Pearson

WEEK 1 TASKS

(Higher 4-6)

Remember to mark your work when completed. This is a crucial part of revision in maths. Make a note of any topics that you need additional support with and ask for help.

You may find it useful to revisit the same questions a week later and check that you can then answer questions that you were previously unsure about or could not answer.

Remember: you can do this!

WEEK 1 TASK 1

Estimated completion time = 25 minutes.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Solve $7x - 27 < 8$

.....

(Total for Question 1 is 2 marks)

---

2 Write 124 as a product of its prime factors.

.....

(Total for Question 2 is 2 marks)

---

3 A delivery company has a total of 160 cars and vans.

the number of cars : the number of vans = 3 : 7

Each car and each van uses electricity or diesel or petrol.

$\frac{1}{8}$ of the cars use electricity.
25% of the cars use diesel.
The rest of the cars use petrol.

Work out the number of cars that use petrol.
You must show all your working.

.....

(Total for Question 3 is 5 marks)

4 (*a*) Write 1.63×10^{-3} as an ordinary number.

.....

(1)

(*b*) Write 438 000 in standard form.

.....

(1)

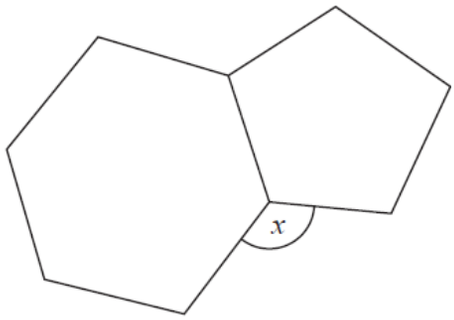
(*c*) Work out $(4 \times 10^{3}) \times (6 \times 10^{-5})$
Give your answer in standard form.

.....

(2)

(Total for Question 4 is 4 marks)

5 Here is a regular hexagon and a regular pentagon.



Work out the size of the angle marked x.
You must show all your working.

.....°

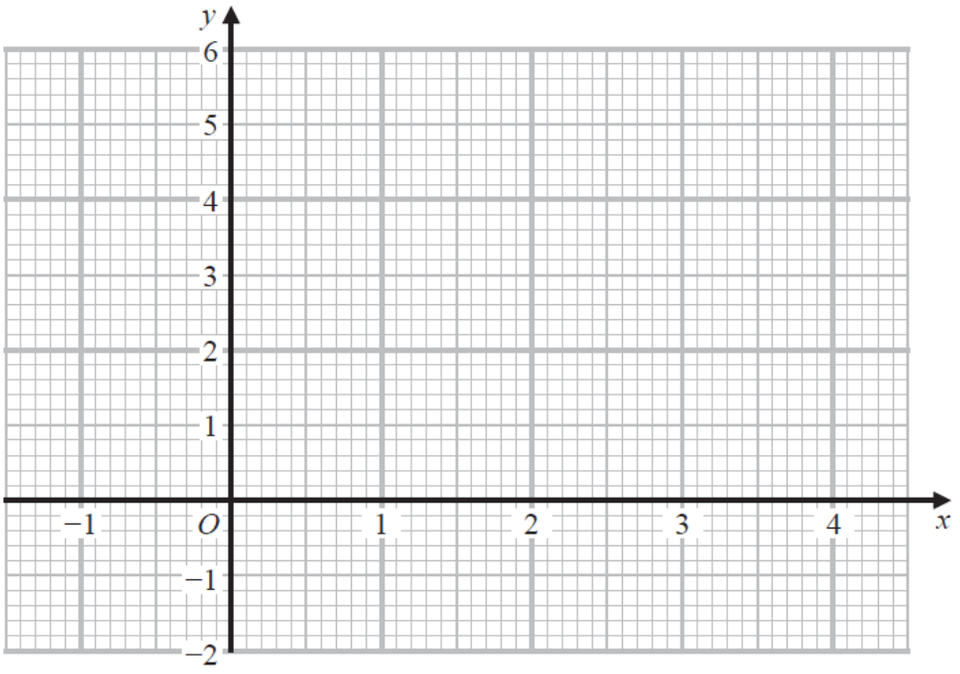
(Total for Question 5 is 3 marks)

6 (*a*) Complete the table of values for $y = x^2 - 3x + 1$

x	-1	0	1	2	3	4
y		1	-1			

(2)

(*b*) On the grid, draw the graph of $y = x^2 - 3x + 1$ for values of x from -1 to 4



(2)

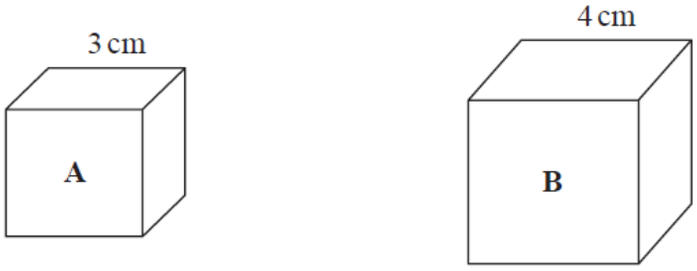
(*c*) Using your graph, find estimates for the solutions of the equation $x^2 - 3x + 1 = 0$

.....

(2)

(Total for Question 6 is 6 marks)

7 Here are two cubes, **A** and **B**.



Cube **A** has a mass of 81 g.

Cube **B** has a mass of 128 g.

Work out

the density of cube **A** : the density of cube **B**

Give your answer in the form $a : b$, where a and b are integers.

.....

(Total for Question 7 is 3 marks)

WEEK 1 TASK 2

Estimated completion time = 45 minutes.

Answer all questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

***1** Mano has three shelves of books.

There are x books on shelf **A**.
There are $(3x + 1)$ books on shelf **B**.
There are $(2x - 5)$ books on shelf **C**.

There is a total of 44 books on the three shelves.
All the books have the same mass.

The books on shelf **B** have a total mass of 7500 g.

Work out the total mass of the books on shelf **A**.

..... g

(Total for Question 1 is 5 marks)

***2** The mean length of 5 sticks is 4.2 cm.

Nawal measured the length of one of the sticks as 7 cm.

(*a*) Work out the mean length of the other 4 sticks.

..... cm

(3)

Nawal made a mistake.
The stick was not 7 cm long.
It was 17 cm long.

(*b*) How does this affect your answer to part (*a*)?

.....

.....

.....

(1)

(Total for Question 2 is 4 marks)

---

3 (*a*) Expand and simplify $(3x + 2)(2x - 5)$

.....

(2)

(*b*) Factorise $x^2 - 16$

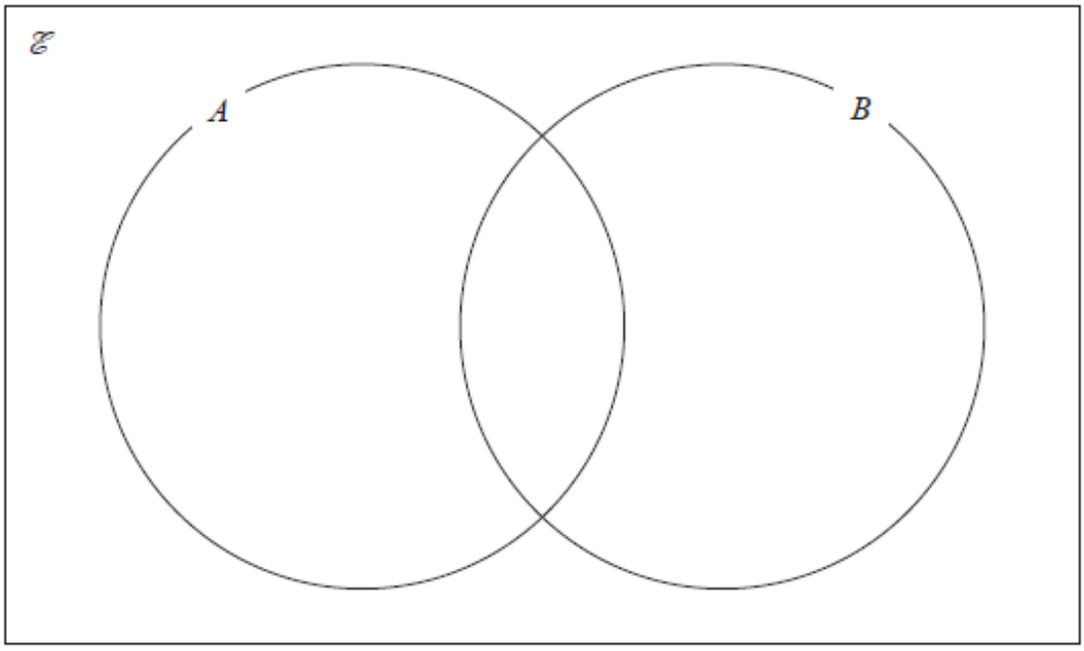
.....

(1)

(Total for Question 3 is 3 marks)

***4** $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
$A = \{\text{odd numbers}\}$
$B = \{\text{square numbers}\}$

(*a*) Complete the Venn diagram for this information.



(3)

A number is chosen at random from the universal set $\mathscr{E}$

(*b*) Find the probability that this number is in the set B'

.....

(2)

(Total for Question 4 is 5 marks)

***5** (i) Write down the value of 5^0

.....

(1)

(ii) Write down the value of 5^{-2}

.....

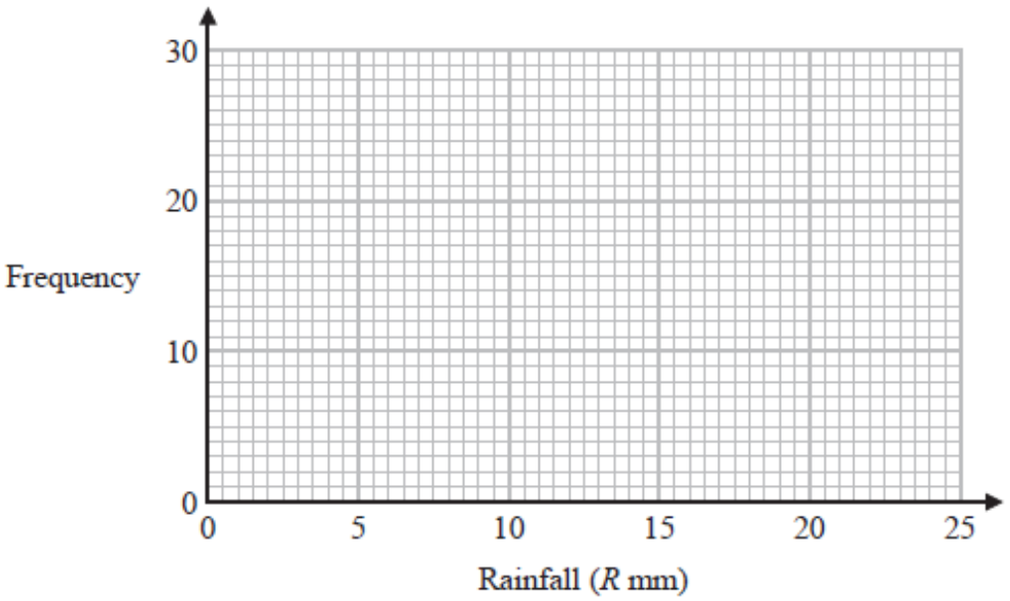
(1)

(Total for Question 5 is 2 marks)

***6** The table shows information about the daily rainfall in a town for 60 days.

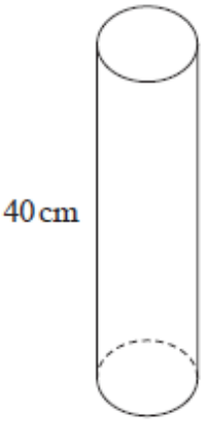
Rainfall (R mm)	**Frequency**
$0 \leq R < 5$	8
$5 \leq R < 10$	24
$10 \leq R < 15$	13
$15 \leq R < 20$	11
$20 \leq R < 25$	4

Draw a frequency polygon for this information.



(Total for Question 6 is 2 marks)

***7** The diagram shows a solid cylinder on a horizontal floor.



$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

The cylinder has a

volume of 1200 cm^3
height of 40 cm.

The cylinder exerts a force of 90 newtons on the floor.

Work out the pressure on the floor due to the cylinder.

..... newtons/cm^2

(Total for Question 7 is 3 marks)

***8** Work out 8.46 ÷ 0.15

.....

(Total for Question 8 is 3 marks)

9 Work out an estimate for $\dfrac{5.7 \times 8.2}{0.26}$

.....

(Total for Question 9 is 3 marks)

***10** The point P lies on the line AB.
Use ruler and compasses to construct an angle of 90° at P.
You must show all your construction lines.

(Total for Question 10 is 2 marks)

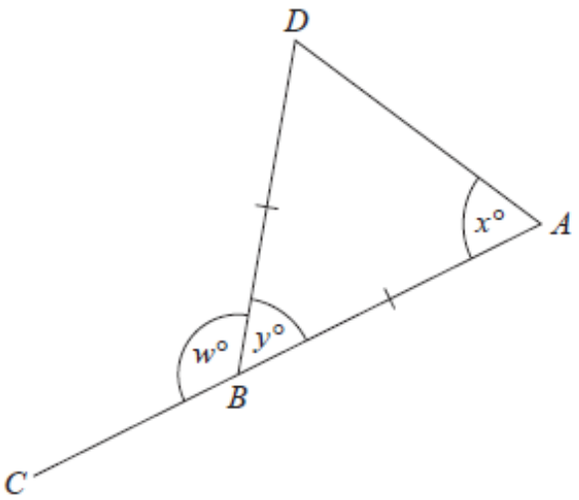
***11** A cube has a total surface area of 150 cm^2

Work out the volume of the cube.

..... cm^3

(Total for Question 11 is 4 marks)

***12** The diagram shows an isosceles triangle *ABD* and the straight line *ABC*.



BA = *BD*

x : *y* = 2 : 1

Work out the value of *w*.

w = ...

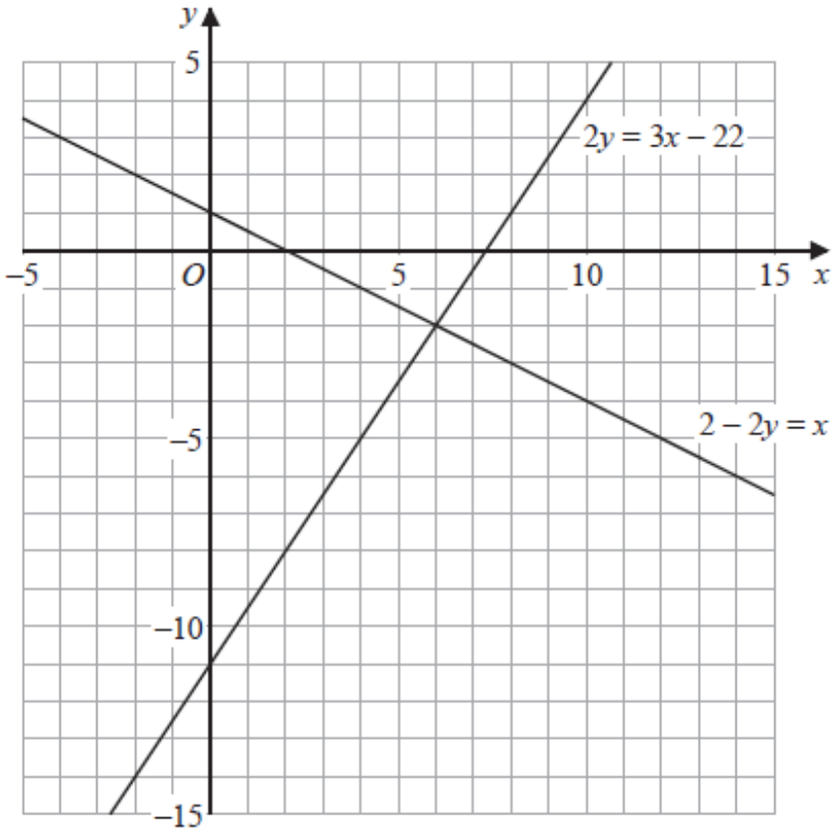
(Total for Question 12 is 4 marks)

13 Work out the value of $\dfrac{4^{-6} \times 4^{9}}{4}$

.....

(Total for Question 13 is 2 marks)

***14**



Use these graphs to solve the simultaneous equations

$$2 - 2y = x$$
$$2y = 3x - 22$$

x = ...

y = ...

(Total for Question 14 is 1 mark)

15 Write down the exact value of cos 60°

.....

(Total for Question 15 is 1 mark)

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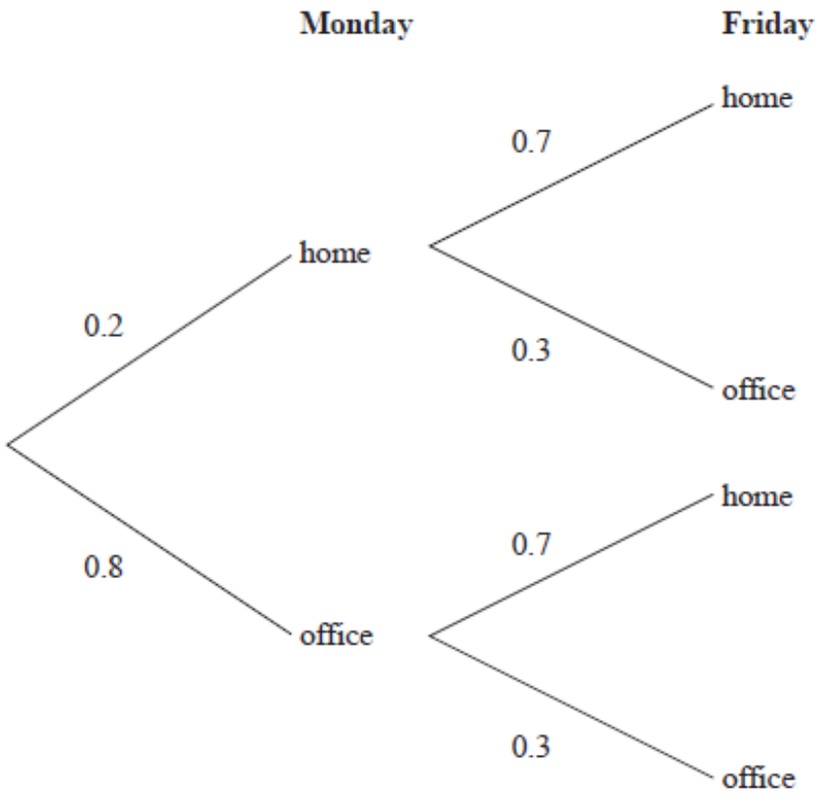
16 The probability tree diagram shows the probabilities that Shayla will work at home or will work at the office on two days next week.



Work out the probability that Shayla will work at home on Monday and work at the office on Friday.

.....

(Total for Question 16 is 2 marks

TOTAL FOR PAPER IS 46 MARKS

WEEK 1 TASK 3

Estimated completion time = 25 minutes.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (*a*) Simplify $(x^3)^5$

.....

(1)

(*b*) Expand and simplify $4(x + 3) + 7(4 - 2x)$

.....

(2)

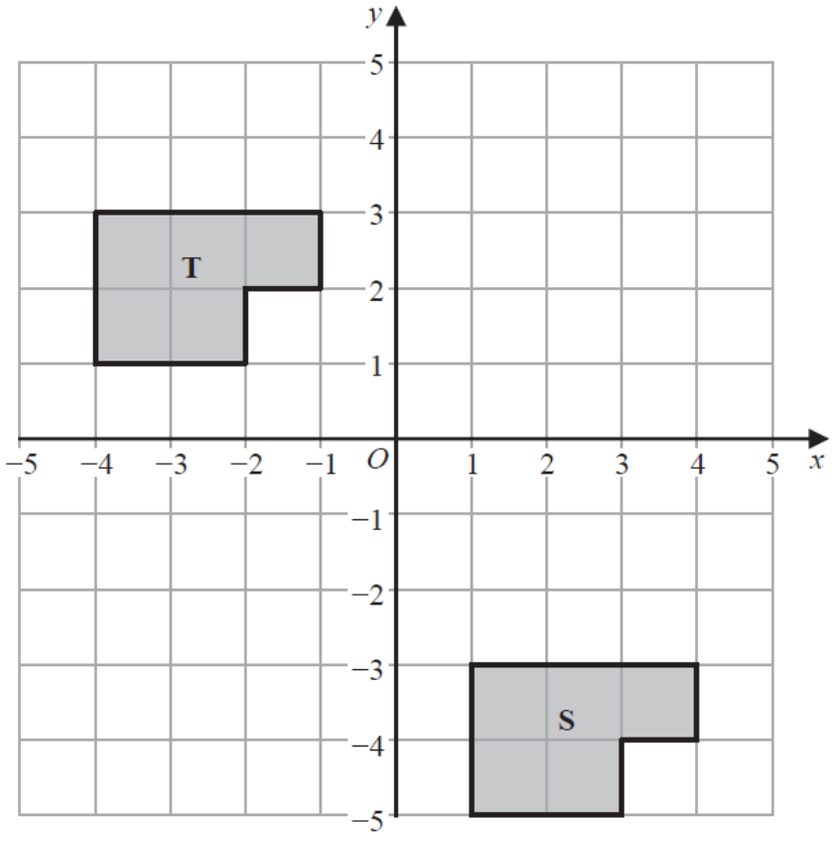
(*c*) Factorise fully $15x^3 + 3x^2y$

.....

(2)

(Total for Question 1 is 5 marks)

2



Describe fully the single transformation that maps shape **S** onto shape **T**.

.....

.....

.....

(Total for Question 2 is 2 marks)

---

3 The length of a football pitch is 90 metres, correct to the nearest metre.

Complete the error interval for the length of the football pitch.

..... m ≤ length < ..... m

(Total for Question 3 is 2 marks)

---

4 Festival A will be in a rectangular field with an area of 80 000 m^2
The greatest number of people allowed to attend Festival A is 425

Festival B will be in a rectangular field 700 m by 2000 m.
The greatest number of people allowed to attend Festival B is 6750

The area per person allowed for Festival B is greater than the area per person allowed for Festival A.

(*a*) How much greater?
Give your answer correct to the nearest whole number.

..... m^2
(4)

Callum says,

"300 cm^2 is the same as 3 m^2 because there are 100 cm in 1 m so you divide by 100"

Callum's method is wrong.

(*b*) Explain why.

.....

.....

.....

(1)

(Total for Question 4 is 5 marks)

5 The points L, M and N are such that LMN is a straight line.

The coordinates of L are $(-3, 1)$

The coordinates of M are $(4, 9)$

Given that $LM : MN = 2 : 3$,

find the coordinates of N.

(..... , ...)

(Total for Question 5 is 4 marks)

---

6 A new phone cost £679
The value of the phone decreases at a rate of 4% per year.

Work out the value of the phone at the end of 3 years.

£.....

(Total for Question 6 is 3 marks)

---

7 In Spain, Sam pays 27 euros for 18 litres of petrol.
In Wales, Leo pays £40.80 for 8 gallons of the same type of petrol.

1 euro = £0.85
4.5 litres = 1 gallon

Sam thinks that petrol is cheaper in Spain than in Wales.

Is Sam correct?
You must show how you get your answer.

(Total for Question 7 is 4 marks)

WEEK 1 TASK 4

Estimated completion time = 45 minutes.

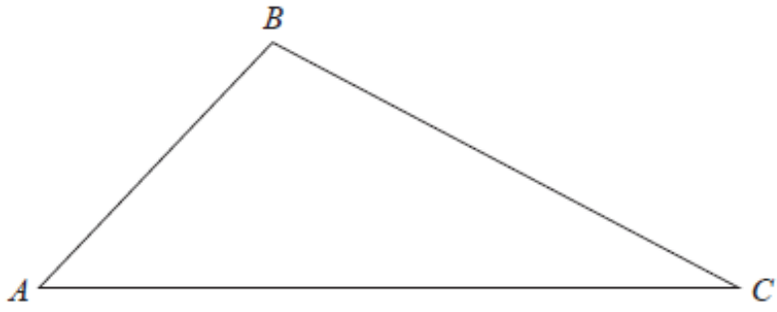
Answer all questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Here is a triangle.

(*a*) Measure the length of AC.



..... cm

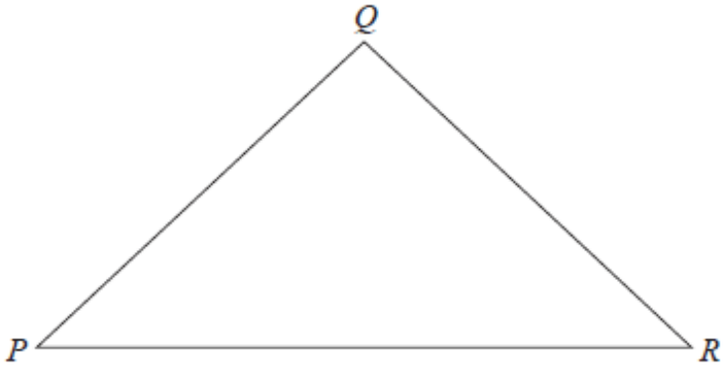
(1)

(*b*) Measure the size of angle B.

.....°

(1)

Here is a different triangle.



$QP = QR$

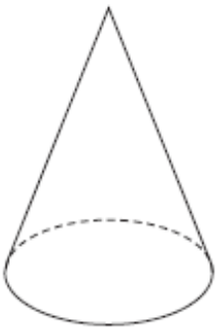
(*c*) Write down the mathematical name of this triangle.

.....

(1)

(Total for Question 1 is 3 marks)

2 Here is a 3-D shape.



(*a*) Write down the name of this 3-D shape.

.....

(1)

(*b*) In the space below, draw a sketch of a triangular prism.

(1)

(Total for Question 2 is 2 marks)

***3** Make g the subject of the formula $f = 3g + 11$

.....

(Total for Question 3 is 2 marks)

***4** A number, d, is rounded to 1 decimal place.

The result is 12.7

Complete the error interval for d.

..... $\leq d <$ .....

(Total for Question 4 is 2 marks)

---

5 Solve the simultaneous equations

$$3x + y = -4.5$$
$$4x + 3y = -3.5$$

$x =$ .....

$y =$ .....

(Total for Question 5 is 3 marks)

6 Ethan buys a box of 24 cans of lemonade for £7
There are 330 m*l* of lemonade in each can.

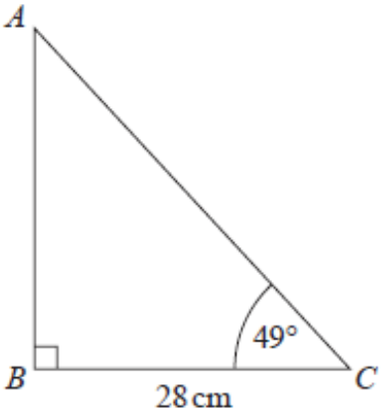
Work out the cost of 100 m*l* of lemonade.
Give your answer correct to the nearest penny.

.....p

(Total for Question 6 is 3 marks)

---

7 *ABC* is a right-angled triangle.



Calculate the length of *AB*.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 7 is 2 marks)

***8** Chris, Debbie and Errol share some money in the ratio 3 : 4 : 2
Debbie gets £120

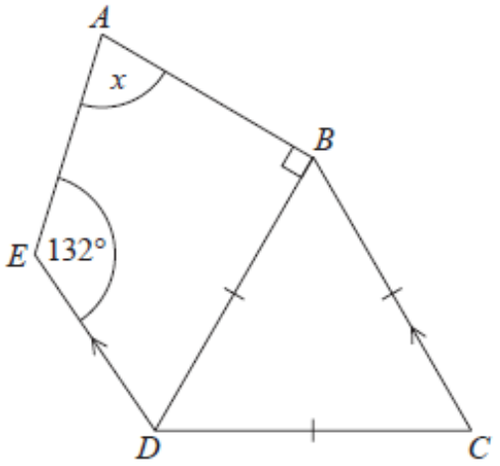
Chris then gives some of his share to Debbie and some of his share to Errol.
The money that Chris, Debbie and Errol each have is now in the ratio 2 : 5 : 3

How much money did Chris give to Errol?

£.....

(Total for Question 8 is 4 marks)

9 The diagram shows a quadrilateral *ABDE* and an equilateral triangle *BCD*.



CB is parallel to *DE*.

Angle *AED* = 132°

Work out the size of the angle marked *x*.
You must give a reason for each stage of your working.

.....°

(Total for Question 9 is 4 marks)

***10** Solve $\frac{2}{5}g - 4 < 6$

.....

(Total for Question 10 is 3 marks)

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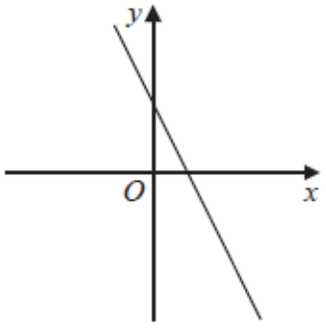
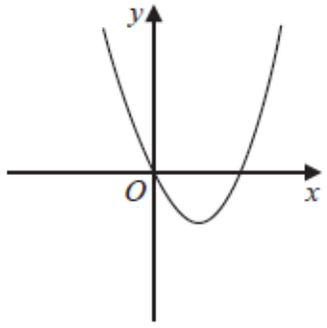
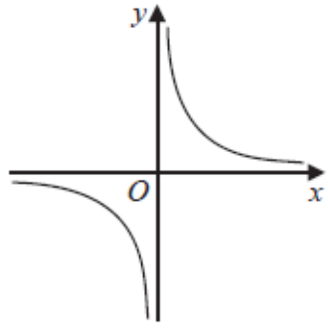
11 Here are five graphs.



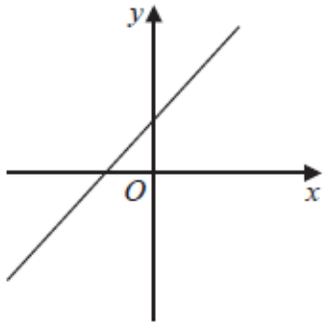
A



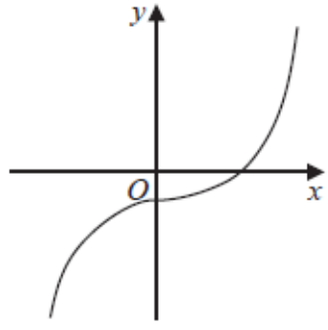
B



C



D



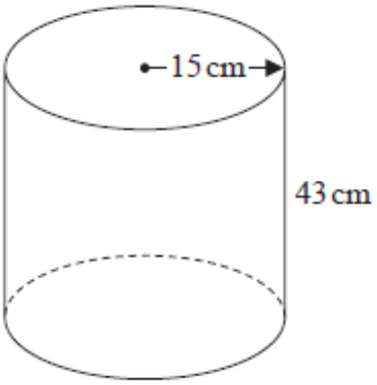
E

Equation	Graph
$y = x^2 - 4x$	
$y = x + 3$	
$y = x^3 - 2$	
$y = \frac{1}{x}$	
$y = 5 - 2x$	

Match the letter of each graph with its equation.

(Total for Question 11 is 3 marks)

***12** The diagram shows an empty tank in the shape of a cylinder.



The cylinder has radius 15 cm and height 43 cm.

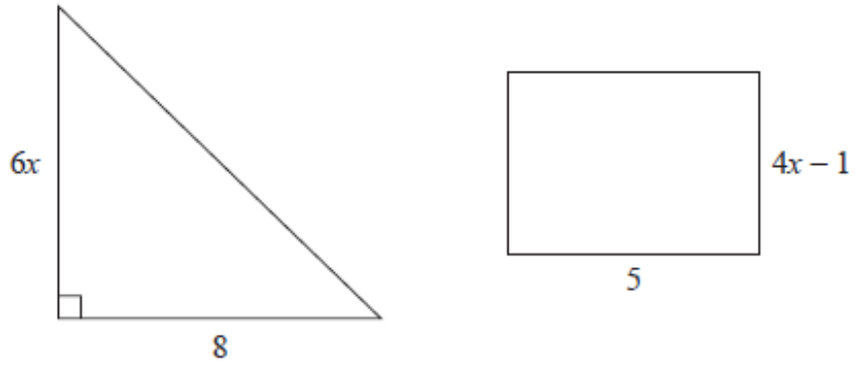
Water flows into the tank at a rate of 0.47 litres per minute.

Calculate the number of minutes it will take to completely fill the tank.
Give your answer correct to the nearest minute.

..... minutes

(Total for Question 12 is 4 marks)

***13** Here is a triangle and a rectangle.



All measurements are in centimetres.

The area of the triangle is 10 cm^2 greater than the area of the rectangle.

Work out the value of x.

x = ...

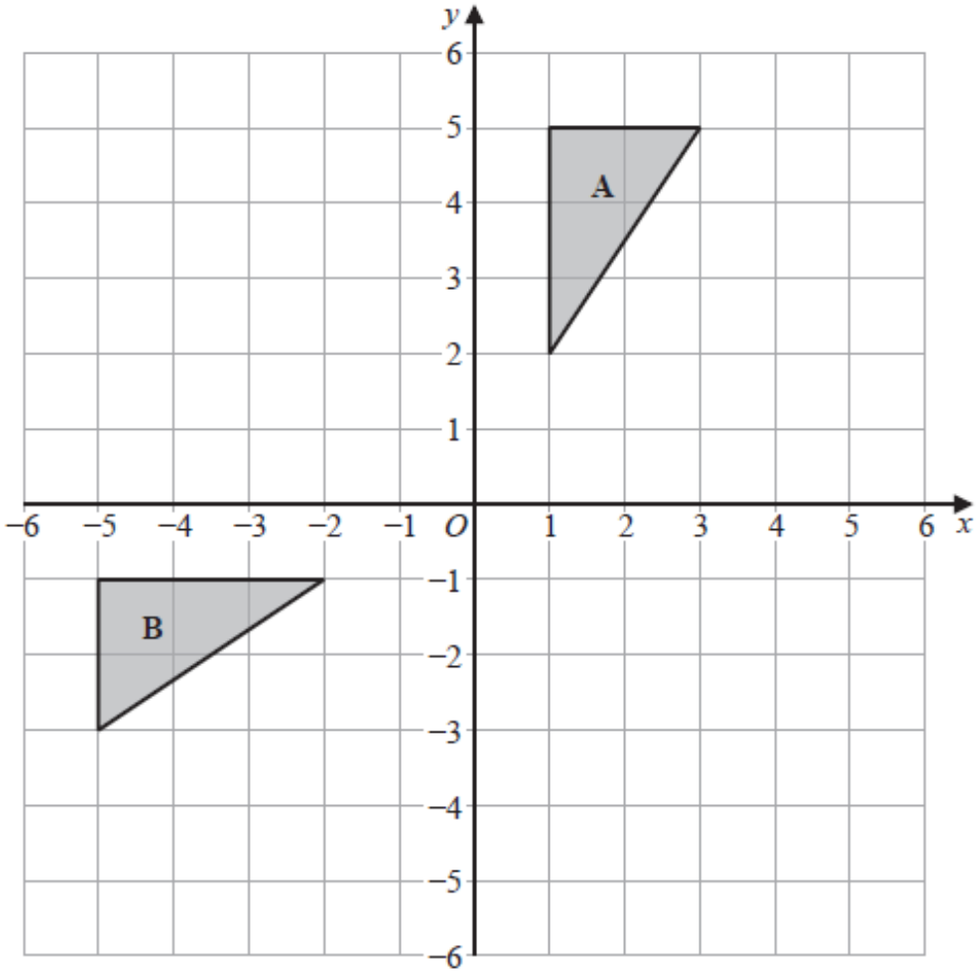
(Total for Question 13 is 4 marks)

***14** Work out the value of the reciprocal of 0.625

.....

(Total for Question 14 is 1 mark)

15



Describe fully the single transformation that maps triangle **A** onto triangle **B**.

.....

.....

(Total for Question 15 is 2 marks)

***16** The bearing of port *B* from port *A* is 147°

Work out the bearing of port *A* from port *B*.

.....°

(Total for Question 16 is 2 marks)

TOTAL FOR PAPER IS 44 MARKS

WEEK 1 TASK 5

Estimated completion time = 25 minutes.

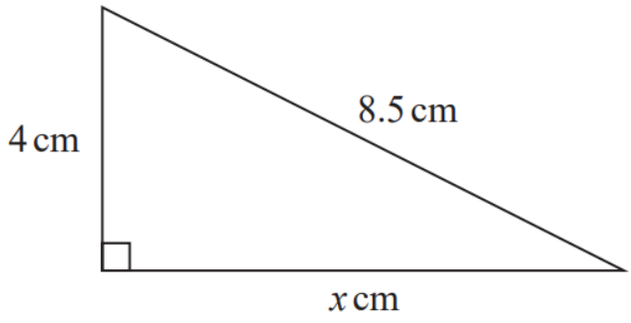
Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Here is a right-angled triangle.

Work out the value of x.



x = ...

(Total for Question 1 is 2 marks)

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2 $T = 4m^2 - 11$

(a) Work out the value of T when $m = -3$

T = ... (2)

(b) Make p the subject of the formula $d = 3p + 4$

..... (2)

(Total for Question 2 is 4 marks)

---

3 Rick, Selma and Tony are playing a game with counters.

Rick has some counters.

Selma has twice as many counters as Rick.

Tony has 6 counters less than Selma.

In total they have 54 counters.

the number of counters Rick has : the number of counters Tony has = 1 : p

Work out the value of p.

p = ...

(Total for Question 3 is 5 marks)

4 Jo is going to buy 15 rolls of wallpaper.

Here is some information about the cost of rolls of wallpaper from each of two shops.

Chic Decor
3 rolls for £36

Style Papers
Pack of 5 rolls
normal price £70
12% off the normal price

Jo wants to buy the 15 rolls of wallpaper as cheaply as possible.

Should Jo buy the wallpaper from Chic Decor or from Style Papers?

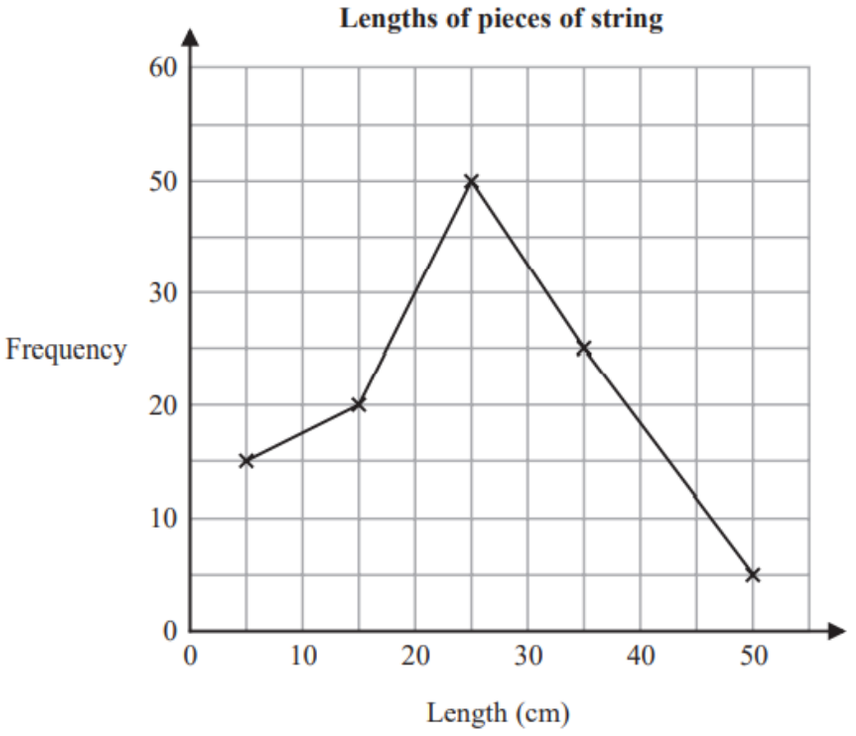
You must show how you get your answer.

(Total for Question 4 is 4 marks)

5 The table gives information about the lengths, in cm, of some pieces of string.

Length (t cm)	Frequency
$0 < t \leq 10$	15
$10 < t \leq 20$	20
$20 < t \leq 30$	50
$30 < t \leq 40$	25
$40 < t \leq 50$	5

Amos draws a frequency polygon for the information in the table



Write down two mistakes that Amos has made.

1.....

.....

2.....

.....

(Total for Question 5 is 2 marks)

6 Jessica runs for 15 minutes at an average speed of 6 miles per hour.
She then runs for 40 minutes at an average speed of 9 miles per hour.

It takes Amy 45 minutes to run the same total distance that Jessica runs.

Work out Amy's average speed.
Give your answer in miles per hour.

..... miles per hour

(Total for Question 6 is 4 marks)

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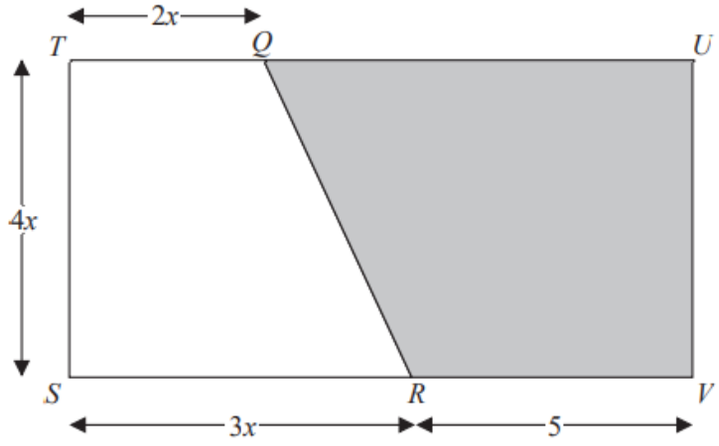
7 The diagram shows rectangle *STUV*.
TQU and *SRV* are straight lines.
All measurements are in cm.



The area of trapezium QUVR is A cm^2
Show that $A = 2x^2 + 20x$

(Total for Question 7 is 3 marks)

Pearson

WEEK 1 MARKSCHEMES

(Higher 4-6)

WEEK 1 TASK 1

Question 1 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$7x < 35$	M1	This mark is given for a method to solve the inequality
	$x < 5$	A1	This mark is given for a correct answer only

Question 2 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	2, 2, 31	M1	This mark is given for a complete method to find the prime factors (for example, using a factor tree with no more than one error)
	$2 \times 2 \times 31$	A1	This mark is given for a correct answer (or equivalent)

Question 3 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$160 \div (3 + 7) = 16$	P1	This mark is given for the first step in a process to find the number of cars
	$16 \times 3 = 48$	P1	This mark is given for a full process to find the number of cars
	$48 \times \frac{1}{8} = 6$	P1	This mark is given for a process to find the number of cars that use electricity
	$48 \times 0.25 = 12$	P1	This mark is given for a process to find the number of cars that use diesel
	$48 - 6 - 12 = 30$	A1	This mark is given for the correct answer only

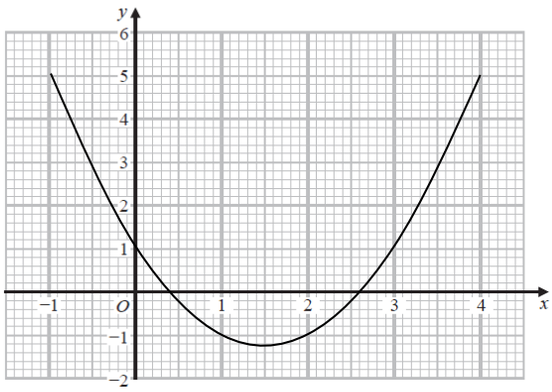
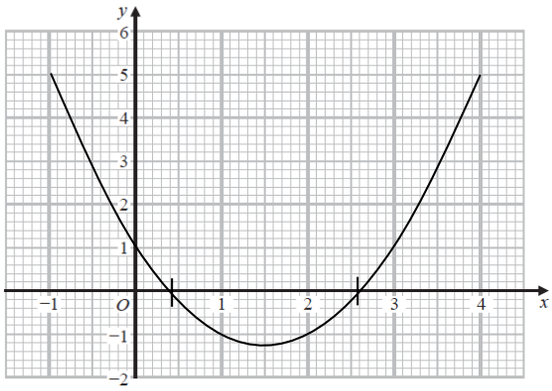
Question 4 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	0.00163	B1	This mark is given for the correct answer only
(b)	4.38×10^5	B1	This mark is given for the correct answer only
(c)	$4 \times 6 \times 10^3 \times 10^{-5}$	M1	This mark is given for a method to find the answer
	2.4×10^{-1}	A1	This mark is given for the correct answer only

Question 5 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Hexagon: $360 \div 6 = 60$ or $180 \times 4 \div 6 = 120$ Pentagon: $360 \div 5 = 72$ or $180 \times 3 \div 5 = 108$	M1	This mark is given a method to find an exterior angle or an interior angle of one of the shapes
	$60 + 72$ or $360 - 120 - 108$	M1	This mark is given for a complete method to find the size of the angle x
	132	A1	This mark is given for the correct answer only

Question 6 (Total 6 marks)

<table>
<tr><th>Part</th><th>Working or answer an examiner might expect to see</th><th>Mark</th><th>Notes</th></tr>
<tr><td>(a)</td><td><table><tr><td>x</td><td>–1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>y</td><td>5</td><td>1</td><td>–1</td><td>–1</td><td>1</td><td>5</td></tr></table></td><td>B2</td><td>This mark is given for a fully correct table
(B1 is given for two or three correct values)</td></tr>
<tr><td rowspan="2">(b)</td><td rowspan="2">  </td><td>M1</td><td>This mark is given for at least four of the points (–1, 5), (0, 1), (1, –1), (2, –1), (3, 1) and (4, 5) plotted correctly</td></tr>
<tr><td>A1</td><td>This mark is given for a fully correct curve drawn</td></tr>
<tr><td rowspan="2">(c)</td><td>  </td><td>M1</td><td>This mark is given for showing marks indicating the interception of the curve with the x-axis</td></tr>
<tr><td>x = 0.4 and x = 2.6</td><td>A1</td><td>Accept answers in the range 0.2 to 0.6 and 2.4 to 2.8</td></tr>
</table>

Question 7 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Volume of cube **A** = $3^3 = 27$ Volume of cube **B** = $4^3 = 64$	P1	This mark is given a process to find the volume of at least one cube
	Density of cube **A** = 81 ÷ 27 = 3 Density of cube **B** = 128 ÷ 64 = 2	P1	This mark is given a process to find the density of at least one cube
	3 : 2	A1	This mark is given for the correct answer only (or equivalent)

WEEK 1 TASK 2

Answer all questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

***1** Mano has three shelves of books.

There are x books on shelf **A**.
There are $(3x + 1)$ books on shelf **B**.
There are $(2x - 5)$ books on shelf **C**.

There is a total of 44 books on the three shelves.
All the books have the same mass.

The books on shelf **B** have a total mass of 7500 g.

Work out the total mass of the books on shelf **A**.

A B C Total

$x + 3x + 1 + 2x - 5 = 44$ 1 mark

$6x - 4 = 44$

$6x = 48$

$x = 8$

Shelf B $3x + 1$

1 mark $3 \times 8 + 1 = 25$ books

25 books = 7500 g

1 book = $7500 \div 25$ 1 mark

= 300g

Shelf A

8×300 1 mark

2400 Final mark

..... g

(Total for Question 1 is 5 marks)

***2** The mean length of 5 sticks is 4.2 cm.

Nawal measured the length of one of the sticks as 7 cm.

(*a*) Work out the mean length of the other 4 sticks.

Total length $4.2 \times 5 = 21$ 1 mark

$21 - 7 = 14$ $14 \div 4 = 3.5$ 1 mark

3.5 Final mark

..... cm

(3)

Nawal made a mistake.
The stick was not 7 cm long.
It was 17 cm long.

(*b*) How does this affect your answer to part (*a*)?

$21 - 17 = 4$ $4 \div 4 = 1$cm

My answer would be smaller than 4 1 mark

(1)

(Total for Question 2 is 4 marks)

---

3 (*a*) Expand and simplify $(3x + 2)(2x - 5)$

$6x^2 - 15x + 4x - 10$

1 mark

$6x^2 - 11x - 10$ Final mark

(2)

(*b*) Factorise $x^2 - 16$

$(x + 4)(x - 4)$ 1 mark

(1)

(Total for Question 3 is 3 marks)

***4** $\mathscr{E}$ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

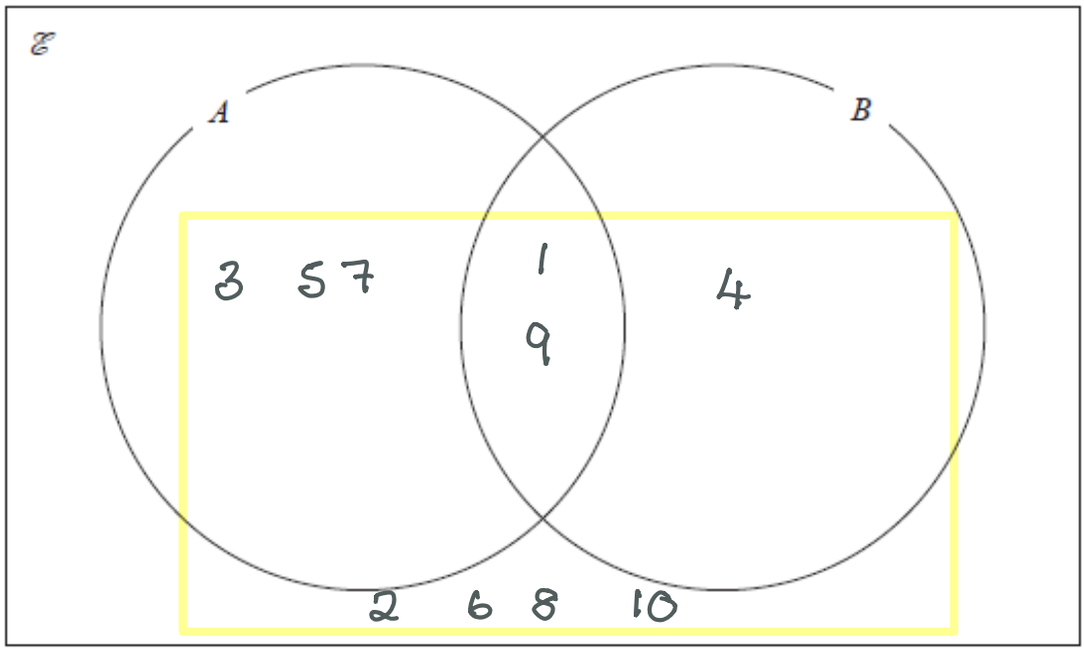
A = {odd numbers}

B = {square numbers}

1 3 5 7 9

1 4 9

(*a*) Complete the Venn diagram for this information.



3 marks for fully correct Venn

2 marks for two or three correct regions

1 mark for one correct region

(3)

A number is chosen at random from the universal set $\mathscr{E}$

(*b*) Find the probability that this number is in the set B'

$\frac{\quad}{10}$ 1 mark for denominator of 10

$\frac{7}{10}$ Final mark

(2)

(Total for Question 4 is 5 marks)

***5** (i) Write down the value of 5^0

1 1 mark

(1)

(ii) Write down the value of 5^{-2}

$\frac{1}{5^2} = \frac{1}{25}$

$\frac{1}{25}$ 1 mark

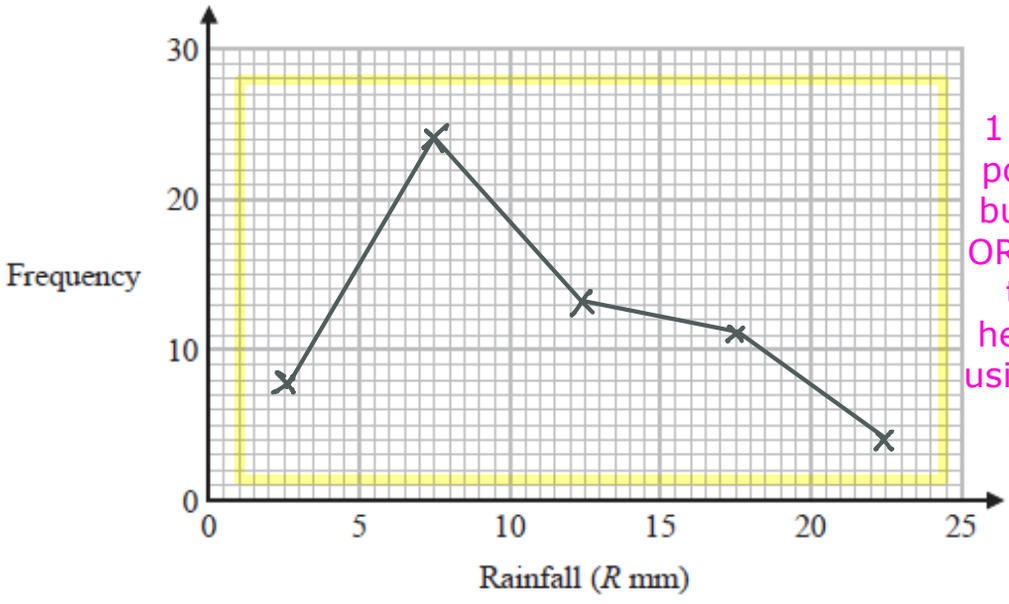
(1)

(Total for Question 5 is 2 marks)

***6** The table shows information about the daily rainfall in a town for 60 days.

Rainfall (R mm)	Frequency
$0 \leq R < 5$	8
$5 \leq R < 10$	24
$10 \leq R < 15$	13
$15 \leq R < 20$	11
$20 \leq R < 25$	4

Draw a frequency polygon for this information.

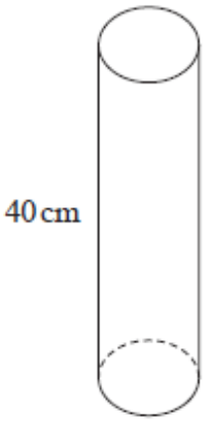


2 marks for fully correct frequency polygon

1 mark for all points plotted but not joined OR all points at the correct height but not using midpoints and joined

(Total for Question 6 is 2 marks)

***7** The diagram shows a solid cylinder on a horizontal floor.



$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

The cylinder has a

volume of 1200 cm^3
height of 40 cm.

1 mark

Area = $\frac{1200}{40} = 30cm^2$

The cylinder exerts a force of 90 newtons on the floor.

Work out the pressure on the floor due to the cylinder.

F = 90N
A = $30cm^2$
P = ?

$P = \frac{90}{30}$ 1 mark

3 Final mark

..... newtons/cm^2

(Total for Question 7 is 3 marks)

***8** Work out 8.46 ÷ 0.15

$\frac{8.46 \times 100}{0.15 \times 100} = \frac{846}{15}$

846 ÷ 15 1 mark

15
30
45
60
75
90
105
120

056.4 1 mark for digits 564

15 | 8⁸4⁹6.⁶00

56.4 Final mark

.....

(Total for Question 8 is 3 marks)

9 Work out an estimate for $\frac{5.7 \times 8.2}{0.26}$

1 mark for one of these

$5.7 \rightarrow 6$

$8.2 \rightarrow 8$

$0.26 \rightarrow 0.25$

$\frac{6 \times 8}{0.25} = \frac{48}{0.25}$

$48 \div \frac{1}{4} = 48 \times 4$

1 mark

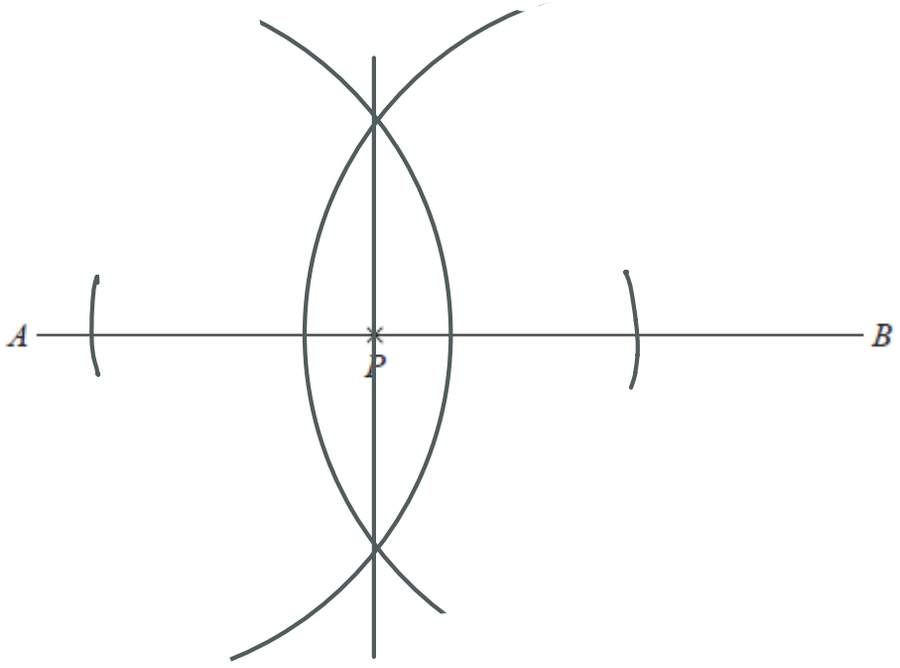
0.3 could be used too so a range is accepted of 160 to 200

192 Final mark

.....

(Total for Question 9 is 3 marks)

***10** The point P lies on the line AB.
Use ruler and compasses to construct an angle of 90° at P.
You must show all your construction lines.



2 marks

(Total for Question 10 is 2 marks)

***11** A cube has a total surface area of 150 cm^2

Work out the volume of the cube.

1 face = $150 \div 6 = 25\text{cm}^2$ 1 mark

side length = $\sqrt{25} = 5\text{cm}$ 1 mark

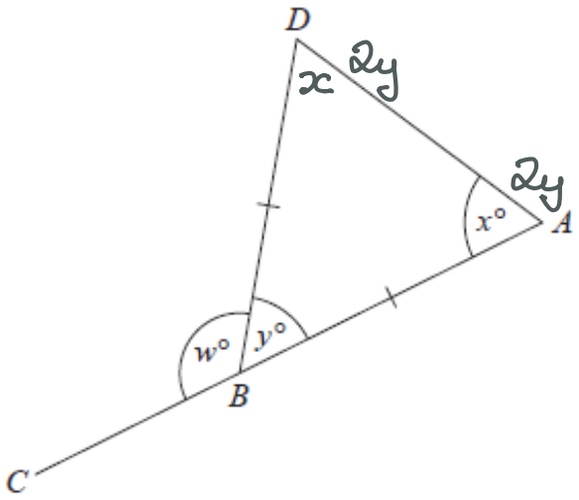
Volume = $5 \times 5 \times 5$ 1 mark

125 Final mark

..... cm^3

(Total for Question 11 is 4 marks)

***12** The diagram shows an isosceles triangle ABD and the straight line ABC.



$BA = BD$

$x : y = 2 : 1$

Work out the value of w.

using $x : y = 2 : 1$

$x = 2y$ 1 mark

so $180° = 5y$ 1 mark

$y = 180 \div 5$
$= 36$

$5 \overline{)180}$ → 036

$w = 180 - 36$ 1 mark

$w =$ 144 Final mark

(Total for Question 12 is 4 marks)

13 Work out the value of $\dfrac{4^{-6} \times 4^{9}}{4}$

1 mark

$\dfrac{4^{-6+9}}{4} = \dfrac{4^{3}}{4}$

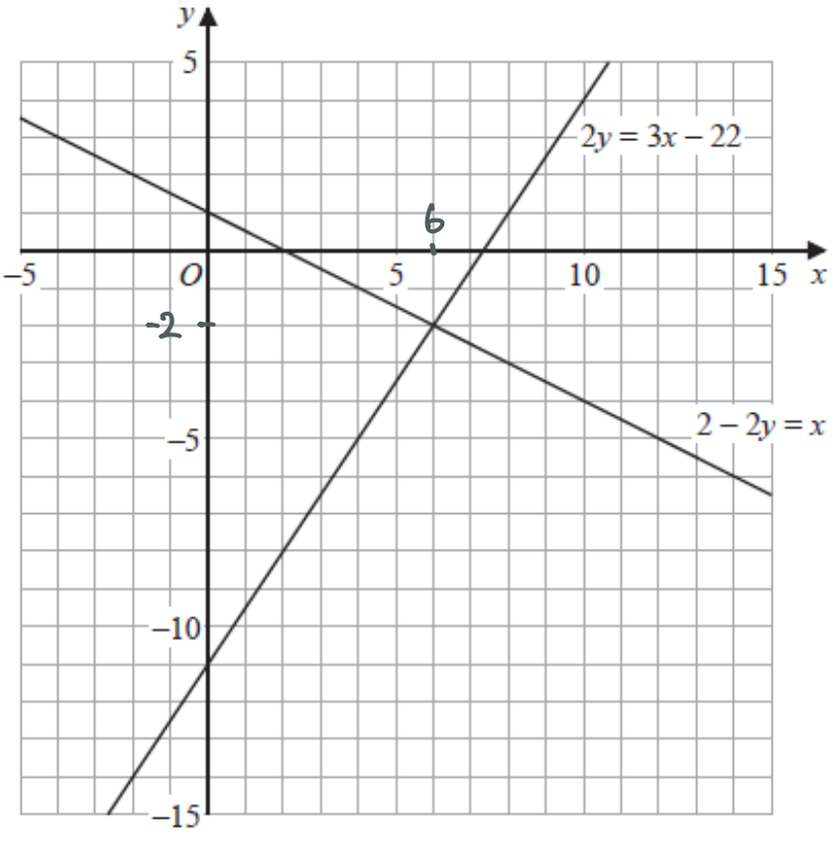
$= 4^{2} = 16$

16 (or 4^2) Final mark

.....

(Total for Question 13 is 2 marks)

***14**



Use these graphs to solve the simultaneous equations

$$2 - 2y = x$$
$$2y = 3x - 22$$

$x =$ 6 1 mark .....

$y =$ -2 .....

(Total for Question 14 is 1 mark)

15 Write down the exact value of cos 60°

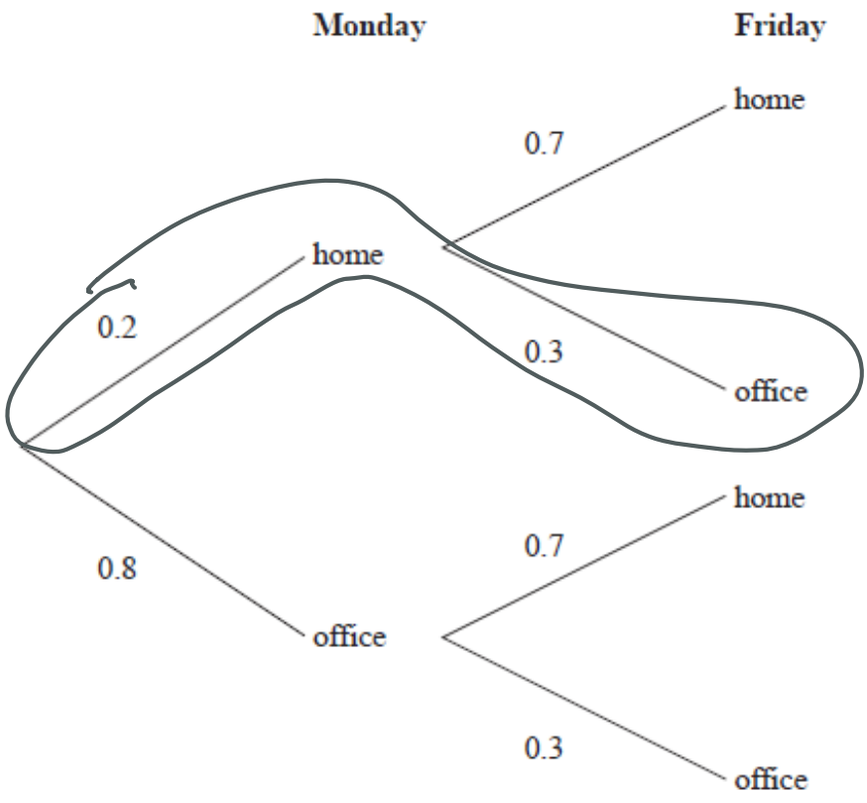
1 mark $\frac{1}{2}$ or 0·5

.....

(Total for Question 15 is 1 mark)

---

16 The probability tree diagram shows the probabilities that Shayla will work at home or will work at the office on two days next week.



Work out the probability that Shayla will work at home on Monday and work at the office on Friday.

0·2 × 0·3 1 mark

.....0·06 Final mark

(Total for Question 16 is 2 marks

TOTAL FOR PAPER IS 46 MARKS

WEEK 1 TASK 3

Question 1 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$(x^3)^5 = x^{(3 \times 5)} = x^{15}$	B1	This mark is given for the correct answer only
(b)	$4x + 12 + 28 - 14x$	M1	This mark is given for a method to expand at least one bracket
	$40 - 10x$	A1	This mark is given for the correct answer only
(c)	$3(5x^3 + x^2y)$ **or** $3x(5x^2 + xy)$ **or** $x^2(15x + 3y)$	M1	This mark is given for a method to eliminate at least one factor
	$3x^2(5x + y)$	A1	This mark is given for the correct answer only

Question 2 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Translation $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$	B1	This mark is given for translation stated
		B1	This mark is given for the vector $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$

Question 3 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$89.5 \leq$ length < 90.5	B1	This mark is given for 89.5 shown in the correct position
		B1	This mark is given for 90.5 shown in the correct position

Question 4 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$700 \times 2000 = 1\,400\,000$	P1	This mark is given for a process to find the area available at Festival B
	Festival A: $80\,000 \div 425 = 188.23\ldots$ Festival B: $1\,400\,000 \div = 6750 = 207.40\ldots$	P1	This mark is given a method to find the area available per person at (at least) one Festival
	$207.40\ldots - 188.23\ldots = 19.17\ldots$	P1	This mark is given for finding the difference in area per person
	19 (to the nearest whole number)	A1	This mark is given for the correct answer only
(b)	For example: 300 cm^2 is 0.1 m × 0.3 m = 0.03 m^2 3 m^2 is 100 cm × 300 cm = 30 000 cm^2	C1	This mark is given for a valid statement relating scale factor to area

Question 5 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$4 - -3 = 7$ $9 - 1 = 8$	P1	This mark is given for a process to use coordinates to find the translation of *L* to *M*
	$7 \div 2 = 3.5$ $8 \div 2 = 4$	P1	This mark is given for a process to use the ratio 2 : 3
	$5 \times 3.5 + -3$ $5 \times 4 + 1$	P1	This mark is given for a process to use coordinates to find the translation of *L* to *N*
	(14.5, 21)	A1	This mark is given for the correct answer only

Question 6 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$679 \times 0.96 = 651.84$	M1	This mark is given for a method to find the decrease in value after one year (given also if $679 \times (0.96)^3$ seen)
	$651.84 \times 0.96 \times 0.96$ **or** $679 \times (0.96)^3$	M1	This mark is given for a method to find the decrease in value after three years
	600.74	A1	This mark is given for the correct answer only (accept 600.73)

Question 7 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$18 \div 4.5 = 4$ **or** $8 \times 4.5 = 36$ (18 litres = 4 gallons **or** 8 gallons = 36 litres)	P1	This mark is given for a process to convert between litres and gallons
	$40.8 \div 0.85 = 48$ **or** $27 \times 0.85 = 22.95$ (£40.80 = €48 or €27 = £22.95)	P1	This mark is given for a process to convert between euros and pounds
	Sam pays £22.95 for 4 gallons Leo pays £20.40 for 4 gallons **or** Sam pays €27 for 18 litres Leo pays €24 for 18 litres	P1	This mark is given for a process to make a comparison between petrol prices
	For example: Sam is wrong, petrol is cheaper in Wales	C1	This mark is given for the valid conclusion supported by correct working

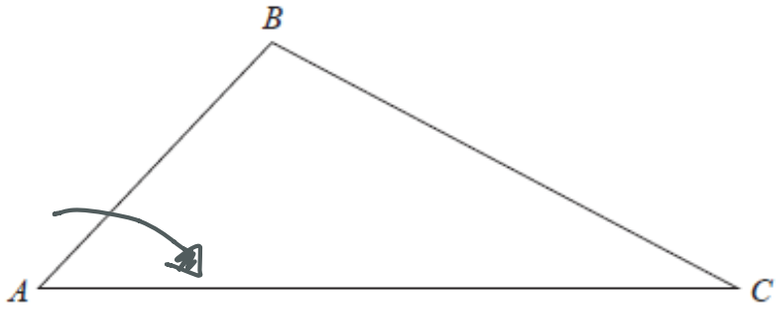
WEEK 1 TASK 4

Answer all questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Here is a triangle.



(*a*) Measure the length of AC.

this length (your answer may differ depending on your printer settings.)

9.3 1 mark

..... cm

(1)

Range accepted 9.1 to 9.5

(*b*) Measure the size of angle B.

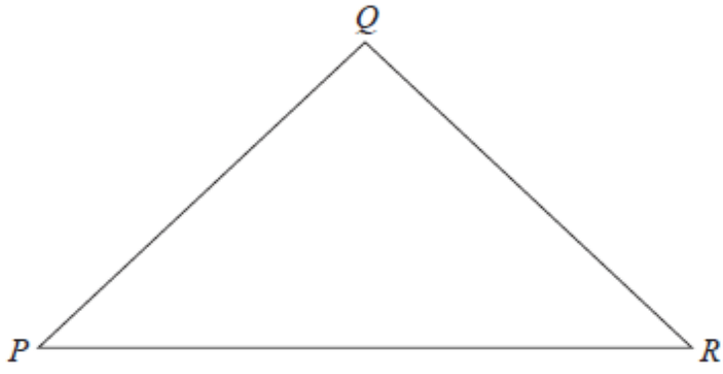
106 1 mark

..... °

(1)

Range accepted 104 to 108

Here is a different triangle.



$QP = QR$

(*c*) Write down the mathematical name of this triangle.

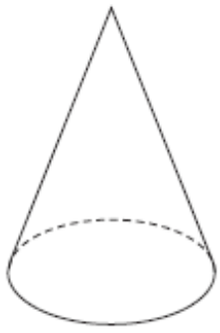
isosceles 1 mark

.....

(1)

(Total for Question 1 is 3 marks)

2 Here is a 3-D shape.



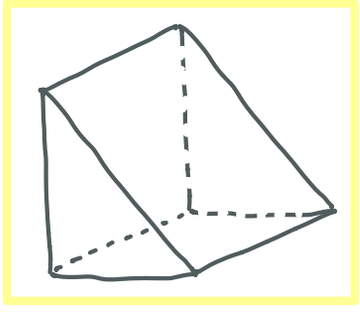
(*a*) Write down the name of this 3-D shape.

cone 1 mark

.....

(1)

(*b*) In the space below, draw a sketch of a triangular prism.



1 mark

(1)

(Total for Question 2 is 2 marks)

***3** Make g the subject of the formula $f = 3g + 11$

$f = 3g + 11$

$-11 \quad -11$

$f - 11 = 3g$ 1 mark

$\div 3 \quad \div 3$

$\frac{f-11}{3} = g$

$g = \frac{f-11}{3}$ Final mark

.....

(Total for Question 3 is 2 marks)

***4** A number, d, is rounded to 1 decimal place.

The result is 12.7

Complete the error interval for d.

12.6 ↑ 12.65 | 12.7 | 12.8 ↑ 12.75

1 mark 1 mark

12.65 $\leq d <$ 12.75

(Total for Question 4 is 2 marks)

---

5 Solve the simultaneous equations

① $3x + y = -4.5$ x 3

② $4x + 3y = -3.5$

$9x + 3y = -13.5$

$4x + 3y = -3.5$

$5x = -10$

$x = -\frac{10}{5}$

$x = -2$

1 mark for correct method to eliminate x or y

sub into ②

$4x - 2 + 3y = -3.5$

1 mark for substituting found value

$3y = -3.5 + 8$

$3y = 4.5$

$y = 1.5$

$x =$ -2

$y =$ 1.5

Final mark

(Total for Question 5 is 3 marks)

6 Ethan buys a box of 24 cans of lemonade for £7
There are 330 m*l* of lemonade in each can.

Work out the cost of 100 m*l* of lemonade.
Give your answer correct to the nearest penny.

24 cans = £7

700 ÷ 24

1 mark

1 can = 29.16 p

330 ml = 29.16 p

÷330 ÷300

×100 ×100

100ml = 8.83p

1 mark

Final mark

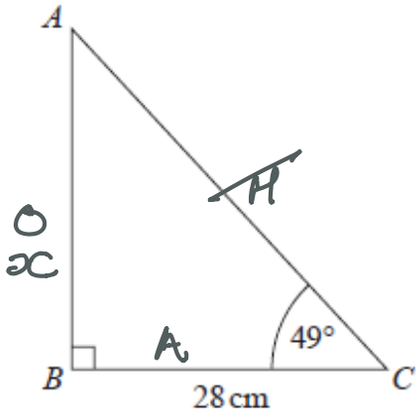
9 or £0.09 .....p

(Total for Question 6 is 3 marks)

---

7 *ABC* is a right-angled triangle.

Calculate the length of *AB*.
Give your answer correct to 3 significant figures.



$\tan 49 = \frac{x}{28}$

1 mark

$x = 28 \times \tan 49$

$= 32.210...$

Final mark

32.2 ..... cm

(Total for Question 7 is 2 marks)

Range accepted 32.2 to 32.22

***8** Chris, Debbie and Errol share some money in the ratio 3 : 4 : 2
Debbie gets £120

Chris then gives some of his share to Debbie and some of his share to Errol.
The money that Chris, Debbie and Errol each have is now in the ratio 2 : 5 : 3

How much money did Chris give to Errol?

C	D	E	Total
3	4	2	9
x 30		x 30	x 30
£90	£120	£60	£270

1 mark

120 ÷ 4 = 30

C	D	E	Total
2	5	3	10
x27	x27	x27	£270
= £54	= £135	= £81	270 ÷ 10 = 27

1 mark

given to Errol => 81 - 60 = £21

1 mark for 81 and 60

£ 21 Final mark

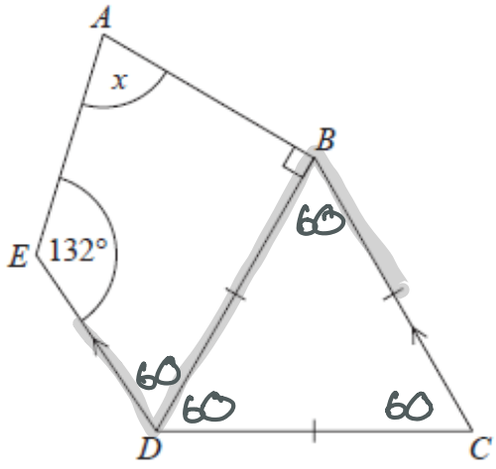
(Total for Question 8 is 4 marks)

9 The diagram shows a quadrilateral *ABDE* and an equilateral triangle *BCD*.

CB is parallel to *DE*.

Angle *AED* = 132°

Work out the size of the angle marked *x*.
You must give a reason for each stage of your working.



△ DBC 180 ÷ 3 = 60 1 mark

all angles are equal in an equilateral triangle

∠EDB = ∠DBC = 60 1 mark

alternate angles are equal

Final mark for one correct reason

x = 360 − (132 + 90 + 60)

= 78

angles in a quadrilateral = 360

78 1 mark

.....°

(Total for Question 9 is 4 marks)

***10** Solve $\frac{2}{5}g - 4 < 6$

$\frac{2}{5}g - 4 < 6$

+4 +4

$\frac{2}{5}g < 10$ 1 mark

×5 ×5

$2g < 50$ 1 mark

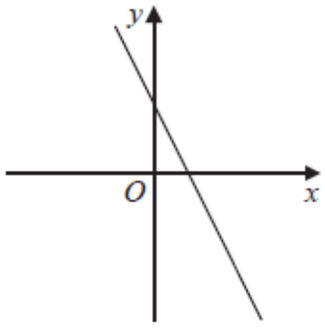
$g < 25$

$g < 25$ Final mark

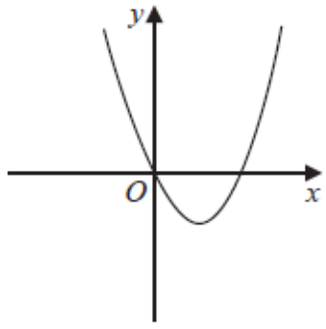
.....

(Total for Question 10 is 3 marks)

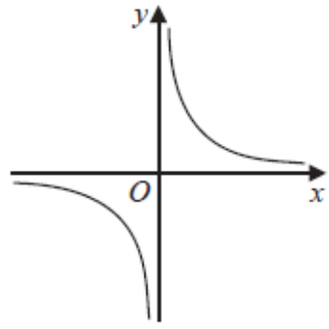
11 Here are five graphs.



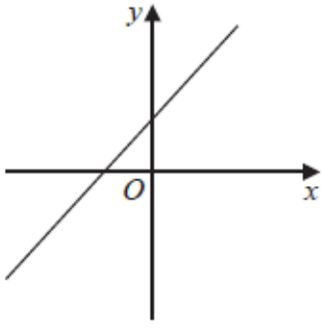
A



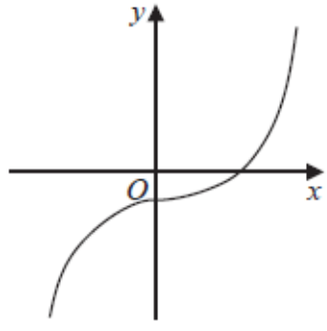
B



C



D



E

Equation	Graph
$y = x^2 - 4x$	B
$y = x + 3$	D
$y = x^3 - 2$	E
$y = \frac{1}{x}$	C
$y = 5 - 2x$	A

3 marks for all correct

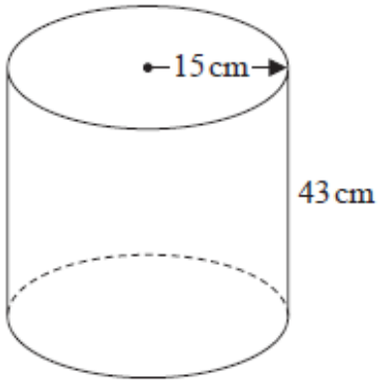
2 marks for three or four correct

1 mark for two correct

Match the letter of each graph with its equation.

(Total for Question 11 is 3 marks)

***12** The diagram shows an empty tank in the shape of a cylinder.



The cylinder has radius 15 cm and height 43 cm.

Water flows into the tank at a rate of 0.47 litres per minute.

Calculate the number of minutes it will take to completely fill the tank.
Give your answer correct to the nearest minute.

Volume of cylinder

$= \pi \times 15^2 \times 43$ 1 mark

$= 30394.908\ldots\ cm^3$

convert to litres 1 mark

$= 30394.908\ldots \div 1000 = 30.39\ldots$ litres

Time $30.39\ldots \div 0.47$ 1 mark

$= 64.67\ldots$ minutes

80 65

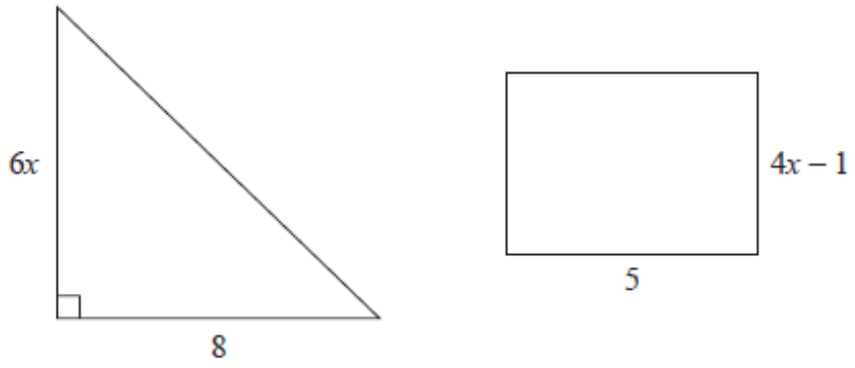
65 Final mark

..... minutes

(Total for Question 12 is 4 marks)

Range accepted 64.6 to 65

***13** Here is a triangle and a rectangle.



All measurements are in centimetres.

The area of the triangle is 10 cm^2 greater than the area of the rectangle.

Work out the value of x.

triangle = rectangle + 10

$\frac{1}{2} 8 \times 6x = 5(4x - 1) + 10$ 1 mark

$24x = 20x - 5 + 10$

$24x = 20x + 5$ 1 mark 1 mark

$4x = 5$

$x = \frac{5}{4}$

$= 1.25$

$x =$ 1.25 Final mark

(Total for Question 13 is 4 marks)

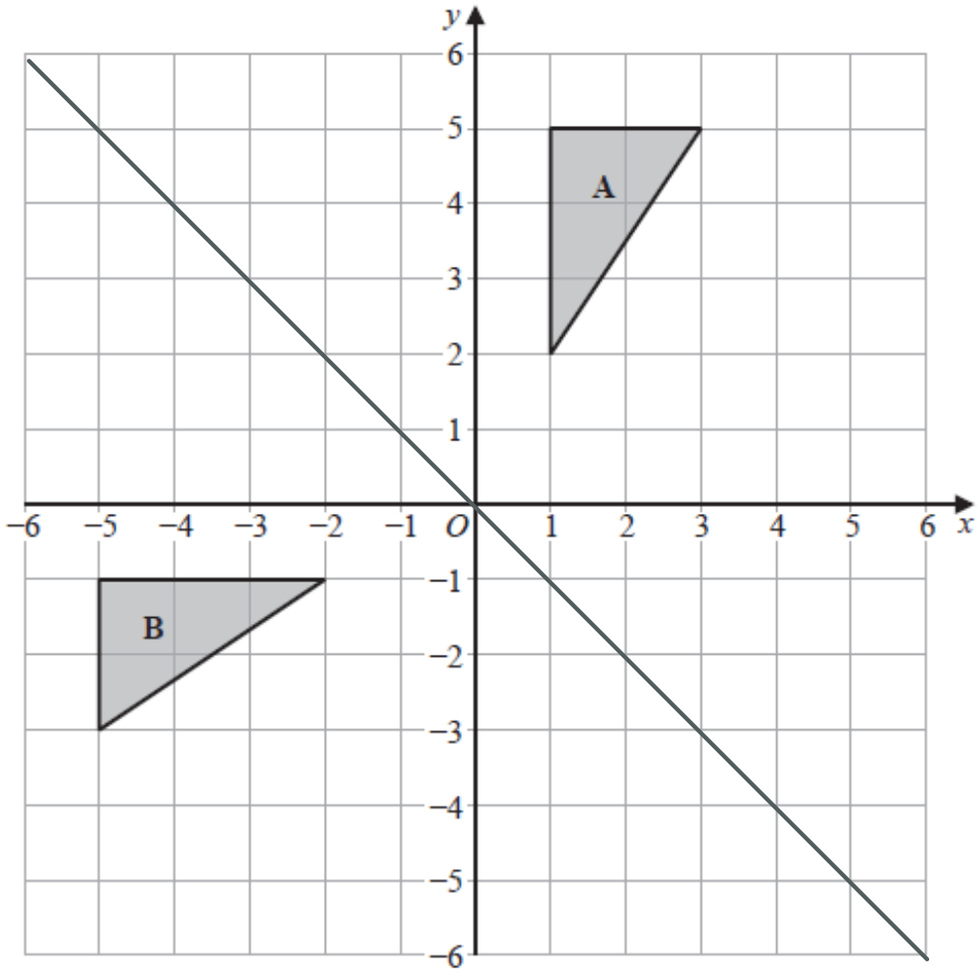
***14** Work out the value of the reciprocal of 0.625

$1 \div 0.625$

1.6 1 mark

(Total for Question 14 is 1 mark)

15



Describe fully the single transformation that maps triangle **A** onto triangle **B**.

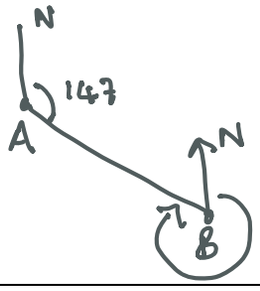
its a reflection in the line y = -x

1 mark 1 mark

(Total for Question 15 is 2 marks)

***16** The bearing of port *B* from port *A* is 147°

Work out the bearing of port *A* from port *B*.



147 + 180 1 mark

327 Final mark °

(Total for Question 16 is 2 marks)

TOTAL FOR PAPER IS 44 MARKS

WEEK 1 TASK 5

Question 1 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(b)	$8.5^2 - 4^2 = 72.25 - 16 = 56.25$ $\sqrt{56.25} =$	M1	This mark is given for a method to use Pythagoras' theorem to find x
	7.5	A1	This mark is given for the correct answer only

Question 2 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$4 \times (-3)^2 - 11$ $= 36 - 11$	M1	This mark is given for a method to substitute –3 into the equation
	25	A1	This mark is given for the correct answer only
(b)	$d - 4 = 3p$ or $\frac{d}{3} - \frac{4}{3} = p$	M1	This mark is given for a first step to make p the subject of the formula
	$p = \frac{d-4}{3}$	A1	This mark is given for the correct answer only

Question 3 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	R = n, S = $2n$, T = $2n - 6$	P1	This mark is given for a process to develop three algebraic expressions (with at least two correct)
	$n + 2n + 2n - 6 = 54$	P1	This mark is given for a process to sum the three algebraic expressions to 54
	$5n - 6 = 54$ $n = 12$	P1	This mark is given for a process to solve the linear equation
	Ratio = 12: $(2 \times 12 - 6)$ = 12 : 18	P1	This mark is given for a process to find the ratio of the number of counters Rick and Tony have
	$p = 1.5$	A1	This mark is given for the correct answer only

Question 4 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{15}{3} \times 36 = £180$	P1	This mark is given for a process to find the cost of 15 rolls from Chic Decor
	$70 \times (15 \div 5) \times 0.12 = £25.20$	P1	This mark is given for a process to find the discount available at Style Papers
	$(3 \times 70) - 25.20 = £184.80$	P1	This mark is given for a process to find the cost of 15 rolls from Style Papers
	Jo should by the wallpaper from Chic Decor	C1	This mark is given for a valid statement relating scale factor to area

Question 5 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	For example: 40 is missing from the frequency scale	C1	This mark is given for a mistake identified on the frequency polygon
	For example: An incorrect point (50, 5) is mapped	C1	This mark is given for a mistake identified on the frequency polygon

Question 6 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$6 \times \frac{15}{60} = 1.5 \qquad 9 \times \frac{40}{60} = 6$	P1	This mark is given for a process to find the distance of either of the two parts of Jessica's journey
	$1.5 + 6 = 7.5$	P1	This mark is given for a process to find the total distance of Jessica's journey
	45 minutes = 0.75 hours $\frac{75}{7.5} =$	P1	This mark is given for a process to find Amy's average speed
	10	A1	This mark is given for the correct answer only

Question 7 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$A = \frac{1}{2}h(a + b)$ where $h = 4x$, $a = 5$ and $b = (3x - 5) - 2x = x + 5$	M1	This mark is given for a method to find an algebraic representation of the lengths used to work out the area of the trapezium $QUVR$
	$A = \frac{1}{2} \times 4x \times (5 + x + 5)$	M1	This mark is given for a method to find an algebraic representation of the area of the trapezium $QUVR$
	$A = 2x(10 + x) = 20x + 2x^2$	C1	This mark is given for the correct expansion of brackets seen and simplification to the given answer