Name:

Edexcel GCSE

Mathematics A

Paper 2 (Calculator) 1st 12 Pages

Higher Tier

Paper Reference
1MA0/2H

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Paper	Mark	Grade	
June 2009			
November 2009			
June 2010			
November 2010			
June 2011			
November 2011			
March 2012			
June 2012			
November 2012			
March 2013			
June 2013			
November 2013			

Paper	Topics I need to work on

What have I done about it?	

Paper	Topics I need to work on

What have I done about it?	

JUNE 2009

1. Tania went to Italy.
She changed £325 into euros (€).

The exchange rate was £1 = €1.68

(a) Change £325 into euros (€).

€ .....
(2)

When she came home she changed €117 into pounds.

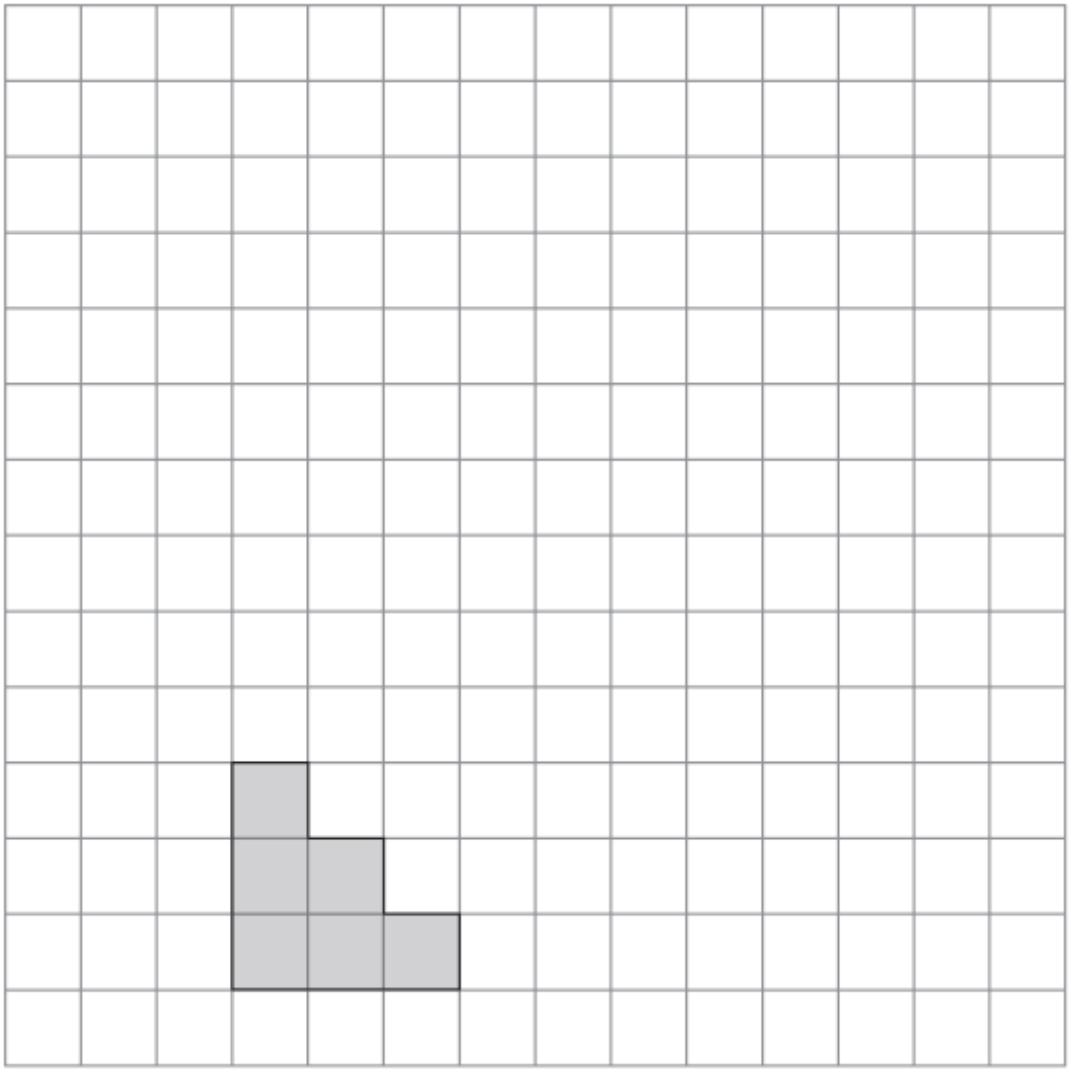
The new exchange rate was £1 = €1.50

(b) Change €117 into pounds.

£ .....
(2)

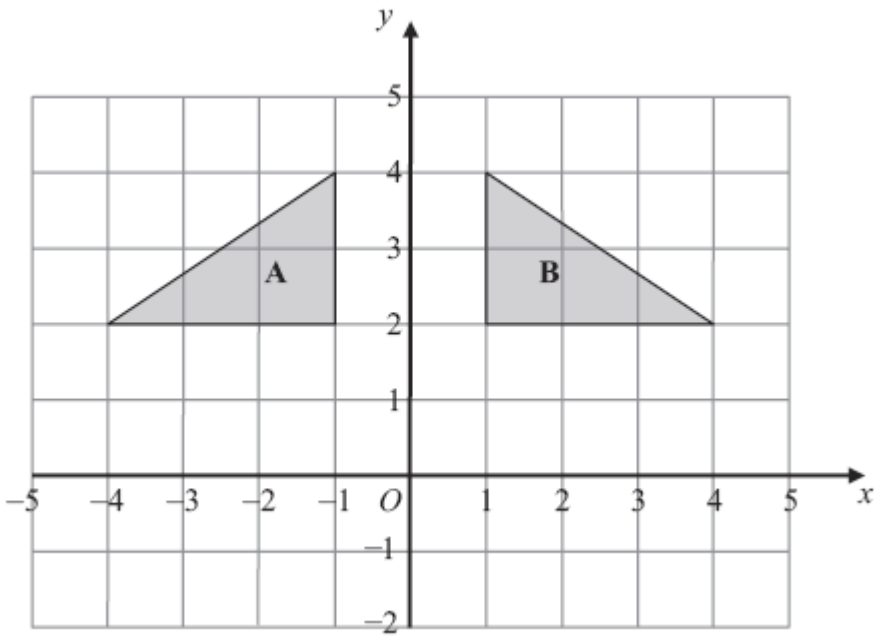
(Total 4 marks)

2.



(a) On the grid, draw an enlargement, scale factor 2, of the shaded shape.

(2)



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

.....

(2)

(Total 4 marks)

---

3. The n th term of a number sequence is $n^2 + 1$
Write down the first three terms of the sequence.

.....

(Total 2 marks)

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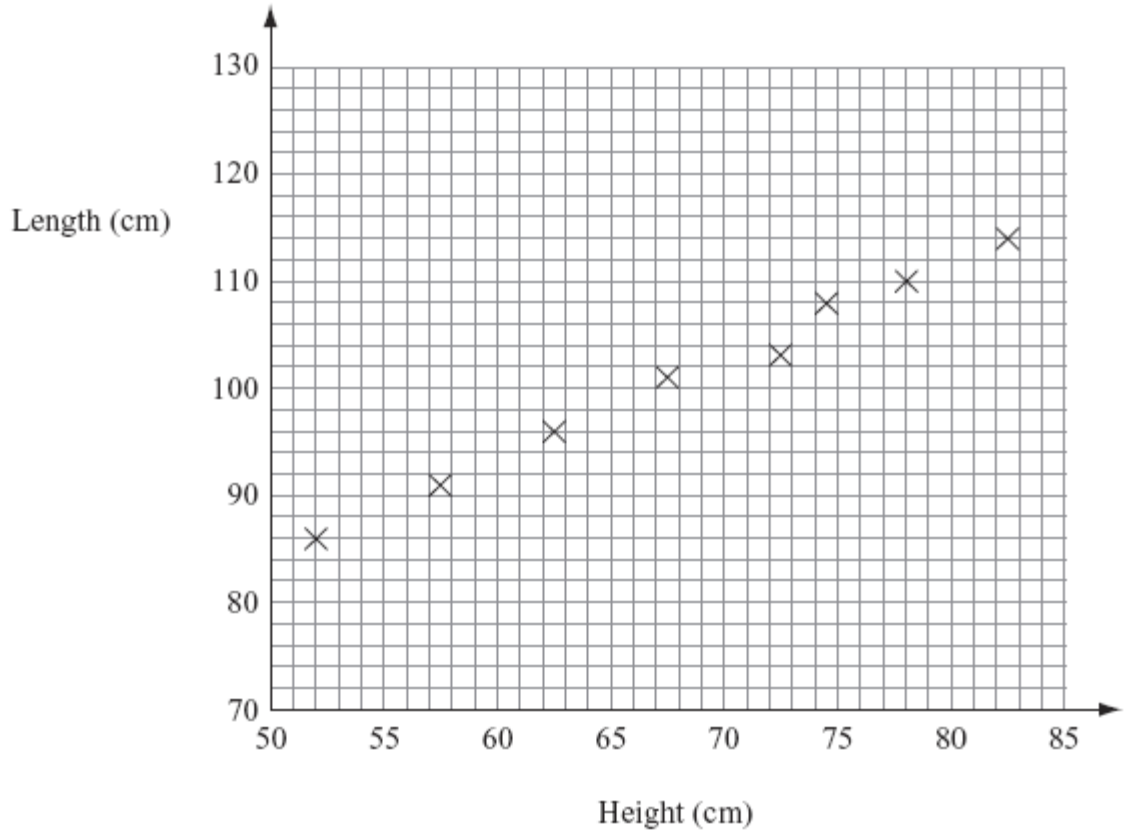
4. The scatter graph shows information about eight sheep.
It shows the height and the length of each sheep.



The table gives the height and the length of two more sheep.

Height (cm)	65	80
Length (cm)	100	110

(a) On the scatter graph, plot the information from the table.

(1)

(b) Describe the relationship between the height and the length of these sheep.

.....

(1)

The height of a sheep is 76 cm.

(c) Estimate the length of this sheep.

.....cm

(2)

(Total 4 marks)

5. Julie buys 19 identical calculators.
The total cost is £143.64

Work out the total cost of 31 of these calculators.

£ .....

(Total 3 marks)

---

6. $F = 1.8C + 32$

(a) Work out the value of F when $C = -8$

.....
(2)

(b) Work out the value of C when $F = 68$

.....
(2)

(Total 4 marks)

---

7. The diagram shows the position of two boats, *P* and *Q*.

The bearing of a boat *R* from boat *P* is 060°
The bearing of boat *R* from boat *Q* is 310°

In the space above, draw an accurate diagram to show the position of boat *R*.
Mark the position of boat *R* with a cross (×). Label it *R*.

(Total 3 marks)

8. There are some sweets in a bag.

18 of the sweets are toffees.
12 of the sweets are mints.

(a) Write down the ratio of the number of toffees to the number of mints.
Give your ratio in its simplest form.

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

There are some oranges and apples in a box.

The total number of oranges and apples is 54
The ratio of the number of oranges to the number of apples is 1 : 5

(b) Work out the number of apples in the box.

.....
(2)

(Total 4 marks)

9. The equation

$$x^3 + 20x = 71$$

has a solution between 2 and 3

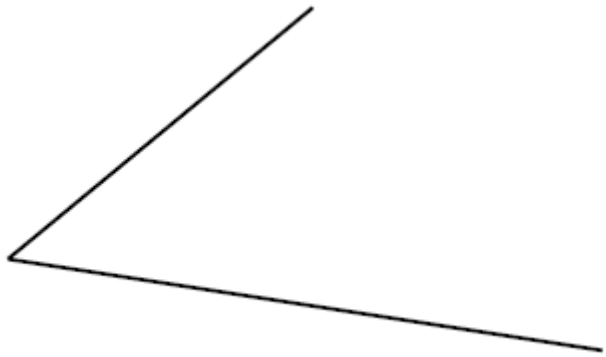
Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show **ALL** your working.

x = ...

(Total 4 marks)

---

10. Use ruler and compasses to **construct** the bisector of this angle.
You must show all your construction lines.



(Total 2 marks)

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11. Tarish says,

'The sum of two prime numbers is always an even number'.

He is **wrong**.
Explain why.

.....

.....

(Total 2 marks)

---

12. Sethina recorded the times, in minutes, taken to repair 80 car tyres.
Information about these times is shown in the table.

Time(*t*minutes)	**Frequency**		
$0 < t \leq 6$	15		
$6 < t \leq 2$	25		
$12 < t \leq 18$	20		
$18 < t \leq 24$	12		
$24 < t \leq 30$	8		

Calculate an estimate for the mean time taken to repair each car tyre.

..... minutes

(Total 4 marks)

13. Here is a tile in the shape of a semicircle.

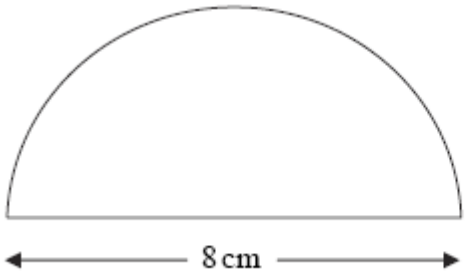


Diagram **NOT** accurately drawn

The diameter of the semicircle is 8 cm.

Work out the perimeter of the tile.
Give your answer correct to 2 decimal places.

..... cm

(Total 3 marks)

14. (a) Simplify $a \times a \times a$

.....

(1)

(b) Expand $5(3x - 2)$

.....

(1)

(c) Expand $3y(y + 4)$

.....

(2)

(d) Expand and simplify $2(x - 4) + 3(x + 2)$

.....

(2)

(e) Expand and simplify $(x + 4)(x - 3)$

.....

(2)

(Total 8 marks)

Leave blank

NOVEMBER 2009

1. Ali asked 200 students which sport they like best.
They could choose swimming or tennis or athletics.

The two-way table shows some information about their answers.

	Swimming	**Tennis**	**Athletics**	**Total**
Female			19	
Male	36	42		
Total	79		54	200

Complete the two-way table.

Q1

(Total 3 marks)

2. (a) Use your calculator to work out the value of $\frac{8.7\times12.3}{9.5-5.73}$

Write down all the digits from your calculator.
Give your answer as a decimal.

.....

(2)

(b) Write your answer to part (a) correct to 1 significant figure.

.....

(1)

Q2

(Total 3 marks)

Leave blank

3. (a) $p = 2$
$q = -4$

Work out the value of $3p + 5q$

.....

(2)

(b) Factorise $3m - 6$

.....

(1)

Q3

(Total 3 marks)

4. Frank did a survey on the areas of pictures in a magazine.

The magazine had 60 pages.
Frank worked out the area of each of the pictures in the first 2 pages.

This may not be a good method to do the survey.
Explain why.

.....

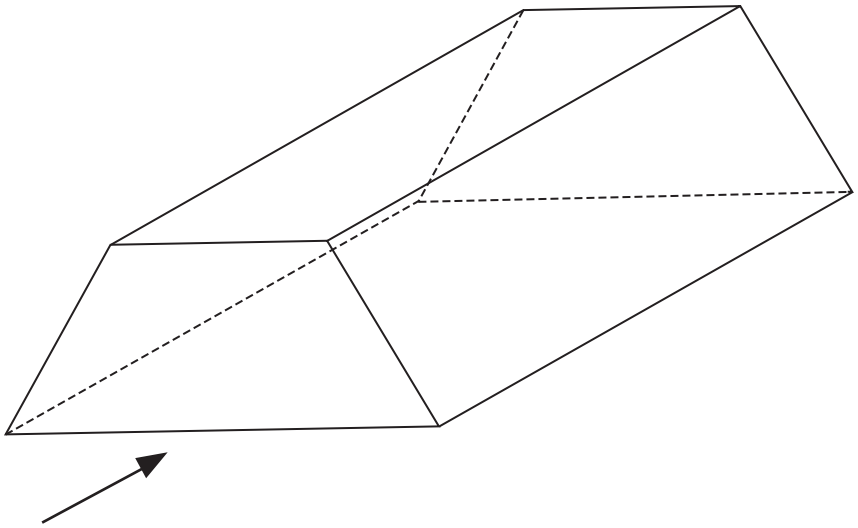
.....

Q4

(Total 1 mark)

Leave blank

5.



The diagram shows a prism.

(a) On the diagram, draw in **one** plane of symmetry for the prism.

(2)

(b) In the space below, sketch the front elevation from the direction marked with an arrow.

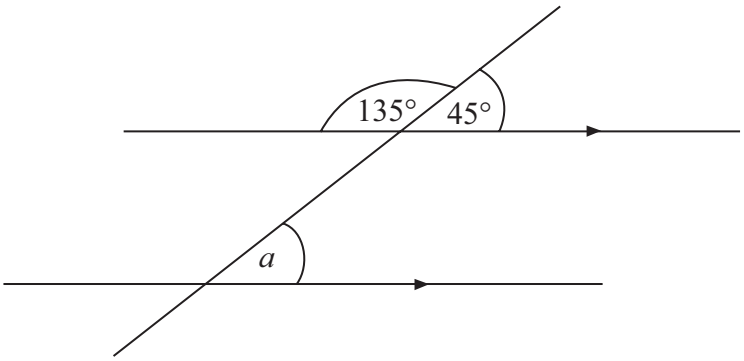
(2) **Q5**

(Total 4 marks)

Leave blank

6.

Diagram **NOT** accurately drawn



(i) Write down the size of the angle marked *a*.

..... °

(ii) Give a reason for your answer.

.....

Q6

(Total 2 marks)

7. A circle has a radius of 5 cm.

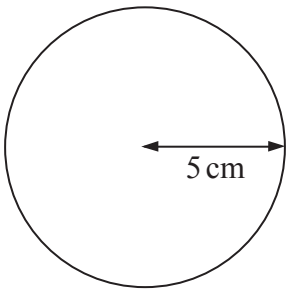


Diagram **NOT** accurately drawn

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

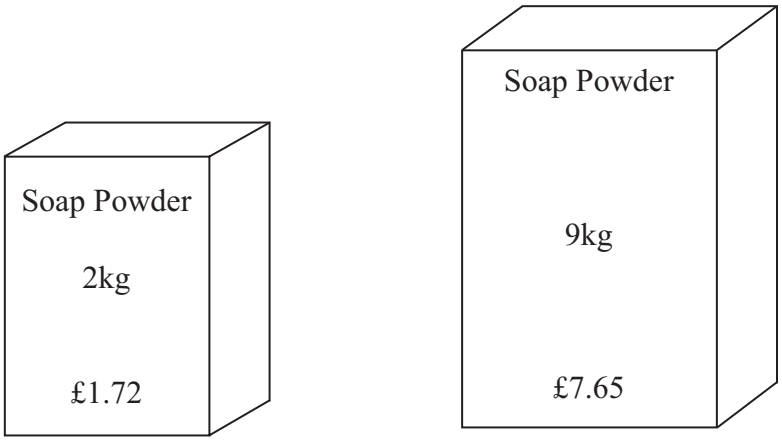
..... cm^2

Q7

(Total 2 marks)

Leave blank

8. Soap powder is sold in two sizes of box.



Small box Large box

A small box contains 2 kg of soap powder and costs £1.72
A large box contains 9 kg of soap powder and costs £7.65

Which size of box gives the better value for money?

.....

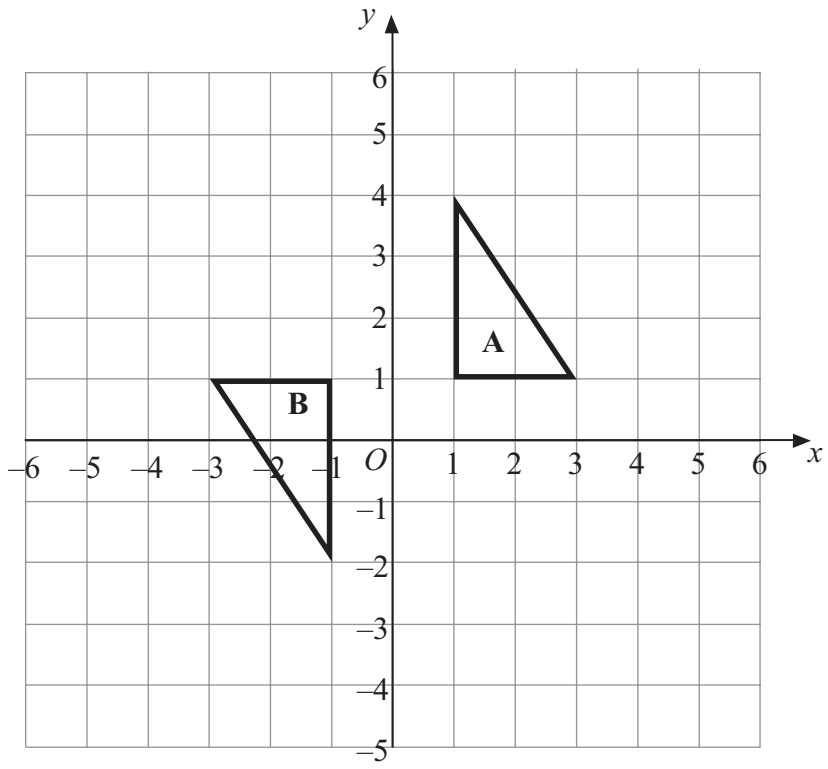
Explain your answer.
You must show all your working.

Q8

(Total 3 marks)

Leave blank

9.



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

.....

.....

Q9

(Total 3 marks)

10. A computer costs £360 plus $17\frac{1}{2}$% VAT.

Calculate the total cost of the computer.

£360

plus

$17\frac{1}{2}$% VAT

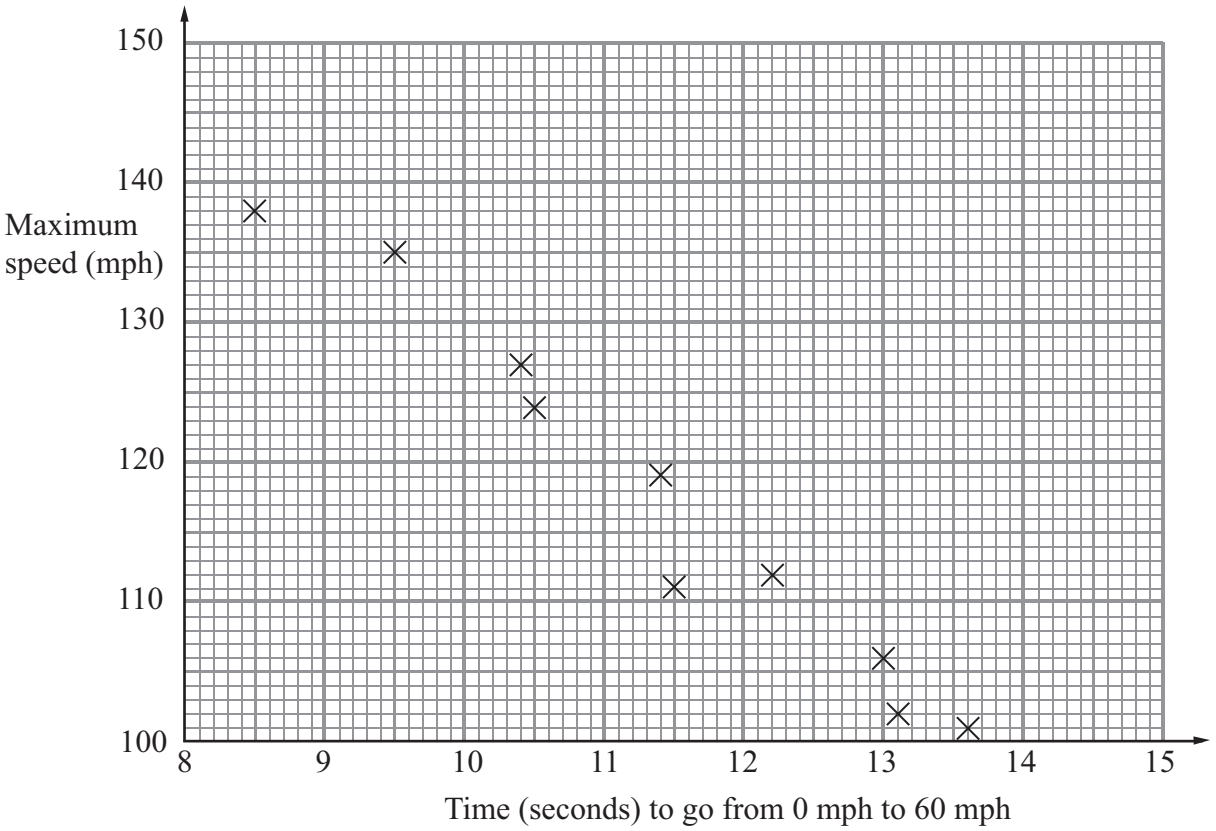
£ .....

Q10

(Total 3 marks)

Leave blank

11. The scatter graph shows some information about 10 cars.
It shows the time, in seconds, it takes each car to go from 0 mph to 60 mph.
For each car, it also shows the maximum speed, in mph.



(a) What type of correlation does this scatter graph show?

.....

(1)

The time a car takes to go from 0 mph to 60 mph is 11 seconds.

(b) Estimate the maximum speed for this car.

..... mph

(2)

Q11

(Total 3 marks)

Leave blank

12.

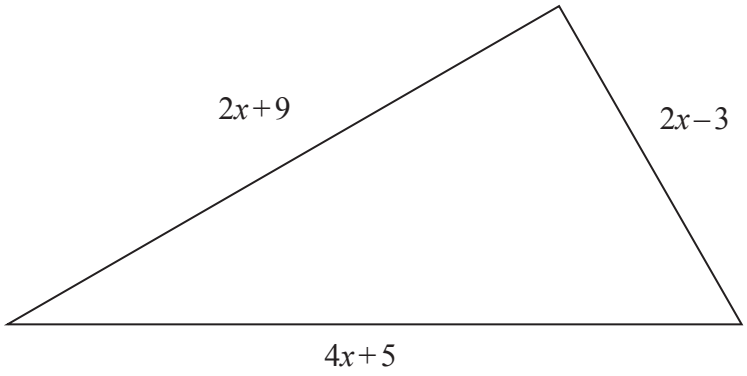


Diagram **NOT** accurately drawn

In the diagram, all measurements are in centimetres.

The lengths of the sides of the triangle are

$2x+9$
$2x-3$
$4x+5$

(a) Find an expression, in terms of x, for the perimeter of the triangle.
Give your expression in its simplest form.

.....

(2)

The perimeter of the triangle is 39 cm.

(b) Find the value of x.

$x =$ .....

(2)

Q12

(Total 4 marks)

Leave blank

13. A piece of wood is 180 cm long.
Tom cuts it into three pieces in the ratio 2 : 3 : 4

Work out the length of the longest piece.

..... cm

Q13

(Total 3 marks)

14. The equation

$$x^3 + 2x = 60$$

has a solution between 3 and 4

Use a trial and improvement method to find this solution.
Give your answer correct to 1 decimal place.
You must show all your working.

x = ...

Q14

(Total 4 marks)

Leave blank

15. (a) Simplify $m^3 \times m^4$

.....

(1)

(b) Simplify $p^7 \div p^3$

.....

(1)

(c) Simplify $4x^2y^3 \times 3xy^2$

.....

(2) **Q15**

(Total 4 marks)

16.

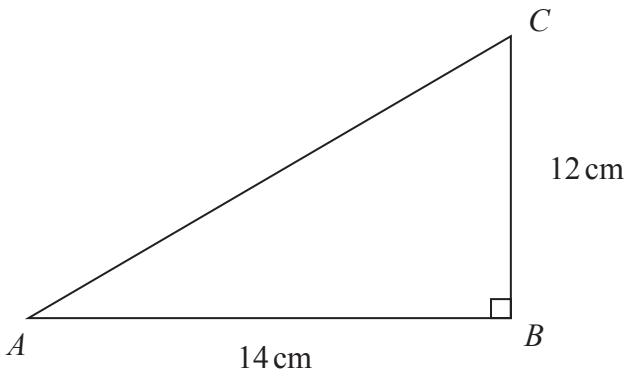


Diagram **NOT** accurately drawn

ABC is a right-angled triangle.
AB = 14 cm.
BC = 12 cm.

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

..... cm **Q16**

(Total 3 marks)

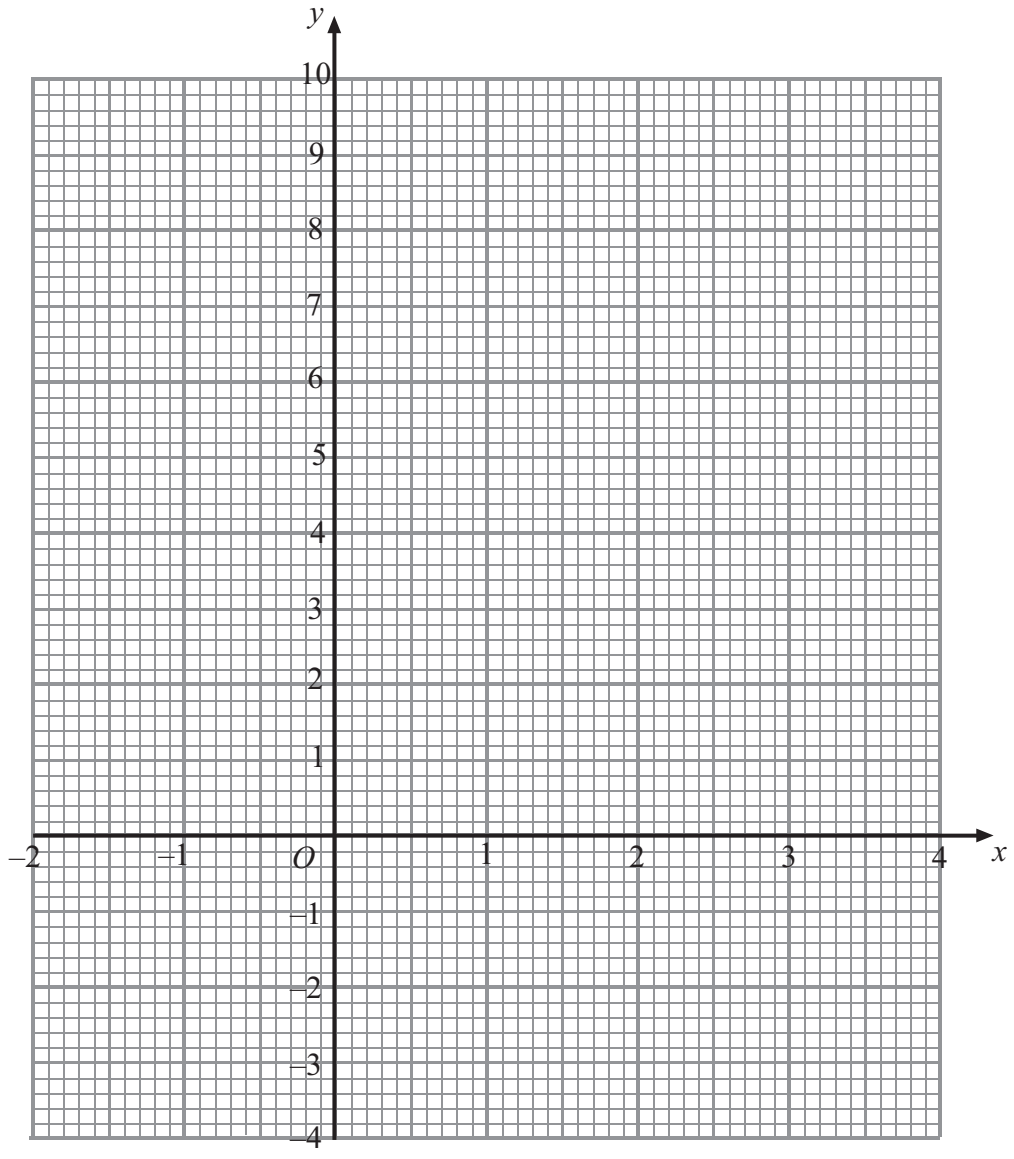
Leave blank

17. (a) Complete the table of values for $y = x^2 - 3x - 1$

x	–2	–1	0	1	2	3	4
y		3	–1	–3		–1	

(2)

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



(2) **Q17**

(Total 4 marks)

Leave blank

18. The table shows some information about the heights (h cm) of 100 students.

Height (h cm)	**Frequency**		
$120 \leqslant h < 130$	8		
$130 \leqslant h < 140$	16		
$140 \leqslant h < 150$	25		
$150 \leqslant h < 160$	30		
$160 \leqslant h < 170$	21		

(a) Find the class interval in which the median lies.

.....

(1)

(b) Work out an estimate for the mean height of the students.

..... cm

(4)

Q18

(Total 5 marks)

JUNE 2010

1. Here is a list of ingredients for making a trifle for 4 people.

Trifle for 4 people	
120 g	of raspberry jelly
8	sponge fingers
420 m*l*	of custard
180 g	of tinned fruit

Rob is going to make a trifle for 6 people.
Work out the amount of each ingredient he needs.

..... g of raspberry jelly

..... sponge fingers

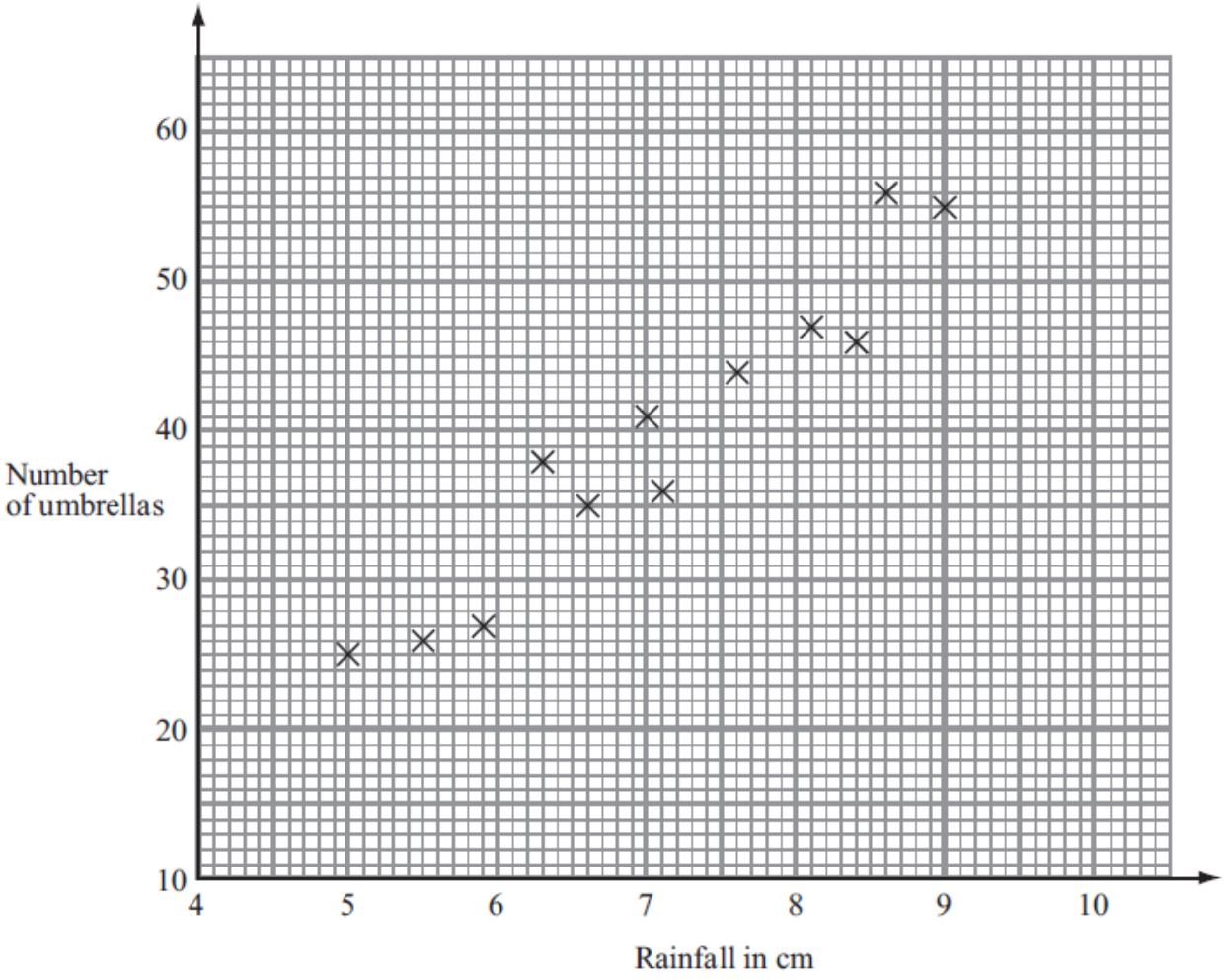
..... m*l* of custard

..... g of tinned fruit

(Total 3 marks)

2. Mr Wither sells umbrellas.

The scatter graph shows some information about the number of umbrellas he sold and the rainfall, in cm, each month last year.



In January of this year, the rainfall was 6.1 cm.
During January, Mr Wither sold 32 umbrellas.

(a) Show this information on the scatter graph.

(1)

(b) What type of correlation does this scatter graph show?

.....

(1)

In February of this year, Mr Wither sold 40 umbrellas.

(c) Estimate the rainfall for February.

..... cm

(2)

(Total 4 marks)

3. In August 2008, Eddie hired a car in Italy.

The cost of hiring the car was £620
The exchange rate was £1 = €1.25

(a) Work out the cost of hiring the car in euros (€).

€ .....
(2)

Eddie bought some perfume in Italy.

The cost of the perfume in Italy was €50
The cost of the same perfume in London was £42

The exchange rate was still £1 = €1.25

(b) Work out the difference between the cost of the perfume in Italy and the cost of the perfume in London.
Give your answer in pounds (£).

£ .....
(3)

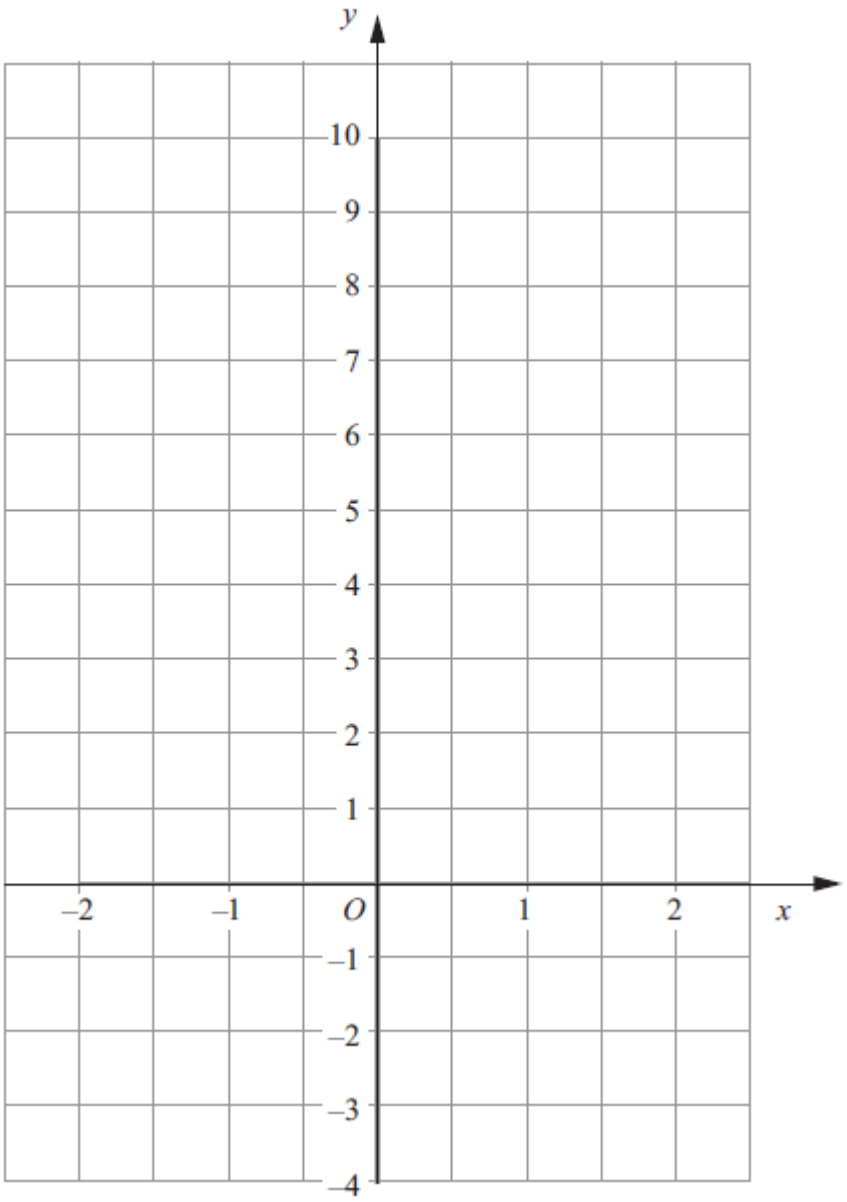
(Total 5 marks)

4. (a) Complete the table of values for $y = 3x + 4$

x	–2	–1	0	1	2
y		1			10

(2)

(b) On the grid, draw the graph of $y = 3x + 4$



(2)

(Total 4 marks)

5.

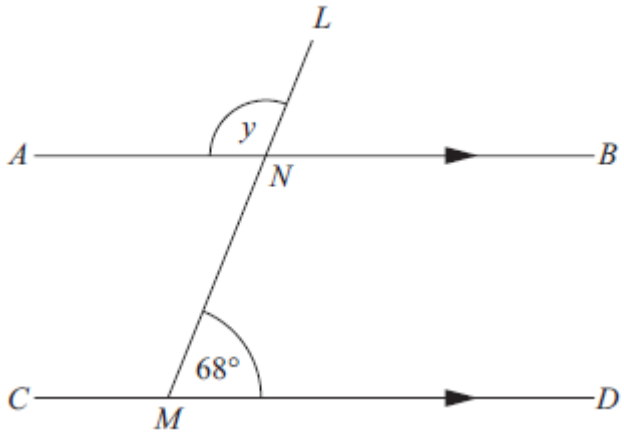


Diagram **NOT** accurately drawn

ANB is parallel to *CMD*.
LNM is a straight line.
Angle *LMD* = 68°

(i) Work out the size of the angle marked *y*.

.....°

(ii) Give reasons for your answer.

.....

.....

(3)

(Total 3 marks)

---

6. (a) Use your calculator to work out $\dfrac{2}{1.5+2.45}$

Write down all the figures on your calculator display.
You must give your answer as a decimal.

.....

(2)

(a) Write your answer to part (a) correct to 2 decimal places.

.....

(1)

(Total 3 marks)

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7. A circle has a diameter of 12 cm.

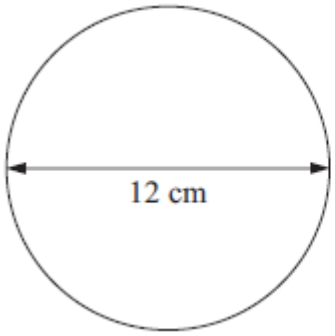


Diagram **NOT** accurately drawn

Work out the circumference of the circle.
Give your answer correct to 1 decimal place.

..... cm

(Total 2 marks)

---

8. The equation

$$x^3 + 10x = 25$$

has a solution between 1 and 2

Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show **all** your working.

x = ...

(Total 4 marks)

---

9. Work out £84 as a percentage of £350

..... %

(Total 2 marks)

---

10. There are some ribbons in a box.
The ribbons are green or red or yellow or white.

The table shows each of the probabilities that a ribbon chosen at random will be green or red or white.

Colour	**Green**	**Red**	**Yellow**	**White**
Probability	0.15	0.30		0.35

(a) Work out the probability that a ribbon chosen at random will be yellow.

.....

(2)

There are 500 ribbons in the box.

(b) Work out the number of red ribbons.

.....

(2)

(Total 4 marks)

11.

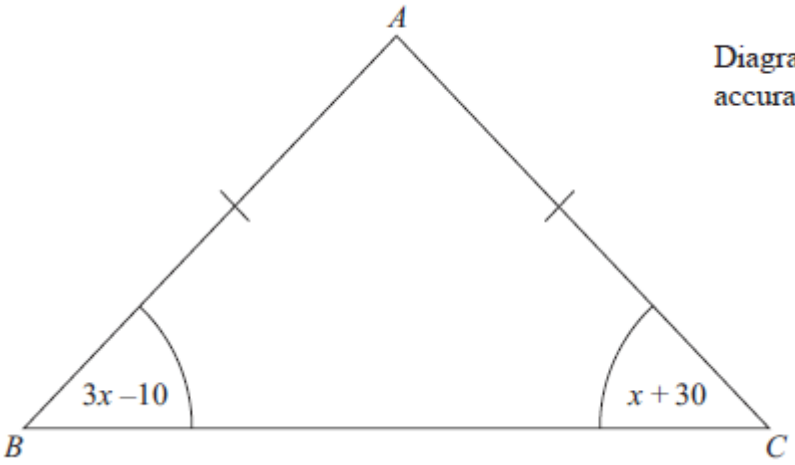


Diagram **NOT** accurately drawn

ABC is an isosceles triangle.
AB = *AC*

(a) Explain why $3x - 10 = x + 30$

.....

(1)

(b) Solve $3x - 10 = x + 30$

x = ...

(2)

(Total 3 marks)

12.

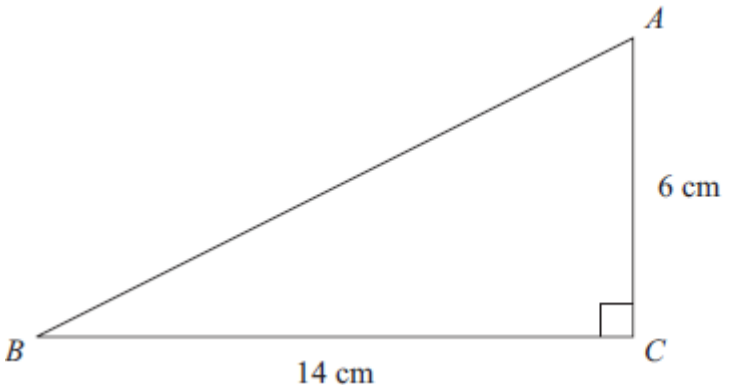


Diagram **NOT** accurately drawn

ABC is a right-angled triangle.
AC = 6 cm.
BC = 14 cm.

(a) Work out the area of triangle *ABC*.

..... cm^2
(2)

(b) Calculate the length of *AB*.
Give your answer correct to 2 decimal places.

..... cm
(3)

(Total 5 marks)

13. The diagram shows a solid prism.

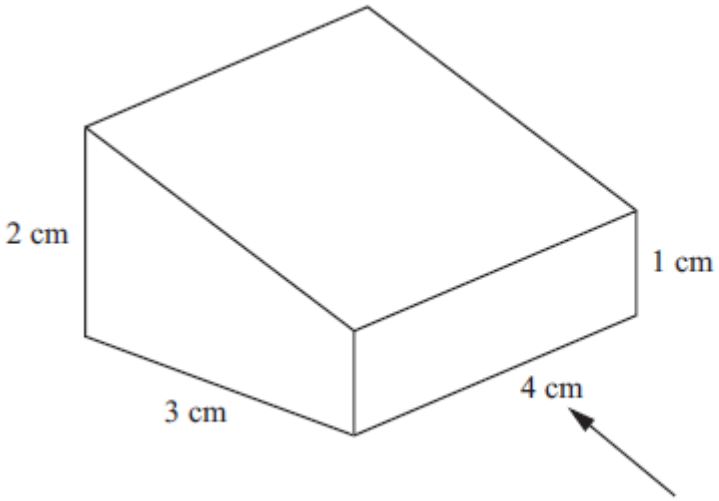
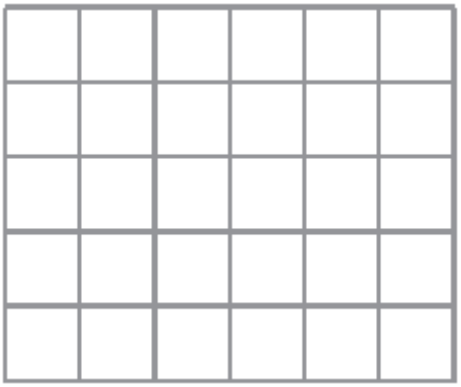


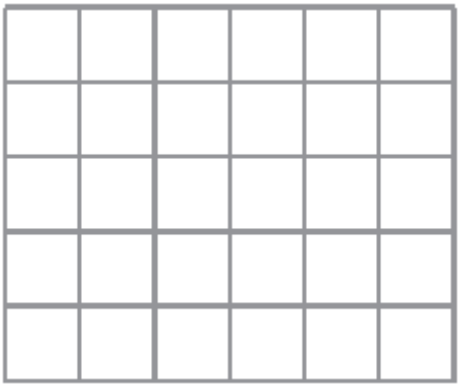
Diagram **NOT** accurately drawn

(a) On the grid below, draw the front elevation of the prism from the direction of the arrow.



(2)

(b) On the grid below, draw the plan of the prism.



(2)

(Total 4 marks)

14. The table gives information about the number of CDs sold in a shop during each of the last 30 weeks.

Number of CDs (n)	**Frequency**		
$0 < n \leq 40$	3		
$40 < n \leq 80$	5		
$80 < n \leq 120$	12		
$120 < n \leq 160$	7		
$160 < n \leq 200$	3		

Calculate an estimate for the mean number of CDs sold each week.
Give your answer correct to 1 decimal place.

.....

(Total 4 marks)

---

15. $-4 < n \leq 1$
n is an integer.

(a) Write down all the possible values of n.

.....

(2)

(b) Solve $3x - 2 > x + 7$

.....

(2)

(Total 4 marks)

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16. Draw the locus of all points which are equidistant from the lines *AB* **and** *AC*.

(Total 2 marks)

NOVEMBER 2010

1.

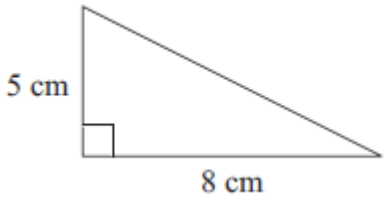

Diagram **NOT** accurately drawn

Work out the area of this right-angled triangle.

..... cm^2

(Total 2 marks)

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2. A spinner can land on red or blue or pink.
The table shows the probabilities that the spinner will land on red or on blue.

Colour	red	blue	pink
Probability	0.58	0.30	

Work out the probability that the spinner will land on pink.

.....

(Total 2 marks)

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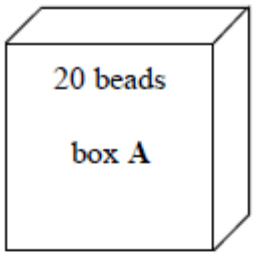
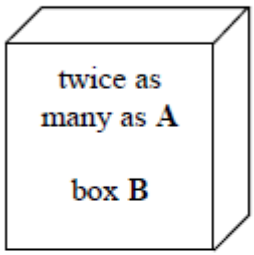
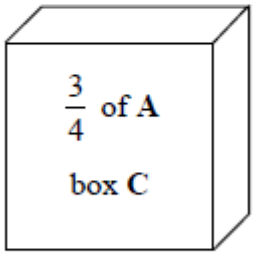
3. There are 20 beads in box **A**.



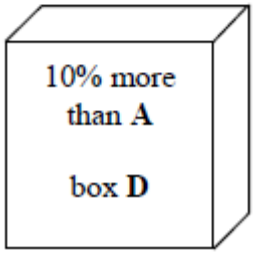
In box **B** there are twice as many beads as in box **A**.



In box **C** there are $\frac{3}{4}$ of the number of beads as in box **A**.



In box **D** there are 10% **more** beads than in box **A**.



Work out the **total** number of beads in the four boxes.

..... beads

(Total 4 marks)

4. Here is a list of ingredients to make melon sorbet for **6** people.

Melon Sorbet
for 6 people

800 g	melon
4	egg whites
$\frac{1}{2}$	lime
100 g	caster sugar

Terry makes melon sorbet for 18 people.

(a) Work out how much caster sugar he uses.

..... g
(2)

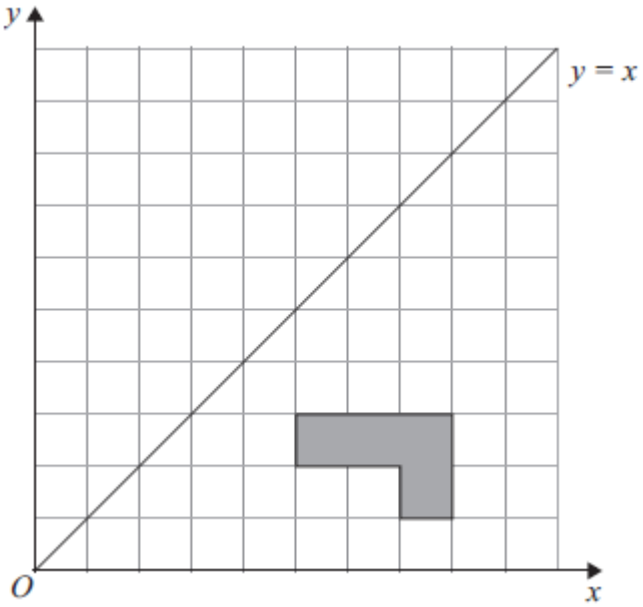
Hedley makes melon sorbet.
He uses 2 limes.

(b) Work out how many people he makes melon sorbet for.

.....
(2)

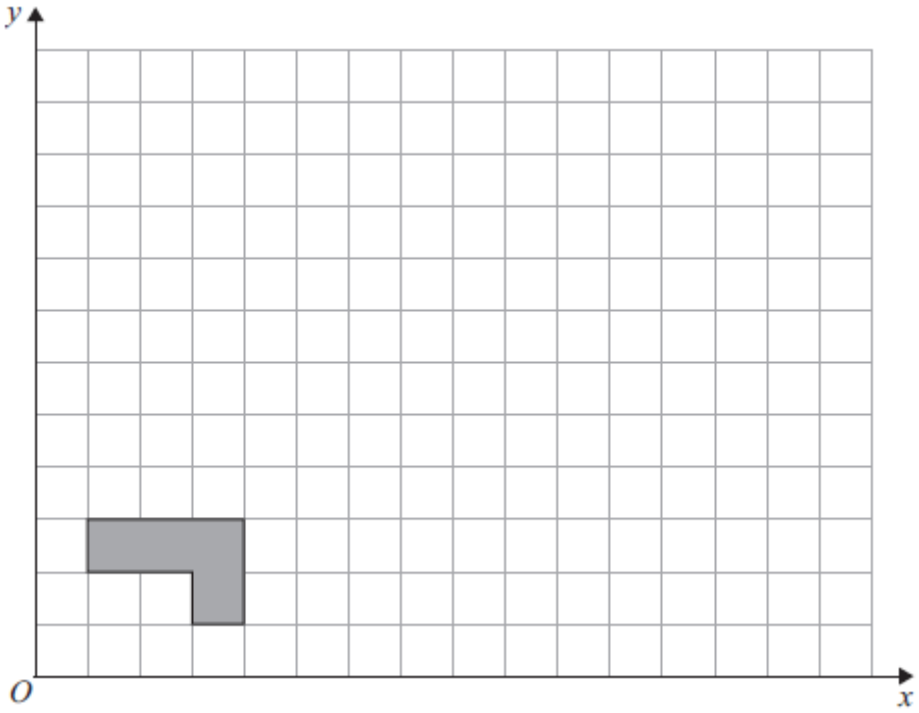
(Total 4 marks)

5.



(a) Reflect the shaded shape in the line $y = x$.

(2)



(b) On the grid, enlarge the shaded shape by a scale factor of 3, centre O.

(3)

(Total 5 marks)

6. (a) Simplify $7x + 2y - x + 3y$

.....

(2)

(b) Solve $2x + 3 = 10$

x = ...

(2)

(c) Simplify

(i) $c^5 \times c^6$

.....

(ii) $e^{12} \div e^4$

.....

(2)

(Total 6 marks)

---

7. Noah got 8 out of 20 in a test.

Write 8 out of 20 as a percentage.

..... %

(Total 2 marks)

---

8. The table shows some information about the ages, in years, of 60 people.

Age (in years)	Frequency
0 to 9	6
10 to 19	13
20 to 29	12
30 to 39	9
40 to 49	7
50 to 59	3
60 to 69	10

(a) Write down the modal class.

.....

(1)

Luke says

"The median lies in the class 30 to 39"

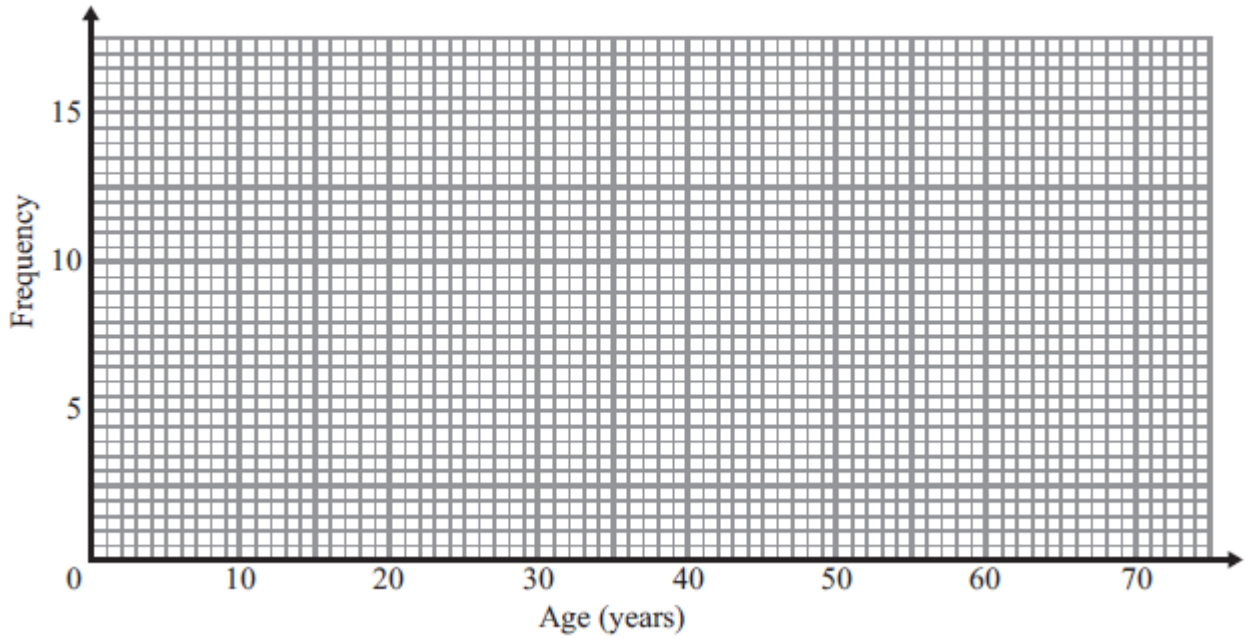
Luke is wrong.

(b) Explain why.

.....

.....

(1)



(c) On the grid, draw a frequency polygon for the information in the table.

(2)

(Total 4 marks)

9. Use your calculator to work out

$$\frac{13.7 + 5.86}{2.54 \times 3.17}$$

Write down all the figures on your calculator display.
You must give your answer as a decimal.

.....

(Total 2 marks)

---

10. $-3 < k \leq 2$

k is an integer.

(a) Write down all the possible values of k.

.....

(2)

(b) Solve the inequality $\frac{2x}{3} < 10$

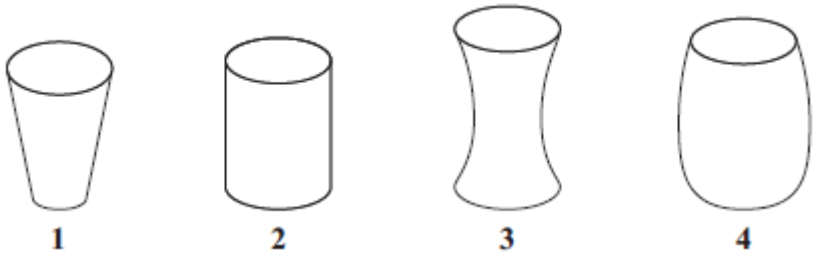
.....

(2)

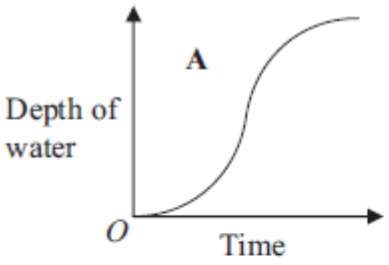
(Total 4 marks)

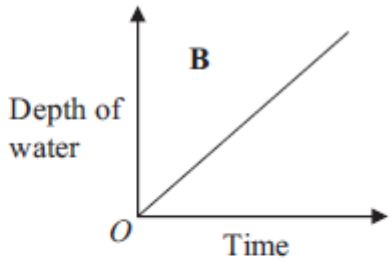
---

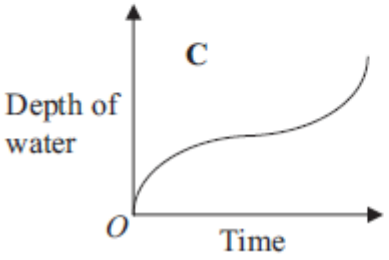
11. Here are four containers.
Water is poured into each container at a constant rate.

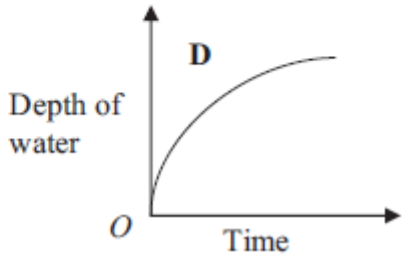


Here are four graphs.
The graphs show how the depth of the water in each container changes with time.









Match each graph with the correct container.

A and .....

B and .....

C and .....

D and .....

(Total 2 marks)

12. A shop sells small boxes and large boxes for storing CDs.

A small box stores x CDs.
A large box stores y CDs.

Ethan buys 7 small boxes.
He also buys 5 large boxes.

Ethan can store a total of T CDs in these boxes.

Write down a formula for T in terms of x and y.

.....

(Total 3 marks)

---

13. A family went on holiday to Miami.
They travelled from London by plane.

The distance from London to Miami is 7120 km.
The plane journey took 8 hours.

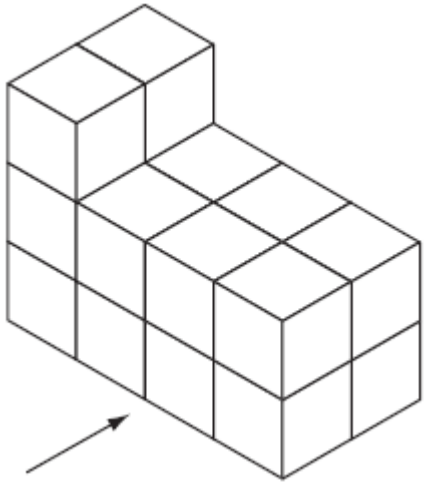
Calculate the average speed of the plane.

.....km/h

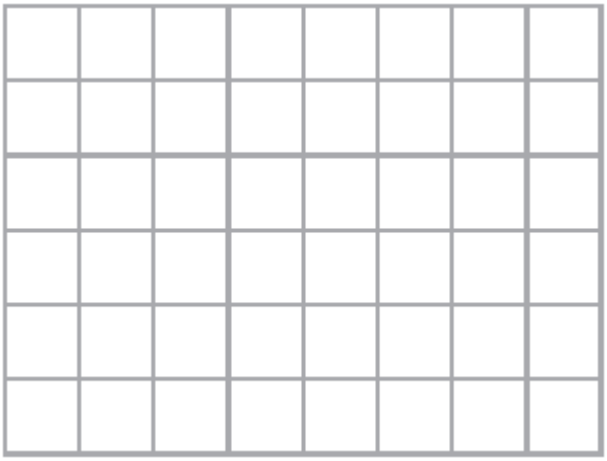
(Total 2 marks)

---

14. The diagram shows a solid prism made from centimetre cubes.

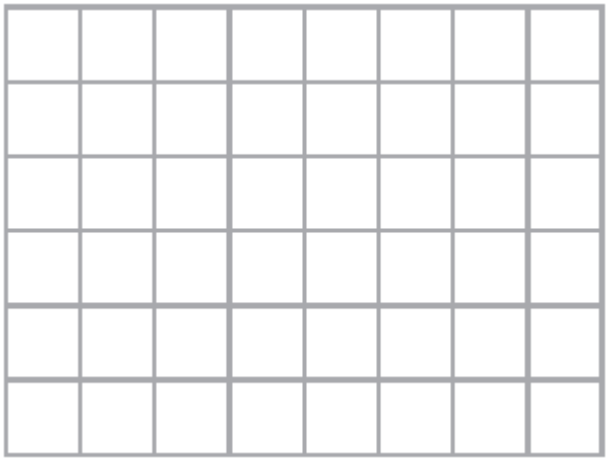


(a) On the centimetre square grid, draw the front elevation of the solid prism from the direction shown by the arrow.



(2)

(b) On the centimetre square grid below, draw the plan of the solid prism.



(2)

(Total 4 marks)

15. 200 students in Year 11 took a mathematics test.
Kamini wants to find out whether students in Year 11 like mathematics.

For her sample she asks the 20 students who got the highest marks in the test.

This is not a good sample to use.

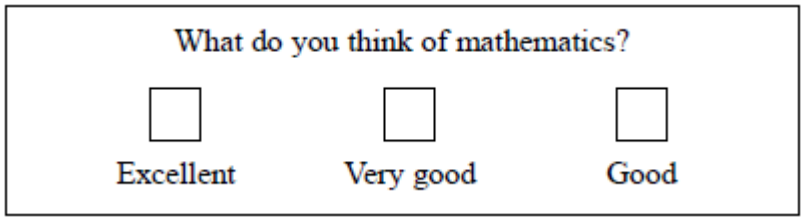
(a) Write down one reason why.

.....

.....

(1)

She uses this question on her questionnaire.



(b) Write down one thing that is wrong with this question.

.....

.....

(1)

Kamini also wants to find out how many hours students spend on their mathematics homework.

(c) Design a suitable question that Kamini could use on her questionnaire.
You must include some response boxes.

(2)
(Total 4 marks)

16. *G* and *H* are vertices of a cuboid.

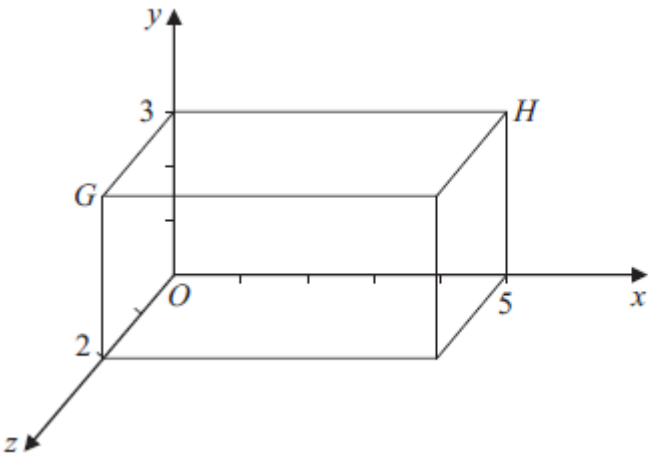


Diagram **NOT** accurately drawn

(a) Write down the coordinates of point *G*.

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

(1)

(b) Write down the coordinates of point *H*.

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

(1)

(Total 2 marks)

---

17. (a) Write 82 500 000 in standard form.

.....

(1)

(b) Work out $(5.2 \times 10^{-7}) \times (2.8 \times 10^{-9})$

Give your answer in standard form.

.....

(2)

(Total 3 marks)

JUNE 2011

1. Each student at a college studies one of four languages.

The table shows the probability a student chosen at random studies German or Russian or French.

Language	German	Spanish	Russian	French
Probability	0.2		0.1	0.5

A student is chosen at random.

(a) Work out the probability that the student studies Spanish.

.....

(2)

There are 800 students at the college.

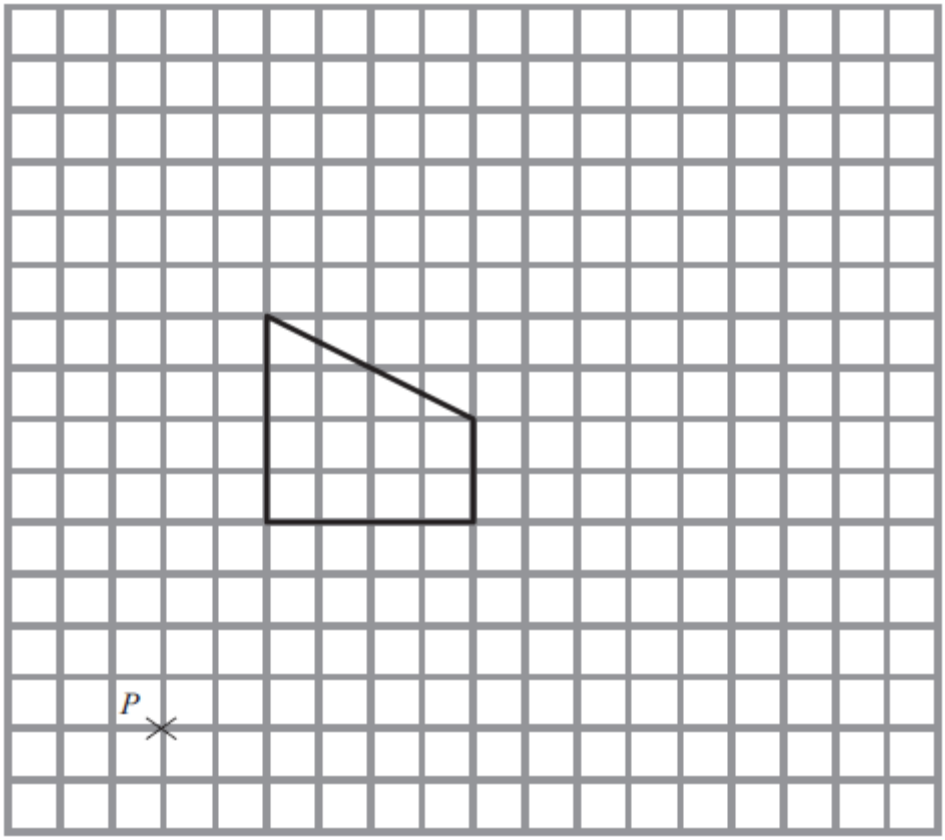
(b) Work out the number of students who study German.

.....

(2)

(Total 4 marks)

2.



On the grid, enlarge the shape with a scale factor of $\frac{1}{2}$, centre P.

(Total 3 marks)

---

3. (a) Express 45 as a product of its prime factors.

.....

(2)

(b) Find the Highest Common Factor (HCF) of 45 and 30

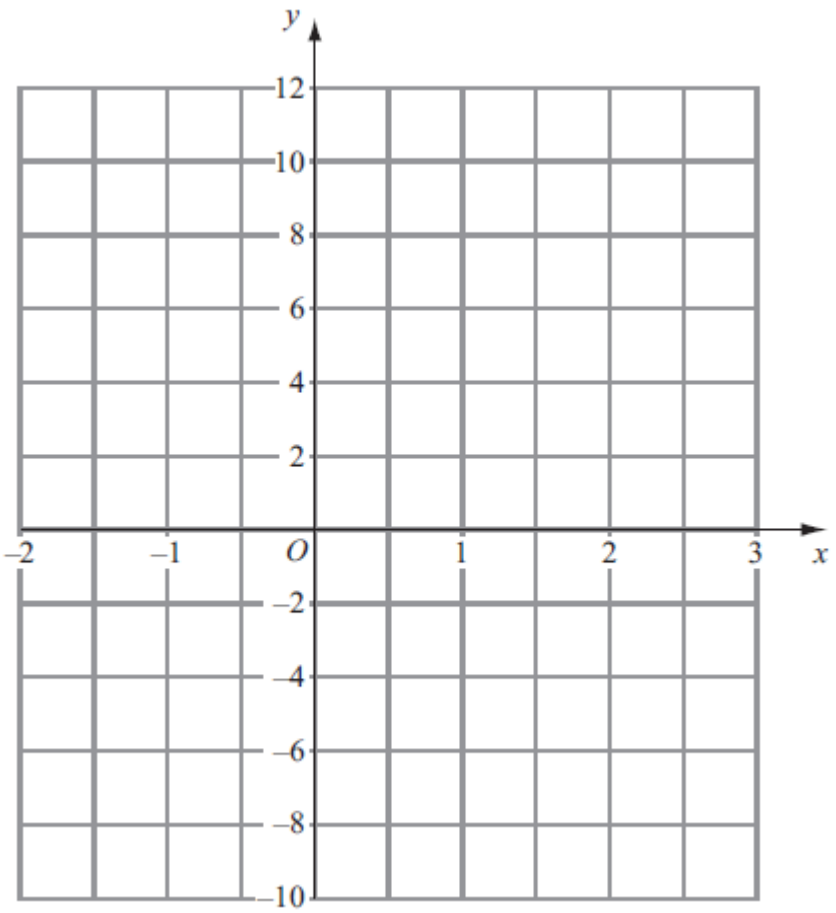
.....

(2)

(Total 4 marks)

---

4. On the grid, draw the graph of $y = 4x - 2$



(Total 3 marks)

5. The diagram shows a circular pond with a path around it.

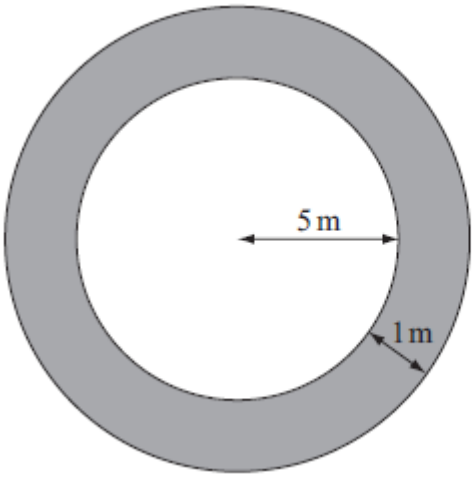


Diagram **NOT** accurately drawn

The pond has a radius of 5m.
The path has a width of 1m.

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

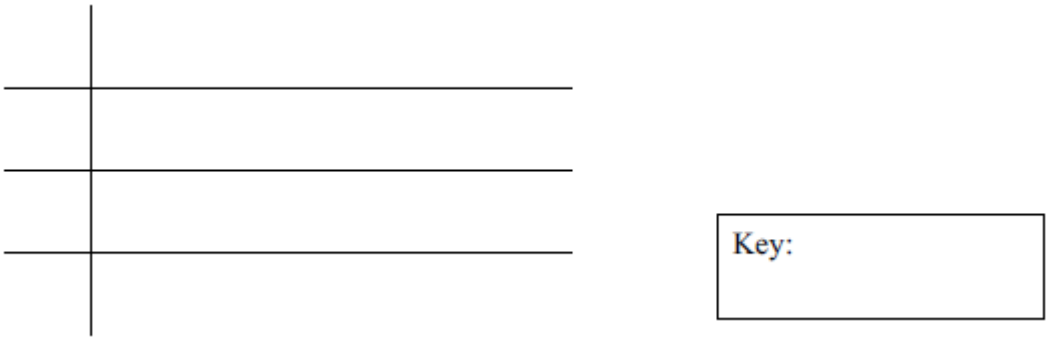
..... m^2

(Total 3 marks)

6. Here are the ages, in years, of 16 people.

36 48 18 25 36 28 45 30
38 27 41 16 36 48 28 21

(a) Draw an ordered stem and leaf diagram to show this information.
You must include a key.



(3)

(b) Find the median age.

..... years
(2)

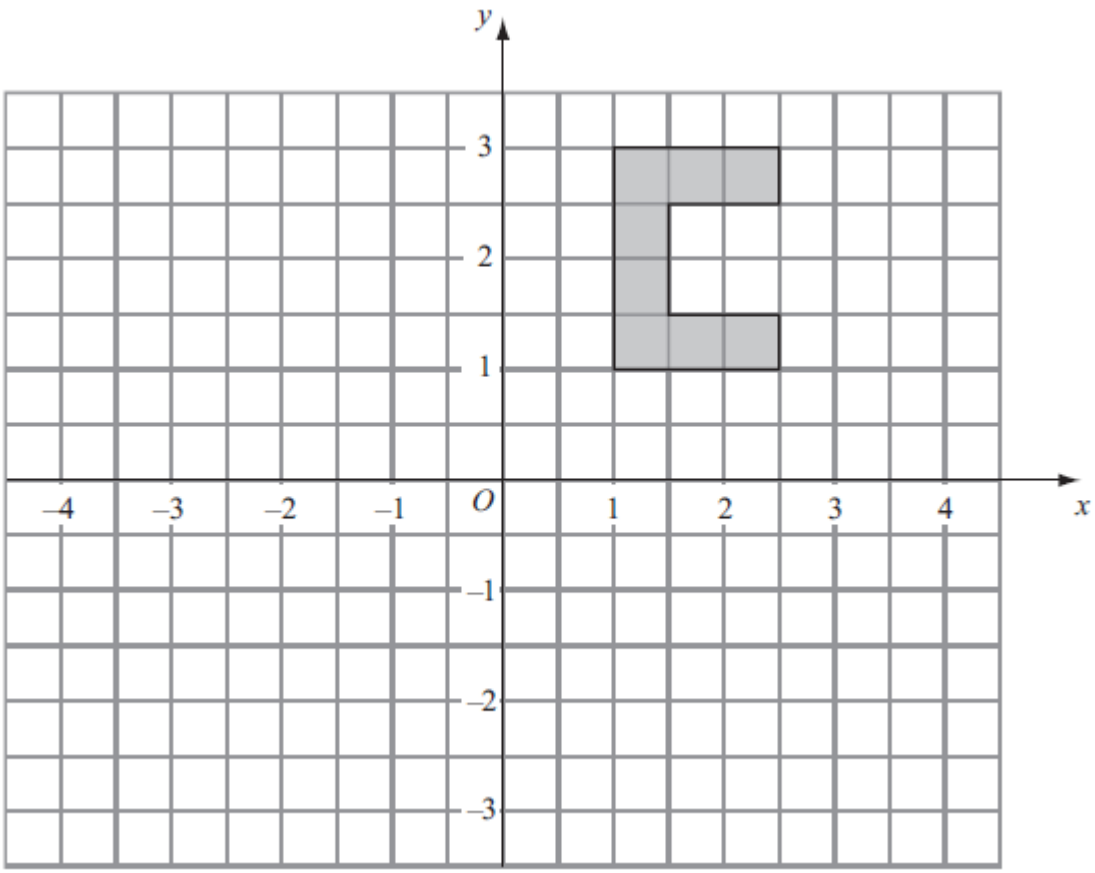
(Total 5 marks)

7. Bob has 120 beads.
The beads are either red or green.
Bob gives $\frac{3}{4}$ of the beads to his friend.
$\frac{2}{3}$ of the beads Bob now has are red.
Work out how many green beads Bob now has.

.....

(Total 2 marks)

8.



Rotate the shape 90° clockwise, centre *O*.

(Total 3 marks)

9.

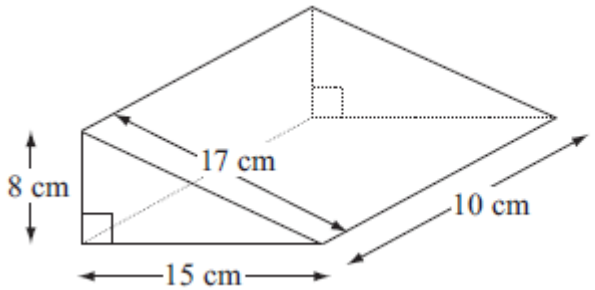


Diagram **NOT** accurately drawn

Work out the **total** surface area of the triangular prism.

.....

(Total 4 marks)

10. (a) Simplify $6e + 5f + e - 3f$

.....

(2)

(b) Solve $4(2x - 1) = 3x - 19$

$x =$ .....

(3)

(c) Solve $\frac{y + 4}{5} = 30$

$y =$ .....

(2)

(Total 7 marks)

11. Bianca asked 32 women about the number of children they each had.

The table shows information about her results.

Number of children	**Frequency**	
0	9	
1	6	
2	7	
3	8	
4	2	
more than 4	0	

(a) Find the mode.

.....

(1)

(b) Calculate the mean.

.....

(3)

(Total 4 marks)

12. The equation

$x^3 + 5x = 67$

has a solution between 3 and 4

Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show **ALL** your working.

$x =$ .....

(Total 4 marks)

---

13. Use your calculator to work out

$$\sqrt{\frac{920 - 170 \tan 65°}{0.012 + 0.034}}$$

(a) Write down all the figures on your calculator display.
You must write your answer as a decimal.

.....

(2)

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

.....

(1)

(Total 3 marks)

---

14. The table shows six expressions.
n is a positive integer.

$2n - 3$	$3n - 2$	$3(n + 4)$	$4n + 1$	$4(3n + 1)$	$2n + 1$

(a) From the table, write the expression whose value is

(i) always even

.....

(ii) always a multiple of 3

.....

(2)

(b) From the table, write the expression which is a factor of $4n^2 - 1$

.....

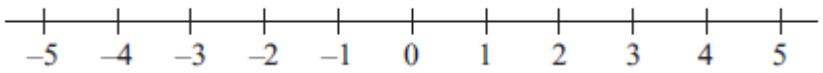
(1)

(Total 4 marks)

---

15. (a) $x > -3$

Show this inequality on the number line.



(2)

(b) Solve the inequality $7y + 36 \leq 8$

.....

(2)

(Total 3 marks)

---

16. In a sale the normal price of a book is reduced by 10%.
The sale price of the book is £4.86
Calculate the normal price of the book.

£.....

(Total 3 marks)

Leave blank

NOVEMBER 2011

1. (a) Use your calculator to work out

$$\frac{\sqrt{21.5}}{5.8 - 2.36}$$

Write down all the figures on your calculator display.

.....

(2)

(b) Write down your answer to part (a) correct to 2 decimal places.

.....

(1) **Q1**

(Total 3 marks)

2. Ishmal invested £3500 for 3 years at 2.5% per annum **simple interest**.

Work out the total amount of interest Ishmal earned.

£ **Q2**

(Total 3 marks)

Leave blank

3. Gary wants to find out how much time teenagers spend listening to music.

He uses this question on a questionnaire.

How many hours do you spend listening to music?

☐	☐	☐	☐
1 to 5	5 to 10	10 to 20	over 20

(a) Write down **two** things wrong with this question.

1 .....

.....

2 .....

.....

(2)

(b) Design a better question for Gary's questionnaire to find out how much time teenagers spend listening to music.

(2) **Q3**

(Total 4 marks)

Leave blank

4. (a) Find the highest common factor (HCF) of 24 and 30

.....

(1)

(b) Find the lowest common multiple (LCM) of 4, 5 and 6

.....

(2)

Q4

(Total 3 marks)

5. Melissa is 13 years old.
Becky is 12 years old.
Daniel is 10 years old.

Melissa, Becky and Daniel share £28 in the ratio of their ages.
Becky gives a third of her share to her mother.

How much should Becky now have?

£ .....

Q5

(Total 4 marks)

Leave blank

6.

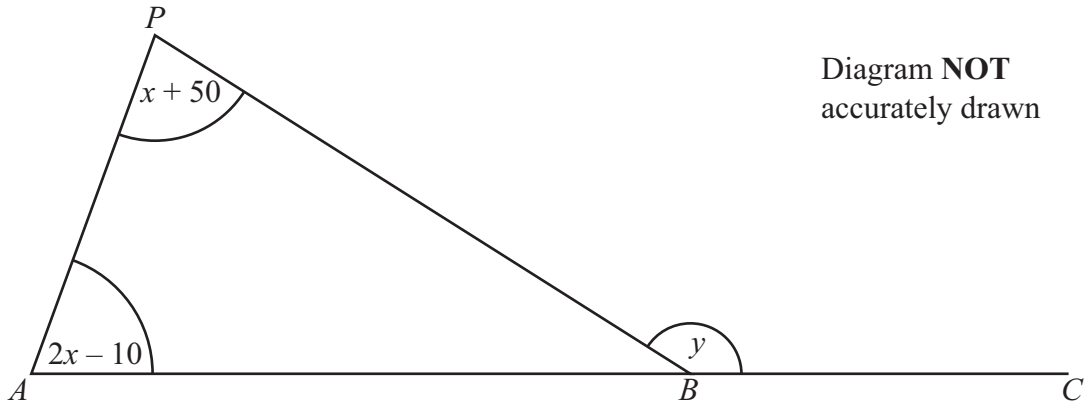


Diagram **NOT** accurately drawn

All angles are measured in degrees.

ABC is a straight line.
Angle *APB* = $x + 50$
Angle *PAB* = $2x - 10$
Angle *PBC* = y

(a) Show that $y = 3x + 40$
Give reasons for each stage of your working.

(3)

(b) Given that $y = 145$,

(i) work out the value of x,

$x =$ .....

(ii) work out the size of the largest angle in triangle *ABP*.

..... °

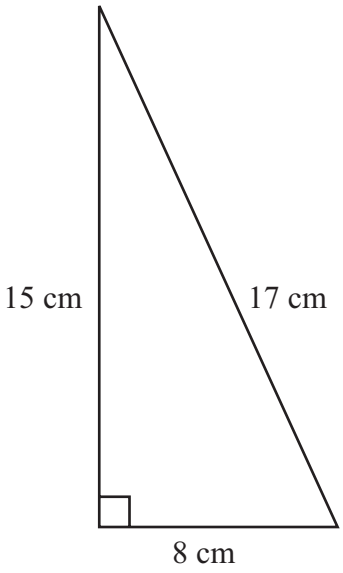
(4) **Q6**

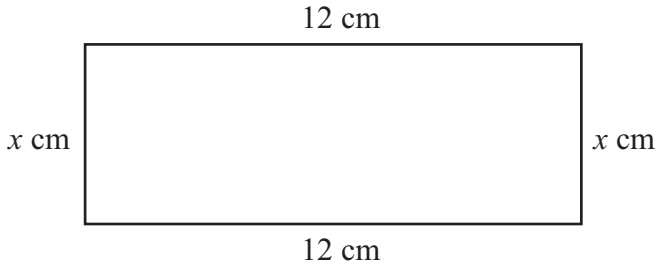
(Total 7 marks)

Leave blank

7. The diagrams show a right-angled triangle and a rectangle.

Diagrams **NOT** accurately drawn





The area of the right-angled triangle is equal to the area of the rectangle.

Find the value of x.

x = ...

Q7

(Total 4 marks)

Leave blank

8. The diagram shows a CD.
The CD is a circle of radius 6 cm.

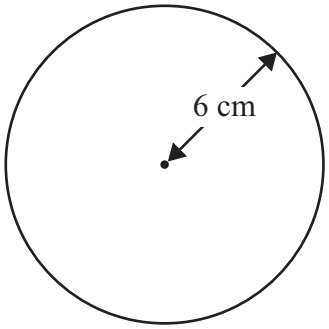


Diagram **NOT** accurately drawn

(a) Work out the circumference of the CD.

..... cm
(2)

CDs of this size are cut from rectangular sheets of plastic.
Each sheet is 1 metre long and 50 cm wide.

(b) Work out the greatest number of CDs that can be cut from one rectangular sheet.

.....
(2)
(Total 4 marks)

Q8

Leave blank

9. The exchange rate in London is £1 = €1.14
The exchange rate in Paris is €1 = £0.86

Elaine wants to change some pounds into euros.

In which of these cities would Elaine get the most euros?
You must show all of your working.

.....

Q9

(Total 3 marks)

Leave blank

10. The temperature (T°C) at noon at a seaside resort was recorded for a period of 60 days. The table shows some of this information.

Temperature (T°C)	**Number of days**
$10 < T \leqslant 14$	2
$14 < T \leqslant 18$	8
$18 < T \leqslant 22$	14
$22 < T \leqslant 26$	23
$26 < T \leqslant 30$	9
$30 < T \leqslant 34$	4

Calculate an estimate for the mean temperature at noon during these 60 days.
Give your answer correct to 3 significant figures.

.....°C **Q10**

(Total 4 marks)

Leave blank

11. (a) Simplify $m^3 \times m^6$

.....

(1)

(b) Simplify $\frac{p^8}{p^2}$

.....

(1)

(c) Simplify $(2n^3)^4$

.....

(2) **Q11**

(Total 4 marks)

12. $-2 \leqslant n < 5$
n is an integer.

(a) Write down all the possible values of n.

.....

(2)

(b) Solve the inequality $4x + 1 > 11$

.....

(2) **Q12**

(Total 4 marks)

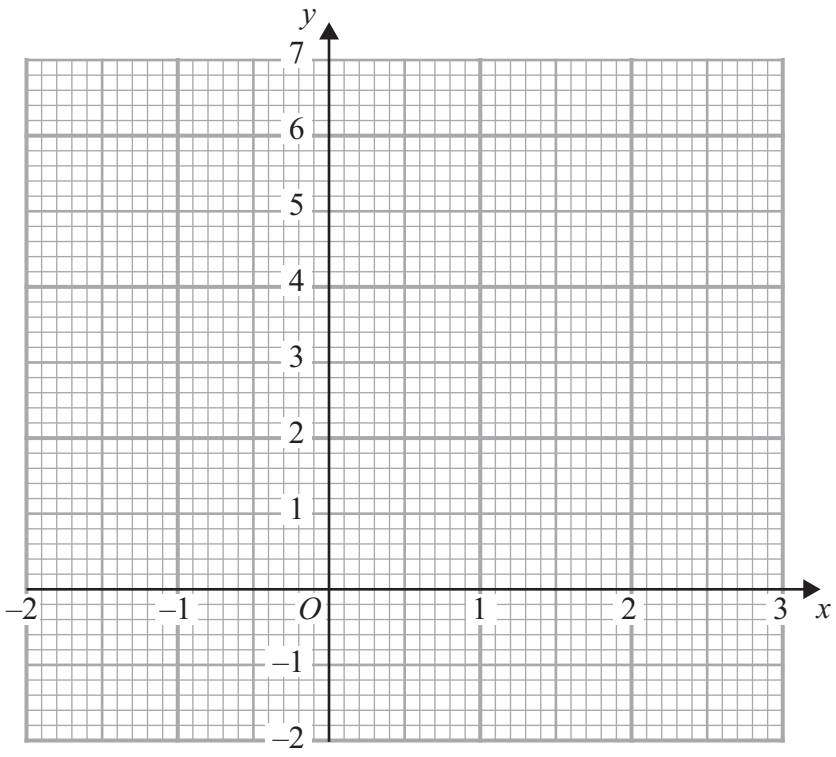
Leave blank

13. (a) Complete the table of values for $3x + 2y = 6$

x	-2	-1	0	1	2	3
y		4.5	3			-1.5

(2)

(b) On the grid, draw the graph of $3x + 2y = 6$



(2)

(c) Find the gradient of the graph of $3x + 2y = 6$

.....

(2) **Q13**

(Total 6 marks)

Leave blank

14. (a) Factorise $6x + 4$

.....

(1)

(b) Factorise fully $9x^2y - 15xy$

.....

(2) **Q14**

(Total 3 marks)

15. A garage sells used cars.
The table shows the number of used cars it sold from July to December.

July	August	September	October	November	December
28	25	34	46	28	40

(a) Work out the 3-point moving averages for the information in the table.
The first two have been worked out for you.

29 35

....

(2)

(b) Comment on the trend shown by the 3-point moving averages.

.....

.....

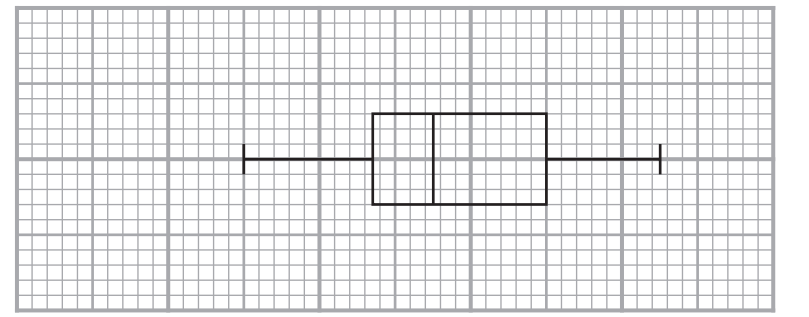
(1) **Q15**

(Total 3 marks)

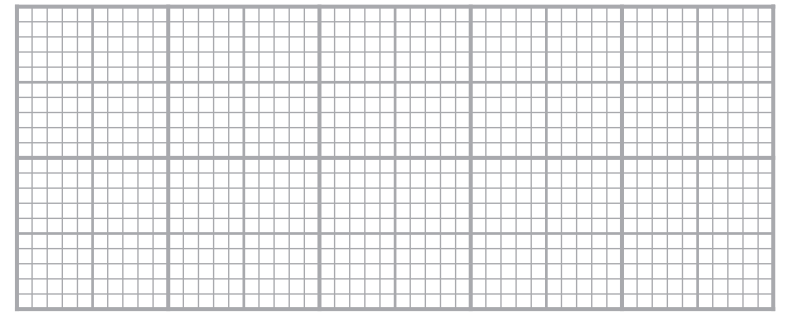
Leave blank

16. Barry drew an angle of 60°.
He asked some children to estimate the size of the angle he had drawn.
He recorded their estimates.
The box plot gives some information about these estimates.

Children's estimates



Adults' estimates



(a) Write down the median of the children's estimates.

.....°

(1)

(b) Find the interquartile range of the children's estimates.

.....°

(2)

Leave blank

MARCH 2012

1. Here are the first five terms in a number sequence.

5 9 13 17 21

Find the 10th term in this number sequence.

..... **Q1**

(Total 2 marks)

2. A rugby team played six games.
The mean score for the six games is 14.5

The rugby team played one more game.
The mean score for all seven games is 16

Work out the number of points the team scored in the seventh game.

..... points **Q2**

(Total 2 marks)

Leave blank

3. Rosie and Jim are going on holiday to the USA.

Jim changes £350 into dollars ($).

The exchange rate is £1 = $1.34

(a) Work out how many dollars ($) Jim gets.

$ .....

(2)

In the USA Rosie sees some jeans costing $67

In London the same make of jeans costs £47.50

The exchange rate is still £1 = $1.34

(b) Work out the difference between the cost of the jeans in the USA and in London. Give your answer in pounds (£).

£ .....

(3)

Q3

(Total 5 marks)

Leave blank

4. John needs 4 tyres for his car.

He pays for 3 tyres and gets one tyre free.
The tyres cost £65 each plus VAT at 20%.

Work out how much in total John pays for the tyres.

£ .....

(Total 4 marks)

Q4

5. (a) Use your calculator to work out $\dfrac{\sqrt{2.5^2+3.75}}{3.9-1.7}$

Write down all the figures on your calculator display.
You must give your answer as a decimal.

.....

(3)

(b) Write your answer to part (a) correct to 2 decimal places.

.....

(1)

(Total 4 marks)

Q5

Leave blank

6. The equation $x^3 + 3x = 41$

has a solution between 3 and 4

Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show **all** your working.

$x =$ .....

Q6

(Total 4 marks)

Leave blank

7.

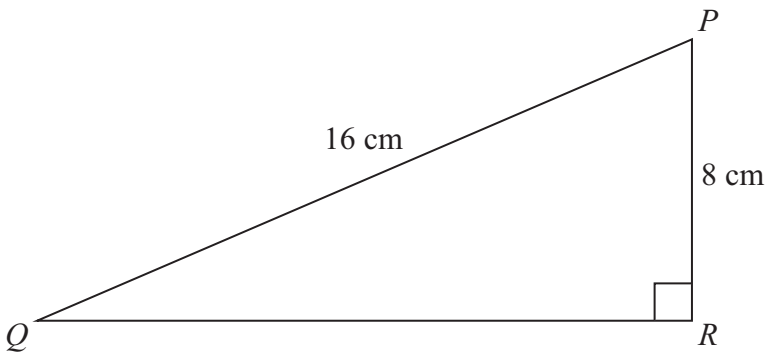


Diagram **NOT** accurately drawn

PQR is a right-angled triangle.
PQ = 16 cm.
PR = 8 cm.

Calculate the length of *QR*.
Give your answer correct to 2 decimal places.

..... cm

Q7

(Total 3 marks)

Leave blank

8. (a) Simplify $x^5 \times x^4$

.....

(1)

(b) Simplify $y^7 \div y^2$

.....

(1)

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

.....

(2)

(d) Expand and simplify $(y + 5)(y + 7)$

.....

(2)

(e) Factorise $p^2 - 6p + 8$

.....

(2) **Q8**

(Total 8 marks)

Leave blank

9. Riki has a packet of flower seeds.

The table shows each of the probabilities that a seed taken at random will grow into a flower that is pink or red or blue or yellow.

Colour	**pink**	**red**	**blue**	**yellow**	**white**
Probability	0.15	0.25	0.20	0.16	

(a) Work out the probability that a seed taken at random will grow into a white flower.

.....

(2)

There are 300 seeds in the packet.

All of the seeds grow into flowers.

(b) Work out an estimate for the number of red flowers.

.....

(2) **Q9**

(Total 4 marks)

Leave blank

10. Caleb measured the heights of 30 plants.

The table gives some information about the heights, h cm, of the plants.

Height (h cm) of plants	**Frequency**		
$0 < h \leqslant 10$	2		
$10 < h \leqslant 20$	8		
$20 < h \leqslant 30$	9		
$30 < h \leqslant 40$	7		
$40 < h \leqslant 50$	4		

Work out an estimate for the mean height of a plant.

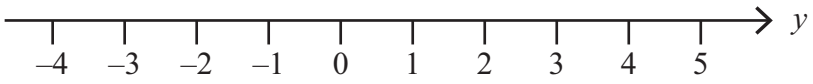
..... cm

Q10

(Total 4 marks)

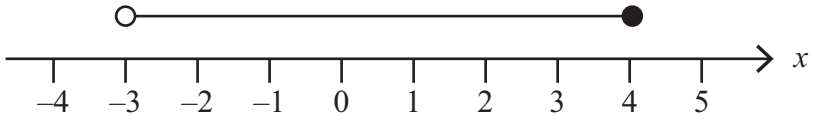
Leave blank

11. (a) On the number line below, show the inequality $-2 < y < 3$



(1)

(b) Here is an inequality, in x, shown on a number line.



Write down the inequality.

.....

(2)

(c) Solve the inequality $4t - 5 > 9$

.....

(2)

Q11

(Total 5 marks)

12. Sylvie shares £45 between Ann, Bob and Cath in the ratio 2 : 3 : 4

Work out the amount each person gets.

Ann .....

Bob .....

Cath .....

Q12

(Total 3 marks)

Leave blank

13. *ABCD* is a trapezium.

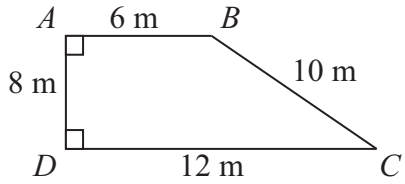


Diagram **NOT** accurately drawn

Work out the area of the trapezium.

..... m^2

Q13

(Total 2 marks)

14. *PQR* is a right-angled triangle.

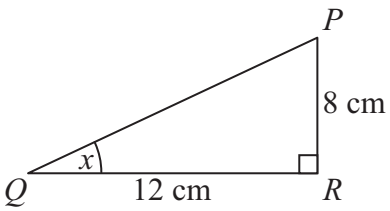


Diagram **NOT** accurately drawn

PR = 8 cm.
QR = 12 cm.

(a) Find the size of the angle marked *x*.
Give your answer correct to 1 decimal place.

..... °

(3)

Leave blank

XYZ is a different right-angled triangle.

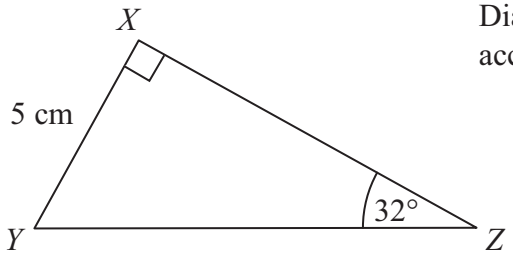


Diagram **NOT** accurately drawn

XY = 5 cm.
Angle *Z* = 32°.

(b) Calculate the length *YZ*.
Give your answer correct to 3 significant figures.

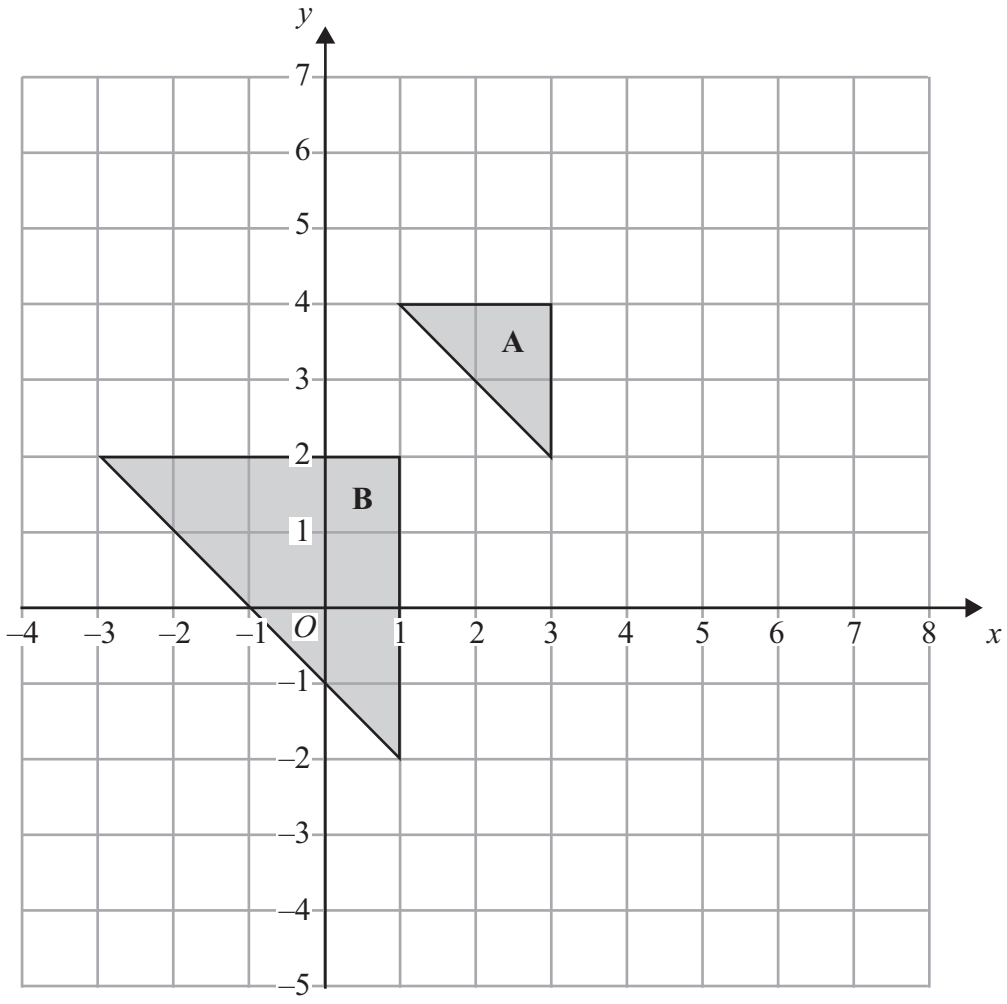
..... cm
(3)

Q14

(Total 6 marks)

Leave blank

15.



Triangle **A** and triangle **B** are drawn on the grid.

(a) Describe fully the single transformation which maps triangle **A** onto triangle **B**.

.....

.....

(3)

JUNE 2012

1

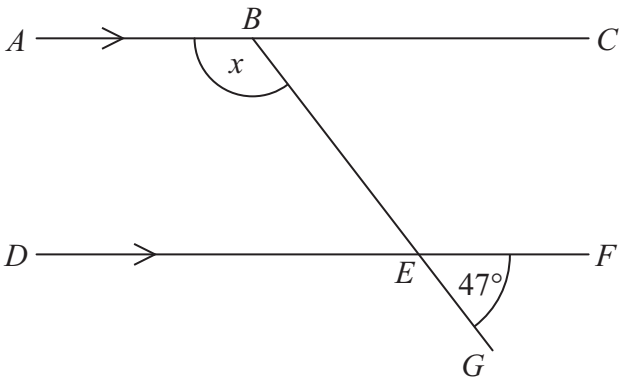


Diagram **NOT** accurately drawn

ABC and *DEF* are parallel lines.
BEG is a straight line.
Angle *GEF* = 47°.

Work out the size of the angle marked *x*.
Give reasons for your answer.

.....°

(Total for Question 1 is 3 marks)

2 (a) Use your calculator to work out $\dfrac{38.5 \times 14.2}{18.4 - 5.9}$

Write down all the figures on your calculator display.
You must give your answer as a decimal.

.....

(2)

(b) Write your answer to part (a) correct to 1 significant figure.

.....

(1)

(Total for Question 2 is 3 marks)

3 Pradeep wants to find out how much time people spend playing sport.

He uses this question on a questionnaire.

How much time do you spend playing sport?

☐ 0 – 1 hours ☐ 1 – 2 hours ☐ 3 – 4 hours

(a) Write down **two** things wrong with this question.

1 .....

.....

2 .....

.....

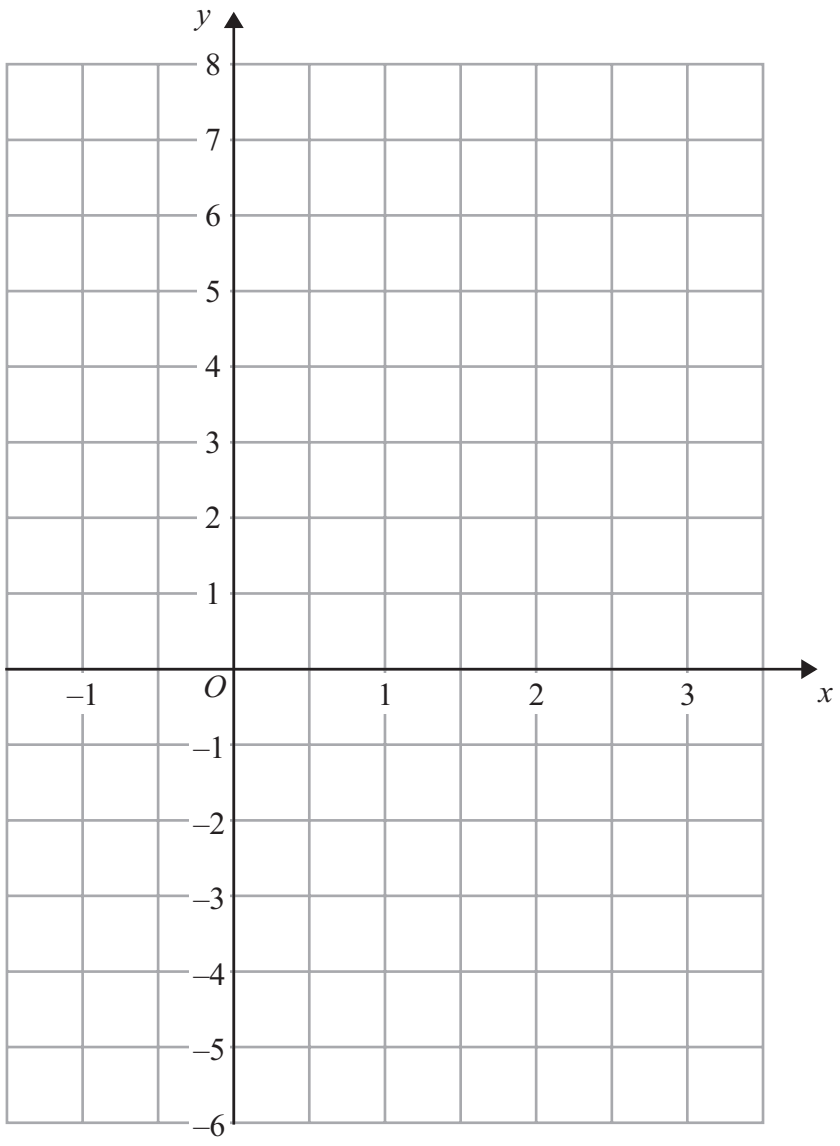
(2)

(b) Design a better question for Pradeep's questionnaire to find out how much time people spend playing sport.

(2)

(Total for Question 3 is 4 marks)

4 On the grid, draw the graph of $y = 3x - 2$ for values of x from -1 to 3



(Total for Question 4 is 3 marks)

***5** Mr Weaver's garden is in the shape of a rectangle.

In the garden

there is a patio in the shape of a rectangle
and two ponds in the shape of circles with diameter 3.8 m.

The rest of the garden is grass.

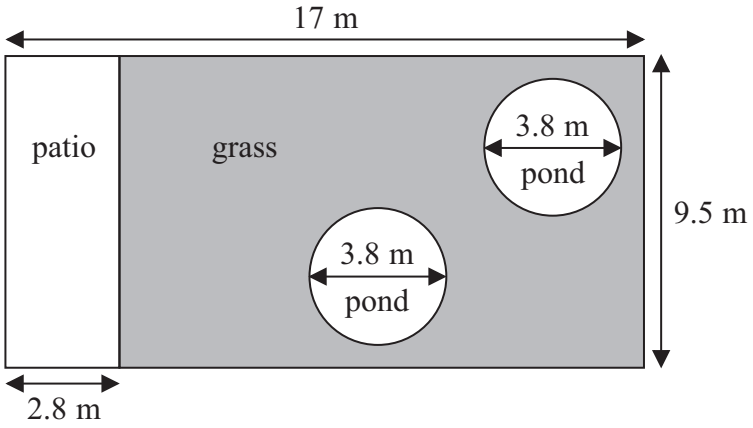


Diagram **NOT** accurately drawn

Mr Weaver is going to spread fertiliser over all the grass.
One box of fertiliser will cover 25 m^2 of grass.

How many boxes of fertiliser does Mr Weaver need?
You must show your working.

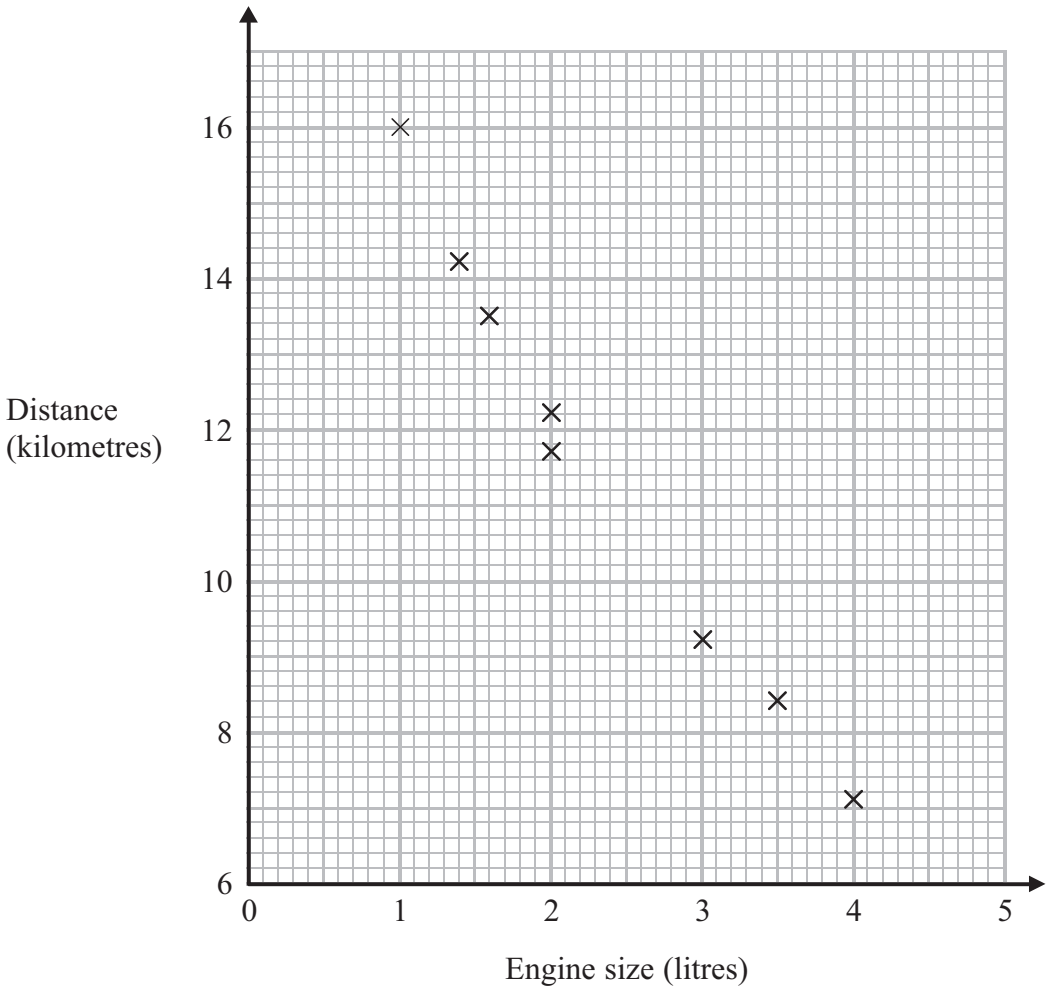
(Total for Question 5 is 5 marks)

***6** Potatoes cost £9 for a 12.5 kg bag at a farm shop.
The same type of potatoes cost £1.83 for a 2.5 kg bag at a supermarket.

Where are the potatoes the better value, at the farm shop or at the supermarket?
You must show your working.

(Total for Question 6 is 4 marks)

7 The scatter graph shows some information about 8 cars.
For each car it shows the engine size, in litres, and the distance, in kilometres, the car travels on one litre of petrol.



(a) What type of correlation does the scatter graph show?

.....

(1)

A different car of the same type has an engine size of 2.5 litres.

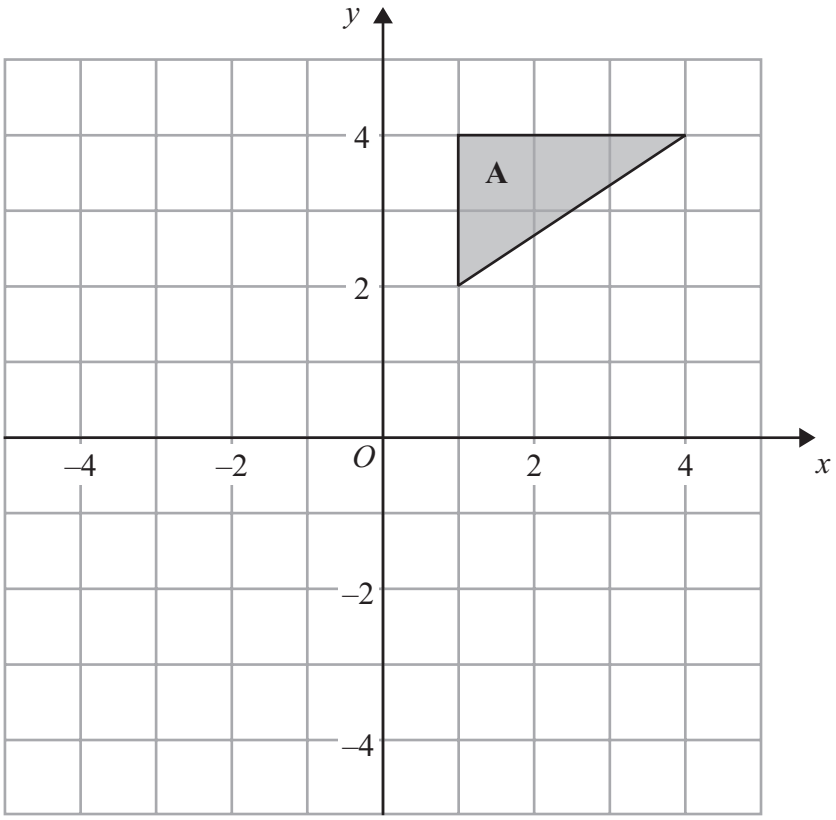
(b) Estimate the distance travelled on one litre of petrol by this car.

..... kilometres

(2)

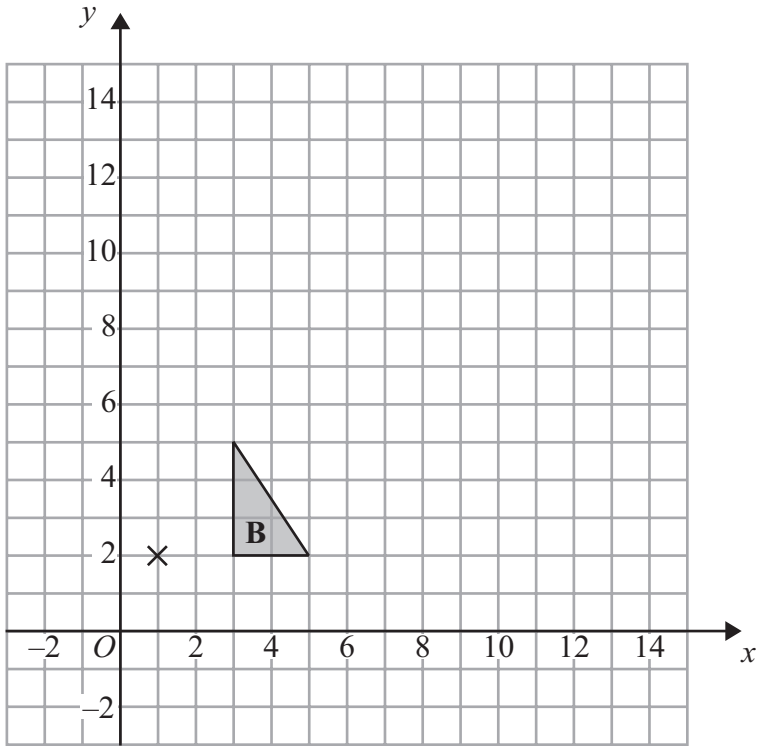
(Total for Question 7 is 3 marks)

8



(a) Rotate triangle **A** 90° clockwise, centre O.

(2)



(b) Enlarge triangle **B** by scale factor 3, centre (1, 2).

(3)

(Total for Question 8 is 5 marks)

9 Linda is going on holiday to the Czech Republic.
She needs to change some money into koruna.

She can only change her money into 100 koruna notes.

Linda only wants to change up to £200 into koruna.
She wants as many 100 koruna notes as possible.

The exchange rate is £1 = 25.82 koruna.

How many 100 koruna notes should she get?

.....

(Total for Question 9 is 3 marks)

10 m is an integer such that $-2 < m \leqslant 3$

(a) Write down all the possible values of m.

.....

(2)

(b) Solve $7x - 9 < 3x + 4$

.....

(2)

(Total for Question 10 is 4 marks)

11 The equation

$$x^3 - 6x = 72$$

has a solution between 4 and 5

Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show **all** your working.

$x =$ .....

(Total for Question 11 is 4 marks)

12 The probability that a biased dice will land on a five is 0.3

Megan is going to roll the dice 400 times.

Work out an estimate for the number of times the dice will land on a five.

.....

(Total for Question 12 is 2 marks)

13 Bob asked each of 40 friends how many minutes they took to get to work.

The table shows some information about his results.

Time taken (m minutes)	Frequency
$0 < m \leqslant 10$	3
$10 < m \leqslant 20$	8
$20 < m \leqslant 30$	11
$30 < m \leqslant 40$	9
$40 < m \leqslant 50$	9

Work out an estimate for the mean time taken.

..... minutes

(Total for Question 13 is 4 marks)

14 (a) Expand and simplify $(p + 9)(p - 4)$

.....

(2)

(b) Solve $\frac{5w - 8}{3} = 4w + 2$

$w =$ .....

(3)

(c) Factorise $x^2 - 49$

.....

(1)

(d) Simplify $(9x^8y^3)^{\frac{1}{2}}$

.....

(2)

(Total for Question 14 is 8 marks)

NOVEMBER 2012

1 Use a calculator to work out

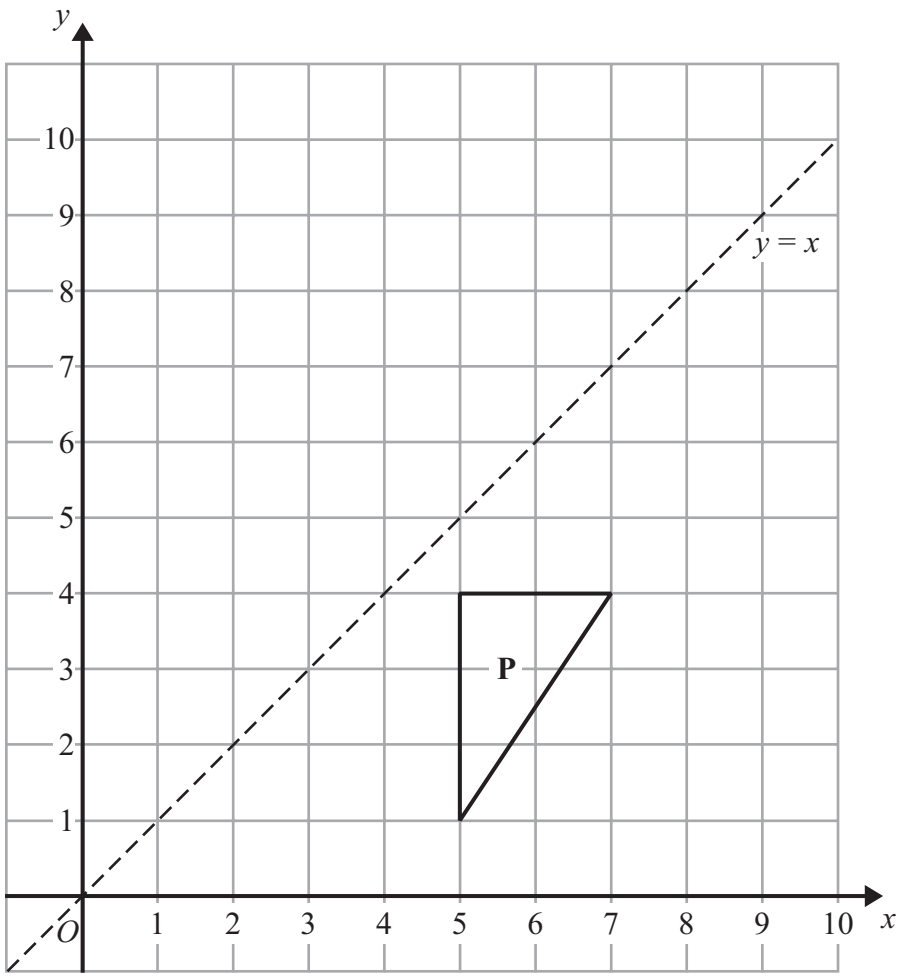
$$\frac{\sqrt{20.4}}{6.2 \times 0.48}$$

Write down all the figures on your calculator display.
Give your answer as a decimal.

.....

(Total for Question 1 is 2 marks)

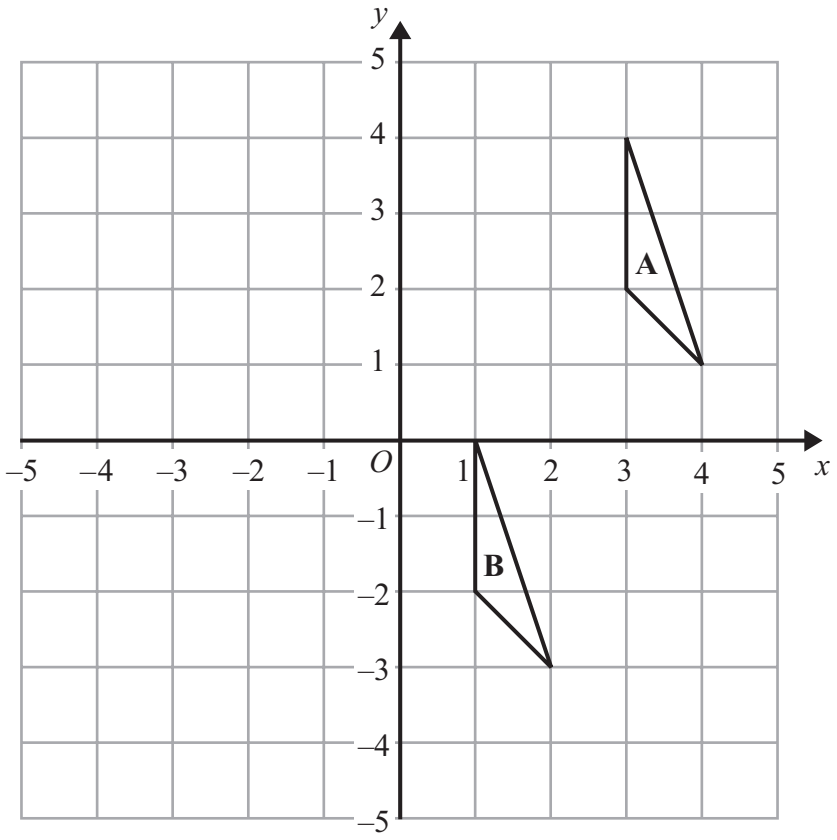
2 (a)



Reflect shape **P** in the line $y = x$

(2)

(b)



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

.....

.....

(2)

(Total for Question 2 is 4 marks)

*3 A company sells boxes to factories.
Fred buys boxes.
The boxes are sold in packs of 1000
Each pack costs £193.86

Fred orders 3 packs of boxes.
He gets a discount on his total order.

The table shows the discount he will get.

Total Order	Discount
£100 - £300	5%
£301 - £400	10%
£401 and above	15%

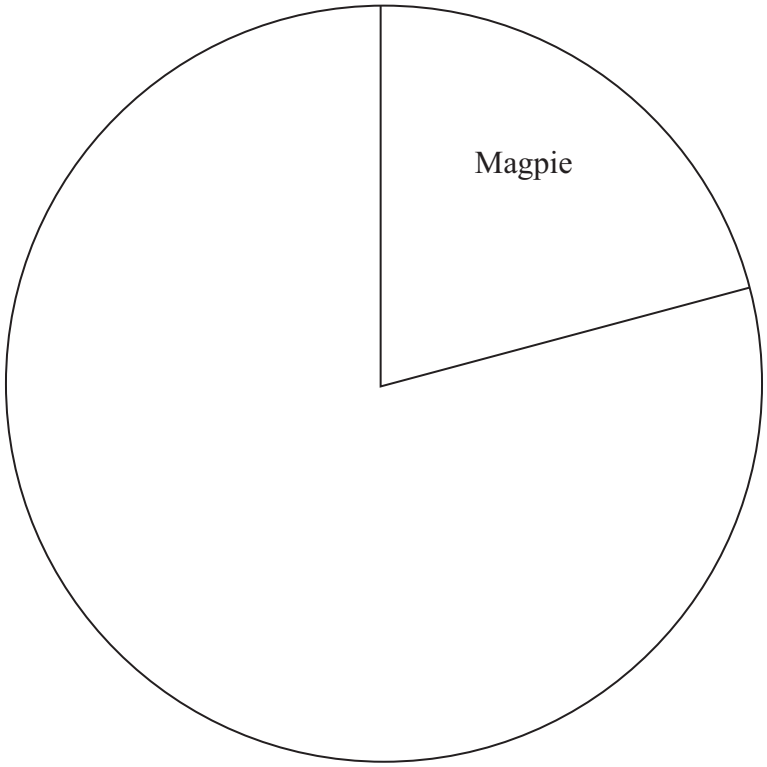
Work out the total cost of the order after the discount.
You must show your working.

(Total for Question 3 is 5 marks)

4 The table gives some information about the birds Paula sees in her garden one day.

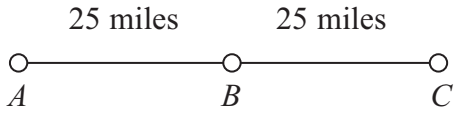
Bird	Frequency
Magpie	15
Thrush	10
Starling	20
Sparrow	27

Complete the accurate pie chart.



(Total for Question 4 is 3 marks)

5



A, *B* and *C* are 3 service stations on a motorway.

AB = 25 miles
BC = 25 miles

Aysha drives along the motorway from *A* to *C*.

Aysha drives at an average speed of 50 mph from *A* to *B*.
She drives at an average speed of 60 mph from *B* to *C*.

Work out the difference in the time Aysha takes to drive from *A* to *B* and the time Aysha takes to drive from *B* to *C*.
Give your answer in minutes.

..... minutes

(Total for Question 5 is 3 marks)

***6**

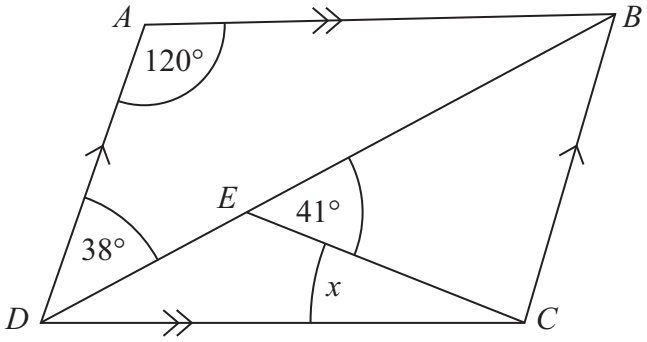


Diagram **NOT** accurately drawn

ABCD is a parallelogram.

Angle *ADB* = 38°.
Angle *BEC* = 41°.
Angle *DAB* = 120°.

Calculate the size of angle *x*.
You must give reasons for your answer.

(Total for Question 6 is 4 marks)

7 160 cm of gold wire has a weight of 17.8 grams.

Work out the weight of 210 cm of the gold wire.

..... grams

(Total for Question 7 is 3 marks)

8 (a) n is an integer.

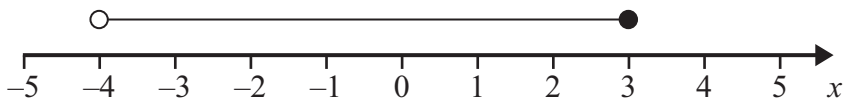
$-1 \leqslant n < 4$

List the possible values of n.

.....

(2)

(b)



Write down the inequality shown in the diagram.

.....

(2)

(c) Solve $3y - 2 > 5$

.....

(2)

(Total for Question 8 is 6 marks)

9 The stem and leaf diagram gives information about the numbers of tomatoes on 31 tomato plants.

0	8	8	9				
1	1	1	5	5			
2	1	2	2	6	7	8	8
3	0	2	5	5	7	9	
4	2	2	3	5	8	8	
5	1	1	3	4	7		

Key: 5 | 7 = 57 tomatoes

(a) Work out the median.

.....

(1)

(b) Work out the interquartile range.

.....

(2)

(Total for Question 9 is 3 marks)

***10** In the UK, petrol cost £1.24 per litre.
In the USA, petrol cost 3.15 dollars per US gallon.

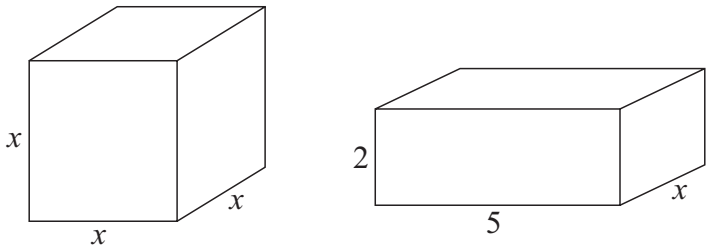
1 US gallon = 3.79 litres
£1 = 1.47 dollars

Was petrol cheaper in the UK or in the USA?

(Total for Question 10 is 4 marks)

11 The diagram shows a cube and a cuboid.

Diagram **NOT** accurately drawn



All the measurements are in cm.
The volume of the cube is 100 cm^3 more than the volume of the cuboid.

(a) Show that $x^3 - 10x = 100$

(2)

(b) Use a trial and improvement method to find the value of x.
Give your answer correct to 1 decimal place.
You must show **all** your working.

$x =$ .....

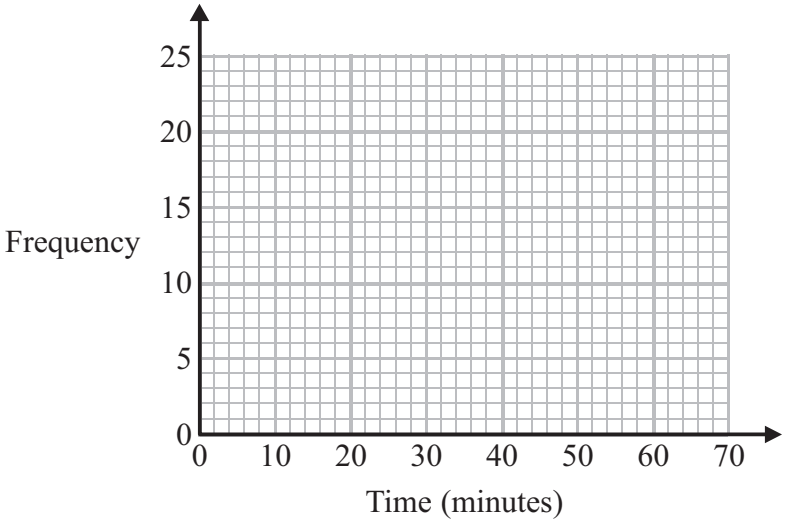
(4)

(Total for Question 11 is 6 marks)

12 The frequency table gives information about the times it took some office workers to get to the office one day.

Time (t minutes)	Frequency
$0 < t \leqslant 10$	4
$10 < t \leqslant 20$	8
$20 < t \leqslant 30$	14
$30 < t \leqslant 40$	16
$40 < t \leqslant 50$	6
$50 < t \leqslant 60$	2

(a) Draw a frequency polygon for this information.



(2)

(b) Write down the modal class interval.

.....

(1)

One of the office workers is chosen at random.

(c) Work out the probability that this office worker took more than 40 minutes to get to the office.

.....

(2)

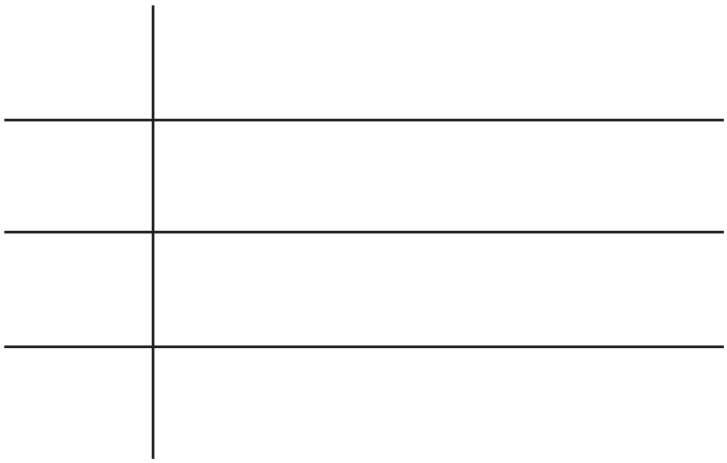
(Total for Question 12 is 5 marks)

MARCH 2013

1 Here are the ages, in years, of 15 students.

19	18	20	25	37
33	21	17	29	20
42	18	23	37	22

Show this information in an ordered stem and leaf diagram.



Key:

(Total for Question 1 is 3 marks)

*2 225 grams of flour are needed to make 9 cakes.

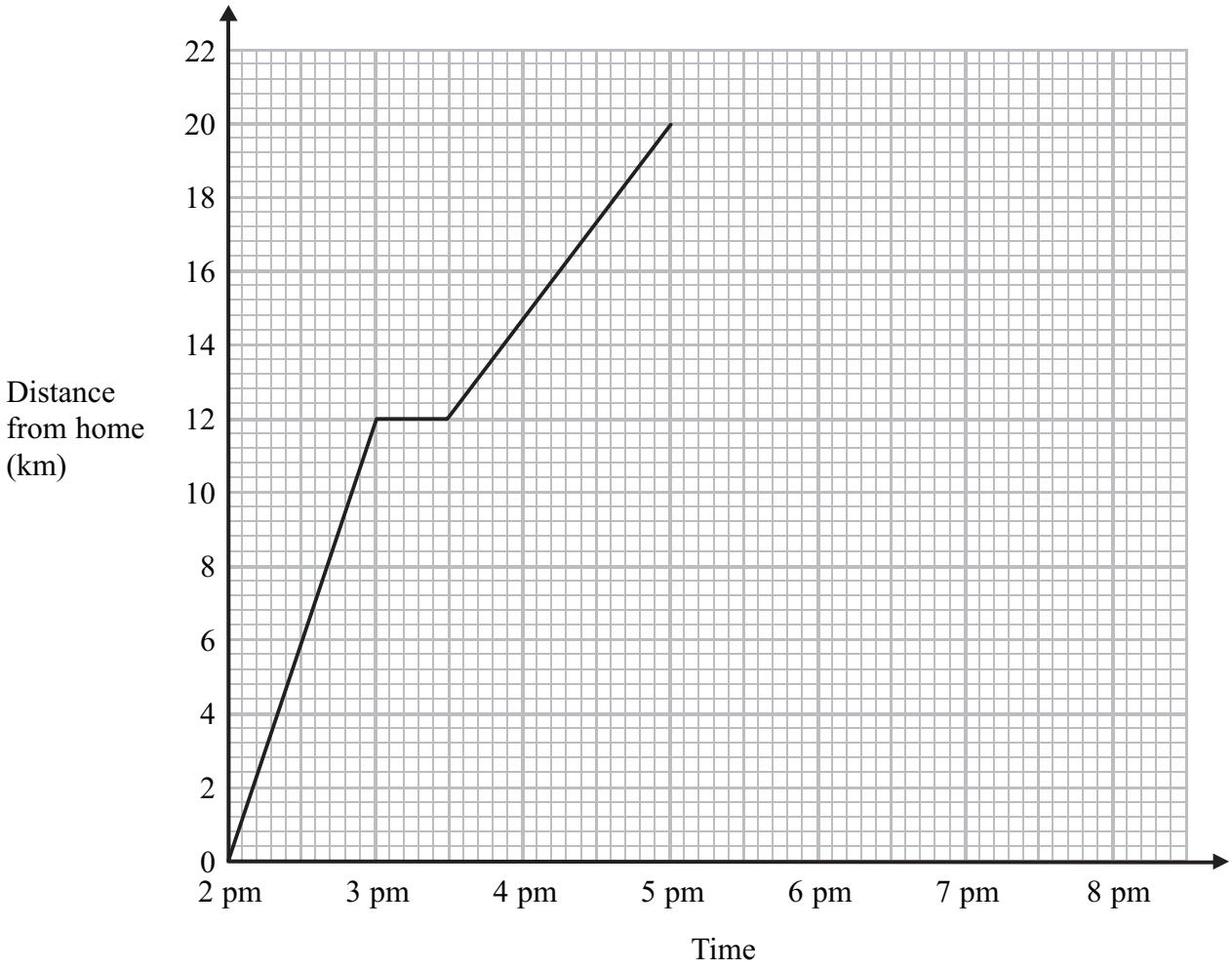
Marian wants to make 20 of these cakes.
She has 475 grams of flour.

Does Marian have enough flour to make 20 cakes?
You must show all your working.

(Total for Question 2 is 3 marks)

3 Simon went for a cycle ride.
He left home at 2 pm.

The travel graph represents part of Simon's cycle ride.



At 3 pm Simon stopped for a rest.

(a) How many minutes did he rest?

..... minutes

(1)

(b) How far was Simon from home at 5 pm?

..... km

(1)

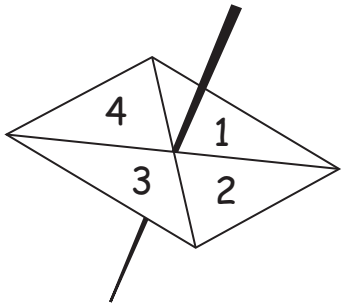
At 5 pm Simon stopped for 30 minutes.
Then he cycled home at a steady speed.
It took him 1 hour 30 minutes to get home.

(c) Complete the travel graph.

(2)

(Total for Question 3 is 4 marks)

4 Here is a four sided spinner.
The spinner is biased.



The table shows the probabilities that the spinner will land on 1 or on 3

Number	1	2	3	4
Probability	0.2		0.1	

The probability that the spinner will land on 2 is the same as the probability that the spinner will land on 4

(a) Work out the probability that the spinner will land on 4

.....

(3)

Shunya is going to spin the spinner 200 times.

(b) Work out an estimate for the number of times the spinner will land on 3

.....

(2)

(Total for Question 4 is 5 marks)

5

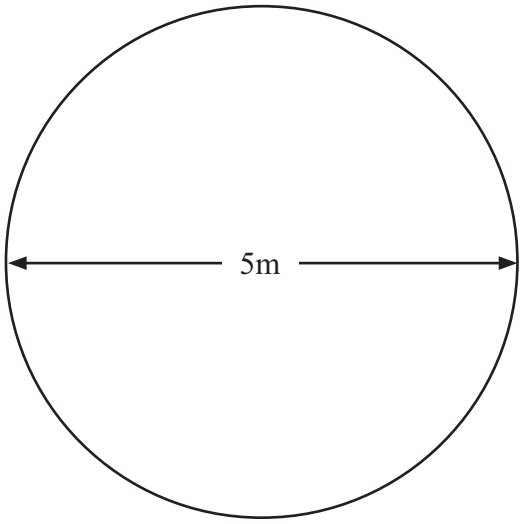


Diagram **NOT** accurately drawn

Jon has a flower garden in the shape of a circle.
The diameter of the garden is 5 metres.

Jon wants to put fencing around the edge of the garden.
The fencing costs £1.80 per metre.

Work out the total cost of the fencing.

£.....

(Total for Question 5 is 3 marks)

6 Mr Watkins needs to buy some oil for his central heating.

Mr Watkins can put up to 1500 litres of oil in his oil tank.
There are already 850 litres of oil in the tank.
Mr Watkins is going to fill the tank with oil.

The price of oil is 67.2p per litre.
Mr Watkins gets 5% off the price of the oil.

How much does Mr Watkins pay for the oil he needs to buy?

£.....

(Total for Question 6 is 5 marks)

7 Peter goes for a walk.
He walks 15 miles in 6 hours.

(a) Work out Peter's average speed.
Give your answer in miles per hour.

..... mph
(2)

5 miles = 8 km.
Sunita says that Peter walked more than 20 km.

*(b) Is Sunita right?
You must show all your working.

(2)

(Total for Question 7 is 4 marks)

8 The equation

$$x^3 - 3x = 15$$

has a solution between 2 and 3

Use a trial and improvement method to find this solution.
Give your answer correct to 1 decimal place.
You must show **all** your working.

$x =$ .....

(Total for Question 8 is 4 marks)

9 Here is a solid prism.

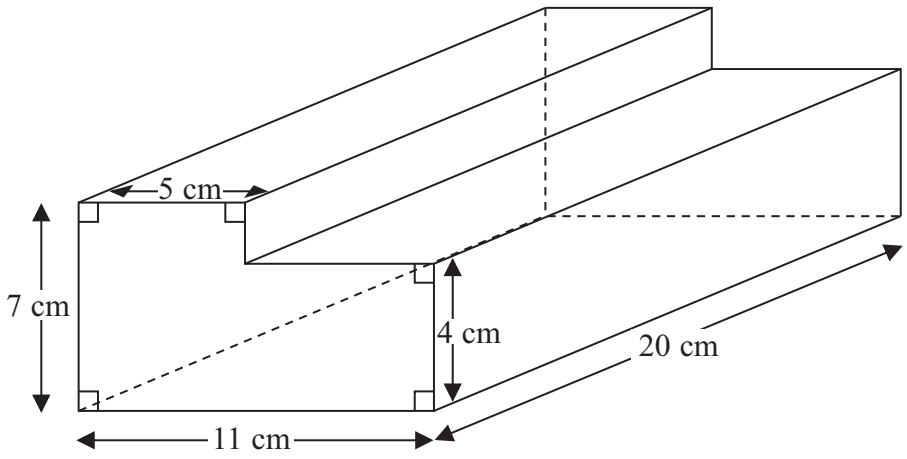


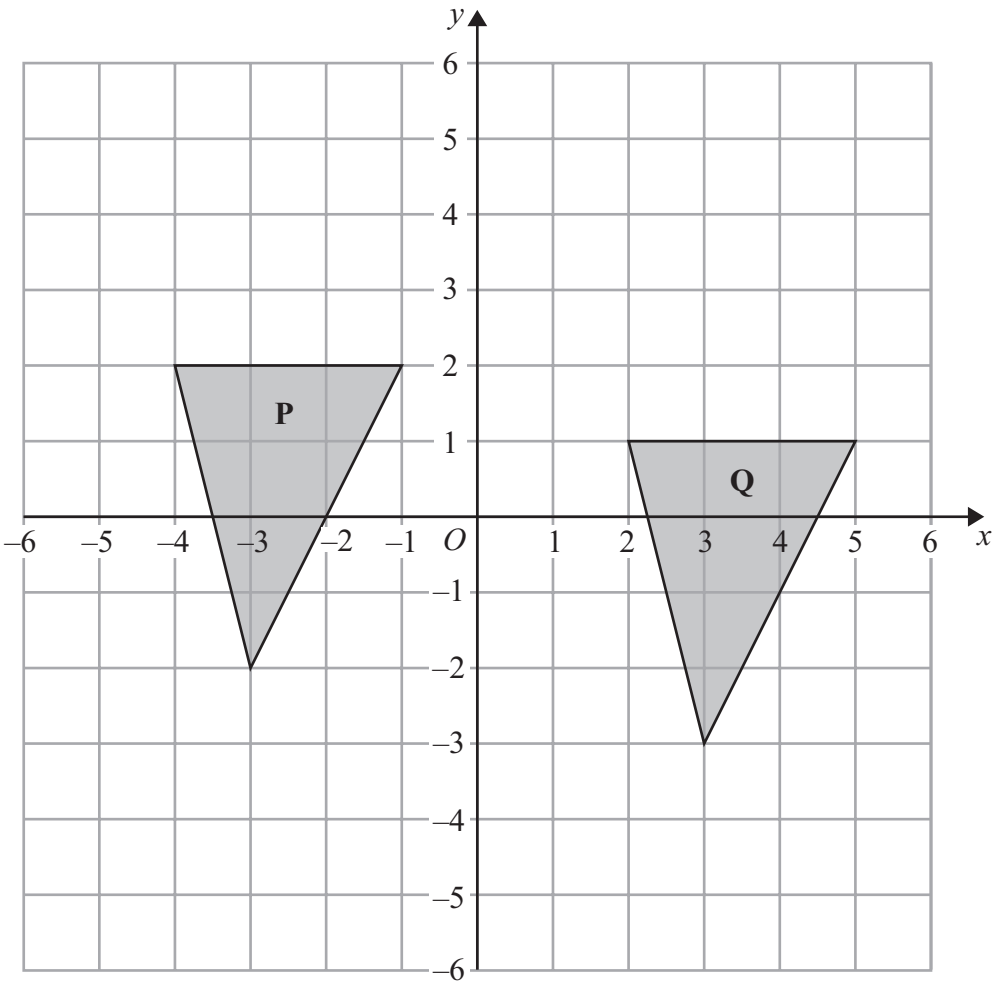
Diagram **NOT** accurately drawn

Work out the volume of the prism.

..... cm^3

(Total for Question 9 is 3 marks)

10



Describe fully the single transformation that maps triangle **P** onto triangle **Q**.

.....

.....

(Total for Question 10 is 2 marks)

11 (a) Expand and simplify $3(x + 4) + 2(5x - 1)$

.....

(2)

(b) Expand and simplify $(2x + 1)(x - 4)$

.....

(2)

(c) Factorise completely $6y^2 - 9xy$

.....

(2)

(Total for Question 11 is 6 marks)

12 $-3 < n \leqslant 1$

n is an integer.

(a) Write down all the possible values of n.

.....

(2)

(b) Solve the inequality $3p - 7 > 11$

.....

(2)

(Total for Question 12 is 4 marks)

JUNE 2013

1 Here is a cuboid.

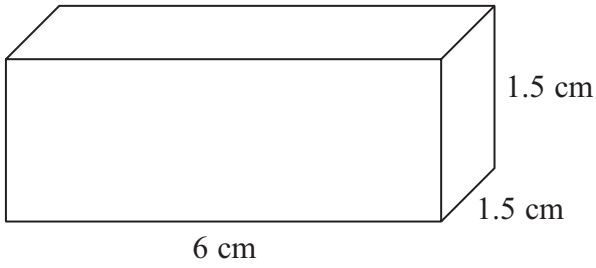


Diagram **NOT** accurately drawn

The cuboid is 6 cm by 1.5 cm by 1.5 cm.

Work out the total surface area of the cuboid.

..... cm^2

(Total for Question 1 is 3 marks)

***2** Here is a list of ingredients for making 18 mince pies.

Ingredients for 18 mince pies
225 g of butter
350 g of flour
100 g of sugar
280 g of mincemeat
1 egg

Elaine wants to make 45 mince pies.

Elaine has

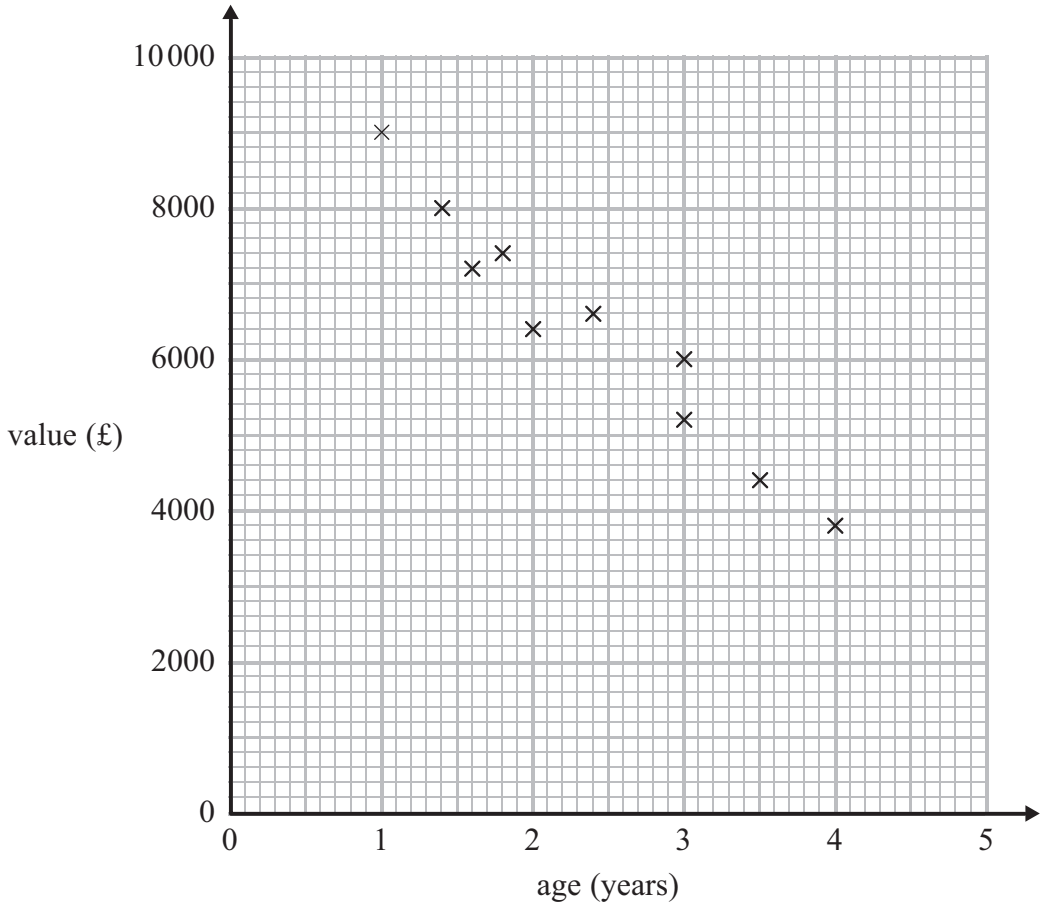
1 kg of butter
1 kg of flour
500 g of sugar
600 g of mincemeat
6 eggs

Does Elaine have enough of each ingredient to make 45 mince pies?
You must show clearly how you got your answer.

(Total for Question 2 is 4 marks)

3 The scatter graph shows some information about 10 cars, of the same type and make.

The graph shows the age (years) and the value (£) of each car.



The table shows the age and the value of two other cars of the same type and make.

age (years)	1	3.5
value (£)	8200	5000

(a) On the scatter graph, plot the information from the table.

(1)

(b) Describe the relationship between the age and the value of the cars.

.....

.....

(1)

A car of the same type and make is $2\frac{1}{2}$ years old.

(c) Estimate the value of the car.

£.....

(2)

(Total for Question 3 is 4 marks)

4 Rhiana plays a game.

The probability that she will lose the game is 0.32
The probability that she will draw the game is 0.05

Rhiana is going to play the game 200 times.

Work out an estimate for the number of times Rhiana will win the game.

.....

(Total for Question 4 is 3 marks)

5 Mason is doing a survey to find out how many magazines people buy.

He uses this question on his questionnaire.

How many magazines do you buy?

☐ 0 to 4 ☐ 4 to 8 ☐ 8 to 12

(a) Write down **two** things wrong with this question.

1 .....

.....

2 .....

.....

(2)

(b) Write a better question for Mason to use on his questionnaire to find out how many magazines people buy.

(2)

Mason asks his friends at school to do his questionnaire.
This may **not** be a good sample to use.

(c) Give **one** reason why.

.....

.....

.....

(1)

(Total for Question 5 is 5 marks)

6 Tame Valley is a company that makes yoghurt.

A machine fills trays of 20 pots with yoghurt.
In one hour, the machine fills a total of 15 000 pots.

Work out how many seconds the machine takes to fill each tray of 20 pots.

..... seconds

(Total for Question 6 is 4 marks)

7 Colin, Dave and Emma share some money.

Colin gets $\frac{3}{10}$ of the money.

Emma and Dave share the rest of the money in the ratio 3 : 2

What is Dave's share of the money?

.....

(Total for Question 7 is 4 marks)

8 The diagram shows the plan of a playground.

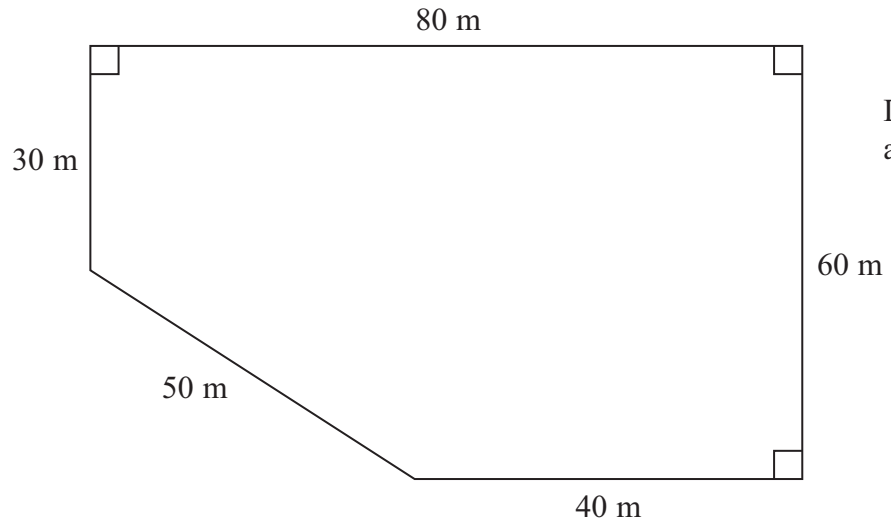


Diagram **NOT** accurately drawn

Bill is going to cover the playground with tarmac.
It costs £2.56 to cover each square metre with tarmac.

Work out the total cost of the tarmac Bill needs.

£.....

(Total for Question 8 is 4 marks)

9

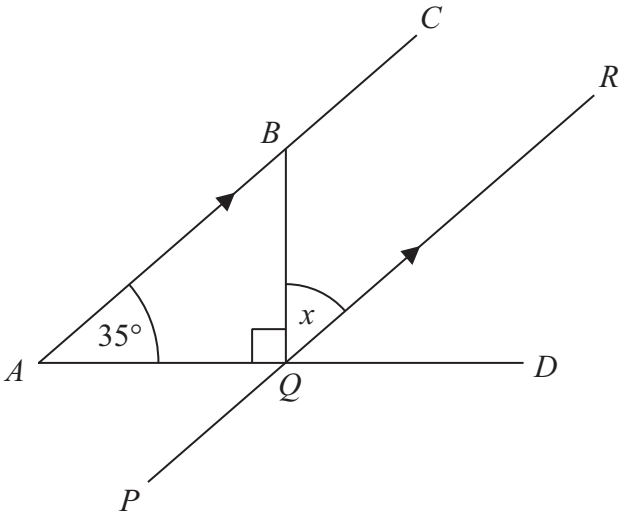


Diagram **NOT** accurately drawn

ABC, *PQR* and *AQD* are straight lines.
ABC is parallel to *PQR*.

Angle *BAQ* = 35°
Angle *BQA* = 90°

Work out the size of the angle marked *x*.
Give reasons for each stage of your working.

x = ... °

(Total for Question 9 is 4 marks)

10 The equation

$$x^3 + 2x = 110$$

has a solution between 4 and 5

Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show **ALL** your working.

$x =$ .....

(Total for Question 10 is 4 marks)

11 *XYZ* is a right-angled triangle.

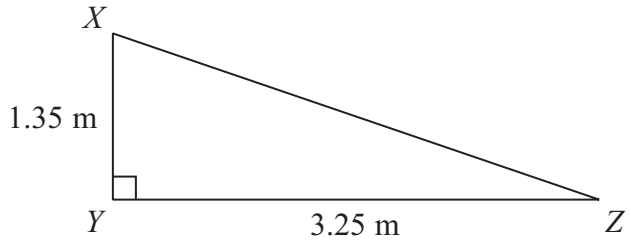


Diagram **NOT** accurately drawn

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

..... m

(Total for Question 11 is 3 marks)

12 (a) Solve $3(x - 2) = x + 7$

$x =$ .....

(3)

(b) Solve $\frac{2 - y}{5} = 1$

$y =$ .....

(2)

(Total for Question 12 is 5 marks)

NOVEMBER 2013

1 (a) Use your calculator to work out $\dfrac{\sqrt{7056}}{0.35 \times 12.8}$

Write down all the figures on your calculator display.
You must give your answer as a decimal.

.....

(2)

(b) Write your answer to part (a) correct to 1 significant figure.

.....

(1)

(Total for Question 1 is 3 marks)

---

2 Pavel and Katie share some sweets in the ratio 3 : 8
Katie gets 32 sweets.

(a) How many sweets does Pavel get?

.....

(2)

Katie also has a tin of chocolates.
There are 80 chocolates in the tin.
45% of the chocolates have toffee in the middle.

(b) Work out the number of chocolates that have toffee in the middle.

.....

(2)

(Total for Question 2 is 4 marks)

3 Bill has some counters in a bag.

3 of the counters are red.
7 of the counters are blue.
The rest of the counters are yellow.

Bill takes at random a counter from the bag.

The probability that he takes a yellow counter is $\frac{2}{7}$

How many yellow counters are in the bag before Bill takes a counter?

.....

(Total for Question 3 is 2 marks)

4 The diagram shows a solid prism.

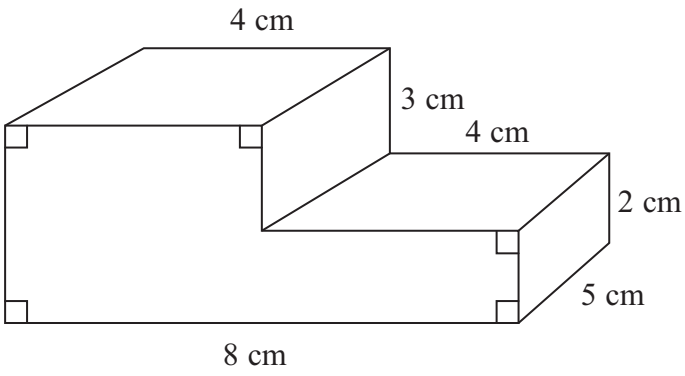


Diagram **NOT** accurately drawn

On the centimetre square grid, draw the side elevation of the solid prism from the direction shown by the arrow.

(Total for Question 4 is 2 marks)

5 Ben goes on holiday to Hong Kong.

In Hong Kong, Ben sees a camera costing HK$3179.55
In London, an identical camera costs £285

The exchange rate is £1 = HK$12.30

Ben buys the camera in Hong Kong.

How much cheaper is the camera in Hong Kong than in London?

.....

(Total for Question 5 is 3 marks)

6 There are 130 adults at a language school.
Each adult studies one of French or Spanish or German.

96 of the adults are women.
12 of the women study French.
73 of the adults study Spanish.
55 of the women study Spanish.
9 of the men study German.

How many of the adults study French?

.....

(Total for Question 6 is 4 marks)

***7** Plants are sold in three different sizes of tray.

A small tray of 30 plants costs £6.50
A medium tray of 40 plants costs £8.95
A large tray of 50 plants costs £10.99

Kaz wants to buy the tray of plants that is the best value for money.

Which size tray of plants should she buy?
You must show all your working.

(Total for Question 7 is 4 marks)

8 Here are the first four terms of an arithmetic sequence.

3 10 17 24

(a) Find, in terms of n, an expression for the nth term of this arithmetic sequence.

.....

(2)

(b) Is 150 a term of this sequence?

You must explain how you get your answer.

.....

.....

.....

.....

.....

(2)

(Total for Question 8 is 4 marks)

9 The diagram shows a pattern using four identical rhombuses.

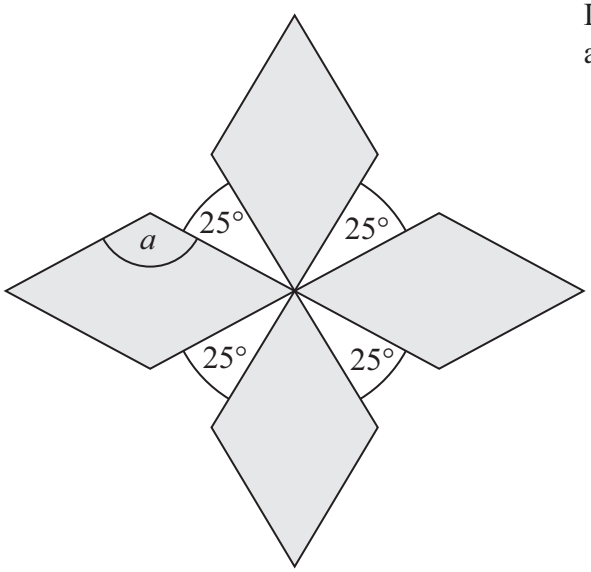


Diagram **NOT** accurately drawn

Work out the size of the angle marked *a*.
You must show your working.

.....°

(Total for Question 9 is 4 marks)

10 Sasha takes a music exam.

The table shows the result that Sasha can get for different percentages in her music exam.

Percentage	Result
50% – 69%	Pass
70% – 84%	Merit
85% – 100%	Distinction

Sasha gets 62 out of 80 in her music exam.

What result does Sasha get?
You must show your working.

.....

(Total for Question 10 is 3 marks)

11 (a) Simplify $x^7 \times x^3$

.....

(1)

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

.....

(1)

(c) Simplify $\dfrac{36af^8}{12a^5f^2}$

.....

(2)

(Total for Question 11 is 4 marks)

12 A circle has a diameter of 140 cm.

Work out the circumference of the circle.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 12 is 2 marks)

***13** Axel and Lethna are driving along a motorway.

They see a road sign.
The road sign shows the distance to Junction 8
It also shows the average time drivers will take to get to Junction 8

To Junction 8
30 miles 26 minutes

The speed limit on the motorway is 70 mph.

Lethna says,

'We will have to drive faster than the speed limit to go 30 miles in 26 minutes.'

Is Lethna right?
You must show how you got your answer.

(Total for Question 13 is 3 marks)

14 The table gives information about the temperature, T °C, at noon in a town for 50 days.

Temperature (T °C)	Frequency
$8 < T \leqslant 12$	6
$12 < T \leqslant 16$	8
$16 < T \leqslant 20$	13
$20 < T \leqslant 24$	21
$24 < T \leqslant 28$	2

(a) Write down the modal class interval.

.....

(1)

(b) Calculate an estimate for the mean temperature.

..... °C

(4)