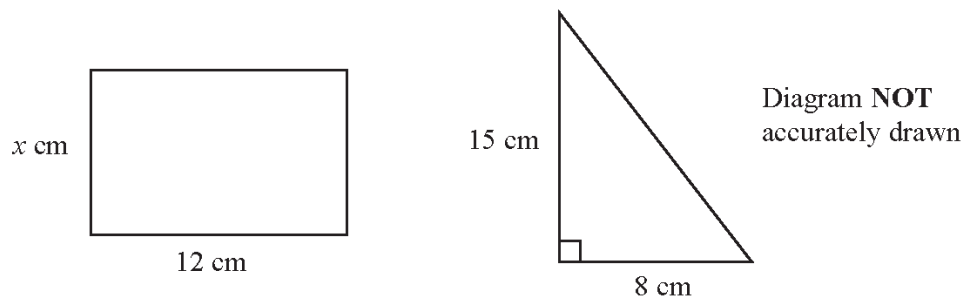
6 - (4MA0-W 2015-Paper 1FR-Q9) - GEOMETRY

Diagram **NOT**  
accurately drawn $PQR$  is an isosceles triangle. $QRS$  is a straight line. $PQ = PR$ .Angle  $PRS = 118^\circ$ Work out the value of  $x$ . $x = \dots\dots\dots$ 

(Total for Question is 3 marks)

7 - (4MA0-W 2015-Paper 1FR-Q12) - *GEOMETRY*

The diagram shows a rectangle and a right-angled triangle.



The area of the rectangle is the same as the area of the triangle.

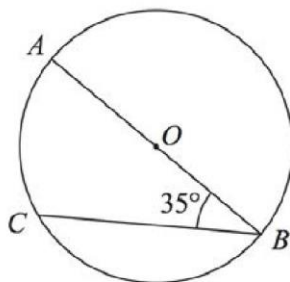
Work out the value of  $x$ .

$x =$  .....

(Total for Question is 3 marks)

8 - (4MA0-S 2016-Paper 1FR-Q3) - GEOMETRY

$A, B, C$  are points on a circle, centre  $O$ .  
 $AOB$  is a straight line.



(i) Write down the mathematical name for the line  $AB$

.....

(ii) Write down the mathematical name for the line  $BC$

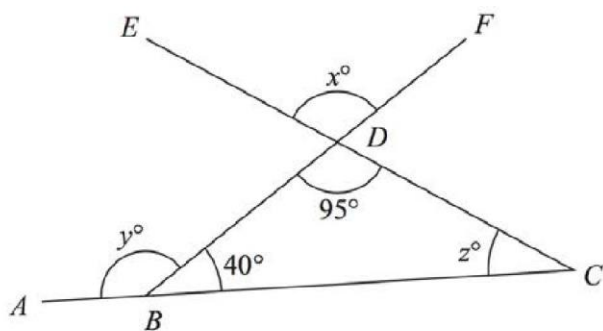
.....

(iii) Write down the mathematical name for an angle of  $35^\circ$

.....

(Total for Question is 3 marks)

9 - (4MA0-S 2016-Paper 1FR-Q9) - GEOMETRY

Diagram **NOT**  
accurately drawn $ABC$ ,  $CDE$  and  $BDF$  are straight lines.(a) Write down the value of  $x$ . $x = \dots\dots\dots$   
(1)(b) (i) Find the value of  $y$ . $y = \dots\dots\dots$ 

(ii) Give a reason for your answer.

 $\dots\dots\dots$   
(2)(c) Find the value of  $z$ . $z = \dots\dots\dots$   
(2)

(Total for Question is 5 marks)

exam  
m (A+) te

10 - (4MA0-S 2016-Paper 1FR-Q23) - GEOMETRY

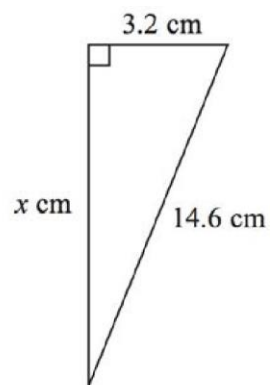


Diagram **NOT**  
accurately drawn

Calculate the value of  $x$ .  
Give your answer correct to 3 significant figures.

$x =$  .....

(Total for Question is 3 marks)

11 - (4MA0-S 2016-Paper 1FR-Q24) - GEOMETRY

Work out the size of an exterior angle of a regular polygon with 8 sides.

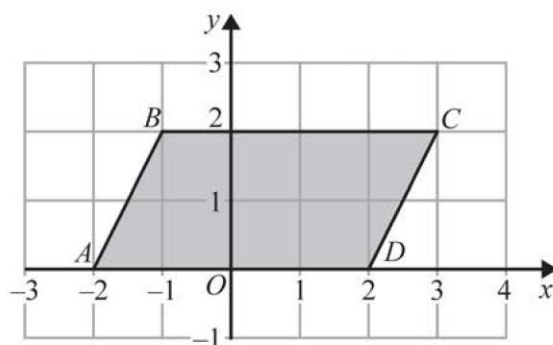
.....

(Total for Question is 2 marks)

exam m (A+) te

12 - (4MA0-W 2016-Paper 1FR-Q8) - GEOMETRY

The diagram shows a quadrilateral  $ABCD$  on a centimetre grid.



(a) Write down the coordinates of

(i)  $C$

(....., .....)

(ii)  $B$

(....., .....)  
(2)

(b) Write down the mathematical name for the quadrilateral  $ABCD$

.....  
(1)

(c) Write down the order of rotational symmetry of the quadrilateral  $ABCD$

.....  
(1)

(d) Work out the area of the quadrilateral  $ABCD$

.....  $\text{cm}^2$   
(2)

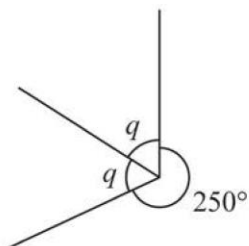
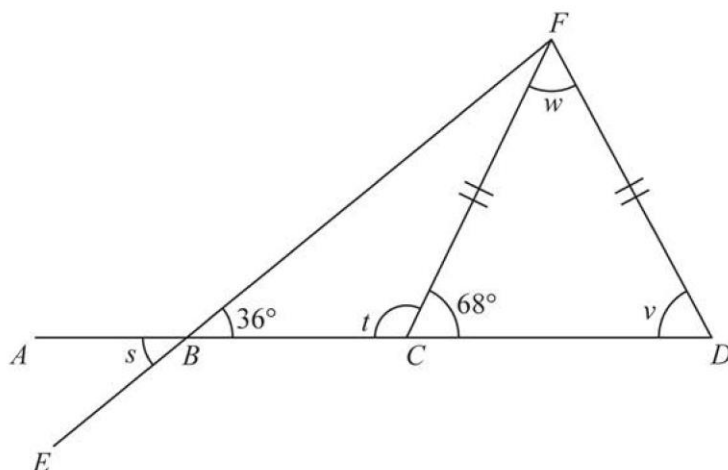
exam m (A+) te

(e) Find the coordinates of the midpoint of  $AC$

(..... , .....)  
(2)

(Total for Question is 8 marks)

13 - (4MA0-W 2016-Paper 1FR-Q10) - GEOMETRY

Diagram **NOT**  
accurately drawn(a) Work out the size of angle  $q$ ......  
(2)Diagram **NOT**  
accurately drawn

$ABCD$  and  $EBF$  are straight lines.  
 Angle  $FBC = 36^\circ$  and angle  $FCD = 68^\circ$   
 $FC = FD$

(b) Write down the size of angle  $s$ ......  
(1)exam  
m (A+) te

(c) Work out the size of angle  $t$ .

.....  
(1)

(d) Explain why angle  $v = 68^\circ$

.....  
(1)

(e) Work out the size of angle  $w$ .

.....  
(2)

(Total for Question is 7 marks)

exam m (A+) te

14 - (4MA0-W 2016-Paper 1FR-Q16) - GEOMETRY

The diagram shows a circle with centre  $O$  and radius 6.5 cm

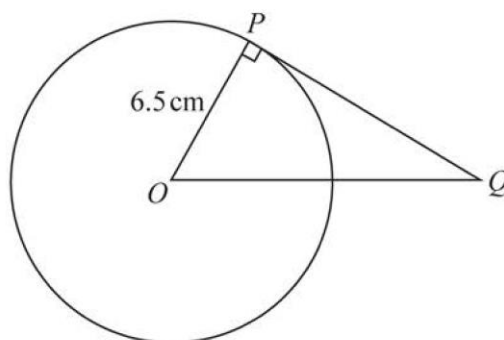


Diagram **NOT**  
accurately drawn

- (a) Work out the area of the circle.  
Give your answer correct to 3 significant figures.

.....  $\text{cm}^2$   
(2)

$PQ$  is the tangent to the circle at  $P$   
 $OQ = 10.5 \text{ cm}$

- (b) Work out the length of  $PQ$   
Give your answer correct to 3 significant figures.

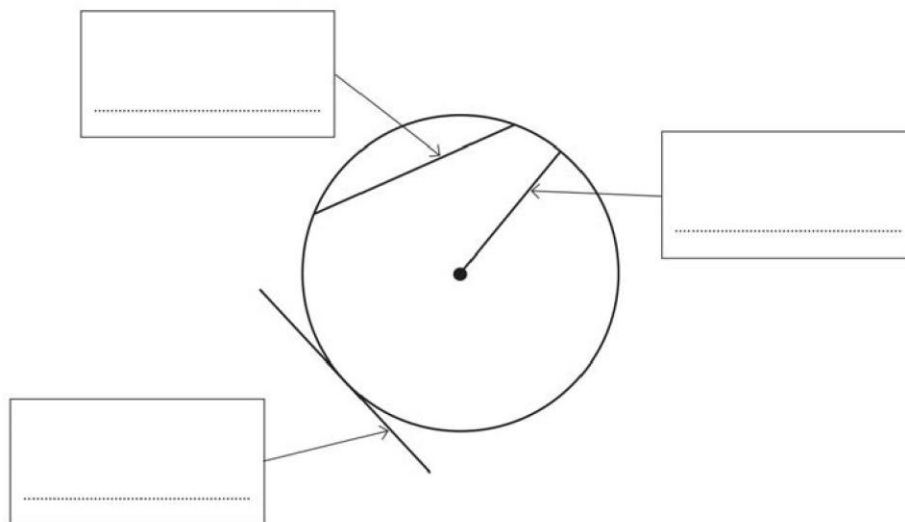
.....  $\text{cm}$   
(3)

(Total for Question is 5 marks)

exam m (A+) te

**15** - (4MA0-S 2017-Paper 1FR-Q4) - *GEOMETRY*

Here is a circle with some straight lines.



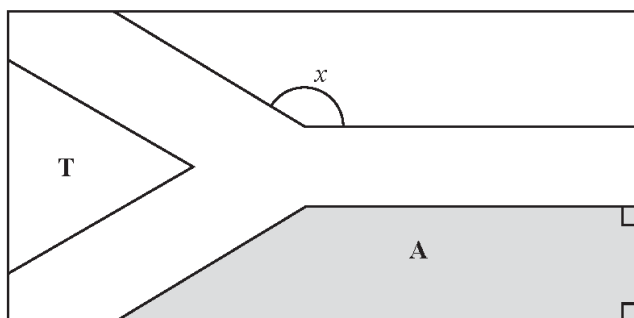
For each line, choose a word from the list below that describes the line to which the arrow points.  
Write each answer in the box.

radius      circumference      diameter      sector      tangent      chord      arc

**3 marks**

**16** - (4MA0-S 2017-Paper 1FR-Q5) - *GEOMETRY*

The diagram shows the design for a flag.



- (a) What type of angle is marked  $x$ ?

.....  
(1)

Triangle **T** is an equilateral triangle.

- (b) What is the size of each angle in an equilateral triangle?

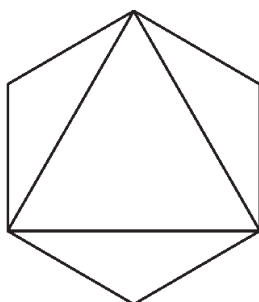
.....  
(1)

- (c) Write down the mathematical name for the shaded quadrilateral **A**.

.....  
(1)

17 - (4MA0-S 2017-Paper 1FR-Q11) - GEOMETRY

Here is a shape.



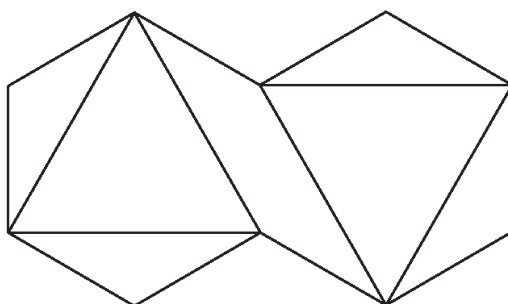
(a) On the shape, draw all the lines of symmetry of the shape.

(2)

(b) Write down the order of rotational symmetry of the shape.

.....  
(1)

Here is a different shape.



(c) Write down the order of rotational symmetry of this shape.

.....  
(1)

18 - (4MA0-S 2017-Paper 1FR-Q12) - GEOMETRY

$ABE$  is an isosceles triangle and  $BCDE$  is a square.

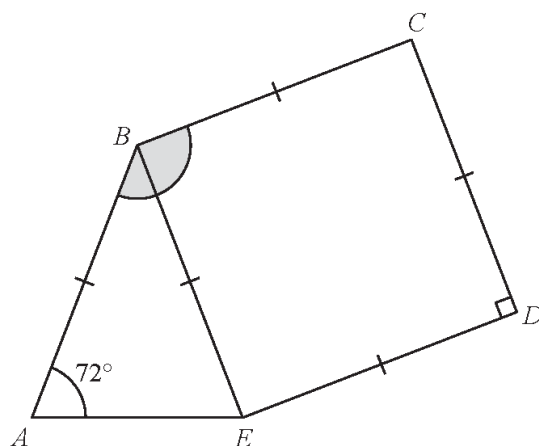


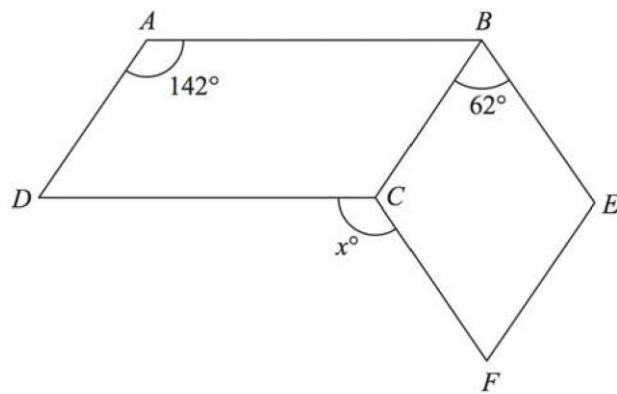
Diagram **NOT**  
accurately drawn

Angle  $BAE = 72^\circ$

Work out the size of angle  $ABC$ .

.....  
**3 marks**

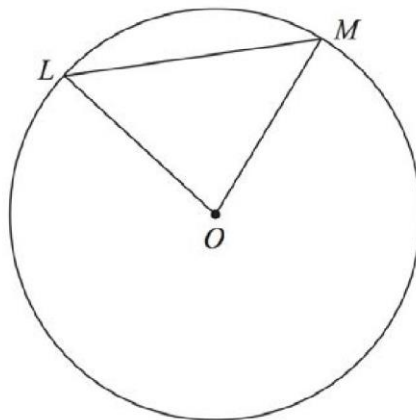
19 - (4MA0-S 2017-Paper 1FR-Q18) - GEOMETRY

Diagram **NOT**  
accurately drawn

*ABCD* is a parallelogram.  
*BEFC* is a rhombus.

Angle  $DAB = 142^\circ$ Angle  $CBE = 62^\circ$ Calculate the value of  $x$ . $x = \dots\dots\dots$ **3 marks**

20 - (4MA0-W 2017-Paper 1FR-Q3) - GEOMETRY



$L$  and  $M$  are points on a circle, centre  $O$ .

(a) Write down the mathematical name for the straight line  $OM$ .

.....  
(1)

(b) Write down the mathematical name for the straight line  $LM$ .

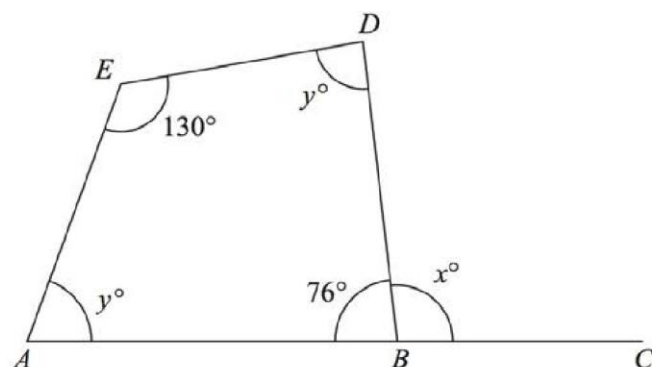
.....  
(1)

(c) On the diagram, shade a segment.

(1)

(Total for Question is 3 marks)

21 - (4MA0-W 2017-Paper 1FR-Q11) - GEOMETRY

Diagram **NOT**  
accurately drawn

$ABC$  is a straight line.  
 $ABDE$  is a quadrilateral.

(a) (i) Work out the value of  $x$ . $x =$  .....

(ii) Give a reason for your answer.

(2)

(b) Work out the value of  $y$ . $y =$  .....

(3)

Each exterior angle of a regular polygon is  $18^\circ$ 

(c) Work out the number of sides of this regular polygon.

(2)

(Total for Question is 7 marks)

exam m (A+) te

**22** - (4MA0-W 2017-Paper 1FR-Q12) - *GEOMETRY*

$A$  is the point with coordinates  $(4, 11)$

$B$  is the point with coordinates  $(8, 3)$

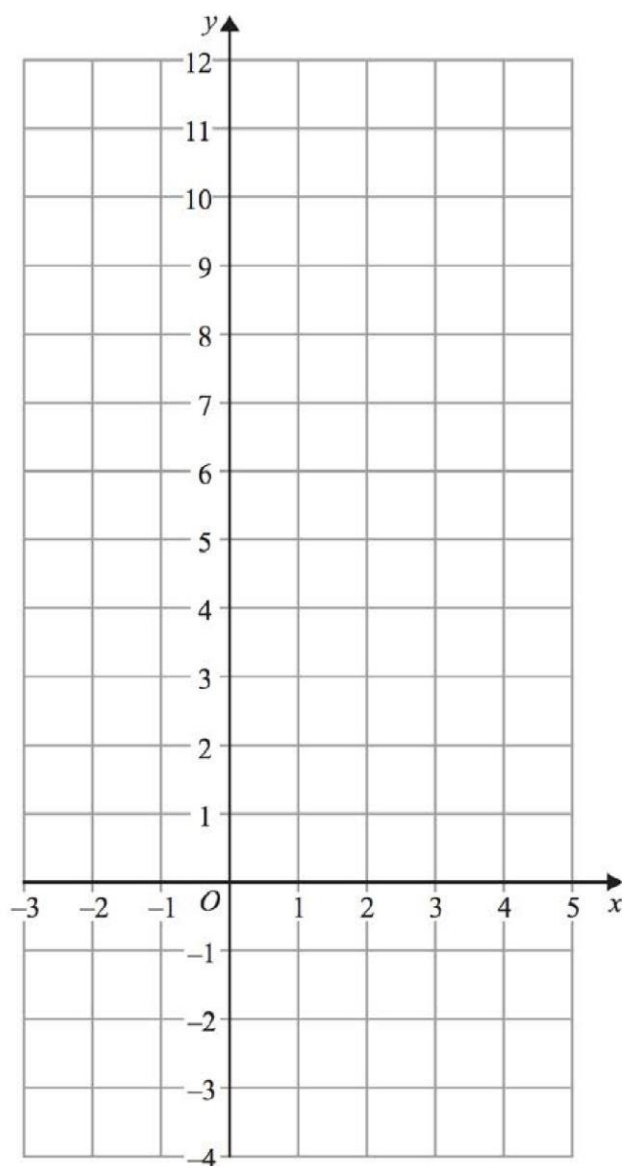
Work out the coordinates of the midpoint of  $AB$ .

(..... , .....)

(Total for Question    is 2 marks)

23 - (4MA0-W 2017-Paper 1FR-Q16) - GEOMETRY

On the grid, draw the graph of  $y + 2x = 6$  for values of  $x$  from  $-2$  to  $4$



(Total for Question is 4 marks)

exam m (A+) te

24 - (4MA0-W 2017-Paper 1FR-Q19) - GEOMETRY

Here is an isosceles triangle.

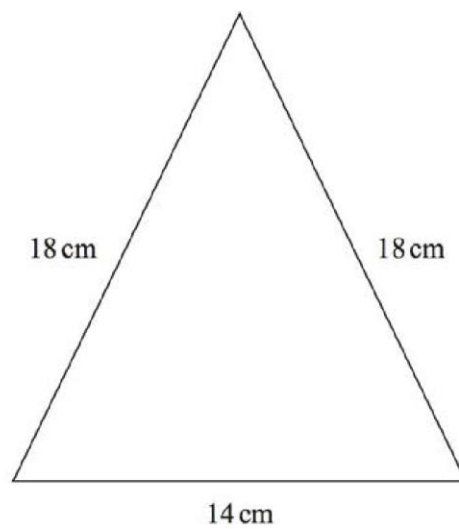


Diagram **NOT**  
accurately drawn

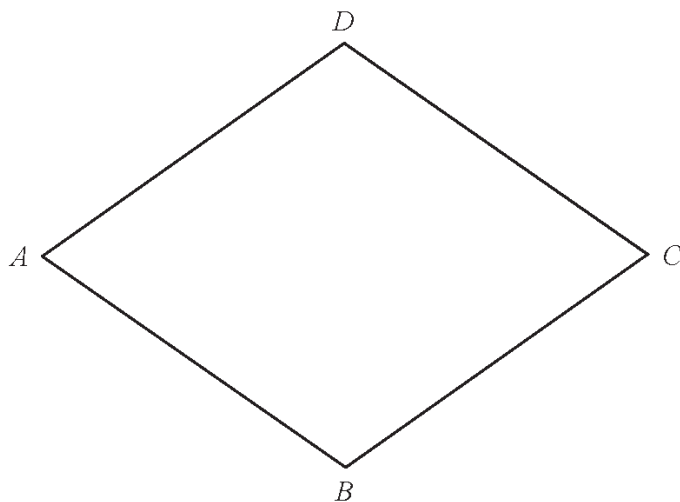
Work out the area of the triangle.  
Give your answer correct to 3 significant figures.

.....  $\text{cm}^2$

(Total for Question is 4 marks)

25 - (4MA0-S 2018-Paper 1FR-Q5) - GEOMETRY

The diagram shows a rhombus  $ABCD$ .



(a) Measure the length of  $AB$ .

..... cm  
(1)

(b) Measure the size of angle  $ABC$ .

..... °  
(1)

(c) On the diagram, draw the lines of symmetry of the rhombus.

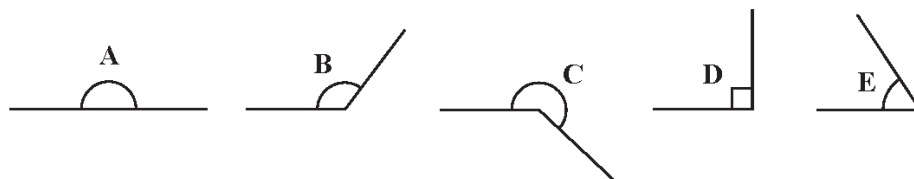
(2)

(d) Write down the order of rotational symmetry of the rhombus.

.....  
(1)

## 26 - (4MA0-S 2018-Paper 1FR-Q7) - GEOMETRY

Five angles are marked in the following diagram.



(a) Write down the letter of the angle that is a reflex angle.

.....  
(1)

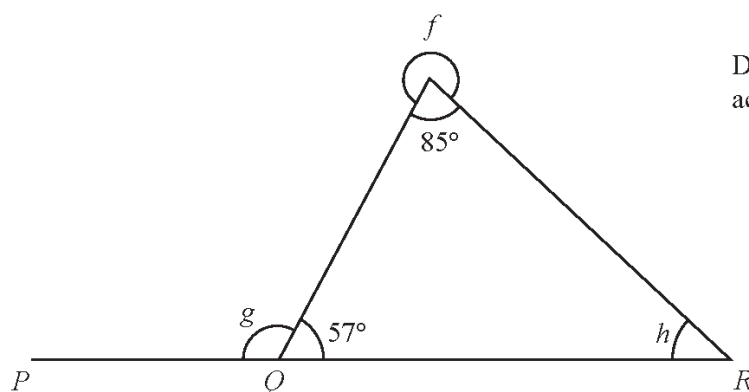


Diagram **NOT**  
accurately drawn

(b) Work out the size of angle  $f$ .

.....  
(1)

$PQR$  is a straight line.

(c) Work out the size of angle  $g$ .

.....  
(1)

(d) Work out the size of angle  $h$ .

.....  
(2)

exam m (A+) te

27 - (4MA0-S 2018-Paper 1FR-Q15) - GEOMETRY

The size of each exterior angle of a regular polygon is  $24^\circ$

(a) Work out the number of sides of the polygon.

Here is a pentagon.

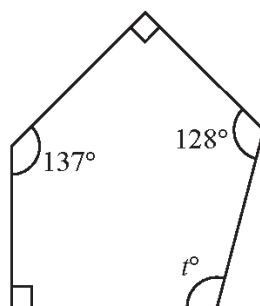


Diagram **NOT**  
accurately drawn

(b) Work out the value of  $t$ .

(2)

(3)

exam m (A+) te

28 - (4MA0-S 2018-Paper 1FR-Q20) - GEOMETRY

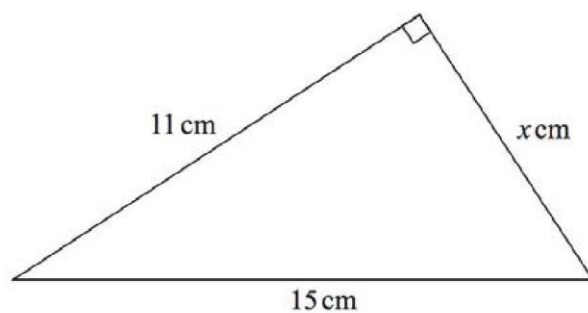


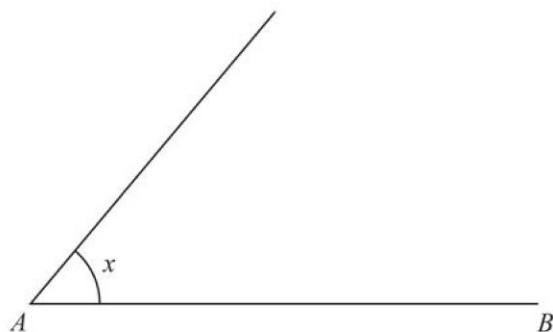
Diagram **NOT**  
accurately drawn

Work out the value of  $x$ .  
Give your answer correct to 3 significant figures.

(Total for Question is 3 marks)

exam m (A+) te

29 - (4MA0-W 2018-Paper 1FR-Q2) - GEOMETRY



- (a) Measure the length of the line  $AB$ .

State the units of your answer.

.....  
(2)

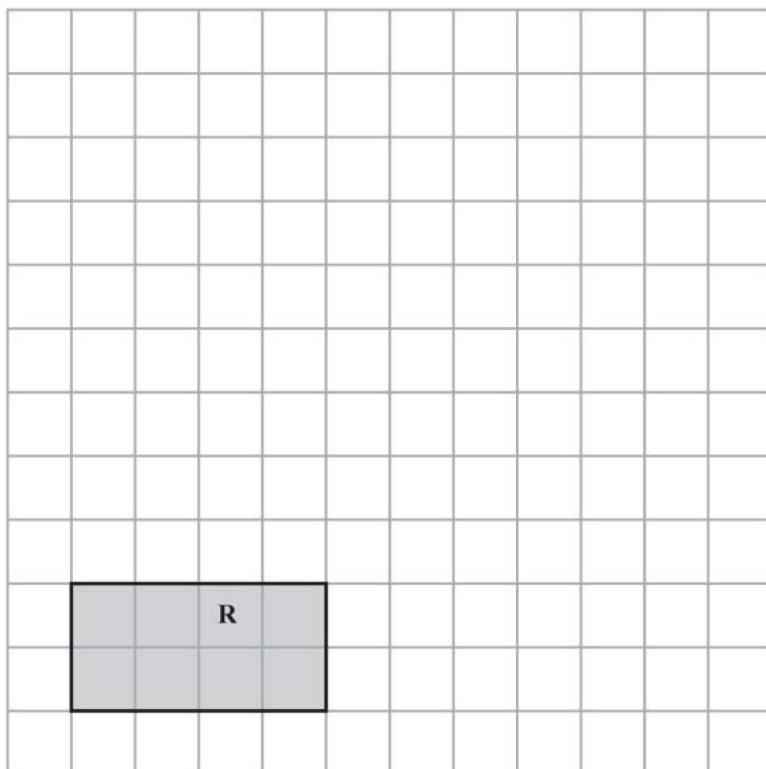
- (b) (i) What type of angle is the angle marked  $x$ ?

- (ii) Measure the size of the angle marked  $x$ .

.....  
(2)

30 - (4MA0-W 2018-Paper 1FR-Q5) - GEOMETRY

Rectangle **R** is drawn on a centimetre grid.



(a) Find the perimeter of rectangle **R**.

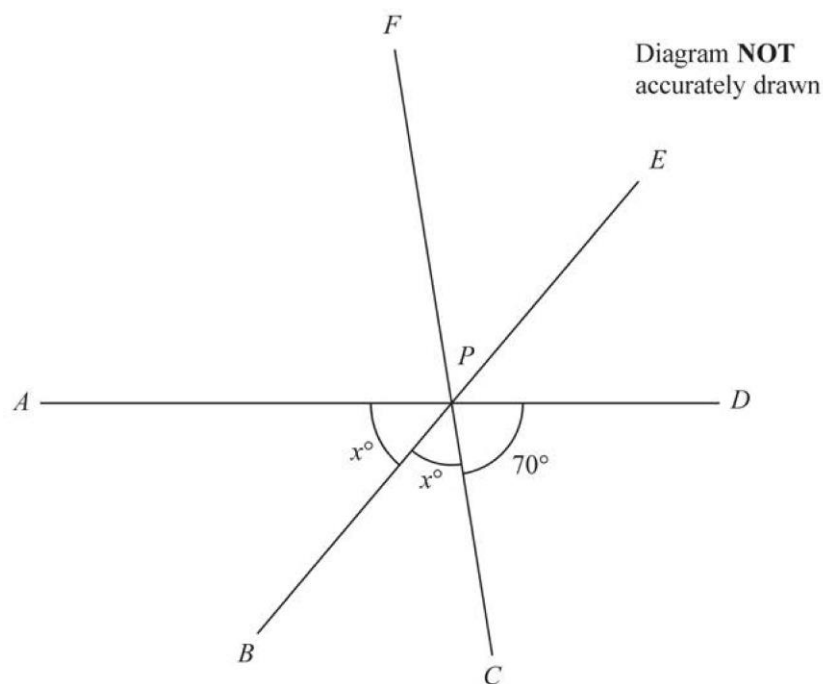
.....cm  
(1)

A square **S** has an area twice the area of rectangle **R**.

(b) On the grid, draw square **S**.

(2)

31 - (4MA0-W 2018-Paper 1FR-Q12) - GEOMETRY



$APD$ ,  $BPE$  and  $CPF$  are straight lines.

Angle  $CPD = 70^\circ$

Angle  $APB = \text{angle } BPC = x^\circ$

(a) Find the size of angle  $FPA$ .

.....  
(1)

(b) Work out the value of  $x$ .

.....  
(2)

32 - (4MA0-W 2018-Paper 1FR-Q15) - GEOMETRY

$ABCD$  is a parallelogram.

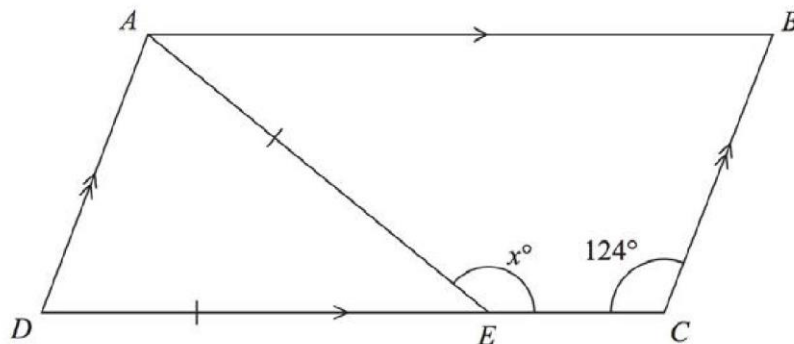


Diagram **NOT**  
accurately drawn

Angle  $DCB = 124^\circ$

$E$  is the point on  $DC$  such that  $AE = DE$ .

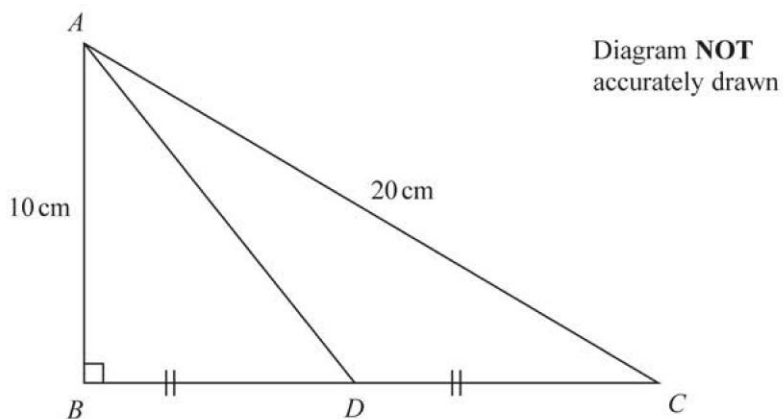
Angle  $AEC = x^\circ$

Work out the value of  $x$ .

(Total for Question is 4 marks)

33 - (4MA0-W 2018-Paper 1FR-Q25) - GEOMETRY

Here is a right-angled triangle  $ABC$ .



Angle  $ABC = 90^\circ$

$AC = 20\text{ cm}$

$AB = 10\text{ cm}$

$D$  is the midpoint of  $BC$ .

Work out the length of  $AD$ .

Give your answer correct to 1 decimal place.

.....cm

(Total for Question is 4 marks)

exam m (A+) te

1 - (4MA0-W 2015-Paper 1FR-Q22) - TRIGONOMETRY

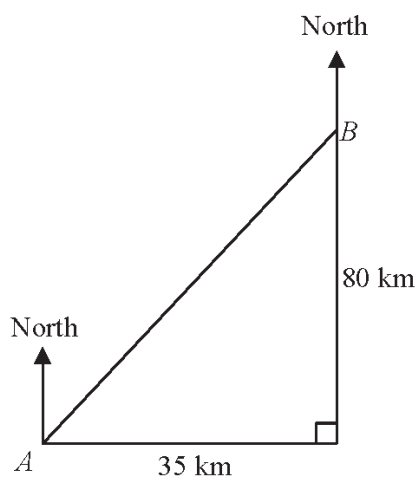


Diagram **NOT**  
accurately drawn

Town  $B$  is 35 km east and 80 km north of town  $A$ .

Work out the bearing of town  $A$  from town  $B$ .

Give your answer correct to the nearest degree.

(Total for Question is 4 marks)

1 - (4MA0-S 2018-Paper 1FR-Q16) - SETS

$\mathcal{E} = \{\text{fish in Jake's lake}\}$

$A = \{\text{fish of length greater than 20 cm}\}$

$B = \{\text{fish that weigh more than 1 kg}\}$

$C = \{\text{fish less than 1 year old}\}$

A fish in Jake's lake is caught.

The fish is 2 years old, weighs 1.2kg and is 19 cm in length.

(a) Write down the set,  $A$  or  $B$  or  $C$ , of which this fish is a member.

.....  
(1)

(b) Describe in words fish that are members of the set  $A \cup B$

.....  
.....  
(2)

$B \cap C = \emptyset$

(c) Explain what this statement tells us about the fish in Jake's lake.

.....  
.....  
(1)

2 - (4MA0-W 2018-Paper 1FR-Q24) - SETS

$$\mathcal{E} = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13\}$$

$$A = \{2, 4, 6, 8, 10, 12\}$$

$$B = \{3, 6, 9, 12\}$$

(a) List the members of the set  $A \cup B$

.....  
(1)

$C$  is a set with 4 members.

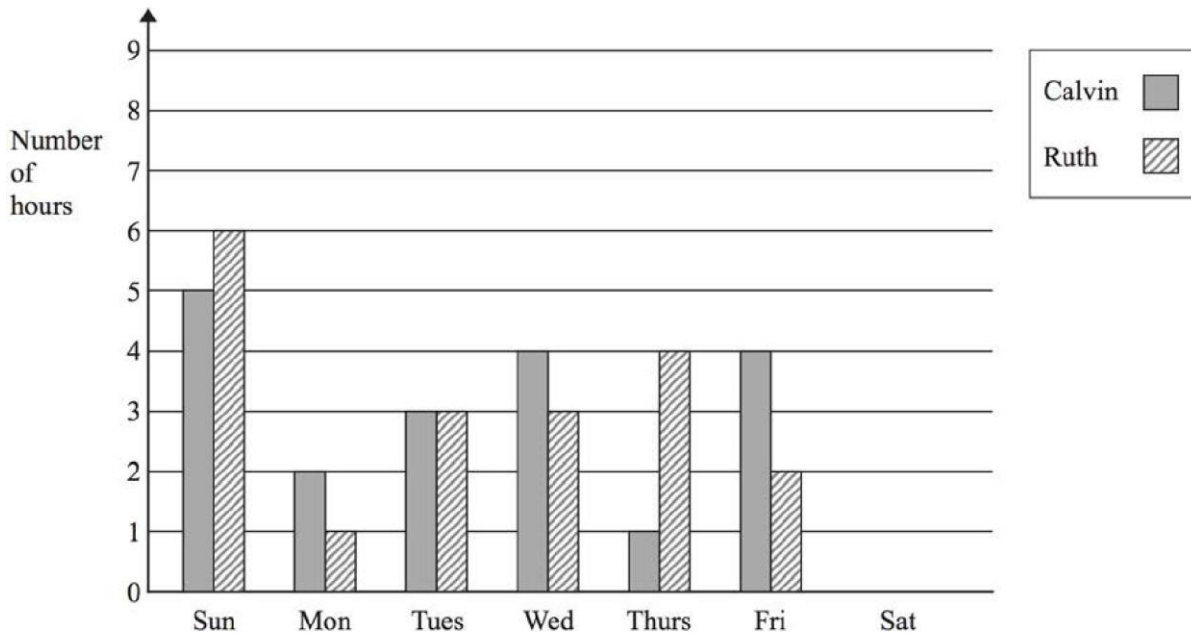
$$A \cap C = \emptyset \text{ and } B \cap C = \emptyset$$

(b) List the members of set  $C$

.....  
(2)

1 - (4MA0-S 2015-Paper 1FR-Q2) - STATISTICS

The bar chart shows information about the numbers of hours Calvin and Ruth each watched TV on six days last week.



On one day last week Calvin and Ruth watched TV for the same number of hours.

(a) Which day?

.....  
(1)

(b) Write down the number of hours that Ruth watched TV on Thursday.

..... hours  
(1)

On Saturday, Calvin watched 8 hours of TV and Ruth watched 6 hours of TV.

(c) (i) Show this information on the bar chart.

(ii) Express the ratio 8 : 6 in its simplest form.

.....  
(2)

On Saturday, Calvin watched sport for 25% of the 8 hours he watched TV.

(d) Work out 25% of 8

.....  
(2)

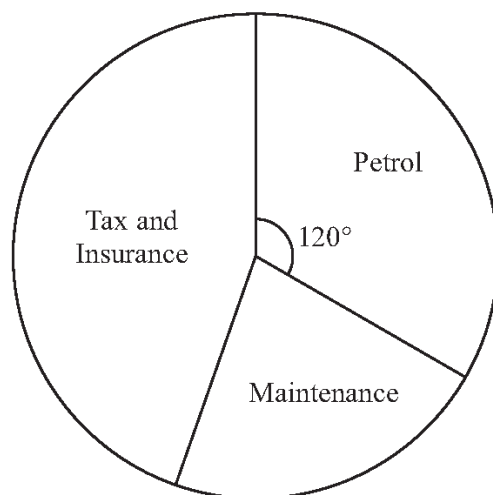
(Total for Question is 6 marks)

exam m (A+) te

2 - (4MA0-S 2015-Paper 1FR-Q8) - STATISTICS

- (a) The pie chart shows information about the amounts Mrs Gupta spent in one year to run her car.

She spent a total of £1800



Work out how much Mrs Gupta spent on petrol for her car in the year.

£.....  
(2)

- (b) The table shows the cost of the electricity, used by the Gupta family, for each 3-month period in one year.

| Months             | Cost of electricity (£) |
|--------------------|-------------------------|
| January – March    | 300                     |
| April – June       | 140                     |
| July – September   | 100                     |
| October – December | 260                     |
| <b>Total</b>       | <b>800</b>              |

Rohit Gupta must draw a pie chart for this information for his maths homework.

Work out the angle in the pie chart for the 3-month period from July to September.

.....  
(2)

(Total for Question is 4 marks)

exam m (A+) te

**3** - (4MA0-S 2015-Paper 1FR-Q14) - *STATISTICS*

The table shows information about the numbers of fish caught by 40 people in one day.

| Number of fish | Frequency |
|----------------|-----------|
| 0              | 2         |
| 1              | 12        |
| 2              | 15        |
| 3              | 8         |
| 5              | 2         |
| 8              | 1         |

Work out the mean number of fish caught.

.....  
(Total for Question    is 3 marks)

**4** - (4MA0-S 2015-Paper 1FR-Q18) - *STATISTICS*

The mean height of a group of 6 children is 165 cm.  
One child, whose height is 155 cm, leaves the group.

Find the mean height of the remaining 5 children.

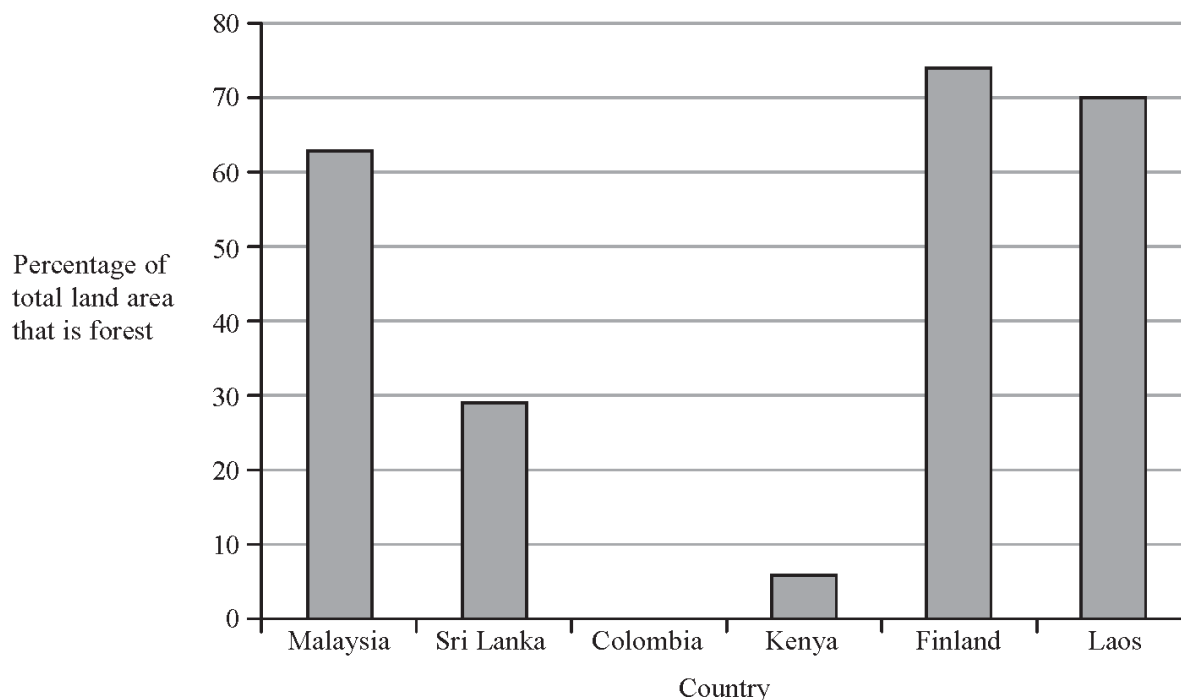
..... cm

(Total for Question    is 3 marks)

exam  te

## 5 - (4MA0-W 2015-Paper 1FR-Q2) - STATISTICS

The bar chart shows the percentage of the total land area of five countries that is forest.



- (a) (i) Write down the percentage of the total land area in Laos that is forest.

..... %

- (ii) Change your answer to part (i) to a fraction.  
Give your fraction in its simplest form.

.....  
(3)

- (b) Write down the name of the country whose forest area is 29% of its total land area.

.....  
(1)

55% of Colombia's total land area is forest.

- (c) (i) Draw a bar on the bar chart to show this information.

- (ii) What percentage of Colombia's total land area is **not** forest?

..... %

(2)

(Total for Question is 6 marks)

exam m (A+) te

**6 - (4MA0-W 2015-Paper 1FR-Q7) - STATISTICS**

Here are the number of goals scored by a netball team in each of its first 9 games of the season.

5      8      5      2      2      1      3      2      8

(a) Find the mode.

.....  
(1)

(b) Work out the range.

.....  
(2)

(c) Work out the mean number of goals scored.

.....  
(2)

(d) The number of goals scored by the team in its 10th game was 7

(i) Will the mean number of goals scored in all 10 games be more, less or the same as the mean found in (c)?

Tick (✓) the appropriate box.

more

less

the same

☐☐☐

(ii) Give a reason for your answer.

.....  
.....  
(2)

**(Total for Question is 7 marks)**

**7** - (4MA0-W 2015-Paper 1FR-Q14) - *STATISTICS*

The table shows information about the numbers of goals scored by some football teams last week.

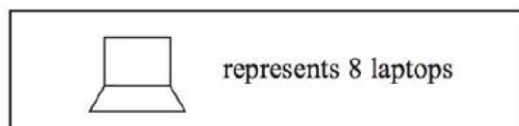
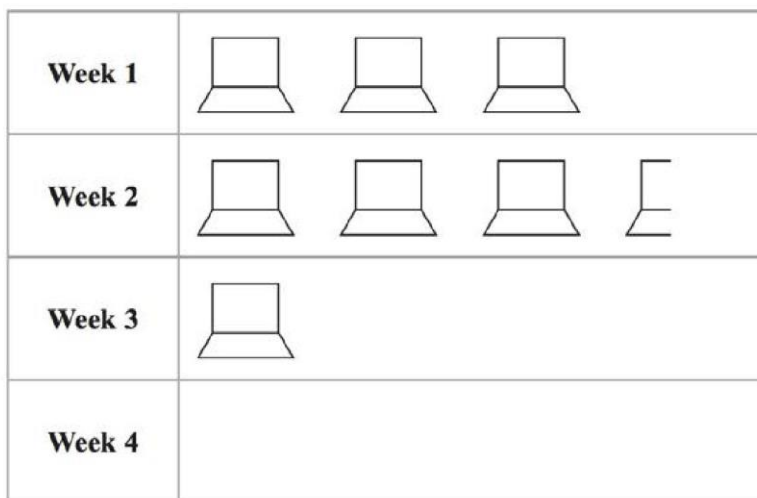
| Number of goals | Number of teams |
|-----------------|-----------------|
| 0               | 5               |
| 1               | 8               |
| 2               | 2               |
| 3               | 3               |
| 4               | 2               |

Work out the total number of goals scored by these football teams last week.

.....  
(Total for Question    is 2 marks)

8 - (4MA0-S 2016-Paper 1FR-Q1) - STATISTICS

The pictogram gives information about the number of laptops sold from a shop for each of the first 3 weeks in April.



(a) Write down the number of laptops sold from the shop in Week 1

.....  
(1)

The shop sold 32 laptops in Week 4

(b) Show this information on the pictogram.

(1)

(c) Work out the total number of laptops sold from the shop during the 4 weeks.

.....  
(2)

(Total for Question is 4 marks)

9 - (4MA0-S 2016-Paper 1FR-Q10) - STATISTICS

The table shows information about the number of pets owned by each of 25 people.

| Number of pets | Frequency |
|----------------|-----------|
| 1              | 10        |
| 2              | 8         |
| 3              | 4         |
| 4              | 2         |
| 5              | 1         |

(a) Work out the range of the number of pets.

.....  
(2)

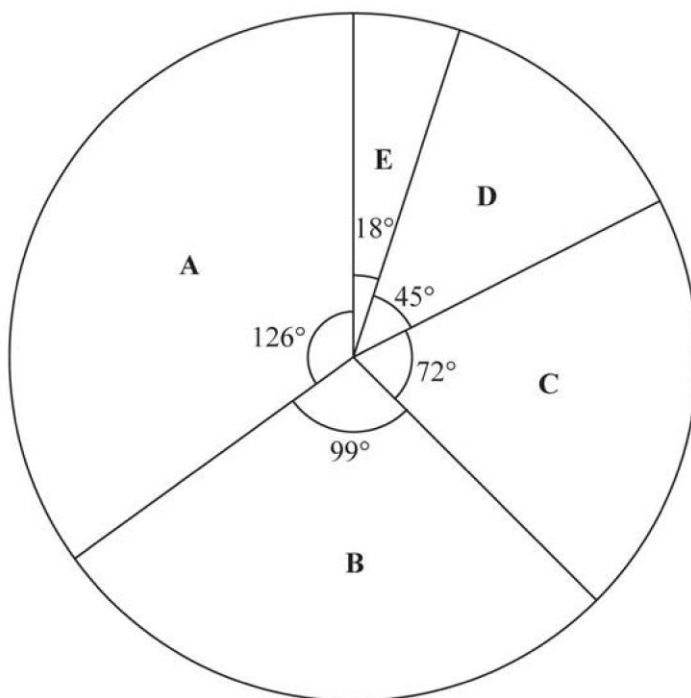
(b) Work out the median number of pets.

.....  
(2)

(Total for Question is 4 marks)

10 - (4MA0-W 2016-Paper 1FR-Q11) - STATISTICS

The pie chart shows information about the grades achieved by all of the candidates in Keval's school who took AS Level English in 2015.



8 candidates achieved grade C.

- (a) Work out the number of candidates in Keval's school who took AS Level English in 2015.

.....  
(2)

- (b) Work out the number of candidates in Keval's school who achieved grade A in AS Level English in 2015.

.....  
(2)

(Total for Question is 4 marks)

exam m (A+) te

**11** - (4MA0-S 2017-Paper 1FR-Q9) - STATISTICS

Hibaru collects shells from the beach.

Here are the lengths, in mm, of 10 shells he found on Monday.

20    24    24    24    28    32    36    38    40    45

(a) Write down the mode.

..... mm  
(1)

Hibaru selects at random one of the 10 shells.

(b) (i) Find the probability that this shell is the shell with the greatest length.

.....

(ii) Find the probability that the length of this shell is greater than the mode.

.....  
(3)

**12** - (4MA0-S 2017-Paper 1FR-Q10) - STATISTICS

The pie chart shows information about the typical intake of food, in grams, each week for any man living in Western Europe.

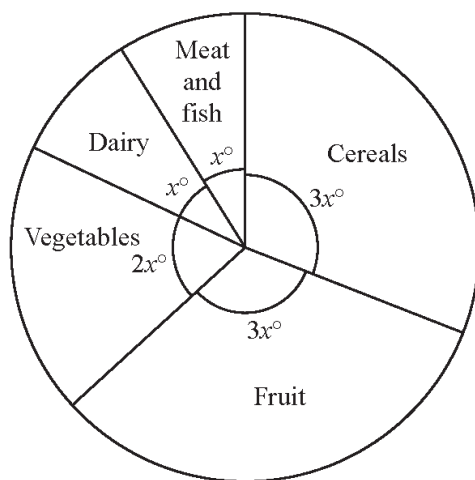


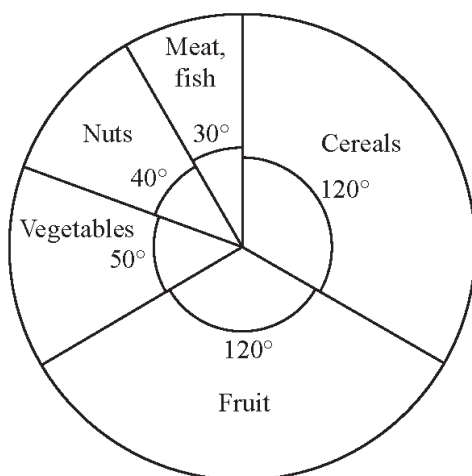
Diagram **NOT**  
accurately drawn

- (a) Work out the value of  $x$ .

.....  
(3)

exam m (A+) te

The pie chart below shows information about the typical intake of food, in grams, each week for any man living in North Africa.



Ibrahim lives in North Africa.  
His intake of food is typical.  
One week his total intake of food was 5400 grams.

(b) Work out his intake of nuts.

..... grams  
(3)

exam m (A+) te

**13** - (4MA0-S 2017-Paper 1FR-Q21) - STATISTICS

Ahmed, Beth and Cleo are three friends.

The mean age, in years, of Ahmed, Beth and Cleo is 21

The mean age, in years, of Ahmed and Beth is 19

(a) Work out Cleo's age.

..... years  
(3)

Ahmed is the youngest of the three friends.

The median age, in years, of the three friends is 20

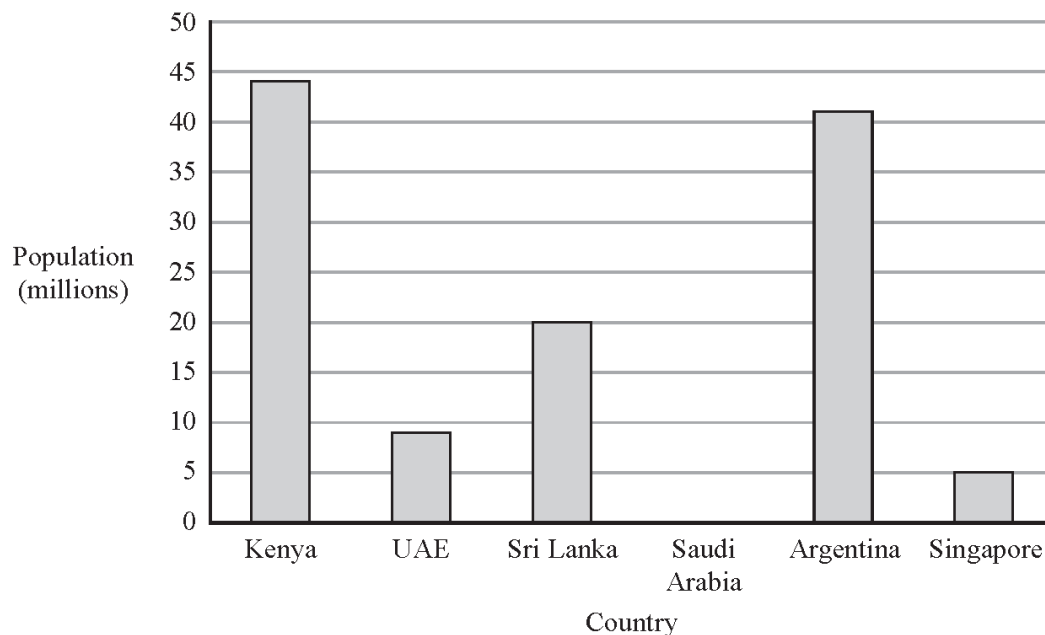
(b) Find the range of their ages.

..... years  
(3)

exam m (A+) te

14 - (4MA0-W 2017-Paper 1FR-Q4) - STATISTICS

The bar chart shows information about the population of each of five countries in 2013



(a) Write down the population of Sri Lanka.

..... million  
(1)

(b) Write down the population of the UAE.

..... million  
(1)

(c) Which country had a population of 41 million?

.....  
(1)

Suki says,

“In 2013, the population of Singapore was  $\frac{1}{5}$  of the population of Sri Lanka.”

(d) Is Suki correct?

You must give a reason for your answer.

.....  
(1)

In 2013, the population of Saudi Arabia was 29 million.

(e) Draw a bar on the bar chart to show this information.

(1)

exam m (A+) te

In 2013, the ratio of the population of India to the population of the UK, in millions, was 1252:64

(f) Write the ratio 1252:64 in its simplest form.

.....  
(2)

**(Total for Question is 7 marks)**

exam m (A+) te

15 - (4MA0-W 2017-Paper 1FR-Q18) - STATISTICS

The table gives information about the weights of 20 rugby players.

| Weight ( $w$ kg)   | Frequency |
|--------------------|-----------|
| $80 < w \leq 90$   | 3         |
| $90 < w \leq 100$  | 5         |
| $100 < w \leq 110$ | 7         |
| $110 < w \leq 120$ | 4         |
| $120 < w \leq 130$ | 1         |

(a) Write down the modal class.

.....  
(1)

(b) Work out an estimate for the total weight of these 20 rugby players.

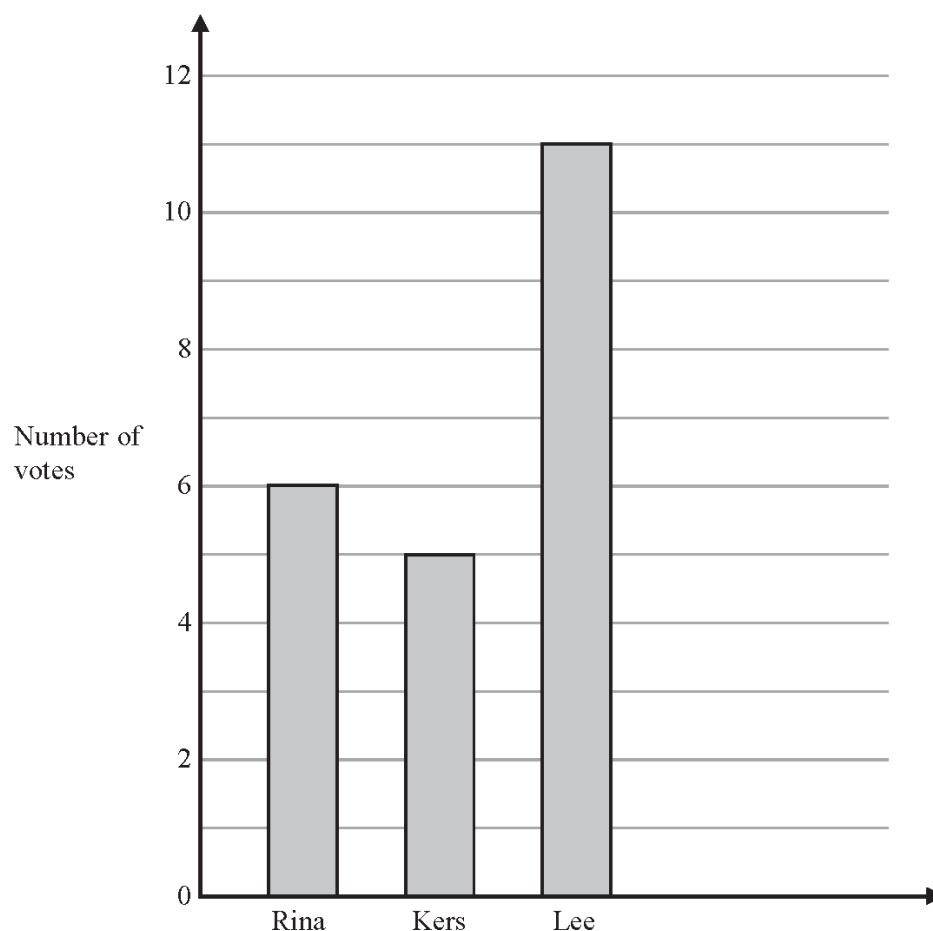
..... kg  
(3)

(Total for Question is 4 marks)

**16** - (4MA0-S 2018-Paper 1FR-Q2) - STATISTICS

The students in a class voted for a representative for the School Council.  
There were four candidates, Rina, Kers, Lee and Jing.

The bar chart shows information about the number of votes for Rina, for Kers and for Lee.



(a) Write down the number of votes for Kers.

.....  
(1)

There were 9 votes for Jing.

(b) Show this information on the bar chart.

.....  
(1)

(c) Work out the total number of votes.

.....  
(2)

exam m (A+) te

The pictogram has been drawn using the information shown on the bar chart.

|             |                                                                                   |
|-------------|-----------------------------------------------------------------------------------|
| <b>Rina</b> |  |
| <b>Kers</b> |  |
| <b>Lee</b>  |  |
| <b>Jing</b> |                                                                                   |

There were 9 votes for Jing.

(d) Show this information on the pictogram.

(2)

## 17 - (4MA0-S 2018-Paper 1FR-Q10) - STATISTICS, PROBABILITY

Eight people play a computer game.  
Here are their scores.

7      10      8      9      12      9      10      10

(a) Work out the median score.

.....  
(2)

(b) Find the range of their scores.

.....  
(2)

One of the eight people is selected at random.

(c) Find the probability that the person selected had a score of 10 in the game.

.....  
(1)

Helga has played the game many times.

She scored 9 or more in  $\frac{5}{6}$  of these games.

(d) Work out an estimate for the probability that the next time Helga plays the game she scores **less** than 9

.....  
(1)

Helga is going to play the game another 60 times.

(e) Work out an estimate for the number of times she will score 9 or more in these 60 games.

.....  
(2)

exam m (A+) te

18 - (4MA0-S 2018-Paper 1FR-Q18) - STATISTICS

Marta breeds dogs.

32 dogs give birth to puppies.

The table shows information about the number of puppies born to each dog.

| Number of puppies | Frequency |
|-------------------|-----------|
| 1 – 3             | 5         |
| 4 – 6             | 12        |
| 7 – 9             | 10        |
| 10 – 12           | 4         |
| 13 – 15           | 1         |

(a) Write down the modal class.

.....  
(1)

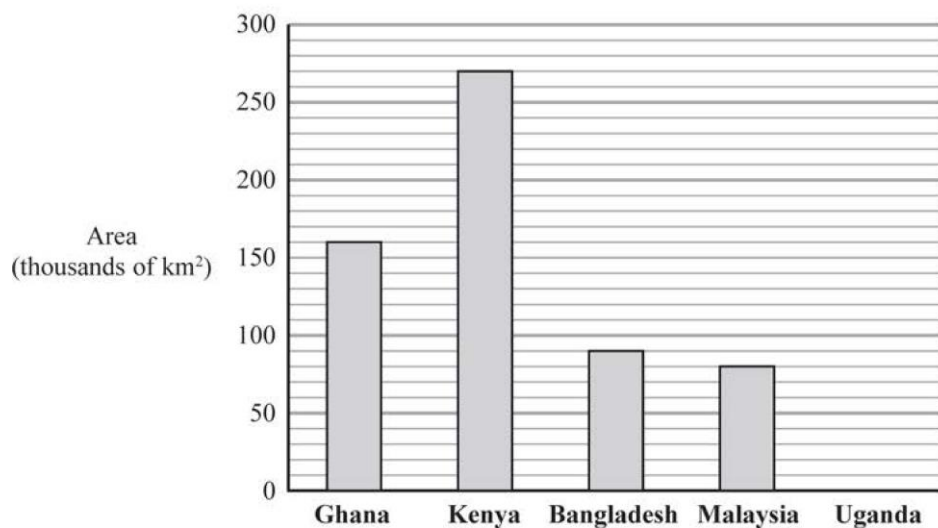
(b) Work out an estimate for the mean number of puppies born to each dog.

.....  
(4)

exam m (A+) te

**19** - (4MA0-W 2018-Paper 1FR-Q7) - STATISTICS

The bar chart shows information about the area of land used for farming in each of four countries in 2012



(a) Write down the area of land used for farming in Ghana in 2012

.....thousands of km<sup>2</sup>  
(1)

The area of land used for farming in Kenya in 2012 was greater than the area of land used for farming in Malaysia in 2012

(b) How much greater?

.....thousands of km<sup>2</sup>  
(2)

The area of land used for farming in Uganda in 2012 was 140 thousands of km<sup>2</sup>

(c) Draw a bar on the bar chart to show this information.

(1)

Coffee is grown on 7% of the land used for farming in Uganda.

(d) Work out 7% of 140 000

.....  
(2)

20 - (4MA0-W 2018-Paper 1FR-Q9) - STATISTICS

Here are the lengths, in mm, of 10 snails a scientist found in a forest.

18    22    31    31    41    26    27    47    34    23

(a) (i) Work out the median length.

.....mm  
(2)

(ii) What percentage of the 10 snails have a length greater than the median length?

.....%  
(1)

(b) Work out the mean length.

.....mm  
(2)

The scientist finds a snail in a field.

This snail has a length that is longer than any of the 10 snails he found in the forest.

The lengths of the 11 snails have a range of 32 mm.

(c) Work out the length of the snail the scientist finds in the field.

.....mm  
(2)

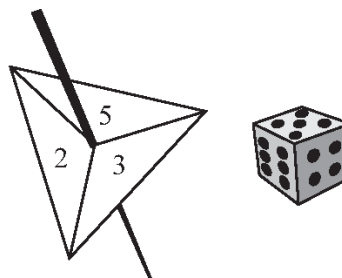
exam  
m (A+) te

## 1 - (4MA0-S 2015-Paper 1FR-Q11) - PROBABILITY

Paul has a fair 3-sided spinner and a fair 6-sided dice.  
The spinner can land on 2, 3 or 5

Paul spins the spinner once and throws the dice once.

- (a) Complete the table to show all the possible outcomes.  
Four outcomes have been done for you.



|         |   | Dice |   |     |     |   |     |
|---------|---|------|---|-----|-----|---|-----|
|         |   | 1    | 2 | 3   | 4   | 5 | 6   |
| Spinner | 2 | 2,1  |   |     |     |   | 2,6 |
|         | 3 |      |   | 3,3 | 3,4 |   |     |
|         | 5 |      |   |     |     |   |     |

(2)

Paul spins the spinner once and throws the dice once.

- (b) Find the probability that the number the spinner lands on is greater than the number shown on the dice.

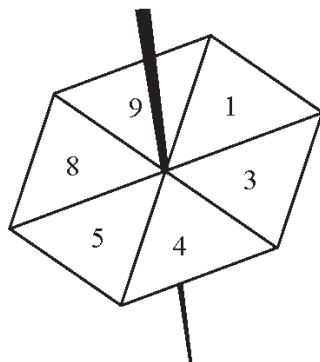
(2)

(Total for Question is 4 marks)

exam m (A+) te

2 - (4MA0-W 2015-Paper 1FR-Q11) - PROBABILITY

Here is a fair 6-sided spinner.



The sections of the spinner are labelled 1, 3, 4, 5, 8, 9

Hamid spins the spinner once.

(a) Write down the probability that the spinner will land on

(i) 3

.....

(ii) 2

.....

(iii) a number less than 7

.....

(3)

Hamid also has a biased dice.

The probability that the dice will land on the number 6 is 0.7

(b) Find the probability that the dice will **not** land on the number 6

.....

(1)

Hamid throws the dice 80 times.

(c) Work out an estimate for the number of times that the dice will land on the number 6

.....

(2)

(Total for Question is 6 marks)

exam m (A+) te

3 - (4MA0-S 2016-Paper 1FR-Q16) - PROBABILITY

There are 50 marbles in a bag.

35 of the marbles are brown.

5 of the marbles are green.

The rest of the marbles are purple.

Seppi takes at random a marble from the bag.

(a) (i) What is the probability that the marble is green?

.....

(ii) What is the probability that the marble is purple?

.....

(3)

Seppi replaces her marble.

Otti takes at random a marble from the bag.

He records the colour of the marble and puts the marble back in the bag.

He does this 300 times.

(b) Work out an estimate for the number of brown marbles he takes.

.....

(2)

(Total for Question is 5 marks)

exam m (A+) te

4 - (4MA0-S 2016-Paper 1FR-Q18) - PROBABILITY

Li throws a 6-sided biased dice once.

The table shows the probability that the dice will land on 1, 2, 3, 5 or 6

| Number      | 1    | 2   | 3    | 4 | 5   | 6    |
|-------------|------|-----|------|---|-----|------|
| Probability | 0.15 | 0.1 | 0.05 |   | 0.2 | 0.15 |

(a) Write down the probability that the dice will land on 7

.....  
(1)

(b) Work out the probability that the dice will land on 4

.....  
(2)

(Total for Question is 3 marks)

5 - (4MA0-S 2016-Paper 1FR-Q25) - PROBABILITY

Julie asked 50 children how many exercise sessions they each took part in last month.  
The table shows information about her results.

| Number of exercise sessions | Frequency |
|-----------------------------|-----------|
| 0 to 6                      | 13        |
| 7 to 13                     | 10        |
| 14 to 20                    | 16        |
| 21 to 27                    | 7         |
| 28 to 34                    | 4         |

Calculate an estimate for the total number of exercise sessions the children took part in last month.

.....  
(Total for Question is 3 marks)

exam m (A+) te

## 6 - (4MA0-W 2016-Paper 1FR-Q15) - PROBABILITY

Maisie plays a game.

Each time she plays, she can win a prize of \$1 or \$5 or \$10

When she does not win one of these prizes, she loses.

The table gives the probability of winning each of the prizes.

| Prize | Probability |
|-------|-------------|
| \$1   | 0.50        |
| \$5   | 0.15        |
| \$10  | 0.05        |

Maisie plays the game once.

- (a) Work out the probability that Maisie loses.

.....  
(2)

- (b) Maisie plays the game 40 times.

- (i) Work out an estimate for the number of \$5 prizes she wins.

.....  
(2)

- (ii) Work out an estimate for the total value of the prizes she wins.

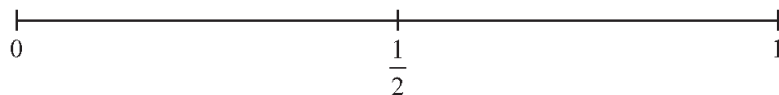
\$.....  
(3)

(Total for Question is 7 marks)

exam m (A+) te

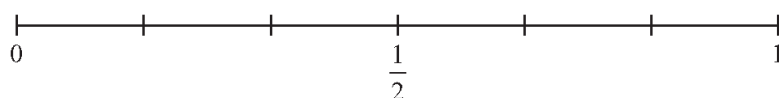
## 7 - (4MA0-S 2017-Paper 1FR-Q3) - PROBABILITY

- (a) On the probability scale, mark with a cross (×) the probability that when a fair coin is thrown once it lands heads.



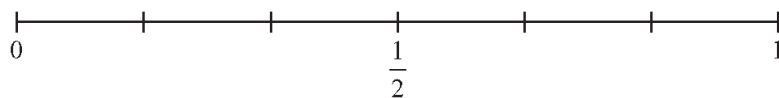
(1)

- (b) On the probability scale, mark with a cross (×) the probability that when an ordinary dice is rolled once it lands on 6



(1)

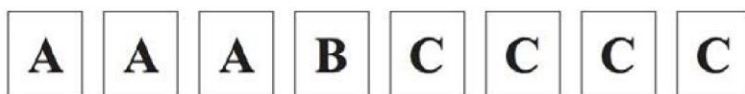
- (c) On the probability scale, mark with a cross (×) the probability that when two ordinary dice are rolled the total is 13



(1)

8 - (4MA0-W 2017-Paper 1FR-Q7) - PROBABILITY

Here are 8 cards.  
Each card has a letter on it.



Malik takes at random one of these cards.

impossible      unlikely      evens      likely      certain

(a) Write down the word from the box that best describes the likelihood that Malik takes

(i) a card with the letter **B**,

.....

(ii) a card with the letter **D**.

.....

(2)

(b) Find the probability that Malik takes a card with the letter **A**.

.....

(2)

Sunil has two sets of cards, Set 1 and Set 2  
Each card has a letter on it.



Set 1



Set 2

Sunil takes one card from Set 1  
He then takes one card from Set 2

(c) List all the possible combinations of cards he could get.

.....

.....

.....

(2)

(Total for Question is 6 marks)

exam m (A+) te

9 - (4MA0-S 2018-Paper 1FR-Q10) - STATISTICS, PROBABILITY

Eight people play a computer game.  
Here are their scores.

7      10      8      9      12      9      10      10

(a) Work out the median score.

.....  
(2)

(b) Find the range of their scores.

.....  
(2)

One of the eight people is selected at random.

(c) Find the probability that the person selected had a score of 10 in the game.

.....  
(1)

Helga has played the game many times.

She scored 9 or more in  $\frac{5}{6}$  of these games.

(d) Work out an estimate for the probability that the next time Helga plays the game she scores **less** than 9

.....  
(1)

Helga is going to play the game another 60 times.

(e) Work out an estimate for the number of times she will score 9 or more in these 60 games.

.....  
(2)

exam m (A+) te

**10** - (4MA0-W 2018-Paper 1FR-Q10) - PROBABILITY

Jim puts 4 white tiles and 3 grey tiles into a bag.  
Each tile has a letter on it.



Jim takes at random a tile from the bag.

- (a) Write down the letter that Jim is most likely to take.

.....  
(1)

- (b) Write down the probability that the tile is grey with the letter C on it.

.....  
(1)

- (c) Write down the probability that the tile does not have the letter A on it.

.....  
(1)

Jim puts the tile back into the bag.  
He then puts more grey tiles into the bag.  
Each of these tiles has the letter C on it.

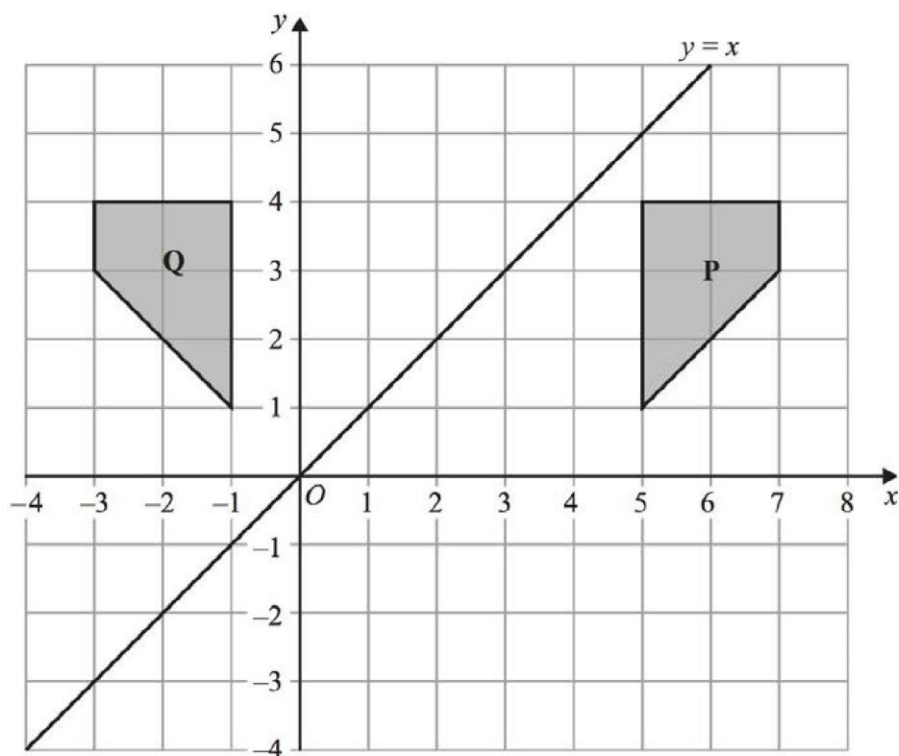
Alice takes at random a tile from the bag.

The probability that this tile has the letter C on it is  $\frac{1}{2}$

- (d) Work out the probability that the tile Alice takes is grey with the letter C on it.

.....  
(2)

1 - (4MA0-S 2015-Paper 1FR-Q17) - TRANSFORMATION



(a) Describe fully the single transformation which maps shape **P** onto shape **Q**.

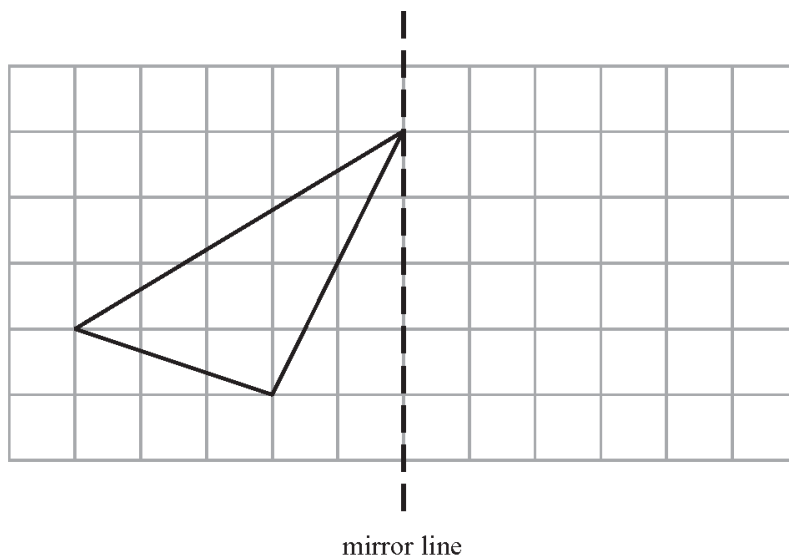
(2)

(b) Reflect the shape **Q** in the line  $y = x$   
Label the new shape **R**.

(2)

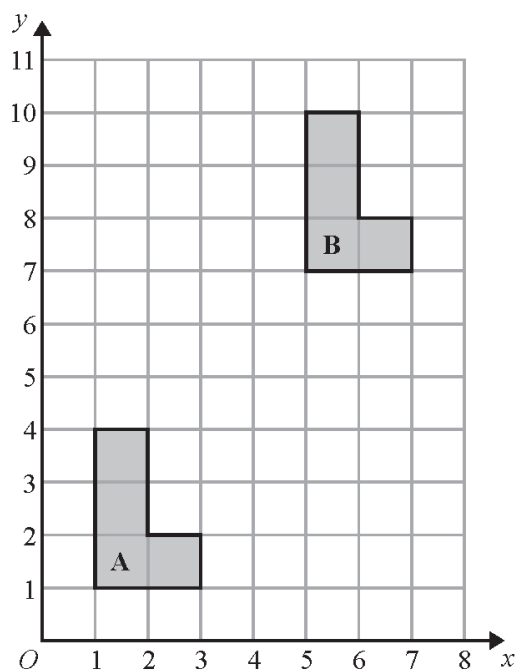
(Total for Question is 4 marks)

2 - (4MA0-W 2015-Paper 1FR-Q16) - TRANSFORMATION



(a) On the grid, reflect the shape in the mirror line.

(1)

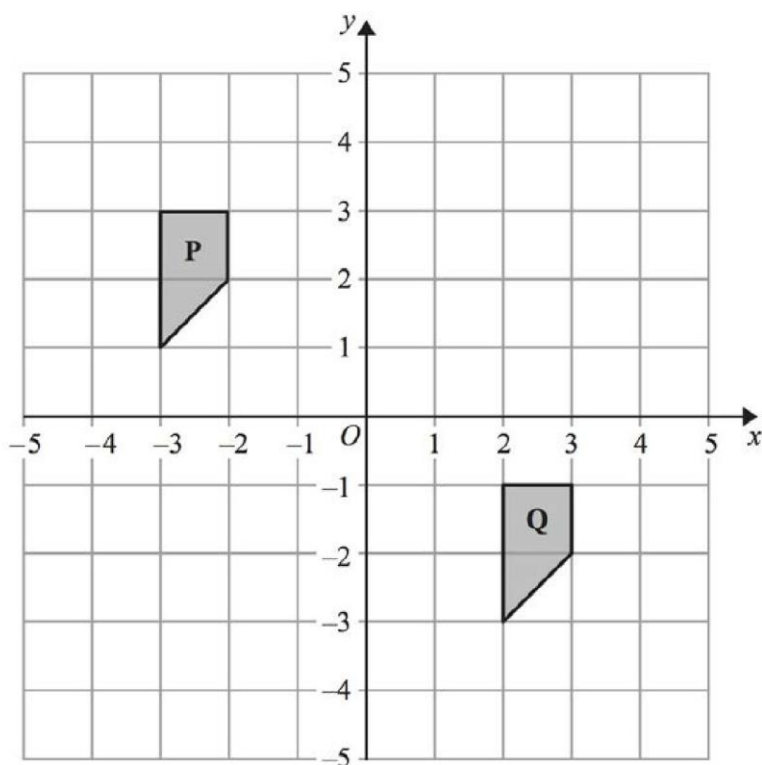


(b) Describe fully the single transformation that maps shape A onto shape B.

(2)

(Total for Question is 3 marks)

3 - (4MA0-S 2016-Paper 1FR-Q22) - TRANSFORMATION



(a) Describe fully the single transformation that maps shape **P** onto shape **Q**.

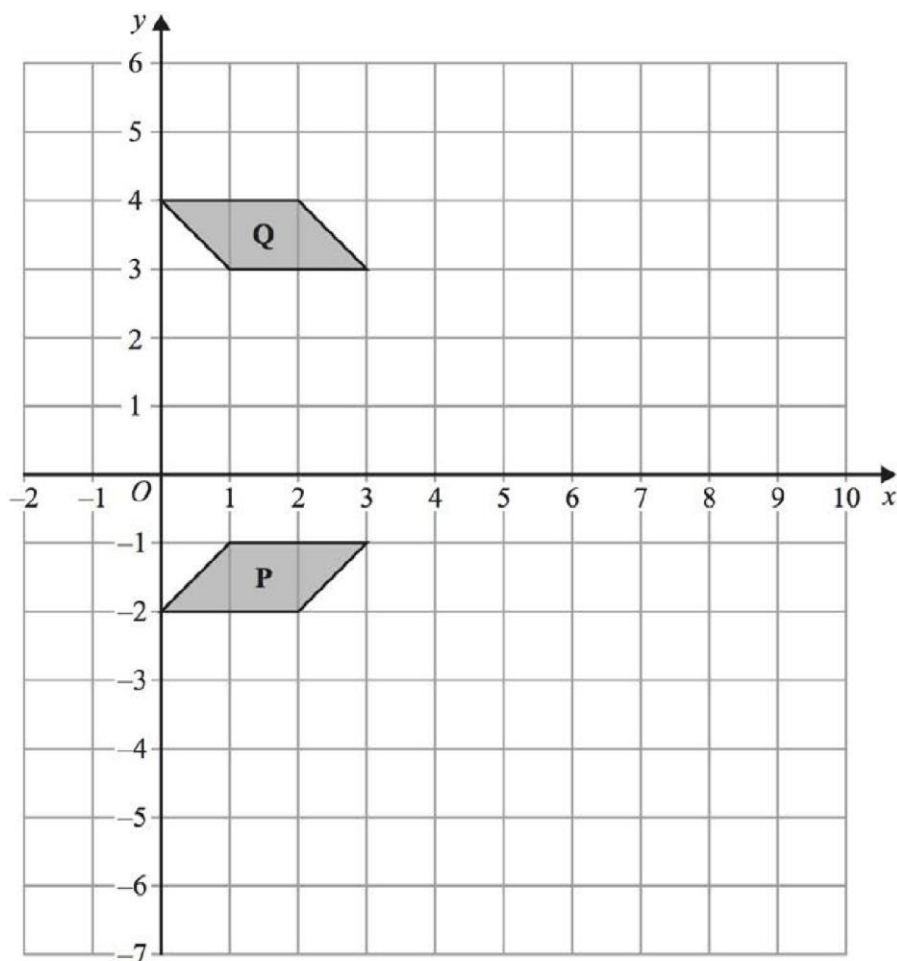
(2)

(b) Rotate shape **Q**  $90^\circ$  clockwise about (1,0)  
Label the new shape **R**.

(2)

(Total for Question is 4 marks)

4 - (4MA0-W 2016-Paper 1FR-Q13) - TRANSFORMATION

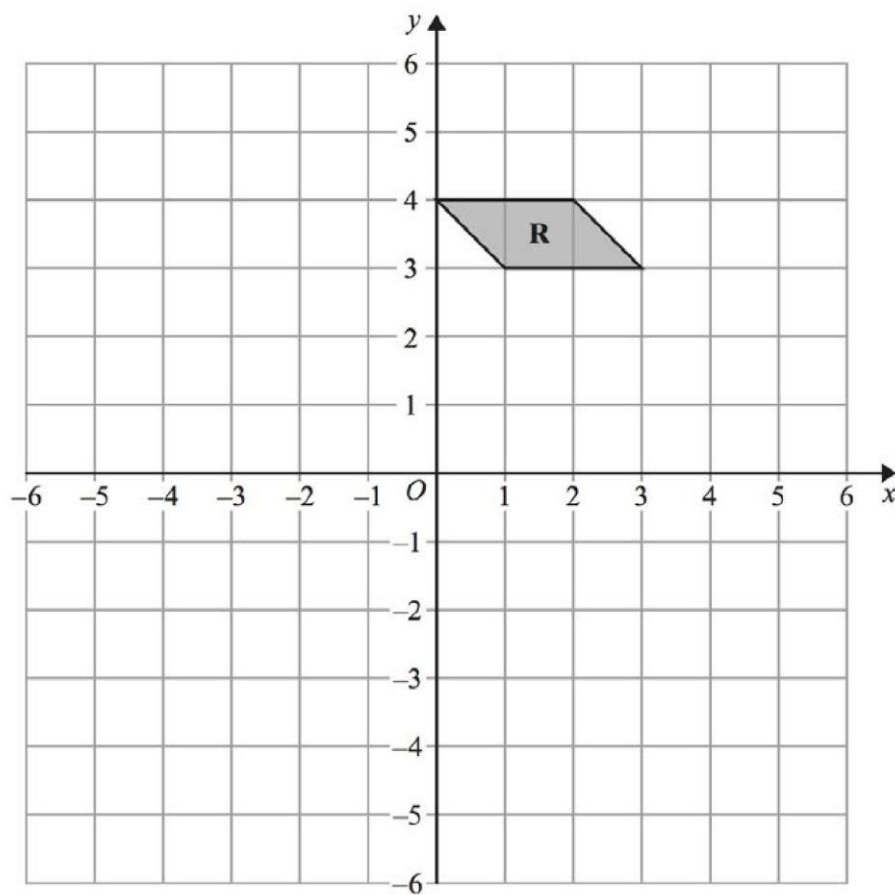


(a) Describe fully the single transformation that maps shape **P** onto shape **Q**.

.....  
.....  
(2)

(b) On the grid above, enlarge shape **P** with scale factor 3 and centre **O**.

(2)

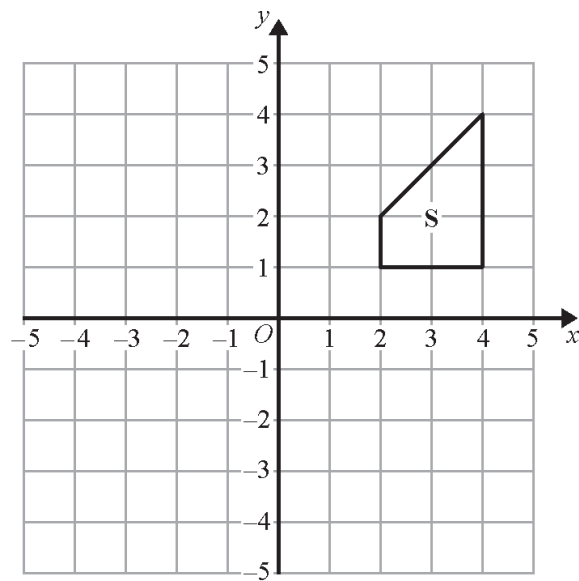


(c) On the grid above, rotate shape **R**  $90^\circ$  anticlockwise with centre (0, 1)

(2)

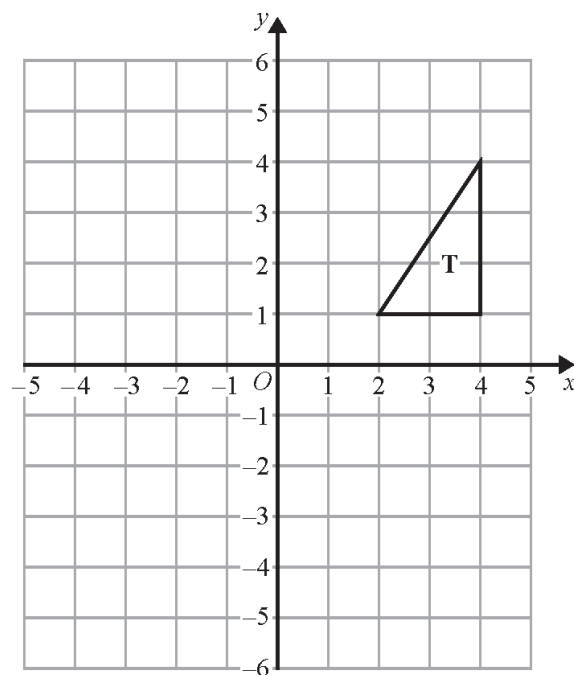
(Total for Question is 6 marks)

## 5 - (4MA0-S 2017-Paper 1FR-Q23) - TRANSFORMATION



(a) On the grid above, translate shape S by 1 square to the left and 3 squares down.

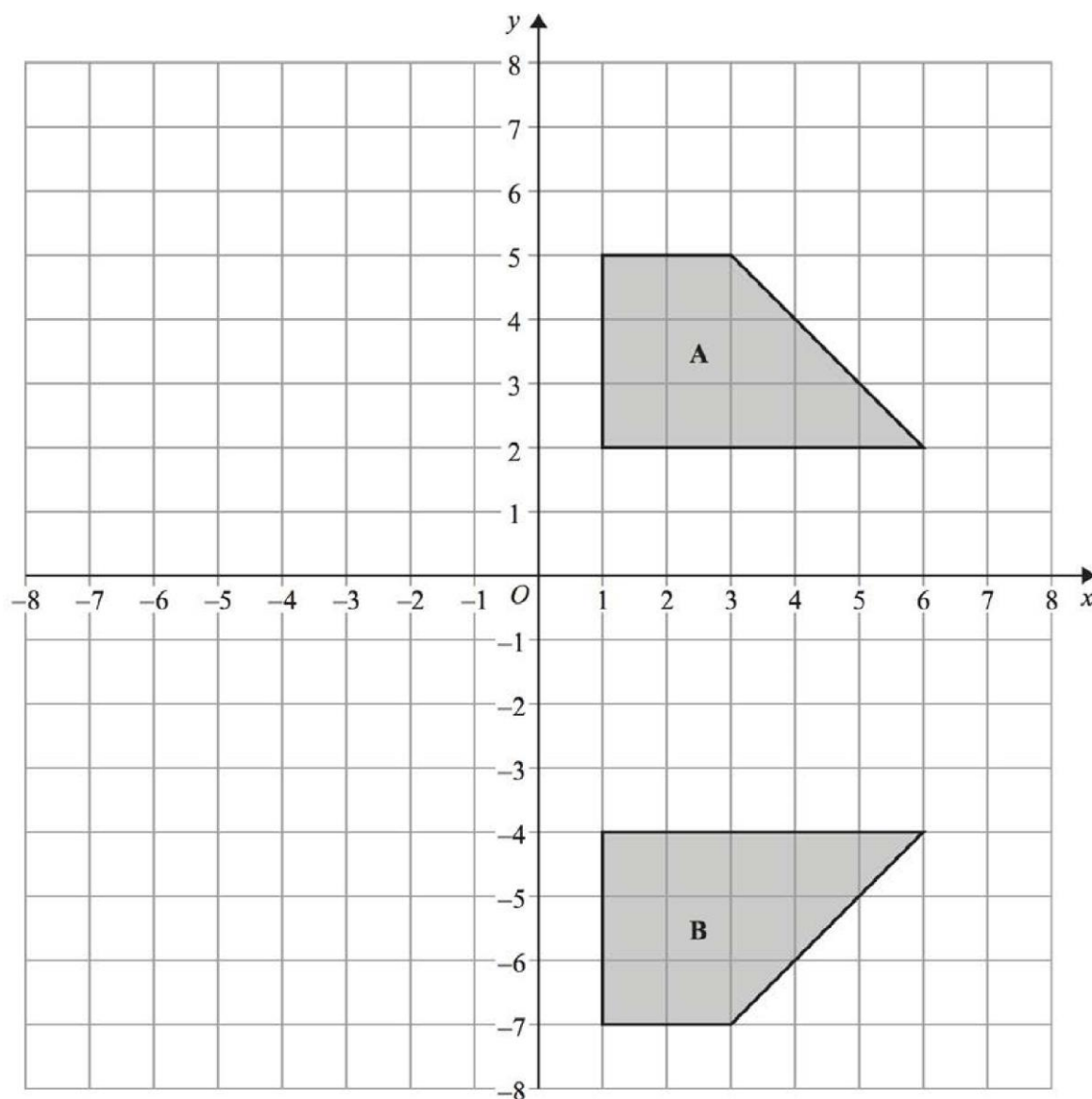
(1)



(b) On the grid, rotate triangle T  $90^\circ$  clockwise about (0, 2).

(2)

## 6 - (4MA0-W 2017-Paper 1FR-Q15) - TRANSFORMATION



- (a) Describe fully the single transformation that maps shape A onto shape B.

(2)

- (b) On the grid, rotate shape A  $90^\circ$  anticlockwise about (0, 0)  
Label the new shape C.

(2)

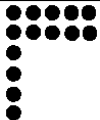
(Total for Question is 4 marks)

# ANSWERS

## 1 - (4MA0-S 2015-Paper 1FR-Q1) - NUMBER

|     |  |                                           |
|-----|--|-------------------------------------------|
| (a) |  | Six thousand one hundred and thirty seven |
| (b) |  | 7485                                      |
| (c) |  | 90                                        |
| (d) |  | 6680                                      |
| (e) |  | Grease                                    |

## 2 - (4MA0-S 2015-Paper 1FR-Q4) - NUMBER

|     |                   |                                                                                   |
|-----|-------------------|-----------------------------------------------------------------------------------|
| (a) |                   |  |
| (b) | $7 \times 3 + 2$  | 23                                                                                |
| (c) | $(41 - 2) \div 3$ | 13                                                                                |
| (d) |                   | $T = 3n + 2$                                                                      |

## 3 - (4MA0-S 2015-Paper 1FR-Q6) - NUMBER

|  |                                                       |       |
|--|-------------------------------------------------------|-------|
|  | $(78.24 \times 6) (= 469.44)$<br>“469.44” + 100 – 520 | 49.44 |
|--|-------------------------------------------------------|-------|

## 4 - (4MA0-S 2015-Paper 1FR-Q7) - NUMBER

|     |            |        |
|-----|------------|--------|
| (a) |            | Ottawa |
| (b) | $34 - -12$ | 46     |
| (c) | $-16 - 7$  | - 23   |

## 5 - (4MA0-S 2015-Paper 1FR-Q10) - NUMBER

|     |                                                                      |                                                       |
|-----|----------------------------------------------------------------------|-------------------------------------------------------|
| (a) |                                                                      | $\frac{3}{4} \frac{13}{16} \frac{7}{8} \frac{11}{12}$ |
| (b) | $\frac{2}{5} \times \frac{7}{6}$ or $\frac{1}{5} \times \frac{7}{3}$ | show                                                  |
| (c) | eg $\frac{2 \times 6}{5 \times 6} - \frac{1 \times 5}{6 \times 5}$   | show                                                  |

## 6 - (4MA0-S 2015-Paper 1FR-Q12) - NUMBER

|     |                            |      |
|-----|----------------------------|------|
| (a) | $85 \times 98$             | 8330 |
| (b) | $784 \div 98 \times 60$ oe | 480  |

## 7 - (4MA0-S 2015-Paper 1FR-Q16) - NUMBER

|  |                 |      |
|--|-----------------|------|
|  | $56.25 \div 15$ |      |
|  |                 | 3.75 |

## 8 - (4MA0-W 2015-Paper 1FR-Q1) - NUMBER

|     |             |        |
|-----|-------------|--------|
| (a) |             | 14 026 |
| (b) |             | 6500   |
| (c) |             | 2000   |
| (d) | $650 - 282$ | 368    |
| (e) | $484 + 346$ | 830    |

exam m (A+) te

9 - (4MA0-W 2015-Paper 1FR-Q4) - NUMBER

|     |  |                           |
|-----|--|---------------------------|
| (a) |  | 12, 26                    |
| (b) |  | 16 or 24                  |
| (c) |  | 1, 2, 4, 5, 8, 10, 20, 40 |
| (d) |  | 29, 37                    |

10 - (4MA0-W 2015-Paper 1FR-Q5) - NUMBER

|     |  |                                                 |
|-----|--|-------------------------------------------------|
| (a) |  | 37, 41                                          |
| (b) |  | eg added 4; +4                                  |
| (c) |  | 61                                              |
| (d) |  | eg. even number all numbers in sequence are odd |

11 - (4MA0-W 2015-Paper 1FR-Q10) - NUMBER

|     |                                              |         |
|-----|----------------------------------------------|---------|
| (a) | 320 : 500                                    | 16 : 25 |
| (b) | $640 \div (7 + 9) \times 9$ or $40 \times 9$ | 360     |

12 - (4MA0-W 2015-Paper 1FR-Q15) - NUMBER

|     |                           |         |
|-----|---------------------------|---------|
| (a) | $15625 + \frac{173}{2.5}$ | 15694.2 |
| (b) |                           | 15700   |

13 - (4MA0-W 2015-Paper 1FR-Q18) - NUMBER

|     |                                                 |         |
|-----|-------------------------------------------------|---------|
| (a) | $\frac{12}{100} \times 45 (=5.4)$<br>45 – "5.4" | 39.6(0) |
| (b) | 546 – 525 (=21)<br>$\frac{21}{525}$             | 4       |

**14** - (4MA0-W 2015-Paper 1FR-Q19) - NUMBER

|  |                                                                 |       |
|--|-----------------------------------------------------------------|-------|
|  | $\frac{15}{2} - \frac{14}{3} = \frac{45a}{6a} - \frac{28a}{6a}$ | shown |
|--|-----------------------------------------------------------------|-------|

**15** - (4MA0-S 2016-Paper 1FR-Q2) - NUMBER

|     |  |                                     |   |    |                         |
|-----|--|-------------------------------------|---|----|-------------------------|
| (a) |  | Two thousand four hundred and sixty | 1 | B1 | Must be all words       |
| (b) |  | seventy                             | 1 | B1 | Accept tens, 7 tens, 70 |
| (c) |  | 240                                 | 1 | B1 |                         |
| (d) |  | 3110                                | 1 | B1 |                         |
| (e) |  | 280                                 | 1 | B1 |                         |
| (f) |  | 0910                                | 1 | B1 | accept 9 10             |

**16** - (4MA0-S 2016-Paper 1FR-Q4) - NUMBER

|         |  |             |   |    |                                                |
|---------|--|-------------|---|----|------------------------------------------------|
| (a)(i)  |  | metres      | 1 | B1 | Accept m                                       |
| (a)(ii) |  | millilitres | 1 | B1 | Accept ml, cm <sup>3</sup><br>Do not accept cc |
| (b)     |  | 8000        | 1 | B1 |                                                |

**17** - (4MA0-S 2016-Paper 1FR-Q5) - NUMBER

|         |  |                        |   |    |            |
|---------|--|------------------------|---|----|------------|
| (a)     |  | 0.043, 0.06, 0.5, 0.62 | 1 | B1 |            |
| (b)     |  | 0.4                    | 1 | B1 | oe eg 4/10 |
| (c)     |  | 2.245                  | 1 | B1 |            |
| (d)(i)  |  | 3478                   | 1 | B1 |            |
| (d)(ii) |  | 8734                   | 1 | B1 |            |

**18** - (4MA0-S 2016-Paper 1FR-Q6) - NUMBER

|     |  |               |   |          |                                         |
|-----|--|---------------|---|----------|-----------------------------------------|
| (a) |  | $\frac{2}{5}$ | 2 | M1<br>A1 | For 6/15 oe (must be a fraction)<br>cao |
| (b) |  | 28            | 1 | B1       |                                         |
| (c) |  | 0.15          | 1 | B1       |                                         |
| (d) |  | 58            | 1 | B1       |                                         |
| (e) |  | 7.05          | 1 | B1       |                                         |

**19** - (4MA0-S 2016-Paper 1FR-Q7) - NUMBER

|     |                                                                              |        |   |              |                                                                                                                                                                                                               |
|-----|------------------------------------------------------------------------------|--------|---|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) |                                                                              | 38, 42 | 2 | B2           | B1 for 1 correct<br>Allow ft, eg 37, 41<br>NB: B0 for 36, 38, etc                                                                                                                                             |
| (b) |                                                                              | Add 4  | 1 | B1           |                                                                                                                                                                                                               |
| (c) | 18 + 19 × 4 or 14 + 20 × 4 or 4n + 14<br>or<br>18, 22, 26, 30, ....., 90, 94 |        | 2 | M1<br><br>A1 | Allow 18 + 20 × 4 or 90 or 98<br><br>List should show a clear intention of adding 4 with at least 5 terms (can count 42 as one of the 5 terms but not 18, 22, 26, 30, 34, 38).<br>Condone 1 arithmetic error. |
|     |                                                                              | 94     |   |              |                                                                                                                                                                                                               |

**20** - (4MA0-S 2016-Paper 1FR-Q13) - NUMBER

|      |  |    |   |    |  |
|------|--|----|---|----|--|
| (i)  |  | 9  | 1 | B1 |  |
| (ii) |  | 56 | 1 | B1 |  |

**21 - (4MA0-S 2016-Paper 1FR-Q14) - NUMBER**

|     |  |    |   |    |
|-----|--|----|---|----|
| (a) |  | 32 | 1 | B1 |
| (b) |  | 4  | 1 | B1 |

**22 - (4MA0-S 2016-Paper 1FR-Q17) - NUMBER**

|     |                                                                                                 |     |   |    |                                        |
|-----|-------------------------------------------------------------------------------------------------|-----|---|----|----------------------------------------|
| (a) | $\frac{7}{10} \times 30$ oe (eg $30 \div (7+3) = 3, 7 \times '3'$ ) or $\frac{3}{10} \times 30$ |     | 2 | M1 | A Complete method to find either share |
|     |                                                                                                 | 21  |   | A1 |                                        |
| (b) | $\frac{75}{3} \times 4$ oe                                                                      |     | 2 | M1 | Complete method                        |
|     |                                                                                                 | 100 |   | A1 |                                        |

**23 - (4MA0-S 2016-Paper 1FR-Q19) - NUMBER**

|     |                                                  |       |   |                    |                                                        |
|-----|--------------------------------------------------|-------|---|--------------------|--------------------------------------------------------|
| (a) | $\frac{8}{100} \times 28$ or 2.24<br>28 - "2.24" |       | 3 | M1<br>M1 dep<br>A1 | M2 for $\frac{92}{100} \times 28$ oe                   |
|     |                                                  | 25.76 |   |                    |                                                        |
| (b) | $\frac{3}{0.08}$ or $\frac{3}{8} \times 100$ oe  |       | 3 | M2<br>A1           | M1 for $\frac{3}{8}$ or 0.375 or 3 = 8%<br>Accept 37.5 |
|     |                                                  | 37.50 |   |                    |                                                        |

**24 - (4MA0-S 2016-Paper 1FR-Q21) - NUMBER**

|                                                                                                                            |                                                   |   |    |                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|---|----|----------------------------------------------------------------------------------------------------|
| $792 = 2 \times 396 = 2 \times 2 \times 198$<br>$= 2 \times 2 \times 2 \times 99 = 2 \times 2 \times 2 \times 3 \times 33$ |                                                   | 3 | M1 | For at least 2 correct steps in repeated factorisation (may be seen in a tree diagram or 'ladder') |
| 2, 2, 2, 3, 3, 11                                                                                                          |                                                   |   | A1 | Condone inclusion of 1 (maybe a fully correct tree or factor ladder)                               |
|                                                                                                                            | $2 \times 2 \times 2 \times 3 \times 3 \times 11$ |   | A1 | Or $2^3 \times 3^2 \times 11$<br>NB: Candidates showing no working score 0 marks                   |

**25 - (4MA0-W 2016-Paper 1FR-Q2) - NUMBER**

|     |                                   |                      |
|-----|-----------------------------------|----------------------|
| (a) |                                   | $\frac{5}{9}$        |
| (b) |                                   | three squares shaded |
| (c) |                                   | 0.9                  |
| (d) | $\frac{3}{25} \times 100$ or 0.12 |                      |
|     |                                   | 12                   |

**26 - (4MA0-W 2016-Paper 1FR-Q3) - NUMBER**

|     |  |               |
|-----|--|---------------|
| (a) |  | 7, 9 or 3, 21 |
| (b) |  | 55            |
| (c) |  | 36            |
| (d) |  | 53            |

**27** - (4MA0-W 2016-Paper 1FR-Q4) - NUMBER

|     |                        |                   |
|-----|------------------------|-------------------|
| (a) |                        |                   |
|     |                        |                   |
|     |                        | Correct bar chart |
| (b) | $(20 + 15 + 5 + 35)/4$ |                   |
|     |                        | 18.75             |
| (c) | $35 - 5$               |                   |
|     |                        | 30                |
| (d) | $35 : 15$              |                   |
|     |                        | $7 : 3$           |

**28** - (4MA0-W 2016-Paper 1FR-Q5) - NUMBER

|     |                           |      |
|-----|---------------------------|------|
| (a) |                           | 4.5  |
| (b) |                           | 8480 |
| (c) | $\frac{10 \times 20}{40}$ |      |
|     |                           | 5    |

**29** - (4MA0-W 2016-Paper 1FR-Q6) - NUMBER

|     |                                         |          |
|-----|-----------------------------------------|----------|
| (a) |                                         | 36       |
| (b) |                                         | 192      |
| (c) | $20 \times 6$ or list of first 20 terms |          |
|     |                                         | 120      |
| (d) |                                         | $T = 6n$ |

**30** - (4MA0-W 2016-Paper 1FR-Q7) - NUMBER

|     |                           |          |
|-----|---------------------------|----------|
| (a) |                           | Nitrogen |
| (b) | or $183 - 34$             |          |
|     |                           | 149      |
| (c) | $357 + 39$ or $-39 - 357$ |          |
|     |                           | 396      |

**31** - (4MA0-W 2016-Paper 1FR-Q9) - NUMBER

|     |                     |      |
|-----|---------------------|------|
| (a) |                     | 6561 |
| (b) |                     | 19   |
| (c) | $\frac{14.14}{3.5}$ |      |
|     |                     | 4.04 |

**32** - (4MA0-W 2016-Paper 1FR-Q14) - NUMBER

|     |                                                                           |      |
|-----|---------------------------------------------------------------------------|------|
| (a) | $\frac{163 \text{ (million)}}{683 \text{ (million)}} \times 100$          |      |
|     |                                                                           | 23.9 |
| (b) | $\frac{17.6}{100} \times 1028 \text{ (million)}$ or 180.(928) (million)   |      |
|     | $\frac{17.6}{100} \times 1028 \text{ (million)} + 1028 \text{ (million)}$ |      |
|     |                                                                           | 1209 |

**33** - (4MA0-W 2016-Paper 1FR-Q17) - NUMBER

|     |                                                                                                      |                           |
|-----|------------------------------------------------------------------------------------------------------|---------------------------|
| (a) | Correct factor tree or repeated division to find factors 2, 2, 2, 3, 5, 5 (condone inclusion of 1's) |                           |
|     |                                                                                                      | $2^3 \times 3 \times 5^2$ |
| (b) | $\frac{5^{12}}{5^3}$ or $\frac{5^{10}}{5}$ or $\frac{5^{11}}{5^2}$                                   |                           |
|     |                                                                                                      | $5^9$                     |

**34** - (4MA0-S 2017-Paper 1FR-Q1) - NUMBER

|   |                                                                     |               |   |                                            |
|---|---------------------------------------------------------------------|---------------|---|--------------------------------------------|
| a |                                                                     | 8.8           | 1 | B1                                         |
| b |                                                                     | Correct place | 1 | B1                                         |
| c |                                                                     | 6             | 1 | B1                                         |
| d | $(1.4 + 4.8) \div 2$ or $(4.8 - 1.4) \div 2 (=1.7)$ and '1.7' + 1.4 | 3.1           | 2 | M1 for a method to find the half way value |
|   |                                                                     |               |   | A1                                         |

**35** - (4MA0-S 2017-Paper 1FR-Q2) - NUMBER

|   |                  |               |   |       |
|---|------------------|---------------|---|-------|
| a |                  | 10            | 1 | B1    |
| b |                  | 30            | 1 | B1    |
| c |                  | 40            | 1 | B1    |
| d |                  | 0.6(0)        | 1 | B1    |
| e | $\frac{60}{100}$ | $\frac{3}{5}$ | 2 | M1 oe |
|   |                  |               |   | A1    |

**36** - (4MA0-S 2017-Paper 1FR-Q13) - NUMBER

|  |                                                         |      |   |                                     |
|--|---------------------------------------------------------|------|---|-------------------------------------|
|  | $34.00 + 9.20 + 12.20 + 39.00 + 8.75 + 9.50 (= 112.65)$ | 7.35 | 4 | M1 adding at least 5 correct prices |
|  | $70 + 50 (= 120)$                                       |      |   | M1                                  |
|  | '120' - '112.65'                                        |      |   | M1 (dep M1,M1)                      |
|  |                                                         |      |   | A1                                  |

**37 - (4MA0-S 2017-Paper 1FR-Q15) - NUMBER**

|   |                   |          |   |                        |
|---|-------------------|----------|---|------------------------|
| a |                   | 17 or 19 | 1 | B1 for either or both  |
| b |                   | 2, 23    | 1 | B1                     |
| c | $(60 - 2) \div 2$ | 29, 31   | 2 | M1 any complete method |
|   |                   |          |   | A1                     |

**38 - (4MA0-S 2017-Paper 1FR-Q19) - NUMBER**

|   |                                                                                |       |   |        |                                                          |                                 |
|---|--------------------------------------------------------------------------------|-------|---|--------|----------------------------------------------------------|---------------------------------|
| a | $3500 \div 119$                                                                |       |   | M1     |                                                          |                                 |
|   |                                                                                | 29.41 | 2 | A1     | for 29.41 – 29.412                                       |                                 |
| b | $8500 \div 52$ or 163(.461..)                                                  |       |   | M1     | M1 for $8500 \times 119 = 1011500$                       | M1 for $119 \div 52 (=2.28...)$ |
|   | "163.461.." $\times 119$                                                       |       |   | M1 dep | M1 for "1011500" $\div 52$                               | M1 for $8500 \times "2.28..."$  |
|   |                                                                                | 19452 | 3 | A1     | for 19380 – 19520                                        |                                 |
| c | $24 \div 60 (=0.4)$ or 2.4 or $2\frac{24}{60}$ oe or $2 \times 60 + 24 (=144)$ |       |   | M1     |                                                          |                                 |
|   | $1534 \div 2.4$ oe or $(1534 \div 144) \times 60$ oe                           |       |   | M1     | (allow $1534 \div 2.24$ or answer of 684(.82...) or 685) |                                 |
|   |                                                                                | 639   | 3 | A1     | for 639 – 639.17                                         |                                 |

**39 - (4MA0-S 2017-Paper 1FR-Q22) - NUMBER**

|  |                                                                               |                                                  |   |    |                                                                                                            |
|--|-------------------------------------------------------------------------------|--------------------------------------------------|---|----|------------------------------------------------------------------------------------------------------------|
|  | e.g. $2 \times 2 \times 7 \times 12$ or at least 3 divisions in a factor tree |                                                  |   | M1 | for the start of a correct method<br>e.g. may be a factor tree or consecutive divisions<br>condone 1 error |
|  | All 6 correct prime factors, no extras (2,2,2,2,3,7,(1))                      |                                                  |   | M1 | e.g. from a factor tree, ignore 1s                                                                         |
|  |                                                                               | $2 \times 2 \times 2 \times 2 \times 3 \times 7$ | 3 | A1 | oe dep on M1, M1                                                                                           |

**40 - (4MA0-S 2017-Paper 1FR-Q25) - NUMBER**

|   |                                  |                                            |      |   |                                                                                                                                                       |
|---|----------------------------------|--------------------------------------------|------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| a | $100 - 9.4 (=90.6)$              | $\frac{9.4}{100} \times 607$ oe (= 57.058) |      |   | M1                                                                                                                                                    |
|   | $\frac{90.6}{100} \times 607$ oe | $607 - "57.058"$                           |      |   | M1 (dep)                                                                                                                                              |
|   |                                  |                                            | 550  | 3 | A1 for 549.942 or 549.94 or 549.9                                                                                                                     |
| b | $\frac{100}{20} \times 1320$ oe  |                                            |      |   | M2 for a complete method<br><br>If not M2 then award M1 for a correct first step<br><br>$1320 \div 20 (=66)$ or $0.2x = 1320$ or $1320 \div 2 (=660)$ |
|   |                                  |                                            | 6600 | 3 | A1                                                                                                                                                    |

**41 - (4MA0-W 2017-Paper 1FR-Q1) - NUMBER**

|     |  |                    |   |
|-----|--|--------------------|---|
| ai  |  | $\frac{3}{10}$     | 2 |
| aii |  | 0.3                |   |
| b   |  | eg. $\frac{4}{14}$ | 1 |
| c   |  | 0.65               | 1 |
| d   |  | 28                 | 1 |

**42** - (4MA0-W 2017-Paper 1FR-Q2) - NUMBER

|   |                                                                                |                                  |   |
|---|--------------------------------------------------------------------------------|----------------------------------|---|
| a |                                                                                | Friday                           | 1 |
| b |                                                                                | Twelve thousand and thirty eight | 1 |
| c |                                                                                | 4900                             | 1 |
| d |                                                                                | 9780, 4695                       | 2 |
| e | $15243 \div 1200$                                                              | 13                               | 2 |
| f | $(9780 + 4853 + 12038 + 15243 + 4695 + 4801 + 11856) \div 7$ or $63266 \div 7$ | 9038                             | 2 |

**43** - (4MA0-W 2017-Paper 1FR-Q5) - NUMBER

|   |  |                      |
|---|--|----------------------|
| a |  | 23 or 29 or 31 or 37 |
| b |  | 343                  |

**44** - (4MA0-W 2017-Paper 1FR-Q6) - NUMBER

|   |                                    |            |   |
|---|------------------------------------|------------|---|
| a |                                    | 800        | 1 |
| b |                                    | 9.5        | 1 |
| c |                                    | kilograms  | 1 |
| d |                                    | 11 45 pm   | 1 |
| e | e.g. $2\frac{1}{2} + 7\frac{1}{4}$ | 9 h 45 min | 2 |
| f | $100^2$ or $100^2$ oe              | 120 000    | 2 |

**45** - (4MA0-W 2017-Paper 1FR-Q10) - NUMBER

|   |                                                                              |                |   |
|---|------------------------------------------------------------------------------|----------------|---|
| a | $\frac{2}{9} \times 738$ oe or $738 \div 9 (=82)$ or $2 \times 738 (= 1476)$ | 164            | 2 |
| b | $24 - 17 = 7$ or $\frac{17}{24}$                                             | $\frac{7}{24}$ | 2 |
| c | $\frac{10}{21} - \frac{7}{21}$                                               | shown          | 2 |

46 - (4MA0-W 2017-Paper 1FR-Q14) - NUMBER

|                                                                                                  |    |   |
|--------------------------------------------------------------------------------------------------|----|---|
| $80 \div (3 + 1) (=20)$ <b>or</b> 20 <b>or</b> 60                                                | 67 | 5 |
| $0.15 \times (3 \times "20") (=9)$                                                               |    |   |
| $"20" \div 5 (=4)$                                                                               |    |   |
| $80 - "9" - "4"$                                                                                 |    |   |
| <b>or</b>                                                                                        |    |   |
| $\frac{3}{4} \times \frac{15}{100} (= \frac{9}{80} \text{ or } 0.1125)$                          | 67 | 5 |
| $\frac{1}{4} \times \frac{1}{5} (= \frac{1}{20} \text{ or } 0.05)$                               |    |   |
| $"\frac{9}{80}" + "\frac{1}{20}" (= \frac{13}{80})$ <b>or</b> $"0.1125" + "0.05" (=0.1625)$      |    |   |
| $(1 - "\frac{13}{80}") \times 80$ <b>or</b> $(1 - "0.1625") \times 80$ <b>or</b> $\frac{67}{80}$ |    |   |
|                                                                                                  |    |   |

47 - (4MA0-W 2017-Paper 1FR-Q13) - NUMBER

|                                                                                                                                 |     |   |
|---------------------------------------------------------------------------------------------------------------------------------|-----|---|
| $15 \div 60 (=0.25)$ <b>or</b> 13.25 <b>or</b> $13 \times 60 + 15 (=795)$ <b>or</b><br>$13 \times 3600 + 15 \times 60 (=47700)$ |     |   |
| $8740 \div "13.25"$ <b>or</b> $8740 \div "795" \times 60$ <b>or</b><br>$8740 \div "47700" \times 3600$                          |     |   |
|                                                                                                                                 | 660 | 3 |

48 - (4MA0-W 2017-Paper 1FR-Q17) - NUMBER

|   |                                                                                                                                                                                                                                        |      |   |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|
| a | $224 \div 8$ <b>or</b>                                                                                                                                                                                                                 | 28   | 2 |
| b | $523 - 411 (=112)$ <b>or</b><br>$\frac{523}{411} (=1.273...)$ <b>or</b> $\frac{523}{411} \times 100 (=127.3...)$<br>-----<br>$\frac{"112"}{411} \times 100$ <b>or</b> $100 \times "1.273" - 100$<br>-----<br><b>or</b> $"127.3" - 100$ | 27.3 | 3 |

49 - (4MA0-S 2018-Paper 1FR-Q1) - NUMBER

|       |  |    |   |    |
|-------|--|----|---|----|
| (i)   |  | 42 | 1 | B1 |
| (ii)  |  | 24 | 1 | B1 |
| (iii) |  | 16 | 1 | B1 |
| (iv)  |  | 27 | 1 | B1 |
| (v)   |  | 19 | 1 | B1 |

## 50 - (4MA0-S 2018-Paper 1FR-Q3) - NUMBER

|     |                                 |                |   |          |
|-----|---------------------------------|----------------|---|----------|
| (a) |                                 | 10             | 1 | B1       |
| (b) |                                 | $2\frac{3}{4}$ | 1 | B1       |
| (c) |                                 | 30             | 1 | B1       |
| (d) |                                 | 0.18           | 1 | B1       |
| (e) | $5 \times 8$ or $\frac{360}{9}$ | 40             | 2 | M1<br>A1 |

## 51 - (4MA0-S 2018-Paper 1FR-Q6) - NUMBER

|     |                                                                                                                     |      |   |                                                 |
|-----|---------------------------------------------------------------------------------------------------------------------|------|---|-------------------------------------------------|
| (a) |                                                                                                                     | 6    | 1 | B1                                              |
| (b) |                                                                                                                     | 1.53 | 1 | B1                                              |
| (c) | $0.84 \times 0.5 (=0.42)$ or $0.92 \times 0.75 (=0.69)$<br>$5 - (0.84 \times 0.5 + 0.92 \times 0.75)$ or $5 - 1.11$ | 3.89 | 3 | M1 could work in euros or cents<br><br>M1<br>A1 |

## 52 - (4MA0-S 2018-Paper 1FR-Q8) - NUMBER

|     |  |     |   |    |
|-----|--|-----|---|----|
| (a) |  | 6   | 1 | B1 |
| (b) |  | -48 | 1 | B1 |
| (c) |  | 16  | 1 | B1 |

## 53 - (4MA0-S 2018-Paper 1FR-Q11) - NUMBER

|     |                                              |              |   |                                               |
|-----|----------------------------------------------|--------------|---|-----------------------------------------------|
| (a) |                                              | 3.9          | 1 | B1                                            |
| (b) |                                              | 1296         | 1 | B1                                            |
| (c) | $(26.72\dots)^2$ or $\frac{15775.36}{22.09}$ | 714.1(40335) | 2 | M1 for 26.72... or 15775.36 or 22.09<br>A1    |
| (d) |                                              | 714          | 1 | B1 ft if at least 4 sig figs are given in (c) |

## 54 - (4MA0-S 2018-Paper 1FR-Q13) - NUMBER

|     |                                                                                                                                    |       |   |                                                                                               |                |
|-----|------------------------------------------------------------------------------------------------------------------------------------|-------|---|-----------------------------------------------------------------------------------------------|----------------|
| (a) | 32 : 24                                                                                                                            | 4 : 3 | 2 | M1                                                                                            | SC B1<br>3 : 4 |
| (b) | E.g. $\frac{x}{60} = \frac{12}{16}$ oe or $12 : 16 = x : 60$ oe<br>or $\frac{12 \times 60}{16}$ oe or $\frac{24 \times 60}{32}$ oe | 45    | 2 | A1<br>M1 for a correct equation (accept ratios)<br><br>or a correct calculation<br><br>A1 cao |                |

## 55 - (4MA0-S 2018-Paper 1FR-Q19) - NUMBER

|  |                                                                                                                                                                                                           |                |   |                                                                                                                                                                                                                                                                                                                                                                                                  |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | e.g. $\frac{27}{8} \div \frac{9}{4}, \frac{27}{8} \div \frac{18}{8}$<br><br>$\frac{27}{8} \times \frac{4}{9}$ or $\frac{4 \times 27}{8 \times 9}$ or $\frac{108}{72}$ or $\frac{27}{8} \div \frac{18}{8}$ | $1\frac{1}{2}$ | 3 | M1 for two correct improper fractions<br><br>M1 accept division of any two correct fractions with a common denominator which is a multiple of 8<br><br>A1 for correct working leading to $1\frac{1}{2}$<br>must show correct cancelling of fractions before multiplication or<br>a correct mixed number eg $1\frac{36}{72}, 1\frac{9}{18}$ or<br>a correct improper fraction eg $\frac{108}{72}$ |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**56 - (4MA0-W 2018-Paper 1FR-Q1) - NUMBER**

|        |  |                    |   |    |
|--------|--|--------------------|---|----|
| (a)    |  | 8024               | 1 | B1 |
| (b)    |  | 38, 540, 623, 5043 | 1 | B1 |
| (c)(i) |  | 300                | 2 | B1 |
| (ii)   |  | 76000              |   | B1 |

**57 - (4MA0-W 2018-Paper 1FR-Q3) - NUMBER**

|  |                                                                      |     |   |                                      |
|--|----------------------------------------------------------------------|-----|---|--------------------------------------|
|  | $3 \times 28 (= 84)$ <b>or</b> $28 \div 2 (=14)$<br>'14' + '84' + 28 | 126 | 3 | M1<br>M1 for a complete method<br>A1 |
|--|----------------------------------------------------------------------|-----|---|--------------------------------------|

**58 - (4MA0-W 2018-Paper 1FR-Q6) - NUMBER**

|  |                                                     |    |   |                       |
|--|-----------------------------------------------------|----|---|-----------------------|
|  | $51 - -11$ <b>or</b> $51 + 11$ <b>or</b> $-11 - 51$ | 62 | 2 | M1<br>A1 (accept -62) |
|--|-----------------------------------------------------|----|---|-----------------------|

**59 - (4MA0-W 2018-Paper 1FR-Q14) - NUMBER**

|  |                                                                                                                                                                     |      |   |                                                                                      |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|--------------------------------------------------------------------------------------|
|  | $2 \times 0.30 (= 0.60)$ <b>or</b> $6 \times 0.30 (= 1.80)$<br>$3.55 - 3 \times '0.60' (= 1.75)$ <b>or</b> $3.55 - '1.80' (= 1.75)$<br>1 kg costs '1.75' $\div 2.5$ | 0.70 | 4 | M1<br>M1 for $3.55 - 3 \times '0.60'$<br>M1 for $'1.75' \div 2.5$<br>A1 (accept 0.7) |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|--------------------------------------------------------------------------------------|

**60 - (4MA0-W 2018-Paper 1FR-Q16) - NUMBER**

|     |                                                                                                                                                                                                                                                    |    |   |                                                                                                                                                                                                                                                     |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ALT | $210 \div 9.72 (= (\text{€})21.60..)$<br>'21.60..' $\times 1.10 (= (\text{\$})23.765)$<br>$79 - 23.765..$                                                                                                                                          | 55 | 4 | M1 for $210 \div 9.72$ <b>or</b> $(\$1 = 9.72 \div 1.10 (= 8.836.. (\text{EGP}))$ oe<br>M1 for '21.60..' $\times 1.10$ <b>or</b> $210 \div '8.836..' (= 23.765..)$ oe<br>M1<br>A1 (Accept answer in the range 55 – 55.3)                            |
|     | $79 \div 1.1 \times 9.72 (= 698.7..)$ <b>OR</b><br>$79 \div 1.1 (= 71.81..)$ <b>and</b> $210 \div 9.72 (= 21.60..)$<br>'698' – 210 (= 488.7..) <b>OR</b> '71.8' – '21.6' (= 50.21..)<br>'488' $\div 9.72 \times 1.1$ <b>OR</b> '50.2' $\times 1.1$ | 55 | 4 | M1 convert \$79 into pounds <b>OR</b> convert \$79 into euros <b>and</b> 210 pounds into euros (dep) for subtraction '698' – 210 <b>or</b> '71.8' – '21.6'<br>M1 for conversion of answer into dollars<br>A1 (Accept answer in the range 55 – 55.3) |

**61 - (4MA0-W 2018-Paper 1FR-Q21) - NUMBER**

|  |                                                                                                                                                                                                |     |   |                                                                                    |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|------------------------------------------------------------------------------------|
|  | $\frac{3}{4} \times 24 (= 18)$ <b>or</b> $\frac{1}{4} \times 24 (= 6)$<br>'18' $\times 30 (= 540)$ <b>or</b> '6' $\times 20 (= 120)$<br>$\frac{'540' + '120' - 400}{400} \times 100 (= 65)$ oe | 65% | 4 | M1<br><br>M1<br><br>M1 for a complete method<br>A1<br>SC: B3 for an answer of 165% |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|------------------------------------------------------------------------------------|

**62 - (4MA0-W 2018-Paper 1FR-Q22) - NUMBER**

|  |                                                                                                                                                                                                                                                         |    |   |                                                                                                                          |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|--------------------------------------------------------------------------------------------------------------------------|
|  | $50\,000 \times 30 (= 1500000)$<br><b>or</b> $50\,000 \div (100 \times 1000) (= 0.5)$<br><b>or</b> $30 \div (100 \times 1000) (= 0.0003)$<br><br>'1500000' $\div (100 \times 1000)$<br><b>or</b> '0.5' $\times 30$<br><b>or</b> '0.0003' $\times 50000$ | 15 | 3 | M1 for a correct first step <b>or</b> an answer with the digits 15 eg 0.0015, 1500<br><br>M1 for a complete method<br>A1 |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|--------------------------------------------------------------------------------------------------------------------------|

exam m (A+) te

## 63 - (4MA0-W 2018-Paper 1FR-Q23) - NUMBER

|                                                                                   |                                                                                                   |                 |   |                                   |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------|---|-----------------------------------|
| $\frac{5}{8} \times \frac{3}{4} \left( = \frac{15}{32} \right)$                   | $\frac{5}{8} \times 320 (= 200) \text{ or } \left( 1 - \frac{5}{8} \right) \times 320$<br>(= 120) | $\frac{23}{32}$ | 4 | M1                                |
| $\left( 1 - \frac{5}{8} \right) \times \frac{2}{3} \left( = \frac{6}{24} \right)$ | $\frac{3}{4} \times '200' (= 150) \text{ oe and } \frac{2}{3} \times '120'$<br>(= 80) oe          |                 |   | M1                                |
| $\frac{15}{32} + \frac{6}{24} \text{ oe}$                                         | $\frac{'150' + '80'}{320} \text{ oe}$                                                             |                 |   | M1 for a complete method<br>A1 oe |

1 - (4MA0-S 2015-Paper 1FR-Q13) - ALGEBRA

|         |  |            |
|---------|--|------------|
| (a) (i) |  | $4t^3$     |
| (ii)    |  | $8x - 5y$  |
| (iii)   |  | $7e^2$     |
| (b)     |  | $g(g + 4)$ |

2 - (4MA0-S 2015-Paper 1FR-Q20) - ALGEBRA

|         |                      |                           |
|---------|----------------------|---------------------------|
| (a) (i) |                      | $2^2 \times 5$            |
| (ii)    |                      | $2^3 \times 3 \times 5^2$ |
| (b)     | $8 (= 2^n)$ or $2^3$ |                           |
|         |                      | 3                         |

3 - (4MA0-S 2015-Paper 1FR-Q21) - ALGEBRA

|      |                                  |                                 |
|------|----------------------------------|---------------------------------|
| (i)  |                                  |                                 |
|      |                                  | eg.<br>$9(8x + 4) = 28(10 - x)$ |
| (ii) | $36x + 18 = 140 - 14x$           |                                 |
|      | $50x = 122$                      |                                 |
|      | $x = 2.44$ or $\frac{61}{25}$ oe |                                 |
|      | $7 \times (10 - \text{“2.44”})$  |                                 |
|      |                                  | 52.92                           |

## 4 - (4MA0-W 2015-Paper 1FR-Q8) - ALGEBRA

|     |                      |                  |
|-----|----------------------|------------------|
| (a) |                      | 13               |
| (b) |                      | $7e + 4f$        |
| (c) |                      | $3(2w + 5)$      |
| (d) | $x^2 + 4x + 7x + 28$ |                  |
|     |                      | $x^2 + 11x + 28$ |

## 5 - (4MA0-W 2015-Paper 1FR-Q13) - ALGEBRA

|     |                                                                                                                                     |     |
|-----|-------------------------------------------------------------------------------------------------------------------------------------|-----|
| (a) | $4 \times -5 - 24$ or $-20 - 3 \times 8$ or $-20 - 24$                                                                              | -44 |
| (b) | $30 = 4g - 3 \times 6$ or $M + 3h = 4g$ or $(30 + 3 \times 6) \div 4$<br>$30 + "18" = 4g$ or $48 = 4g$ or<br>$30 + 3 \times 6 = 4g$ | 12  |

## 6 - (4MA0-W 2015-Paper 1FR-Q21) - ALGEBRA

|  |                                                                                                      |       |
|--|------------------------------------------------------------------------------------------------------|-------|
|  | $3(x - 5) = 3x - 15$<br><br>$3x - 15 = 7x + 12$<br>$-15 - 12 = 7x - 3x$ or<br>$3x - 7x = 12 + 15$ oe | -6.75 |
|--|------------------------------------------------------------------------------------------------------|-------|

## 7 - (4MA0-S 2016-Paper 1FR-Q11) - ALGEBRA

|     |                      |              |   |                               |
|-----|----------------------|--------------|---|-------------------------------|
| (a) | $8e - 11e + 2f + 3f$ | $-3e + 5f$   | 2 | B2 B1 for $-3e$ or $5f$       |
| (b) |                      | $6y^2 - 14y$ | 2 | M1 For $6y^2$ or $-14y$<br>A1 |

## 8 - (4MA0-S 2016-Paper 1FR-Q12) - ALGEBRA

|     |                     |                   |   |                                                          |
|-----|---------------------|-------------------|---|----------------------------------------------------------|
| (a) |                     | 2                 | 1 | B1                                                       |
| (b) | $(30 + 5) \times 3$ | 105               | 2 | M1 For $(30 + 5) \times 3$ or $35 \times 3$<br>A1<br>cao |
| (c) | $\frac{x}{3} - 5$   | $\frac{x}{3} - 5$ | 2 | M1 For $\frac{x}{3}$ or $x \div 3$ oe<br>A1<br>oe        |

## 9 - (4MA0-S 2016-Paper 1FR-Q15) - ALGEBRA

|     |                                                                                |     |   |                            |
|-----|--------------------------------------------------------------------------------|-----|---|----------------------------|
| (a) | $2 \times -5 + 3 \times 7$                                                     | 11  | 2 | M1 For $-10$ or $21$<br>A1 |
| (b) | $5x - 20 (= 14)$ or $x - 4 = 14/5$<br>$5x = 34$ or $x = 4 + 14/5$<br>$x = 6.8$ | 6.8 | 2 | M1<br>A1oe Allow $34/5$ oe |

exam m (A+) te

**10 - (4MA0-S 2016-Paper 1FR-Q20) - ALGEBRA**

|     |                                                                                                                                                                                                                 |                                      |   |         |                                                                                                                                                                                                                   |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) | $-9 < 3x \leq 6$ or $3x > -9$ and $3x \leq 6$ or<br>$-\frac{4}{3} < x + \frac{5}{3} \leq \frac{11}{3}$ or $x + \frac{5}{3} > -\frac{4}{3}$ and $x + \frac{5}{3} \leq \frac{11}{3}$<br>or $x > -3$ or $x \leq 2$ |                                      | 3 | M2      | For both ends correct for $3x$ or<br>$x + \frac{5}{3}$ or one end correct for $x$<br>M1 for one end correct for $3x$ or<br>$x + \frac{5}{3}$ , eg $3x > -9$ or<br>$3x \leq 6$ or<br>answers of $x = -3$ & $x = 2$ |
| (b) |                                                                                                                                                                                                                 | $-3 < x \leq 2$<br>$-2, -1, 0, 1, 2$ |   | A1<br>2 | B2ft B1 for five correct values and one<br>incorrect value or four correct<br>values with no incorrect value<br>Only ft from an inequality in the<br>form $a < x \leq b$                                          |

**11 - (4MA0-W 2016-Paper 1FR-Q12) - ALGEBRA**

|     |                                                                                                                 |                |
|-----|-----------------------------------------------------------------------------------------------------------------|----------------|
| (a) |                                                                                                                 | 24             |
| (b) | $3y = 12 \times 4$ or $\frac{1}{4}y = \frac{12}{3}$ or $y = 12 \times \frac{4}{3}$ or $y = 12 \div \frac{3}{4}$ |                |
|     |                                                                                                                 | 16             |
| (c) |                                                                                                                 | $9(2c - 3)$    |
| (d) | $t^2 - 4t + 5t - 20$                                                                                            |                |
|     |                                                                                                                 | $t^2 + t - 20$ |

**12 - (4MA0-W 2016-Paper 1FR-Q18) - ALGEBRA**

|     |                               |                   |
|-----|-------------------------------|-------------------|
| (a) |                               | $e < 2$           |
| (b) | $5 - 4 < 3e$ or $-3e < 4 - 5$ |                   |
|     |                               | $e > \frac{1}{3}$ |
| (c) |                               | 1                 |

**13 - (4MA0-S 2017-Paper 1FR-Q6) - ALGEBRA**

|   |  |             |   |                                                                                                                                |
|---|--|-------------|---|--------------------------------------------------------------------------------------------------------------------------------|
| a |  | 9           | 1 | B1                                                                                                                             |
| b |  | 21          | 1 | B1                                                                                                                             |
| c |  | Explanation | 1 | B1 e.g all the terms are odd and 150 is even or 149<br>is in the sequence or $4n + 1 = 150$ does not have<br>an integer answer |

**14 - (4MA0-S 2017-Paper 1FR-Q14) - ALGEBRA**

|   |                    |   |   |                                                       |
|---|--------------------|---|---|-------------------------------------------------------|
| a |                    | 3 | 1 | B1                                                    |
| b | $8 \times 2t = 80$ | 5 |   | M1 or for $8 \times 2t$ or $80 \div 8$ or $80 \div 2$ |
|   |                    |   |   | A1                                                    |

**15 - (4MA0-S 2017-Paper 1FR-Q16) - ALGEBRA**

|  |                                                        |       |   |                                                                          |
|--|--------------------------------------------------------|-------|---|--------------------------------------------------------------------------|
|  | $\frac{6-2.84}{(\sqrt{5})^2}$ or $\frac{6-2.84}{5}$ oe |       |   | M1 or for 0.63<br>NB: Accept 2.23(6...) in place of $\sqrt{5}$           |
|  |                                                        | 0.632 | 2 | A1 for 0.632 or $\frac{79}{125}$<br>SC : B1 for an answer of 1.41(31...) |

## 16 - (4MA0-S 2017-Paper 1FR-Q17) - ALGEBRA

|  |                   |      |   |    |                                                                                                                                                                                                                                                |
|--|-------------------|------|---|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | $5x - x = 8 - 10$ |      |   | M1 | for correct rearrangement with $x$ terms on one side and numbers on the other in a correct equation <b>or</b> the correct simplification of either $x$ terms or numbers on one side in a correct equation<br>eg. $4x - 8 = -10$ ; $5x = x - 2$ |
|  | $4x = -2$         |      |   | M1 | or $-4x = 2$ <b>or</b> $4x + 2 = 0$ <b>or</b> $-4x - 2 = 0$<br>NB: This mark implies the previous M1                                                                                                                                           |
|  |                   | -0.5 | 3 | A1 | oe e.g. $-\frac{2}{4}$ dep on M1                                                                                                                                                                                                               |

## 17 - (4MA0-S 2017-Paper 1FR-Q24) - ALGEBRA

|  |  |             |   |    |                                                                                                  |
|--|--|-------------|---|----|--------------------------------------------------------------------------------------------------|
|  |  | $10e^5 f^2$ | 2 | B2 | If not B2 then award B1 for<br>$ke^5 f^2, k \neq 10$ or $10e^5 f^a$ or $10e^b f^2$ $a, b \neq 0$ |
|--|--|-------------|---|----|--------------------------------------------------------------------------------------------------|

## 18 - (4MA0-W 2017-Paper 1FR-Q8) - ALGEBRA

|   |                                |        |   |
|---|--------------------------------|--------|---|
| a |                                | $3p$   | 1 |
| b |                                | $30ef$ | 1 |
| c |                                | 5      | 1 |
| d |                                | 4      | 1 |
| e | $23 = 3c + 5$<br>$23 - 5 = 3c$ | 6      | 3 |

## 19 - (4MA0-W 2017-Paper 1FR-Q20) - ALGEBRA

|   |                               |                        |   |
|---|-------------------------------|------------------------|---|
| a | $12x = 36$                    | $x = 3$ oe, $y = -2.5$ | 3 |
|   | e.g. $7 \times "3" + 2y = 16$ |                        |   |
|   |                               |                        |   |
| b | $k^2 + 9k - 5k - 45$          | $k^2 + 4k - 45$        | 2 |
|   |                               |                        |   |

## 20 - (4MA0-S 2018-Paper 1FR-Q4) - ALGEBRA

|     |  |            |   |                            |
|-----|--|------------|---|----------------------------|
| (a) |  | 66         | 1 | B1                         |
| (b) |  | subtract 6 | 1 | B1 -6, minus 6, take 6, oe |
| (c) |  | 18         | 1 | B1                         |

**21 - (4MA0-S 2018-Paper 1FR-Q9) - ALGEBRA**

|     |                                     |                |   |                                    |
|-----|-------------------------------------|----------------|---|------------------------------------|
| (a) |                                     | $2g$           | 1 | B1                                 |
| (b) |                                     | 3              | 1 | B1                                 |
| (c) | $46 - 3 \times 2 \times 5$          |                | 2 | M1 for $3 \times 2 \times 5 (=30)$ |
|     |                                     | 16             |   | A1                                 |
| (d) | $43 = 4e + 3 \times 7$              |                | 3 | M1                                 |
|     | $43 - 3 \times 7 = 4e$ or $4e = 22$ |                |   | M1                                 |
|     |                                     | $5\frac{1}{2}$ |   | A1 Accept 5.5, $\frac{22}{4}$ oe   |

**22 - (4MA0-S 2018-Paper 1FR-Q17) - ALGEBRA**

|          |                                                                                                                                   |                   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) (i)  | $(4x+1) + (4x+1) + (2x+2) + (2x+2) (=12x+6)$                                                                                      | 1                 | B1 | for a correct expression, may not be simplified, but if simplified it must be correct                                                                                                                                                                                                                                                                                                                                           |
| (a) (ii) | $(x+3) + (x+3) + 2x (=4x+6)$                                                                                                      | 1                 | B1 | for a correct expression, may not be simplified, but if simplified it must be correct                                                                                                                                                                                                                                                                                                                                           |
| (b)      | $(4x+1) + (4x+1) + (2x+2) + (2x+2) =$<br>$2[(x+3) + (x+3) + 2x]$ oe<br>E.g $6 = 4x$<br>E.g. $4x + 6 = 12$ oe or $12x - 6 = 8x$ oe | $1\frac{1}{2}$ oe | 4  | M1 ft from (a) if at least B1 awarded<br><b>OR</b> one perimeter correct <b>and</b> $2 \times$ (perimeter of triangle)<br>M2 (dep on M1) ft for an equation in the form $ax = b$<br>If not M2 then award M1 (dep on M1) for correct simplification of all $x$ terms<br><b>OR</b><br>correct simplification of all number terms<br>A1 for 1.5 or $\frac{6}{4}$ or $\frac{3}{2}$ or $1\frac{1}{2}$ from correct algebraic working |

**23 - (4MA0-W 2018-Paper 1FR-Q4) - ALGEBRA**

|     |  |        |   |                                                     |
|-----|--|--------|---|-----------------------------------------------------|
| (a) |  | 19     | 1 | B1                                                  |
| (b) |  | 39     | 1 | B1                                                  |
| (c) |  | Reason | 1 | B1 e.g. all the terms must be odd (but 102 is even) |

**24 - (4MA0-W 2018-Paper 1FR-Q8) - ALGEBRA**

|     |                               |                                         |   |                                                                                                                        |
|-----|-------------------------------|-----------------------------------------|---|------------------------------------------------------------------------------------------------------------------------|
| (a) | 0.375, 0.38, 0.146, 0.33(3..) | $0.146, \frac{1}{3}, \frac{3}{8}, 38\%$ | 2 | M1 converts to common form (at least one correct)<br>A1 (SC B1 for any three in the correct order)                     |
| (b) | 1, 2, 3, 4, 6, 8, 12, 24      | 12 and 6                                | 2 | B2 12 and 6<br>(B1 $x + y = 18$ where one of $x, y$ is a factor of 24 or any two factors of 24 which do not sum to 18) |

**25** - (4MA0-W 2018-Paper 1FR-Q11) - ALGEBRA

|     |           |     |   |          |
|-----|-----------|-----|---|----------|
| (a) |           | 16  | 1 | B1       |
| (b) |           | 3   | 1 | B1       |
| (c) | $4t = 18$ | 4.5 | 2 | M1<br>A1 |

**26** - (4MA0-W 2018-Paper 1FR-Q13) - ALGEBRA

|     |                                              |          |   |                                                                                                       |
|-----|----------------------------------------------|----------|---|-------------------------------------------------------------------------------------------------------|
| (a) |                                              | 60       | 1 | B1                                                                                                    |
| (b) | $2 \times 8 + 3 \times 5$                    | 31       | 2 | M1<br>A1                                                                                              |
| (c) | $BC = 2x$ , $CD = x + 5$<br>$x + 2x + x + 5$ | $4x + 5$ | 3 | M1 for $BC$ or $CD$<br><br>M1 for the sum of 3 lengths with at least one of $BC$ , $CD$ correct<br>A1 |

**27** - (4MA0-W 2018-Paper 1FR-Q17) - ALGEBRA

|     |                     |           |   |          |
|-----|---------------------|-----------|---|----------|
| (a) | $5x + 5y - 3x + 3y$ | $2x + 8y$ | 2 | M1<br>A1 |
| (b) |                     | $t^{10}$  | 1 | B1       |
| (c) |                     | $m^{12}$  | 1 | B1       |

**1 - (4MA0-S 2015-Paper 1FR-Q3) - FUNCTIONS & GRAPHS**

|         |                                                                                              |                        |
|---------|----------------------------------------------------------------------------------------------|------------------------|
| (a)     |                                                                                              | Kite                   |
| (b)     |                                                                                              | 52~56 mm inc.          |
| (c) (i) |                                                                                              | (2,3)                  |
| (ii)    |                                                                                              | (4,-2)                 |
| (d)     |                                                                                              | Line of symmetry drawn |
| (e)     | $2 \times 0.5 \times 7 \times 2$ oe<br>or $0.5 \times 4 \times 2 + 0.5 \times 4 \times 5$ oe | 14                     |

**2 - (4MA0-W 2015-Paper 1FR-Q17) - FUNCTIONS & GRAPHS**

|  |                                                          |                                           |
|--|----------------------------------------------------------|-------------------------------------------|
|  | $(-2, -4)(-1, -1)(0, 2)(1, 5)(2, 8)$<br>$(3, 11)(4, 14)$ | Correct line between $x = -2$ and $x = 4$ |
|--|----------------------------------------------------------|-------------------------------------------|

**3 - (4MA0-S 2017-Paper 1FR-Q7) - FUNCTIONS & GRAPHS**

|   |  |                  |   |                                                      |
|---|--|------------------|---|------------------------------------------------------|
| a |  | 100              | 1 | B1                                                   |
| b |  | -52              | 1 | B1                                                   |
| c |  | 7.5              | 1 | B1                                                   |
| d |  | $y = 4x - 20$ oe | 2 | B2<br>(B1 for $4x(-20)$ oe or $x = \frac{y+20}{4}$ ) |

**4 - (4MA0-S 2017-Paper 1FR-Q8) - FUNCTIONS & GRAPHS**

|   |  |                |   |                                                                                                    |
|---|--|----------------|---|----------------------------------------------------------------------------------------------------|
| a |  | $(-3, -2)$     | 1 | B1                                                                                                 |
| b |  | Plotted        | 1 | B1                                                                                                 |
| c |  | Suitable point | 2 | B2 for e.g. $(3, -2), (-3, 4)$<br>(B1 for C plotted correctly but coordinates written incorrectly) |

## 5 - (4MA0-W 2017-Paper 1FR-Q9) - FUNCTIONS &amp; GRAPHS

|   |                                       |     |   |
|---|---------------------------------------|-----|---|
| a |                                       | 9.9 | 1 |
| b |                                       | 73  | 1 |
| c | eg. 100 HKD = 8.2 and $8.2 \times 10$ | 82  | 2 |

## 6 - (4MA0-S 2018-Paper 1FR-Q12) - FUNCTIONS &amp; GRAPHS

|         |                                            |                         |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------|--------------------------------------------|-------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) (i) |                                            | line $y = 1$ drawn      | 4 | B1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (ii)    | $(-1, 6), (0, 4), (1, 2), (2, 0), (3, -2)$ | line $y = 4 - 2x$ drawn |   | B3 for a correct line between $x = -1$ and $x = 3$<br>If not B3 then award B2 for a straight line segment through at least 3 of $(-1, 6), (0, 4), (1, 2), (2, 0), (3, -2)$<br><b>OR</b> for all of $(-1, 6), (0, 4), (1, 2), (2, 0), (3, -2)$ plotted and not joined<br><b>OR</b><br>for a line drawn through $(0, 4)$ with a clear attempt at a gradient of $-2$ (eg a line through $(0, 4)$ and $(0.5, 2)$ )<br><br>If not B2 then award B1 for at least 2 correct points stated or plotted (may be in a table); <b>ignore any incorrect points either plotted or evaluated</b><br><b>OR</b> for a line drawn with negative gradient through $(0, 4)$ <b>OR</b> for a straight line with gradient $-2$ |
| (b)     |                                            | $(1\frac{1}{2}, 1)$     | 1 | B1 ft from (a) providing either $y = 1$ or $y = 4 - 2x$ is correct                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## 7 - (4MA0-W 2018-Paper 1FR-Q18) - FUNCTIONS &amp; GRAPHS

|     |                                                                                                                                                                                                               |     |    |                            |    |    |   |   |     |    |    |   |   |    |    |              |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----------------------------|----|----|---|---|-----|----|----|---|---|----|----|--------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) | <table><tr><td><math>x</math></td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td><math>y</math></td><td>-6</td><td>-2</td><td>2</td><td>6</td><td>10</td><td>14</td></tr></table> | $x$ | -2 | -1                         | 0  | 1  | 2 | 3 | $y$ | -6 | -2 | 2 | 6 | 10 | 14 | Correct line | 3 | B3 for a correct line between $x = -2$ and $x = 3$<br><br>If not B3 then award B2 for a correct line through at least 3 of<br>$(-2, -6)$ $(-1, -2)$ $(0, 2)$ $(1, 6)$ $(2, 10)$ $(3, 14)$<br><b>OR</b> for all of $(-2, -6)$ $(-1, -2)$ $(0, 2)$ $(1, 6)$ $(2, 10)$ $(3, 14)$ plotted, not joined <b>OR</b> line through $(0, 2)$ and clear attempt to use a gradient of 4 eg line through $(0, 2)$ and $(1, 10)$<br><br>If not B2 then award B1 for at least 2 correct points stated or plotted (may be in a table) <b>OR</b> for a line drawn with a positive gradient through $(0, 2)$ <b>OR</b> for a line with a gradient of 4 |
| $x$ | -2                                                                                                                                                                                                            | -1  | 0  | 1                          | 2  | 3  |   |   |     |    |    |   |   |    |    |              |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| $y$ | -6                                                                                                                                                                                                            | -2  | 2  | 6                          | 10 | 14 |   |   |     |    |    |   |   |    |    |              |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| (b) | $4p + 2 = 50$                                                                                                                                                                                                 | 12  | 2  | M1 $4p + 2 = 50$<br><br>A1 |    |    |   |   |     |    |    |   |   |    |    |              |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## 1 - (4MA0-S 2015-Paper 1FR-Q5) - MENSURATION

|     |                                                                                                                                                                                          |    |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| (a) |                                                                                                                                                                                          | 6  |
| (b) |                                                                                                                                                                                          | 12 |
| (c) | $14 \text{ mm} = 1.4 \text{ cm}$<br>or $5 \text{ cm} = 50 \text{ mm}$ and $8 \text{ cm} = 80 \text{ mm}$<br><br>$5 \times 8 \times "1.4"$<br>or $("50" \times "80" \times 14) \div 1000$ | 56 |

## 2 - (4MA0-W 2015-Paper 1FR-Q20) - MENSURATION

|          |                                                                                               |                   |
|----------|-----------------------------------------------------------------------------------------------|-------------------|
| (a)      | $\pi \times 11^2 (121\pi) (=380.1\dots)$ or $2 \times \pi \times 11^2 (242\pi) (=760.2\dots)$ |                   |
|          | $2 \times \pi \times 11 \times 30 (660\pi) (=2073.4\dots)$                                    |                   |
|          | $2 \times "380" + "2073"$ or $"760.2" + "2073"$<br>( $242\pi + 660\pi$ or $902\pi$ )          |                   |
|          |                                                                                               | 2800              |
| (b) (i)  |                                                                                               | 29.5              |
| (b) (ii) |                                                                                               | 30.5 or 30.49 rec |

## 3 - (4MA0-S 2016-Paper 1FR-Q8) - MENSURATION

|     |                                     |      |   |                                                     |
|-----|-------------------------------------|------|---|-----------------------------------------------------|
| (a) |                                     | 9    | 1 | B1                                                  |
| (b) |                                     | 5    | 1 | B1                                                  |
| (c) | $0.5 \times 10 \times 12 \times 40$ | 2400 | 2 | M1<br>A1 $0.5 \times 10 \times 12 \times 40$<br>cao |

## 4 - (4MA0-W 2016-Paper 1FR-Q1) - MENSURATION

|         |              |          |
|---------|--------------|----------|
| (a) (i) |              | cuboid   |
| (ii)    |              | cylinder |
| (iii)   |              | pyramid  |
| (b)     | $6 \times 4$ |          |
|         |              | 24       |

## 5 - (4MA0-S 2017-Paper 1FR-Q20) - MENSURATION

|   |                                                                         |      |   |                           |
|---|-------------------------------------------------------------------------|------|---|---------------------------|
| a | $\pi \times 2.5$ oe or $2 \times \pi \times \left(\frac{2.5}{2}\right)$ |      |   | M1                        |
|   |                                                                         | 7.85 | 2 | A1 7.85 – 7.86            |
| b | $10 \times \frac{4.7}{2.5}$ oe or $10 \times \frac{470}{250}$ oe        |      |   | M1 or for digits 188      |
|   |                                                                         | 18.8 | 2 | A1 accept 19 if 18.8 seen |

**6 - (4MA0-S 2018-Paper 1FR-Q14) - MENSURATION**

|     |                                                            |     |   |          |                                                                                  |
|-----|------------------------------------------------------------|-----|---|----------|----------------------------------------------------------------------------------|
| (a) | $\frac{1}{2}(8 \times 6)$                                  | 24  | 2 | M1<br>A1 |                                                                                  |
| (b) | $24 \times 25$                                             | 600 | 2 | M1<br>A1 | ft 24 from (a) for $(a) \times 25$<br>ft 24 from (a) for $(a) \times 25$         |
| (c) | $2 \times "24" + 10 \times 25 + 6 \times 25 + 8 \times 25$ | 648 | 3 | M2<br>A1 | for a complete method<br>if not M2 then award M1 for<br>at least 3 correct areas |

**7 - (4MA0-W 2018-Paper 1FR-Q19) - MENSURATION**

|  |                                                                                 |    |   |                |                                    |
|--|---------------------------------------------------------------------------------|----|---|----------------|------------------------------------|
|  | $\frac{(24+30)}{2} \times 12 (= 324)$<br>$\sqrt{324} (= 18)$<br>$4 \times "18"$ | 72 | 4 | M1<br>M1<br>A1 | for a complete method for the area |
|--|---------------------------------------------------------------------------------|----|---|----------------|------------------------------------|

**8 - (4MA0-W 2018-Paper 1FR-Q20) - MENSURATION**

|  |                                                                                 |      |   |                                                      |  |
|--|---------------------------------------------------------------------------------|------|---|------------------------------------------------------|--|
|  | $\pi \times 80 (= 251.327....)$<br>$\pi \times 80 - 2 \times 80 (= 91.327....)$ | 91.3 | 3 | M1 oe<br>M1 for a complete method<br>A1 91.2 – 91.43 |  |
|--|---------------------------------------------------------------------------------|------|---|------------------------------------------------------|--|

## 1 - (4MA0-S 2015-Paper 1FR-Q9) - GEOMETRY

|          |                                                                                                             |    |
|----------|-------------------------------------------------------------------------------------------------------------|----|
| (a) (i)  |                                                                                                             | 35 |
| (a) (ii) | Vertically opposite angles are equal                                                                        |    |
| (b)      | $CDF = 180 - 2 \times 35 (=110)$ or<br>$FDE = 35 + 35 (=70)$ or<br>$FDE = 180 - 110 (=70)$ or<br>$DEF = 70$ |    |
|          | $(y =) 180 - 2 \times 70$                                                                                   |    |
|          |                                                                                                             | 40 |

## 2 - (4MA0-S 2015-Paper 1FR-Q15) - GEOMETRY

|     |                                                                         |    |
|-----|-------------------------------------------------------------------------|----|
| (a) | $360 \div 15$ or<br>$\frac{(n-2)180}{n} = 180 - 15$ or                  |    |
|     |                                                                         | 24 |
| (b) | $3 \times 180/5$ or $(180 - 360 \div 5) (=108)$                         |    |
|     | $360 - 3 \times "108"$                                                  |    |
|     |                                                                         | 36 |
|     | <b>Alternative for (b):</b><br>$360/5 (=72)$<br>$(180 - "72" \times 2)$ |    |
|     |                                                                         | 36 |

## 3 - (4MA0-S 2015-Paper 1FR-Q19) - GEOMETRY

|  |                                                             |      |
|--|-------------------------------------------------------------|------|
|  | $5.4^2 + 12.8^2 (=193)$                                     |      |
|  | $\sqrt{5.4^2 + 12.8^2}$ or<br>$\sqrt{"193"} (=13.89244399)$ |      |
|  |                                                             | 13.9 |

## 4 - (4MA0-W 2015-Paper 1FR-Q3) - GEOMETRY

|          |  |          |
|----------|--|----------|
| (a) (i)  |  | pentagon |
| (a) (ii) |  | 5        |
| (b) (i)  |  | E        |
| (b) (ii) |  | A, C     |

## 5 - (4MA0-W 2015-Paper 1FR-Q6) - GEOMETRY

|     |                     |        |
|-----|---------------------|--------|
| (a) |                     | (1, 6) |
| (b) |                     | 5.8    |
| (c) | $4 + 5 + 7 + '5.8'$ | 21.8   |

## 6 - (4MA0-W 2015-Paper 1FR-Q9) - GEOMETRY

|  |                       |    |
|--|-----------------------|----|
|  | $180 - 118$ or 62     |    |
|  | $180 - 2 \times '62'$ |    |
|  |                       | 56 |

## 7 - (4MA0-W 2015-Paper 1FR-Q12) - GEOMETRY

|  |                                                          |   |
|--|----------------------------------------------------------|---|
|  | $\frac{1}{2} \times 8 \times 15$ or 60<br>'60' $\div 12$ | 5 |
|--|----------------------------------------------------------|---|

## 8 - (4MA0-S 2016-Paper 1FR-Q3) - GEOMETRY

|       |  |          |   |    |
|-------|--|----------|---|----|
| (i)   |  | diameter | 1 | B1 |
| (ii)  |  | chord    | 1 | B1 |
| (iii) |  | acute    | 1 | B1 |

## 9 - (4MA0-S 2016-Paper 1FR-Q9) - GEOMETRY

|         |                   |                                                        |   |                                    |
|---------|-------------------|--------------------------------------------------------|---|------------------------------------|
| (a)     |                   | 95                                                     | 1 | B1                                 |
| (b)(i)  |                   | 140                                                    | 1 | B1                                 |
| (b)(ii) |                   | The sum of the angles on a straight line = $180^\circ$ | 1 | B1                                 |
| (c)     | $180 - (95 + 40)$ | 45                                                     | 2 | M1 For $180 - (95 + 40)$<br>A1 cao |

## 10 - (4MA0-S 2016-Paper 1FR-Q23) - GEOMETRY

|                                                                           |      |   |                              |
|---------------------------------------------------------------------------|------|---|------------------------------|
| $14.6^2 - 3.2^2$ or $213.16 - 10.24 (=202.92)$<br>$\sqrt{14.6^2 - 3.2^2}$ | 14.2 | 3 | M1<br>M1 Dep<br>A1 Awrt 14.2 |
|---------------------------------------------------------------------------|------|---|------------------------------|

## 11 - (4MA0-S 2016-Paper 1FR-Q24) - GEOMETRY

|                                                       |    |   |                                                                                         |
|-------------------------------------------------------|----|---|-----------------------------------------------------------------------------------------|
| $\frac{360}{8}$ or $180 - \frac{(8-2) \times 180}{8}$ | 45 | 2 | M1 For complete correct method for exterior angle<br>A1 Do not isw interior angle found |
|-------------------------------------------------------|----|---|-----------------------------------------------------------------------------------------|

**12** - (4MA0-W 2016-Paper 1FR-Q8) - GEOMETRY

|         |                                         |                    |
|---------|-----------------------------------------|--------------------|
| (a) (i) |                                         | (3, 2)             |
| (ii)    |                                         | (-1, 2)            |
| (b)     |                                         | parallelogram      |
| (c)     |                                         | 2                  |
| (d)     | $2 \times 4$                            |                    |
|         |                                         | 8                  |
| (e)     | $(\frac{1}{2}(-2+3), \frac{1}{2}(0+2))$ |                    |
|         |                                         | $(\frac{1}{2}, 1)$ |

**13** - (4MA0-W 2016-Paper 1FR-Q10) - GEOMETRY

|     |                                                   |     |
|-----|---------------------------------------------------|-----|
| (a) | $360 - 250$ or $180 - 125$ or $2q + 250 = 360$ oe |     |
|     |                                                   | 55  |
| (b) |                                                   | 36  |
| (c) |                                                   | 112 |
| (d) | base angles of an isosceles triangle are equal    |     |
| (e) | $180 - 68 - 68$                                   |     |
|     |                                                   | 44  |

**14** - (4MA0-W 2016-Paper 1FR-Q16) - GEOMETRY

|     |                                                                      |      |
|-----|----------------------------------------------------------------------|------|
| (a) | $\pi \times 6.5^2$                                                   |      |
|     |                                                                      | 133  |
| (b) | $10.5^2 - 6.5^2$ or $110.25 - 42.25$ or 68                           |      |
|     | $\sqrt{10.5^2 - 6.5^2}$ or $\sqrt{110.25 - 42.25}$ or $\sqrt{68}$ oe |      |
|     |                                                                      | 8.25 |

**15** - (4MA0-S 2017-Paper 1FR-Q4) - GEOMETRY

|  |  |         |   |    |
|--|--|---------|---|----|
|  |  | Chord   | 3 | B1 |
|  |  | Radius  |   | B1 |
|  |  | Tangent |   | B1 |

**16** - (4MA0-S 2017-Paper 1FR-Q5) - GEOMETRY

|   |  |           |   |    |
|---|--|-----------|---|----|
| a |  | Obtuse    | 1 | B1 |
| b |  | 60        | 1 | B1 |
| c |  | Trapezium | 1 | B1 |

**17** - (4MA0-S 2017-Paper 1FR-Q11) - GEOMETRY

|   |  |                 |   |                                                     |
|---|--|-----------------|---|-----------------------------------------------------|
| a |  | 3 lines correct | 2 | B2 all 3 lines correct<br>(B1 any one correct line) |
| b |  | 3               | 1 | B1                                                  |
| c |  | 2               | 1 | B1                                                  |

**18** - (4MA0-S 2017-Paper 1FR-Q12) - GEOMETRY

|  |                                                                      |     |   |    |
|--|----------------------------------------------------------------------|-----|---|----|
|  | (Angle $ABE = $ ) $180^\circ - 2 \times 72^\circ$<br>( $=36^\circ$ ) | 126 | 3 | M1 |
|  | Angle $ABC = 180^\circ - 2 \times 72^\circ + 90^\circ$               |     |   | M1 |
|  |                                                                      |     |   | A1 |

**19** - (4MA0-S 2017-Paper 1FR-Q18) - GEOMETRY

|  |                                                                                                                                         |     |   |                                                                     |
|--|-----------------------------------------------------------------------------------------------------------------------------------------|-----|---|---------------------------------------------------------------------|
|  | Angle $BCD = 142^\circ$ or<br>Angle $BCF = 180 - 62 (=118^\circ)$ or<br>Angle $ABC = 180 - 142 (=38)$<br>360 - 142 - "118" or "38" + 62 |     |   | M1 for angle $BCD = 142^\circ$ or<br>angle $BCF = (180 - 62)^\circ$ |
|  |                                                                                                                                         | 100 | 3 | M1 for a complete method to find $x$                                |
|  |                                                                                                                                         |     |   | A1                                                                  |

**20** - (4MA0-W 2017-Paper 1FR-Q3) - GEOMETRY

|   |  |                |   |
|---|--|----------------|---|
| a |  | radius         | 1 |
| b |  | chord          | 1 |
| c |  | segment shaded | 1 |

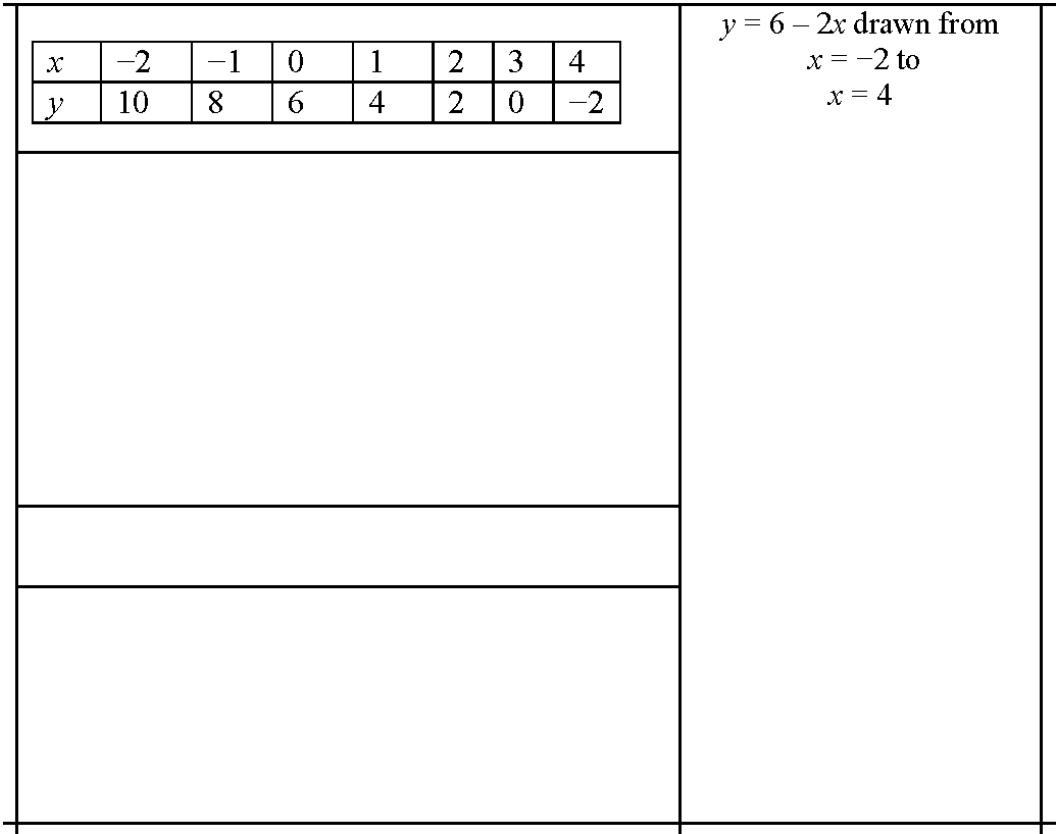
**21** - (4MA0-W 2017-Paper 1FR-Q11) - GEOMETRY

|     |                                                                              |                                              |   |
|-----|------------------------------------------------------------------------------|----------------------------------------------|---|
| ai  |                                                                              | 104                                          | 1 |
| aii |                                                                              | Angles on a straight line sum to $180^\circ$ | 1 |
| b   | $360 - 76 - 130 (=154)$<br>"154" $\div 2$                                    |                                              |   |
|     |                                                                              | 77                                           | 3 |
| c   | $360 \div 18$ or $\frac{(2n-4)90}{n} = 162$ or<br>$\frac{(n-2)180}{n} = 162$ |                                              |   |
|     |                                                                              | 20                                           | 2 |

**22** - (4MA0-W 2017-Paper 1FR-Q12) - GEOMETRY

|                                                |        |   |
|------------------------------------------------|--------|---|
| $\left( \frac{4+8}{2}, \frac{11+3}{2} \right)$ |        |   |
|                                                | (6, 7) | 2 |

23 - (4MA0-W 2017-Paper 1FR-Q16) - GEOMETRY



## 24 - (4MA0-W 2017-Paper 1FR-Q19) - GEOMETRY

|                                                                                  |     |   |
|----------------------------------------------------------------------------------|-----|---|
| $18^2 - (14 \div 2)^2 (=275)$                                                    | 116 | 4 |
| $\sqrt{18^2 - (14 \div 2)^2}$ or $\sqrt{275}$ or $5\sqrt{11}$ or 16.5... or 16.6 |     |   |
| $0.5 \times 14 \times "16.5..."$ or $35\sqrt{11}$                                |     |   |
|                                                                                  |     |   |
| <b>Alternative scheme</b>                                                        |     |   |
| $25(25 - 18)(25 - 18)(25 - 14)(= 13475)$ oe                                      | 116 | 4 |
| $\sqrt{13475}$ oe                                                                |     |   |
|                                                                                  |     |   |

## 25 - (4MA0-S 2018-Paper 1FR-Q5) - GEOMETRY

|     |                                                                           |                     |   |    |                                                                                                                                 |
|-----|---------------------------------------------------------------------------|---------------------|---|----|---------------------------------------------------------------------------------------------------------------------------------|
| (a) |                                                                           | 5.4                 | 1 | B1 | Allow 5.2 – 5.6                                                                                                                 |
| (b) |                                                                           | 110                 | 1 | B1 | Allow 108 – 112                                                                                                                 |
| (c) | Line through <i>A</i> and <i>C</i> and line through <i>B</i> and <i>D</i> | correct lines drawn | 2 | B2 | Two correct lines, no other lines.<br>B1 for one correct line and none incorrect or two correct lines and one or two incorrect. |
| (d) |                                                                           | 2                   | 1 | B1 |                                                                                                                                 |

## 26 - (4MA0-S 2018-Paper 1FR-Q7) - GEOMETRY

|     |                                                                                           |     |   |    |             |
|-----|-------------------------------------------------------------------------------------------|-----|---|----|-------------|
| (a) |                                                                                           | C   | 1 | B1 |             |
| (b) |                                                                                           | 275 | 1 | B1 |             |
| (c) |                                                                                           | 123 | 1 | B1 |             |
| (d) | $57 + 85 + h = 180$ or $h = 180 - 57 - 85$ or<br>" $123$ " = $85 + h$ or $h = "123" - 85$ | 38  | 2 | M1 | ft from (c) |
|     |                                                                                           |     |   | A1 |             |



**31** - (4MA0-W 2018-Paper 1FR-Q12) - *GEOMETRY*

|     |                                                     |    |   |                                       |
|-----|-----------------------------------------------------|----|---|---------------------------------------|
| (a) |                                                     | 70 | 1 | B1 ft '55'                            |
| (b) | $(180 - 70) \div 2$ or $(360 - 2 \times 70) \div 4$ | 55 | 2 | M1<br>A1 allow ft on their <i>FPA</i> |

**32** - (4MA0-W 2018-Paper 1FR-Q15) - *GEOMETRY*

|  |                                                                                                                                                                |     |   |                                                                                                                                 |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|---------------------------------------------------------------------------------------------------------------------------------|
|  | $\angle ADE = 180 - 124 (= 56)$ or $\angle ADE = \frac{360 - 2 \times 124}{2}$<br>$(= 56)$<br>$\angle DAE = \angle ADE = '56'$<br>$\angle AEC = 2 \times '56'$ | 112 | 4 | M1<br><br>M1<br><br>M1 for $2 \times '56'$ or for $\angle AED = 180 - 2 \times '56' (= 68)$ and $\angle AEC = 180 - '68'$<br>A1 |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|---------------------------------------------------------------------------------------------------------------------------------|

**33** - (4MA0-W 2018-Paper 1FR-Q25) - *GEOMETRY*

|  |                                                                                                                     |      |   |                                                                       |
|--|---------------------------------------------------------------------------------------------------------------------|------|---|-----------------------------------------------------------------------|
|  | $20^2 - 10^2 (= 300)$<br>$BD = \frac{\sqrt{300}}{2} (= 8.66...)$<br>$AD^2 = 10^2 + (0.5 \times \text{their } BC)^2$ | 13.2 | 4 | M1<br>M1<br><br>M1 (indep)<br>A1 for answer in the range 13.2 – 13.25 |
|--|---------------------------------------------------------------------------------------------------------------------|------|---|-----------------------------------------------------------------------|

1 - (4MA0-W 2015-Paper 1FR-Q22) - TRIGONOMETRY

|  |                                                                                                   |     |
|--|---------------------------------------------------------------------------------------------------|-----|
|  | $\tan A = \frac{80}{35} \text{ or } \tan B = \frac{35}{80}$                                       |     |
|  | $(A =) \tan^{-1}\left(\frac{80}{35}\right) \text{ or } (B =) \tan^{-1}\left(\frac{35}{80}\right)$ |     |
|  | $(A =) 66.37... \text{ or } (B =) 23.62...$                                                       |     |
|  |                                                                                                   | 204 |

**1** - (4MA0-S 2018-Paper 1FR-Q16) - SETS

|     |  |             |   |    |                                                                                                                                                                                              |
|-----|--|-------------|---|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) |  | $B$         | 1 | B1 | cao                                                                                                                                                                                          |
| (b) |  | Description | 2 | M1 | for reference to both <ul style="list-style-type: none"> <li>length greater than 20cm</li> <li>weigh more than 1 kg</li> </ul> <b>or</b> for identifying $\cup$ as 'or'                      |
|     |  |             |   | A1 | for a complete correct statement<br>eg 'fish that have length greater than 20cm<br><b>OR</b> weigh more than 1 kg (or both)'<br>(accept and/or)                                              |
| (c) |  | Explanation | 1 | B1 | for a complete correct statement<br>eg ' <b>no</b> fish that are less than 1 year old <b>and</b><br>weigh more than 1 kg', 'all the fish that weigh<br>more than 1 kg are older than 1 year' |

**2** - (4MA0-W 2018-Paper 1FR-Q24) - SETS

|     |  |                             |   |    |                                                                                                                                                                                                                                          |
|-----|--|-----------------------------|---|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) |  | 2, 3, 4, 6, 8,<br>9, 10, 12 | 1 | B1 |                                                                                                                                                                                                                                          |
| (b) |  | 5, 7, 11, 13                | 2 | B2 | (B1 any set of 4 elements which satisfies<br>exactly one of $A \cap C = \emptyset$ , $B \cap C = \emptyset$ <b>or</b><br>just 2 or 3 of 5, 7, 11, 13 <b>or</b> all four<br>correct values and one incorrect value eg<br>1, 5, 7, 11, 13) |

## 1 - (4MA0-S 2015-Paper 1FR-Q2) - STATISTICS

|          |                      |                              |
|----------|----------------------|------------------------------|
| (a)      |                      | Tues(day)                    |
| (b)      |                      | 4                            |
| (c) (i)  |                      | Bars at heights 8cm and 6 cm |
| (c) (ii) |                      | 4 : 3                        |
| (d)      | $25/100 \times 8$ oe | 2                            |

## 2 - (4MA0-S 2015-Paper 1FR-Q8) - STATISTICS

|     |                          |     |
|-----|--------------------------|-----|
| (a) | $120/360 \times 1800$ oe | 600 |
| (b) | $100/800 \times 360$     | 45  |

## 3 - (4MA0-S 2015-Paper 1FR-Q14) - STATISTICS

|  |                                                                                                                              |     |
|--|------------------------------------------------------------------------------------------------------------------------------|-----|
|  | $[2 \times 0] + 12 \times 1 + 15 \times 2 + 8 \times 3 + 2 \times 5 + 1 \times 8 (= 84)$ or<br>$[0] + 12 + 30 + 24 + 10 + 8$ |     |
|  | "84" $\div 40$                                                                                                               |     |
|  |                                                                                                                              | 2.1 |

## 4 - (4MA0-S 2015-Paper 1FR-Q18) - STATISTICS

|  |                               |     |
|--|-------------------------------|-----|
|  | $6 \times 165 (=990)$         |     |
|  | $(\text{"990"} - 155) \div 5$ |     |
|  |                               | 167 |

## 5 - (4MA0-W 2015-Paper 1FR-Q2) - STATISTICS

|          |                  |                |
|----------|------------------|----------------|
| (a) (i)  |                  | 70             |
| (a) (ii) | $\frac{70}{100}$ |                |
| (b)      |                  | $\frac{7}{10}$ |
| (c) (i)  |                  | Sri Lanka      |
| (c)      |                  | bar to 55%     |
| (c) (ii) |                  | 45%            |

## 6 - (4MA0-W 2015-Paper 1FR-Q7) - STATISTICS

|          |                                             |                                                         |
|----------|---------------------------------------------|---------------------------------------------------------|
| (a)      |                                             | 2                                                       |
| (b)      | $8 - 1$                                     | 7                                                       |
| (c)      | $(5+8+5+2+2+1+3+2+8) \div 9$ or $36 \div 9$ | 4                                                       |
| (d) (i)  |                                             | more                                                    |
| (d) (ii) |                                             | eg 7 is greater than the mean of the original 9 numbers |

## 7 - (4MA0-W 2015-Paper 1FR-Q14) - STATISTICS

|  |                                                                                         |    |
|--|-----------------------------------------------------------------------------------------|----|
|  | $0 \times 5 + 1 \times 8 + 2 \times 2 + 3 \times 3 + 4 \times 2$ or $0 + 8 + 4 + 9 + 8$ | 29 |
|--|-----------------------------------------------------------------------------------------|----|

## 8 - (4MA0-S 2016-Paper 1FR-Q1) - STATISTICS

|   |  |               |   |                                                  |
|---|--|---------------|---|--------------------------------------------------|
| a |  | 24            | 1 | B1                                               |
| b |  | 4 icons shown | 1 | B1                                               |
| c |  | 92            | 2 | M1 '24' + $28 + 8 + 32$ or $11.5 \times 8$ oe A1 |

## 9 - (4MA0-S 2016-Paper 1FR-Q10) - STATISTICS

|     |  |   |   |       |                                                                               |
|-----|--|---|---|-------|-------------------------------------------------------------------------------|
| (a) |  | 4 | 2 | M1 A1 | For 1 and 5 identified                                                        |
| (b) |  | 2 | 2 | M1 A1 | For 12.5 or 13<br>NB: Award M0A0 if 2 comes from calculating the mean (=2.04) |

## 10 - (4MA0-W 2016-Paper 1FR-Q11) - STATISTICS

|     |                                                                                         |    |
|-----|-----------------------------------------------------------------------------------------|----|
| (a) | $\frac{360}{72} \times 8$ or $5 \times 8$ or $\frac{360}{9}$ or $9^\circ = 1$ candidate |    |
|     |                                                                                         | 40 |
| (b) | $\frac{8}{72} \times 126$ or $\frac{126}{9}$ or $\frac{126}{360} \times "40"$           |    |
|     |                                                                                         | 14 |

## 11 - (4MA0-S 2017-Paper 1FR-Q9) - STATISTICS

|    |                                          |                |   |                   |
|----|------------------------------------------|----------------|---|-------------------|
| a  |                                          | 24             | 1 | B1                |
| bi |                                          | $\frac{1}{10}$ | 3 | B1                |
| ii | 28, 32, 36, 38, 40, 45, or $\frac{6}{n}$ | $\frac{6}{10}$ |   | M1    ft from (a) |
|    |                                          |                |   | A1    ft from (a) |

**12 - (4MA0-S 2017-Paper 1FR-Q10) - STATISTICS**

|          |                                                                     |     |   |    |
|----------|---------------------------------------------------------------------|-----|---|----|
| <b>a</b> | $3x + 3x + 2x + x + x$                                              | 36  | 3 | M1 |
|          | $10x = 360$ oe                                                      |     |   | M1 |
|          |                                                                     |     |   | A1 |
| <b>b</b> | $5400 \div 360 (=15)$ or $\frac{40}{360}$ or $360 \div 40 (=9)$     | 600 | 3 | M1 |
|          | $'15' \times 40$ or $\frac{40}{360} \times 5400$ or $5400 \div '9'$ |     |   | M1 |
|          |                                                                     |     |   | A1 |

**13 - (4MA0-S 2017-Paper 1FR-Q21) - STATISTICS**

|          |                                                                                                                             |    |   |                                                                             |
|----------|-----------------------------------------------------------------------------------------------------------------------------|----|---|-----------------------------------------------------------------------------|
| <b>a</b> | $\frac{a+b+c}{3} = 21$ or $\frac{a+b}{2} = 19$ or $3 \times 21 (=63)$ or $2 \times 19 (=38)$ or $3 \times 21 - 2 \times 19$ |    |   | M1                                                                          |
|          |                                                                                                                             | 25 | 3 | M1 for a complete method                                                    |
|          |                                                                                                                             |    |   | A1                                                                          |
| <b>b</b> | $2 \times 19 - 20 (=18)$ or $21 \times 3 - 20 - '25' (=18)$ or $'25' - '18'$                                                |    |   | M1 fit from (a) for a complete method to find age of 3 <sup>rd</sup> person |
|          |                                                                                                                             | 7  | 3 | M1 dep or for $18 - 25$                                                     |
|          |                                                                                                                             |    |   | A1 fit from answer in (a)                                                   |

**14 - (4MA0-W 2017-Paper 1FR-Q4) - STATISTICS**

|          |                 |             |   |
|----------|-----------------|-------------|---|
| <b>a</b> |                 | 20          | 1 |
| <b>b</b> |                 | 9           | 1 |
| <b>c</b> |                 | Argentina   | 1 |
| <b>d</b> |                 | explanation | 1 |
| <b>e</b> |                 | bar drawn   | 1 |
| <b>f</b> | E.g. $626 : 32$ | $313 : 16$  | 2 |

**15 - (4MA0-W 2017-Paper 1FR-Q18) - STATISTICS**

|          |                                                                                                  |                    |   |
|----------|--------------------------------------------------------------------------------------------------|--------------------|---|
| <b>a</b> |                                                                                                  | $100 < w \leq 110$ | 1 |
| <b>b</b> | $85 \times 3 + 95 \times 5 + 105 \times 7 + 115 \times 4 + 125$<br>$255 + 475 + 735 + 460 + 125$ | 2050               | 3 |

**16 - (4MA0-S 2018-Paper 1FR-Q2) - STATISTICS**

|     |                    |                                    |   |                                                                                                  |
|-----|--------------------|------------------------------------|---|--------------------------------------------------------------------------------------------------|
| (a) |                    | 5                                  | 1 | B1                                                                                               |
| (b) |                    | bar drawn, height 9, labelled Jing | 1 | B1 Do not penalise bar width                                                                     |
| (c) | $6 + '5' + 11 + 9$ | 31                                 | 2 | M1 fit from (a)<br>A1                                                                            |
| (d) | 1 shield = 2 votes | $4\frac{1}{2}$ shields drawn       | 2 | M1 Correct scale or 4 or 5 shield drawn.<br>A1 Allow any reasonable attempt for the half shield. |

exam m (A+) te

**17 - (4MA0-S 2018-Paper 1FR-Q10) - STATISTICS, PROBABILITY**

|     |                            |                |   |                                                                                         |
|-----|----------------------------|----------------|---|-----------------------------------------------------------------------------------------|
| (a) | 7, 8, 9, 9, 10, 10, 10, 12 | $9\frac{1}{2}$ | 2 | M1 List eight values in order, condone one omission (ascending or descending).<br>A1 oe |
| (b) | $12-7$                     | 5              | 2 | M1 Identify 7 and 12<br>A1                                                              |
| (c) |                            | $\frac{3}{8}$  | 1 | B1 0.375                                                                                |
| (d) |                            | $\frac{1}{6}$  | 1 | B1 oe 0.16, decimal correct to 2DP.<br>Not 0.16                                         |
| (e) | $60 \times \frac{5}{6}$    | 50             | 2 | M1<br>A1 NB: $\frac{50}{60}$ gains M1 A0                                                |

**18 - (4MA0-S 2018-Paper 1FR-Q18) - STATISTICS**

|     |                                                                                                                                                                                                                                                               |                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) |                                                                                                                                                                                                                                                               | $4-6$          | 1      | B1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| (b) | $2 \times 5 + 5 \times 12 + 8 \times 10 + 11 \times 4 + 14 \times 1$<br><b>or</b><br>$10 + 60 + 80 + 44 + 14 (= 208)$<br><br>$\frac{2 \times 5 + 5 \times 12 + 8 \times 10 + 11 \times 4 + 14 \times 1}{5 + 12 + 10 + 4 + 1} \left( = \frac{208}{32} \right)$ | $6.5$<br>$6.5$ | 4<br>4 | M2 for at least 4 correct products added (need not be evaluated)<br>If not M2 then award<br>M1 for consistent use of value within interval (including end points) for at least 4 products which must be added<br><b>OR</b><br>correct mid-points used for at least 4 products and not added<br><br>M1 dep on at least M1<br>Allow division by their $\sum f$<br>provided addition or total under column seen<br><br>A1 for 6.5 <b>or</b> $6\frac{1}{2}$<br>allow 6 <b>or</b> 7 if 6.5 oe seen or $208 \div 32$ seen |

**19 - (4MA0-W 2018-Paper 1FR-Q7) - STATISTICS**

|     |                               |             |   |                                                                                                    |
|-----|-------------------------------|-------------|---|----------------------------------------------------------------------------------------------------|
| (a) |                               | 160         | 1 | B1 (accept 160 000)                                                                                |
| (b) | $270\,000 - 80\,000$          | 190         | 2 | M1 subtract two areas ( at least one correct), allowing suppression of 000s<br>A1 (accept 190 000) |
| (c) |                               | Correct bar | 1 | B1                                                                                                 |
| (d) | $140000 \times \frac{7}{100}$ | 9800        | 2 | M1<br>A1                                                                                           |

**20 - (4MA0-W 2018-Paper 1FR-Q9) - STATISTICS**

|        |                                           |     |   |                                         |
|--------|-------------------------------------------|-----|---|-----------------------------------------|
| (a)(i) | 18, 22, 23, 26, 27, 31, 31, 34, 41, 47    | 29  | 2 | M1 order and identify middle pair<br>A1 |
| (ii)   |                                           | 50% | 1 | B1 ft answer to (i)                     |
| (b)    | $(22+18+31+31+41+26+27+47+34+23) \div 10$ | 30  | 2 | M1<br>A1                                |
| (c)    | $18 + 32$                                 | 50  | 2 | M1<br>A1                                |

## 1 - (4MA0-S 2015-Paper 1FR-Q11) - PROBABILITY

|     |                                                                                                                   |      |
|-----|-------------------------------------------------------------------------------------------------------------------|------|
| (a) | (2,1) (2,2) (2,3) (2,4) (2,5) (2,6)<br>(3,1) (3,2) (3,3) (3,4) (3,5) (3,6)<br>(5,1) (5,2) (5,3) (5,4) (5,5) (5,6) |      |
| (b) |                                                                                                                   | 7/18 |

## 2 - (4MA0-W 2015-Paper 1FR-Q11) - PROBABILITY

|           |                 |               |
|-----------|-----------------|---------------|
| (a) (i)   |                 | $\frac{1}{6}$ |
| (a) (ii)  |                 | 0             |
| (a) (iii) |                 | $\frac{4}{6}$ |
| (b)       | $1 - 0.7$       | 0.3           |
| (c)       | $80 \times 0.7$ | 56            |

## 3 - (4MA0-S 2016-Paper 1FR-Q16) - PROBABILITY

|          |                                                                          |       |   |                                                                       |
|----------|--------------------------------------------------------------------------|-------|---|-----------------------------------------------------------------------|
| (a) (i)  |                                                                          | 5/50  | 1 | B1oe                                                                  |
| (a) (ii) | $1 - \frac{35+5}{50}$                                                    | 10/50 | 2 | M1ft $1 - \frac{35+5}{50}$ or $50 - 35 - 5$ or 10<br>A1ft             |
| (b)      | $\frac{35}{50} \times 300$ oe, eg $35 \times 6$ , $0.7 \times 300$ , etc | 210   | 2 | M1 A fully correct method<br>A1 Cao (award $\frac{210}{300}$ M1 only) |

## 4 - (4MA0-S 2016-Paper 1FR-Q18) - PROBABILITY

|     |                                        |      |   |             |
|-----|----------------------------------------|------|---|-------------|
| (a) |                                        | 0    | 1 | B1          |
| (b) | $1 - (0.1 + 0.15 + 0.05 + 0.2 + 0.15)$ | 0.35 | 2 | M1<br>A1 oe |

## 5 - (4MA0-S 2016-Paper 1FR-Q25) - PROBABILITY

|                                                                                                            |     |   |                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------|-----|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $3 \times 13 + 10 \times 10 + 17 \times 16 + 24 \times 7 + 31 \times 4$<br>Or $39 + 100 + 272 + 168 + 124$ | 703 | 3 | M1 For at least 2 products $f \times x$ consistently within intervals (including end points)<br>M1 For completely correct method (condone 1 error)<br>NB: Products do not need to be evaluated<br>A1 cao<br>Do not ISW to find mean<br>SC award 2 marks for 14.06 if no other marks gained |
|------------------------------------------------------------------------------------------------------------|-----|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 6 - (4MA0-W 2016-Paper 1FR-Q15) - PROBABILITY

|         |                                                                                                             |     |
|---------|-------------------------------------------------------------------------------------------------------------|-----|
| (a)     | $1 - 0.5 - 0.15 - 0.05$                                                                                     |     |
|         |                                                                                                             | 0.3 |
| (b) (i) | $40 \times 0.15$                                                                                            |     |
|         |                                                                                                             | 6   |
| (ii)    | $40 \times 0.5$ or 20 <b>and</b> $40 \times 0.05$ or 2                                                      |     |
|         | "20" $\times$ 1 + "6" $\times$ 5 + "2" $\times$ 10                                                          |     |
|         |                                                                                                             | 70  |
|         | <b>Alternative Method</b><br>$1 \times 0.50 + 5 \times 0.15 + 10 \times 0.05$ or 1.75<br>"1.75" $\times$ 40 | 70  |

## 7 - (4MA0-S 2017-Paper 1FR-Q3) - PROBABILITY

|   |  |                           |   |    |
|---|--|---------------------------|---|----|
| a |  | $\times$ at 0.5           | 1 | B1 |
| b |  | $\times$ at $\frac{1}{6}$ | 1 | B1 |
| c |  | $\times$ at 0             | 1 | B1 |

## 8 - (4MA0-W 2017-Paper 1FR-Q7) - PROBABILITY

|     |  |                            |   |
|-----|--|----------------------------|---|
| ai  |  | unlikely                   | 1 |
| aii |  | impossible                 | 1 |
| b   |  | $\frac{3}{8}$              | 2 |
| c   |  | E,W E,X F,W F,X<br>G,W G,X | 2 |

## 9 - (4MA0-S 2018-Paper 1FR-Q10) - STATISTICS, PROBABILITY

|     |                            |                |   |                                                                                         |
|-----|----------------------------|----------------|---|-----------------------------------------------------------------------------------------|
| (a) | 7, 8, 9, 9, 10, 10, 10, 12 | $9\frac{1}{2}$ | 2 | M1 List eight values in order, condone one omission (ascending or descending).<br>A1 oe |
| (b) | 12-7                       | 5              | 2 | M1 Identify 7 and 12<br>A1                                                              |
| (c) |                            | $\frac{3}{8}$  | 1 | B1 0.375                                                                                |
| (d) |                            | $\frac{1}{6}$  | 1 | B1 oe 0.16, decimal correct to 2DP. Not 0.16                                            |
| (e) | $60 \times \frac{5}{6}$    | 50             | 2 | M1<br>A1 NB: $\frac{50}{60}$ gains M1 A0                                                |

**10** - (4MA0-W 2018-Paper 1FR-Q10) - *PROBABILITY*

|     |                                                                      |                |   |                                     |
|-----|----------------------------------------------------------------------|----------------|---|-------------------------------------|
| (a) |                                                                      | B              | 1 | B1                                  |
| (b) |                                                                      | $\frac{1}{7}$  | 1 | B1                                  |
| (c) |                                                                      | $\frac{5}{7}$  | 1 | B1                                  |
| (d) | $0.5 = \frac{5}{10}$ so 3 grey tiles with C<br>Total of 4 grey tiles | $\frac{4}{10}$ | 2 | M1 for $\frac{5}{10}$ or 3<br>A1 oe |

## 1 - (4MA0-S 2015-Paper 1FR-Q17) - TRANSFORMATION

|     |  |                                                     |
|-----|--|-----------------------------------------------------|
| (a) |  | Reflection<br>(in the line) $x = 2$                 |
| (b) |  | Vertices at $(1, -1)$ $(4, -1)$ $(4, -3)$ $(3, -3)$ |
| (c) |  | Vertices at $(3, 2)$ $(3, 4)$ $(4, 4)$ $(4, 3)$     |

## 2 - (4MA0-W 2015-Paper 1FR-Q16) - TRANSFORMATION

|     |  |                                 |
|-----|--|---------------------------------|
| (a) |  | correct reflection              |
| (b) |  | Translation 4 right<br>and 6 up |

## 3 - (4MA0-S 2016-Paper 1FR-Q22) - TRANSFORMATION

|     |  |                                          |   |    |                                                                                                                                                                                                            |
|-----|--|------------------------------------------|---|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) |  | Translation<br>5 to the right and 4 down | 2 | B2 | B1 for translation<br>B1 for 5 to the right and 4 down<br>or $\begin{pmatrix} 5 \\ -4 \end{pmatrix}$<br>These marks are independent but<br>award no marks if the answer is not a<br>single transformation. |
| (b) |  | R correct                                | 2 | B2 | $(-2, -1)$ , $(0, -1)$ , $(0, -2)$ ,<br>$(-1, -2)$ ,<br>Condone omission of label<br>B1 for $90^\circ$ anticlockwise rotation<br>about $(1,0)$ or for<br>Correct orientation but incorrect<br>position.    |

## 4 - (4MA0-W 2016-Paper 1FR-Q13) - TRANSFORMATION

|     |  |                                                                             |
|-----|--|-----------------------------------------------------------------------------|
| (a) |  | Reflection in $y = 1$                                                       |
| (b) |  | Parallelogram with vertices $(3, -3)$ , $(9, -3)$ , $(6, -6)$ and $(0, -6)$ |
| (c) |  | Parallelogram with vertices $(-3, 1)$ , $(-3, 3)$ , $(-2, 4)$ , $(-2, 2)$   |

**5 - (4MA0-S 2017-Paper 1FR-Q23) - TRANSFORMATION**

|          |  |                                                     |   |                                                                                                                                                                                                                 |
|----------|--|-----------------------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>a</b> |  | Correct trapezium<br>(1, -1) (1, -2) (3, 1) (3, -2) | 1 | B1                                                                                                                                                                                                              |
| <b>b</b> |  | Correct triangle<br>(-1, -2) (-1, 0) (2, -2)        | 2 | B2<br>(B1 for a rotation of $90^\circ$ clockwise about a different centre<br>i.e. a triangle in the same orientation as the correct triangle<br><b>or</b><br>rotation by $90^\circ$ anticlockwise about (0, 2)) |

**6 - (4MA0-W 2017-Paper 1FR-Q15) - TRANSFORMATION**

|          |  |                                             |   |
|----------|--|---------------------------------------------|---|
| <b>a</b> |  | Reflection in $y = -1$                      | 2 |
| <b>b</b> |  | Vertices at (-2, 1) (-2, 6) (-5, 1) (-5, 3) | 2 |