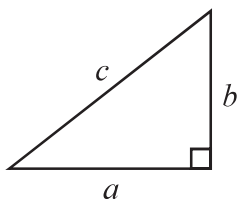


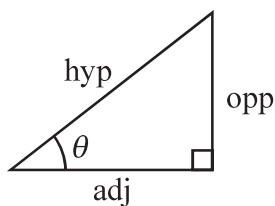
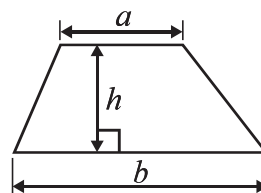
International GCSE MATHEMATICS

FORMULAE SHEET – FOUNDATION TIER

Pythagoras' Theorem
 $a^2 + b^2 = c^2$



Area of a trapezium = $\frac{1}{2}(a + b)h$



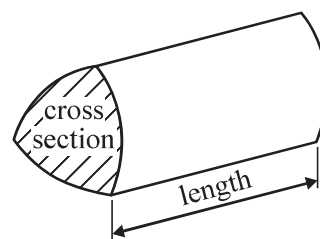
adj = hyp \times cos θ
 opp = hyp \times sin θ
 opp = adj \times tan θ

Volume of prism = area of cross section \times length

or $\sin \theta = \frac{\text{opp}}{\text{hyp}}$

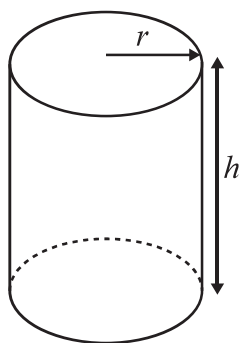
$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

$\tan \theta = \frac{\text{opp}}{\text{adj}}$



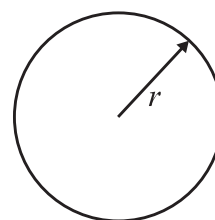
Circumference of circle = $2\pi r$

Area of circle = πr^2



Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi r h$



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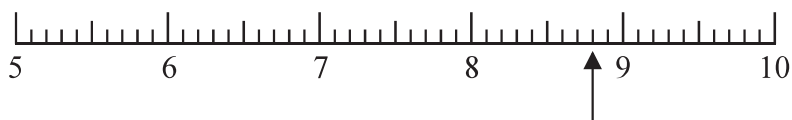
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Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (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)

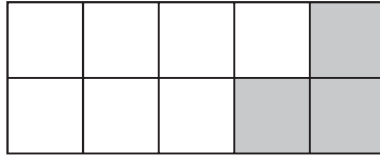
(d) Work out the number that is exactly halfway between 1.4 and 4.8

.....
(2)

(Total for Question 1 is 5 marks)



- 2 Here is a rectangle made from centimetre squares.



- (a) Find the area of this rectangle.

..... cm²
(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)

(Total for Question 2 is 6 marks)

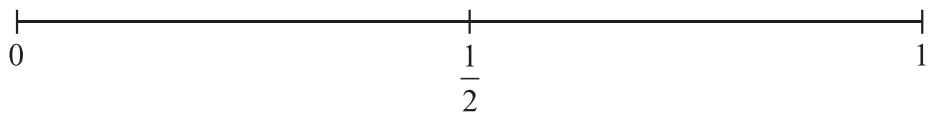


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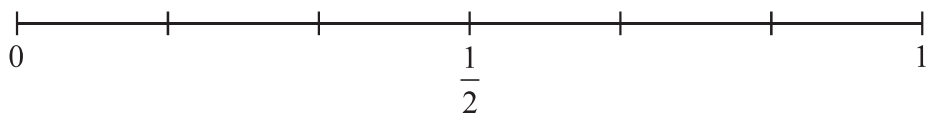
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3 (a) On the probability scale, mark with a cross (×) the probability that when a fair coin is thrown once it lands heads.



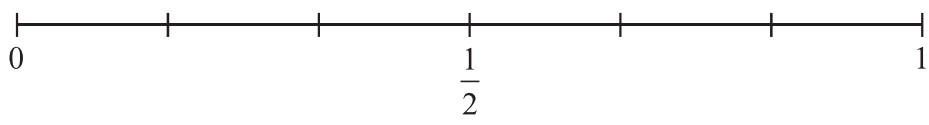
(1)

(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

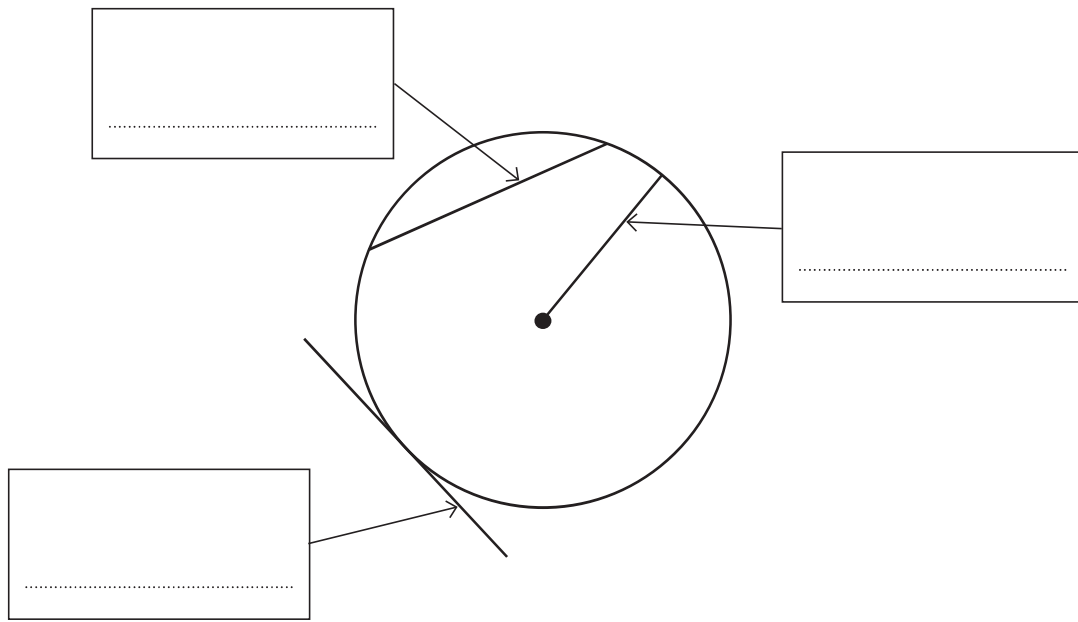


(1)

(Total for Question 3 is 3 marks)



4 Here is a circle with some straight lines.



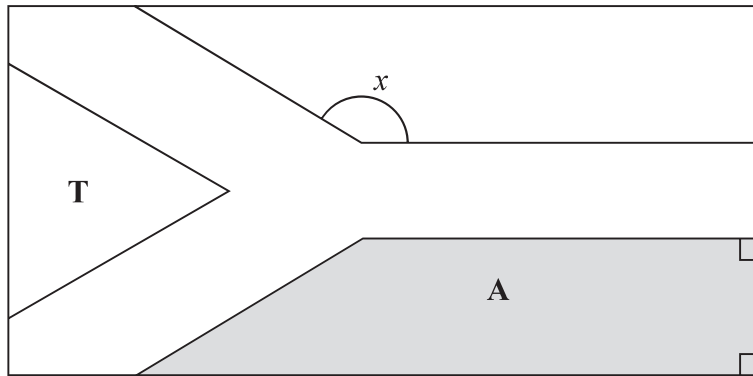
For each line, choose a word from the list below that describes the line to which the arrow points. Write each answer in the box.

radius circumference diameter sector tangent chord arc

(Total for Question 4 is 3 marks)



- 5 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)

(Total for Question 5 is 3 marks)



6 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)

(Total for Question 6 is 3 marks)



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7 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)

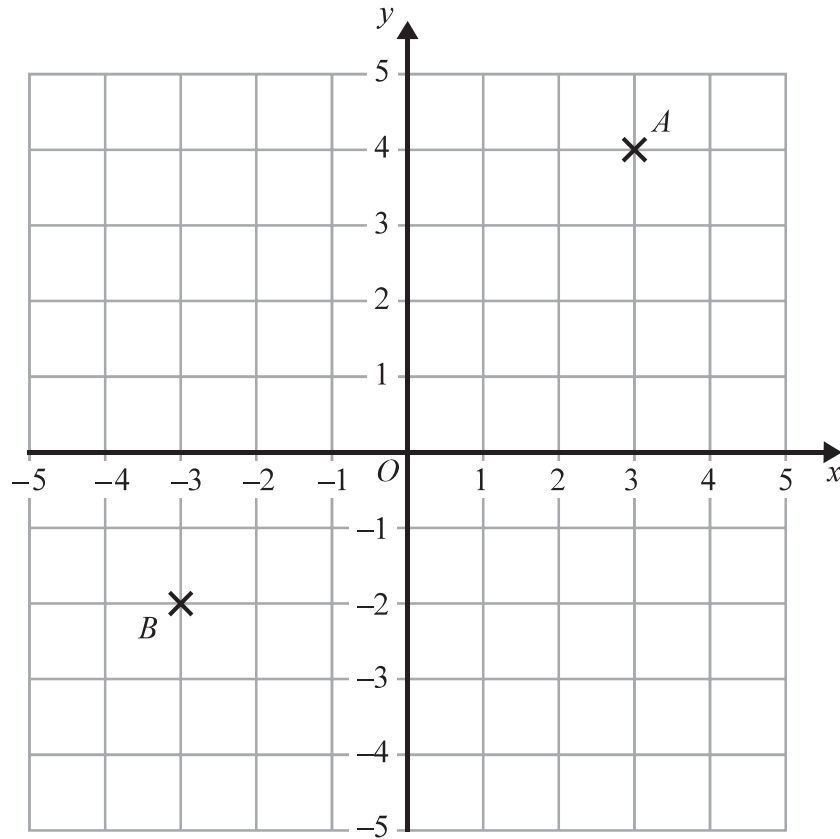
The input is x
The output is y

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

.....
(2)

(Total for Question 7 is 5 marks)





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

(.....,)
(1)

- (b) On the grid, mark with a cross (\times) 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)

(Total for Question 8 is 4 marks)



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9 Hibiru 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)

Hibiru 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.

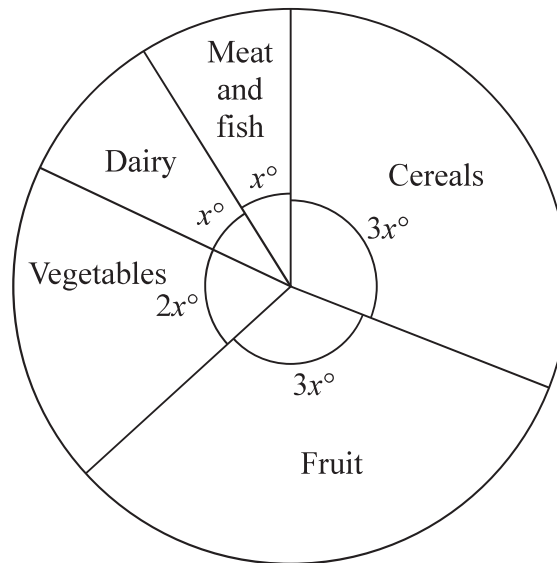
.....
(3)

(Total for Question 9 is 4 marks)



- 10 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)

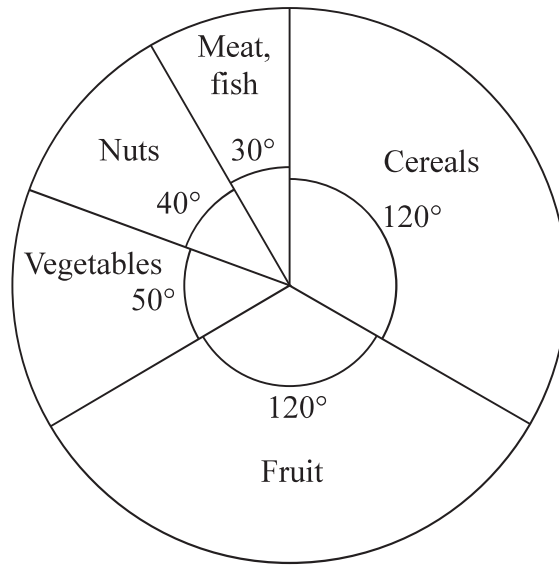
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The pie chart below shows information about the typical intake of food, in grams, each week for any man living in North Africa.



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.

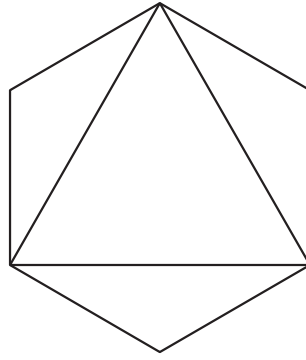
..... grams

(3)

(Total for Question 10 is 6 marks)



11 Here is a shape.



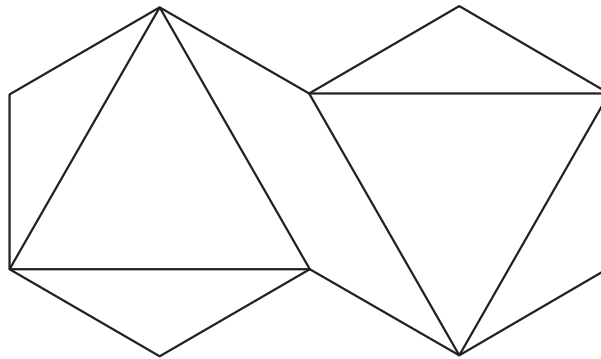
(a) On the shape, draw all the lines of symmetry of the shape.

(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)

(Total for Question 11 is 4 marks)



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

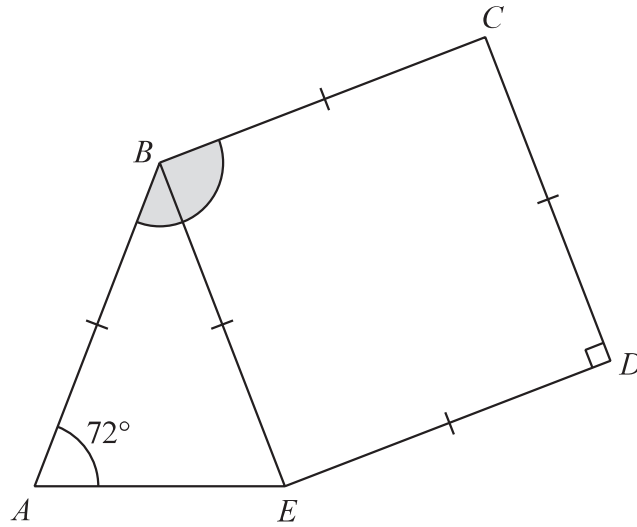


Diagram **NOT** accurately drawn

Angle $BAE = 72^\circ$

Work out the size of angle ABC .

(Total for Question 12 is 3 marks)



- 13 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

(Total for Question 13 is 4 marks)



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14 Here is a square.

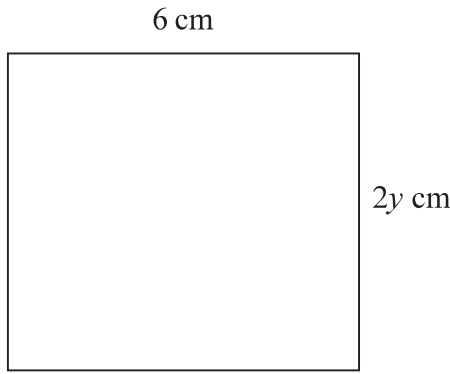


Diagram **NOT** accurately drawn

(a) Find the value of y .

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

Here is a rectangle.

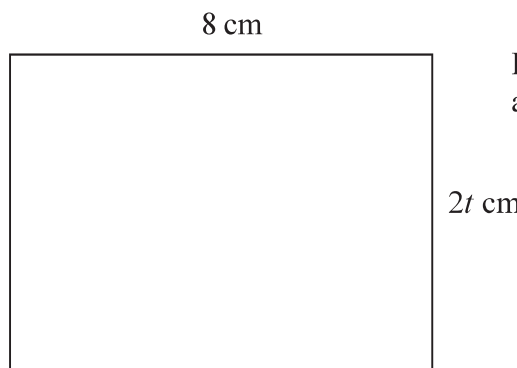


Diagram **NOT** accurately drawn

The rectangle has an area of 80 cm^2

(b) Find the value of t .

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

(Total for Question 14 is 3 marks)



15 (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)

(Total for Question 15 is 4 marks)

16 $a = 6$ $b = 2.84$ $c = \sqrt{5}$

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

.....
(Total for Question 16 is 2 marks)



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17 Solve $5x - 8 = x - 10$
Show clear algebraic working.

$x = \dots\dots\dots$

(Total for Question 17 is 3 marks)



18

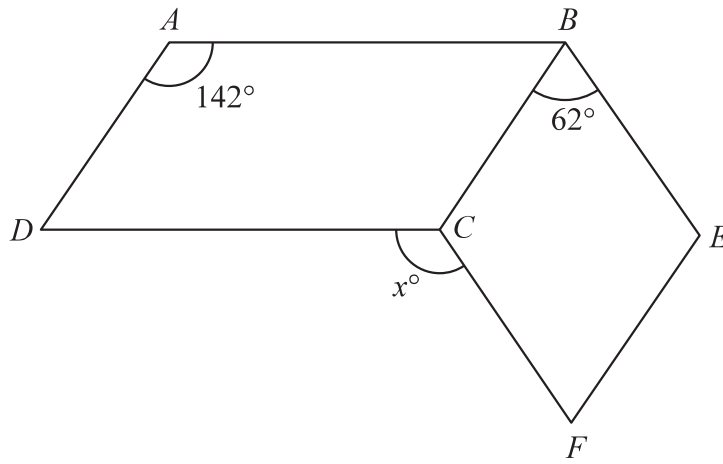


Diagram **NOT** accurately drawn

$ABCD$ is a parallelogram.
 $BEFC$ is a rhombus.

Angle $DAB = 142^\circ$
Angle $CBE = 62^\circ$

Calculate the value of x .

$x = \dots\dots\dots$

(Total for Question 18 is 3 marks)

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19 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)

(Total for Question 19 is 8 marks)



20 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)

(Total for Question 20 is 4 marks)



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21 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)

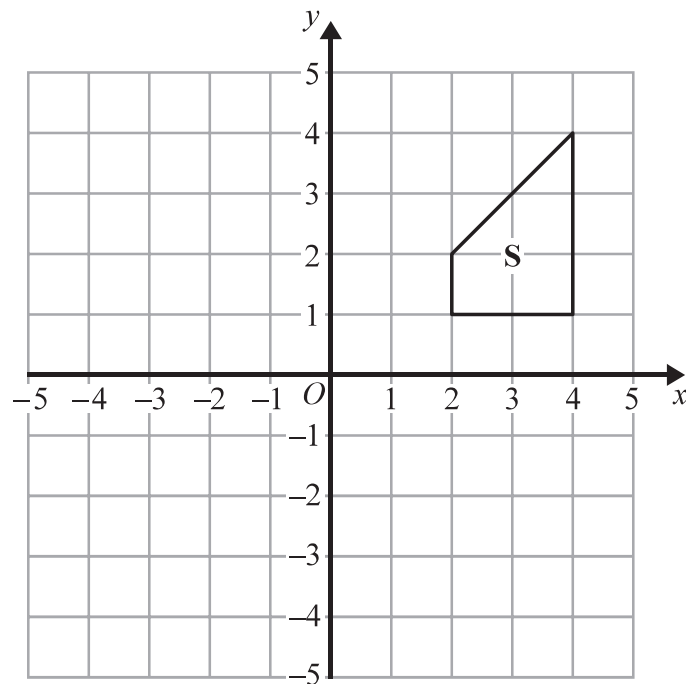
(Total for Question 21 is 6 marks)



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

(Total for Question 22 is 3 marks)

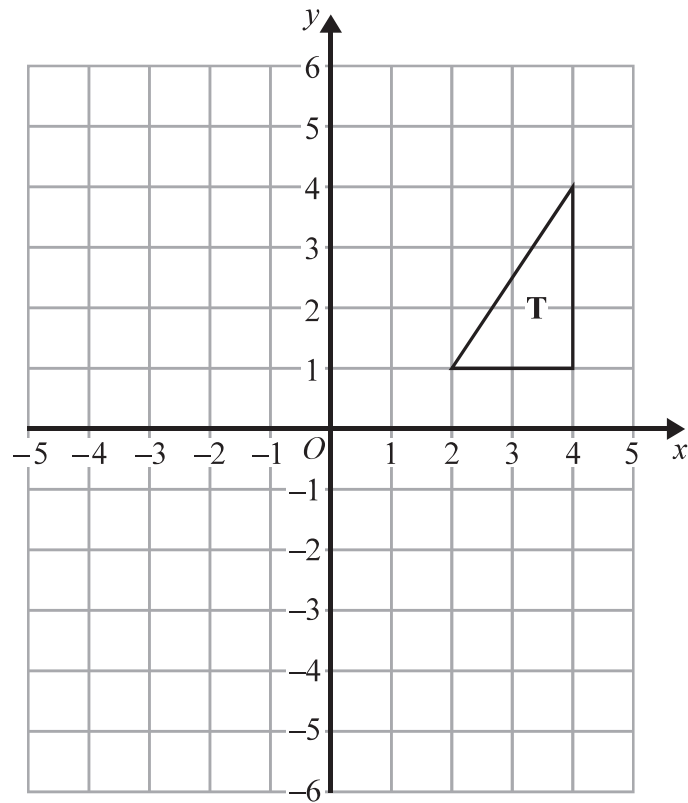
23



- (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° clockwise about $(0, 2)$.

(2)

(Total for Question 23 is 3 marks)

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

(Total for Question 24 is 2 marks)



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25 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)

(Total for Question 25 is 6 marks)

TOTAL FOR PAPER IS 100 MARKS

