

Name: _____

Edexcel GCSE

Mathematics A

Paper 2 (Calculator) 1st 8 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 |
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| What have I done about it? | |
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| Paper | Topics I need to work on |
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| What have I done about it? | |
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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.

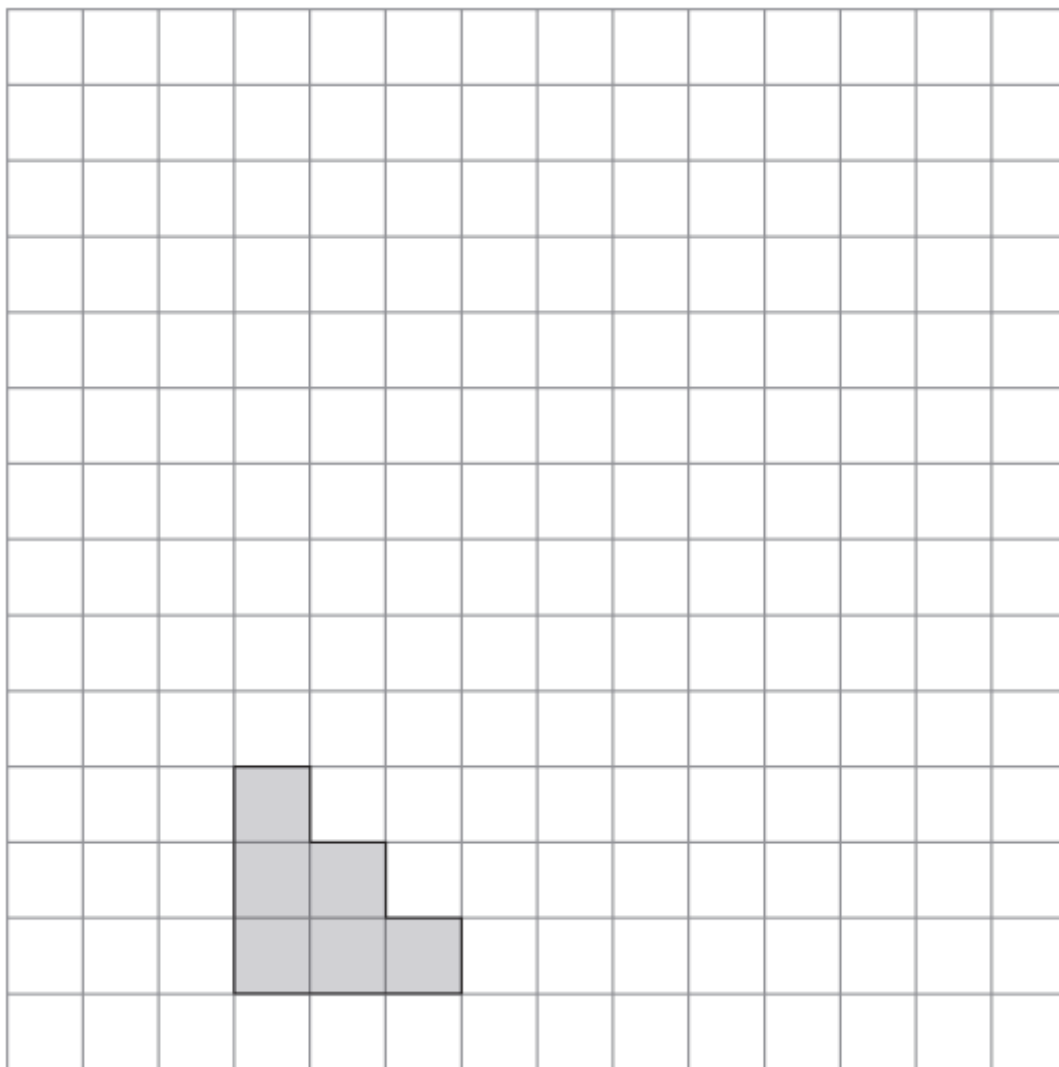
The new exchange rate was £1 = €1.50

- (b) Change €117 into pounds.

£
(2)

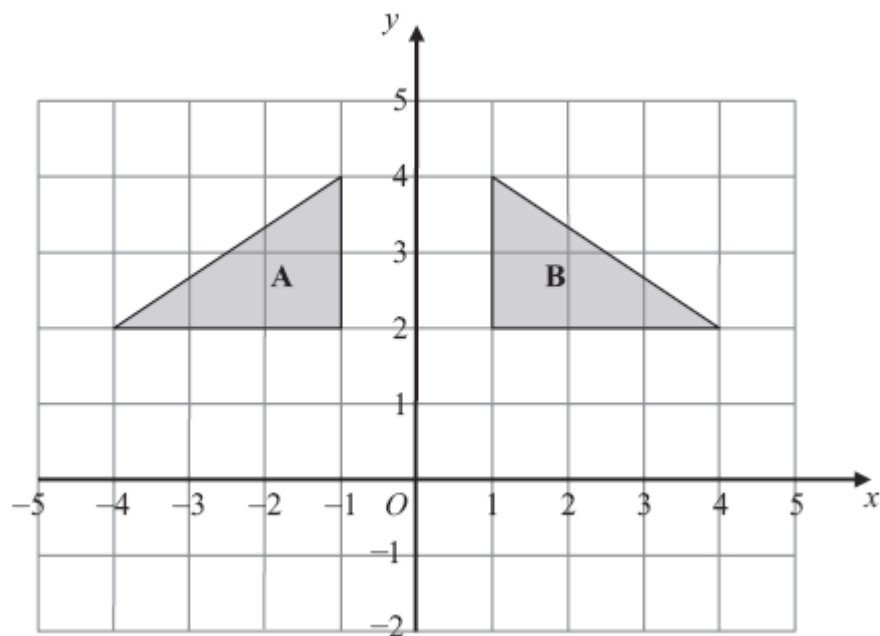
(Total 4 marks)

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**.

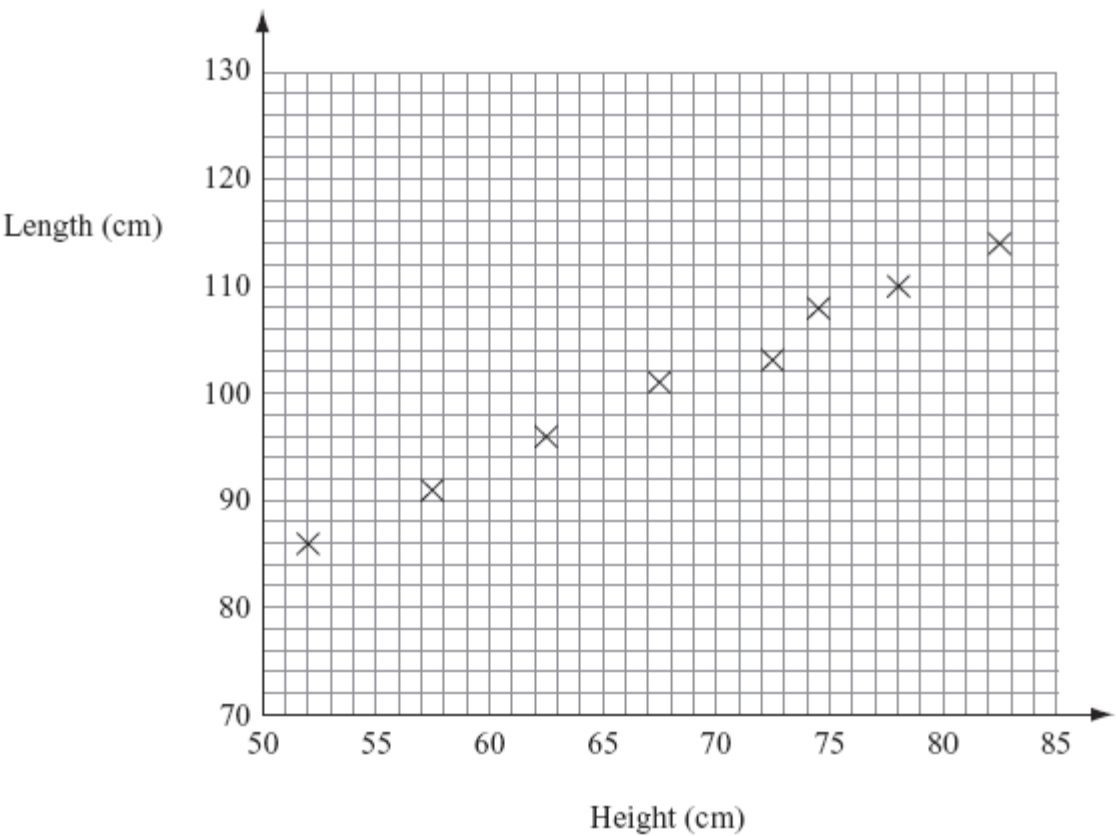
.....
(2)

(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)

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 $C = -8$

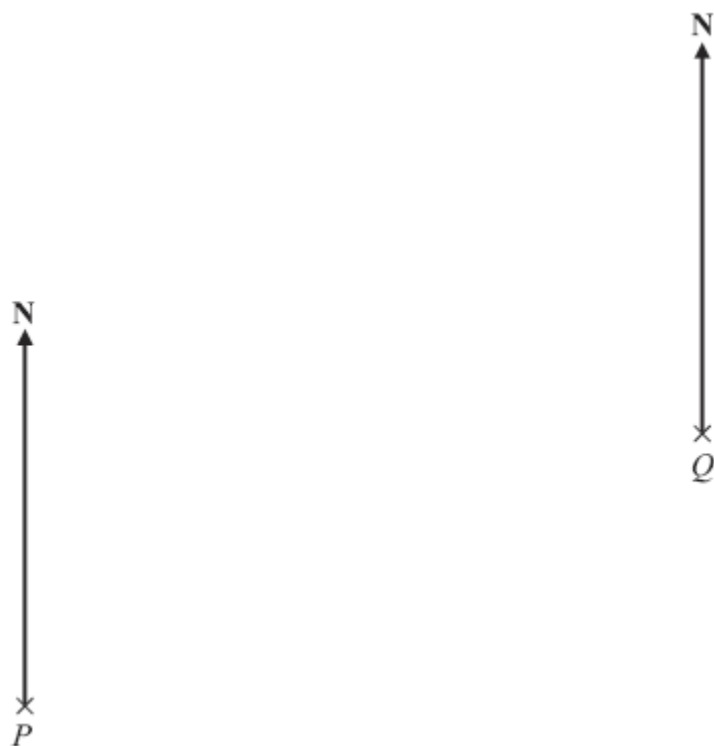
.....
(2)

- (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 (\times). 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.

$x = \dots\dots\dots$

(Total 4 marks)

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 $\frac{8.7 \times 12.3}{9.5 - 5.73}$
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)



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

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

.....
(2)

(b) Factorise $3m - 6$

.....
(1)

(Total 3 marks)

Q3

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.

.....

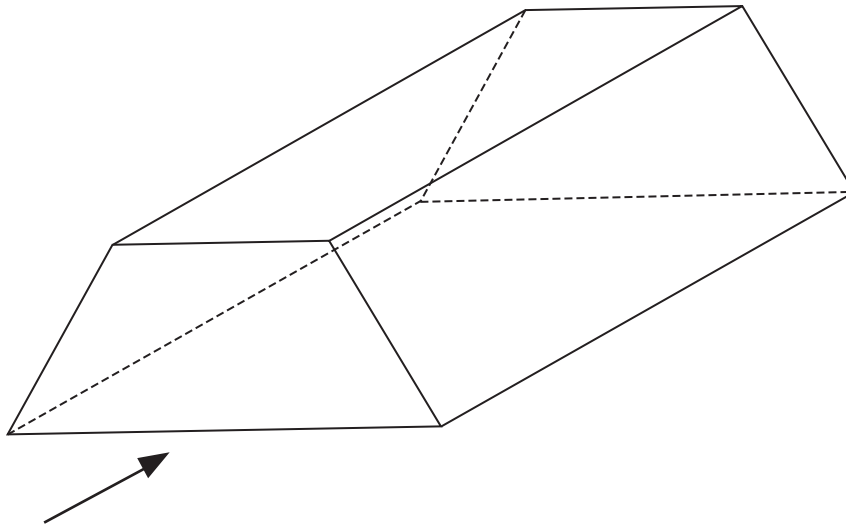
.....

(Total 1 mark)

Q4



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.

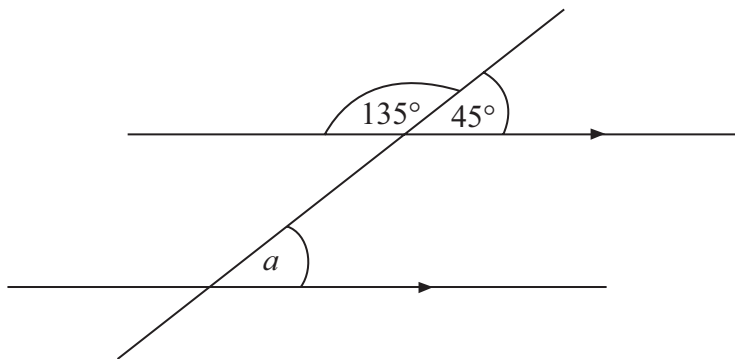
(2) Q5

(Total 4 marks)



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.

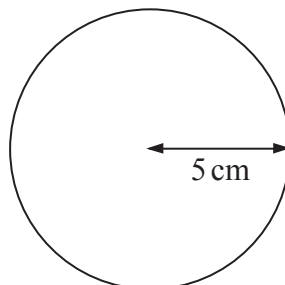


Diagram **NOT**
accurately drawn

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

..... cm^2

Q7

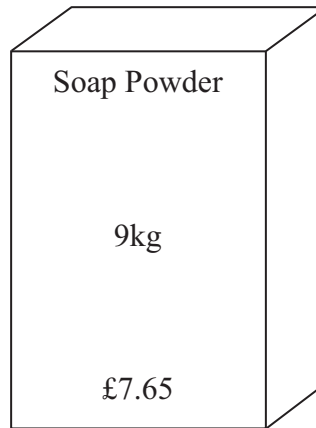
(Total 2 marks)



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.

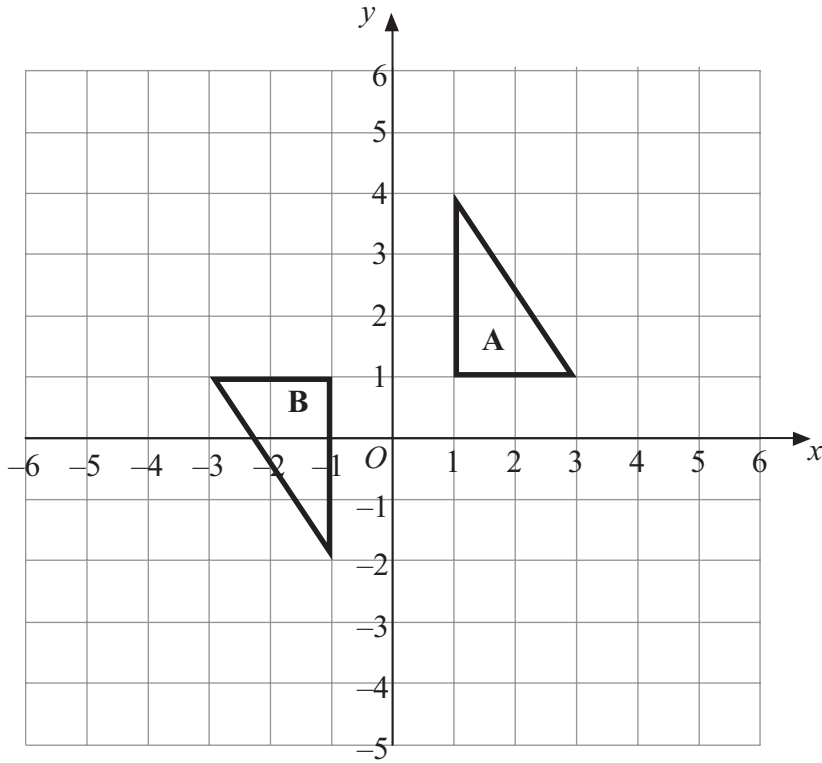
You must show all your working.

Q8

(Total 3 marks)



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

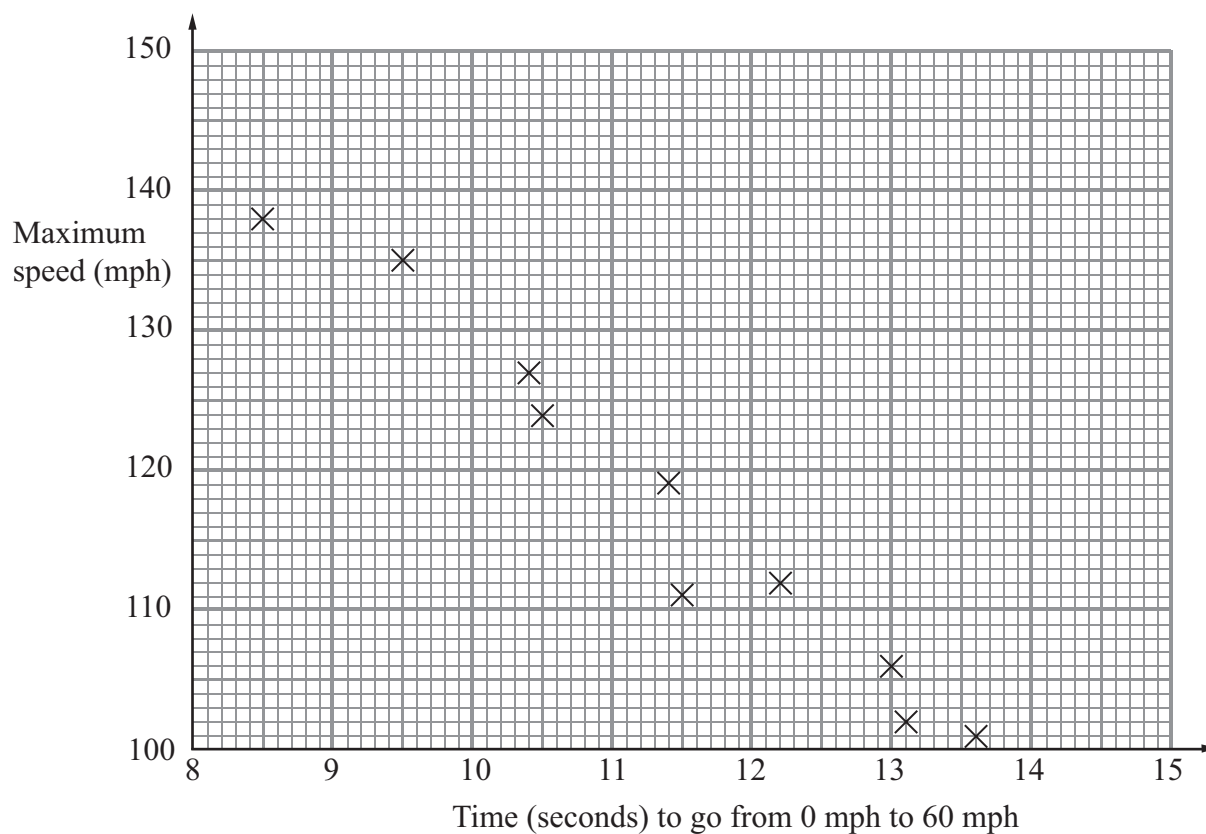
£

Q10

(Total 3 marks)



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)

(Total 3 marks)

Q11



12.

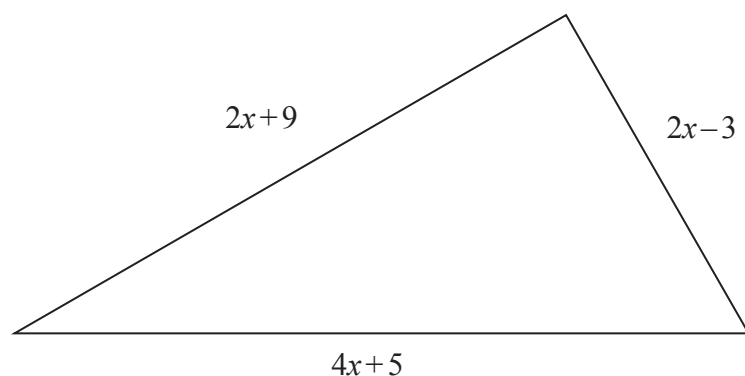


Diagram **NOT**
accurately drawn

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)

(Total 4 marks)

Q12



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 ml 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

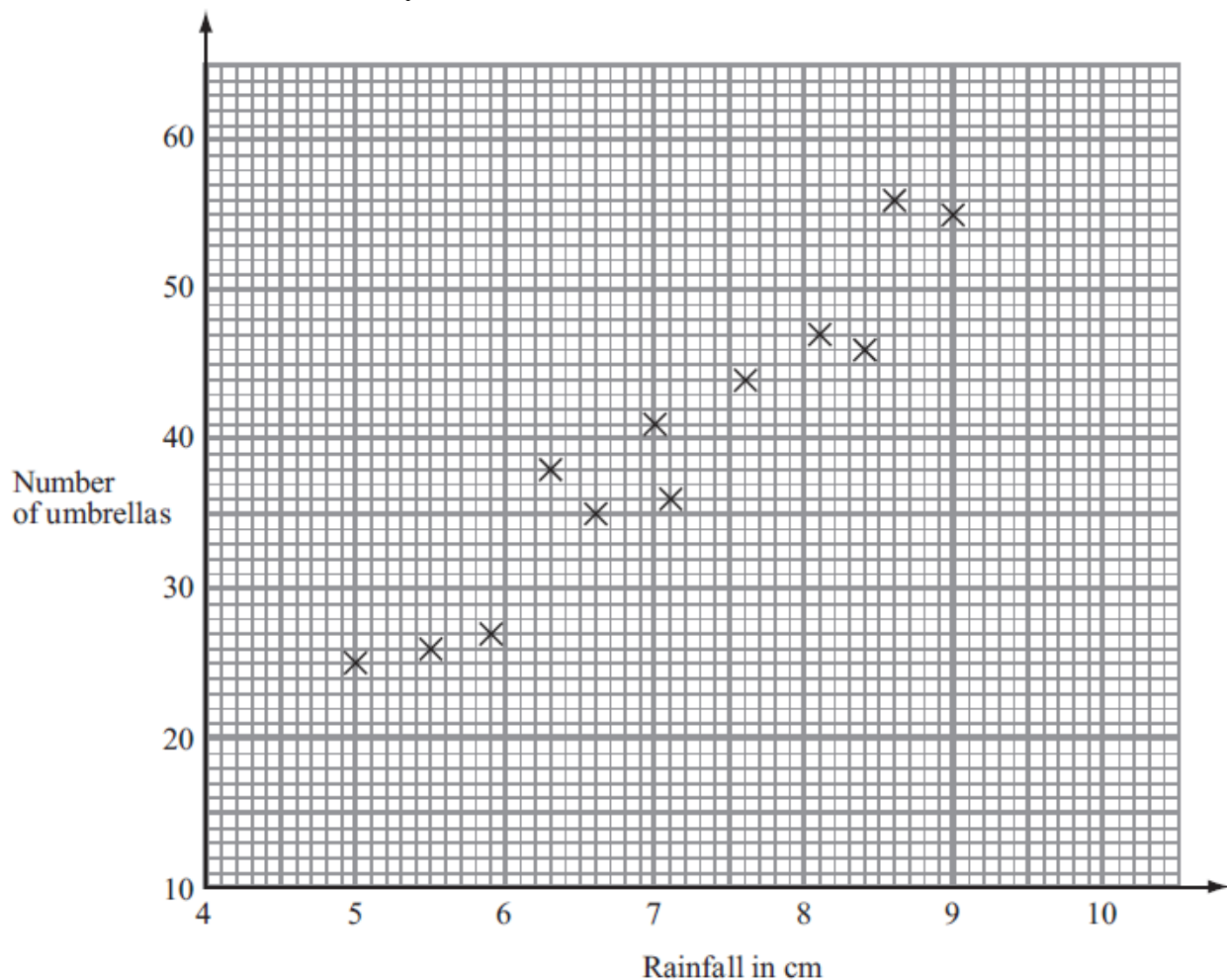
..... ml of custard

..... 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)

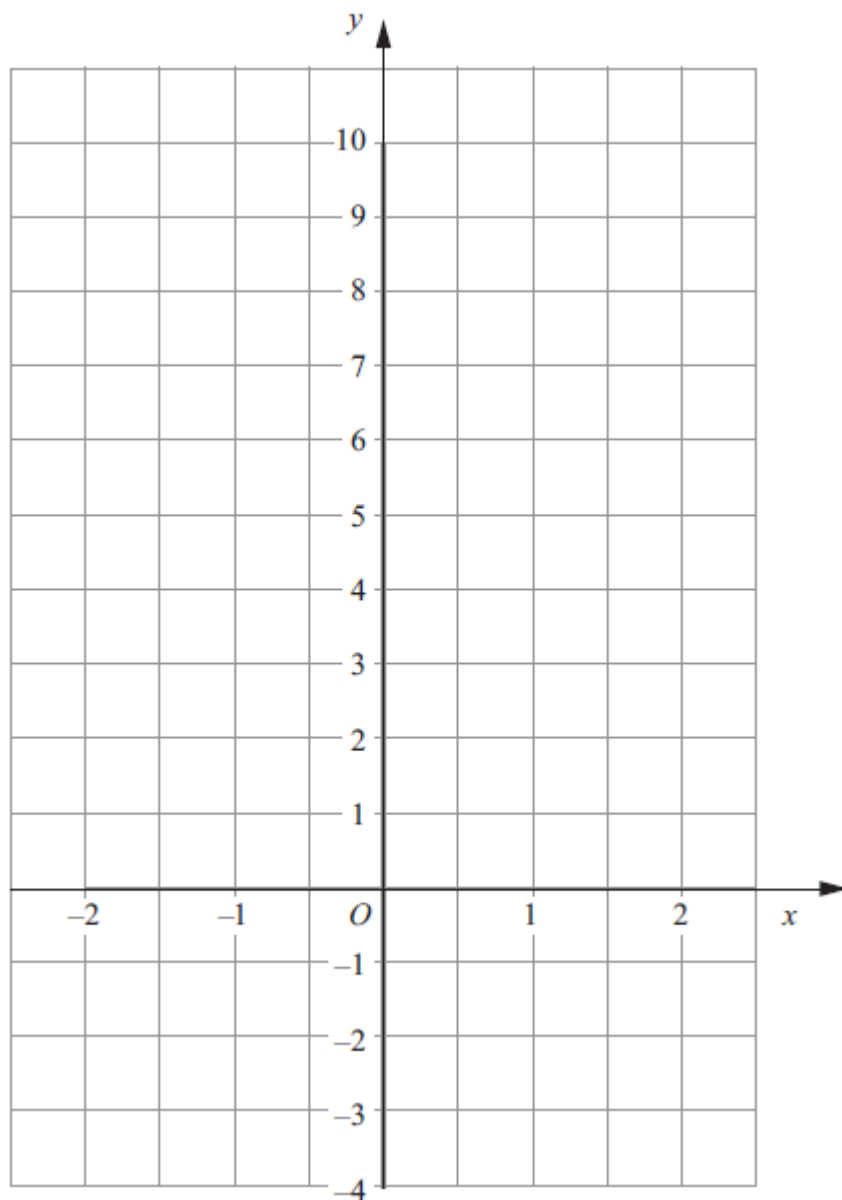
(Total 5 marks)

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.

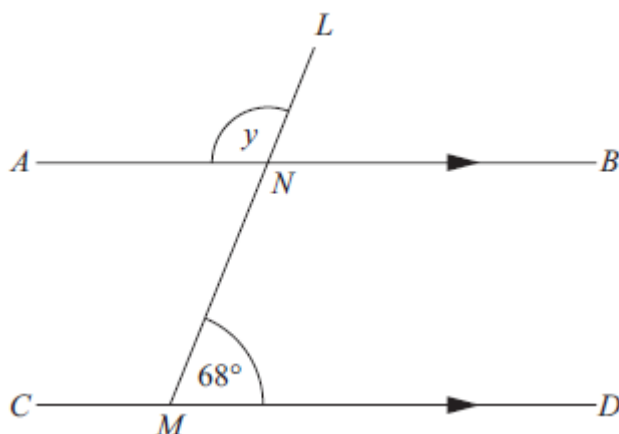


Diagram **NOT**
accurately drawn

ANB is parallel to *CMD*.

LNM is a straight line.

Angle *LMD* = 68°

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

.....^o

- (ii) Give reasons for your answer.

.....

.....

(3)

(Total 3 marks)

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

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)

7. A circle has a diameter of 12 cm.

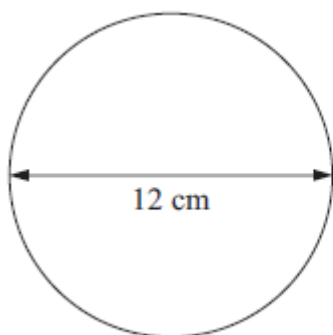


Diagram **NOT**
accurately drawn

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)

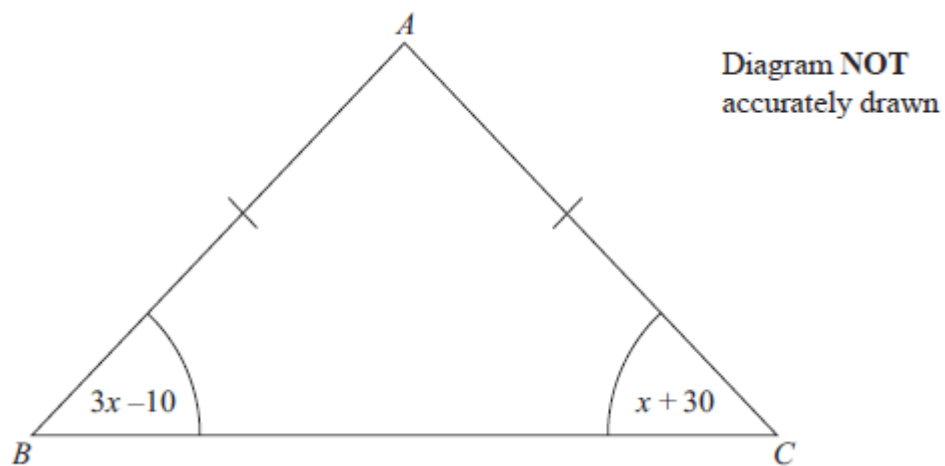
There are 500 ribbons in the box.

- (b) Work out the number of red ribbons.

.....
(2)

(Total 4 marks)

11.



ABC is an isosceles triangle.
 $AB = AC$

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

.....
(1)

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

$x = \dots\dots\dots$
(2)

(Total 3 marks)

NOVEMBER 2010

1.

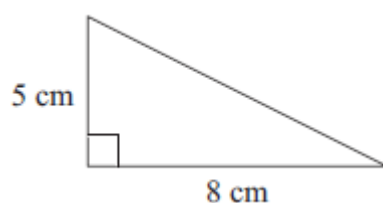


Diagram **NOT**
accurately drawn

Work out the area of this right-angled triangle.

..... cm²

(Total 2 marks)

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.

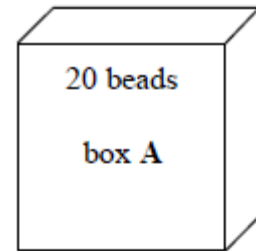
| Colour | red | blue | pink |
|-------------|------|------|------|
| Probability | 0.58 | 0.30 | |

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

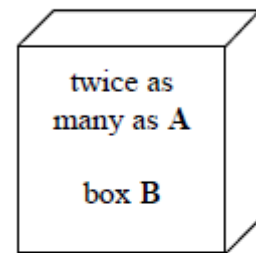
.....

(Total 2 marks)

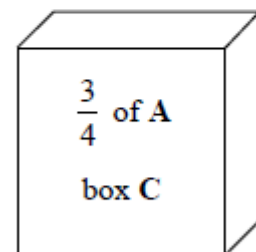
3. There are 20 beads in box **A**.



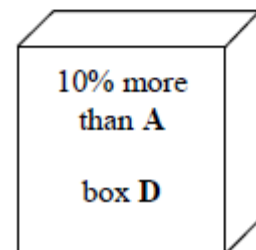
In box **B** there are twice as many beads as in box **A**.



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)

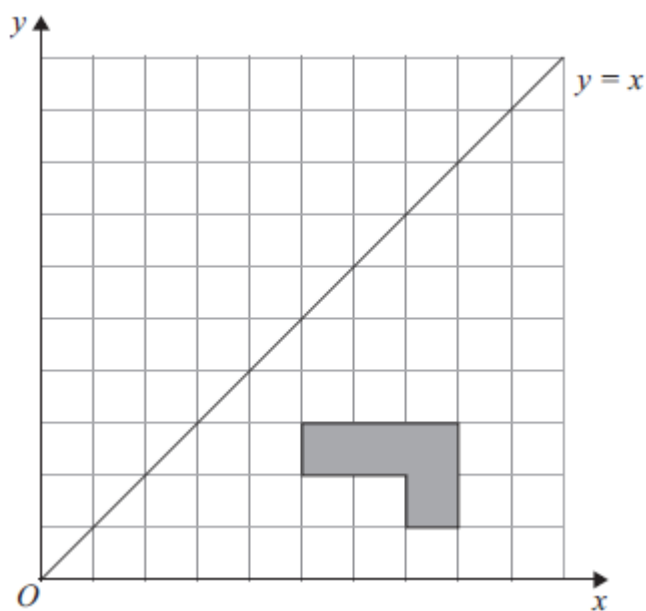
Hedley makes melon sorbet.
He uses 2 limes.

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

.....
(2)

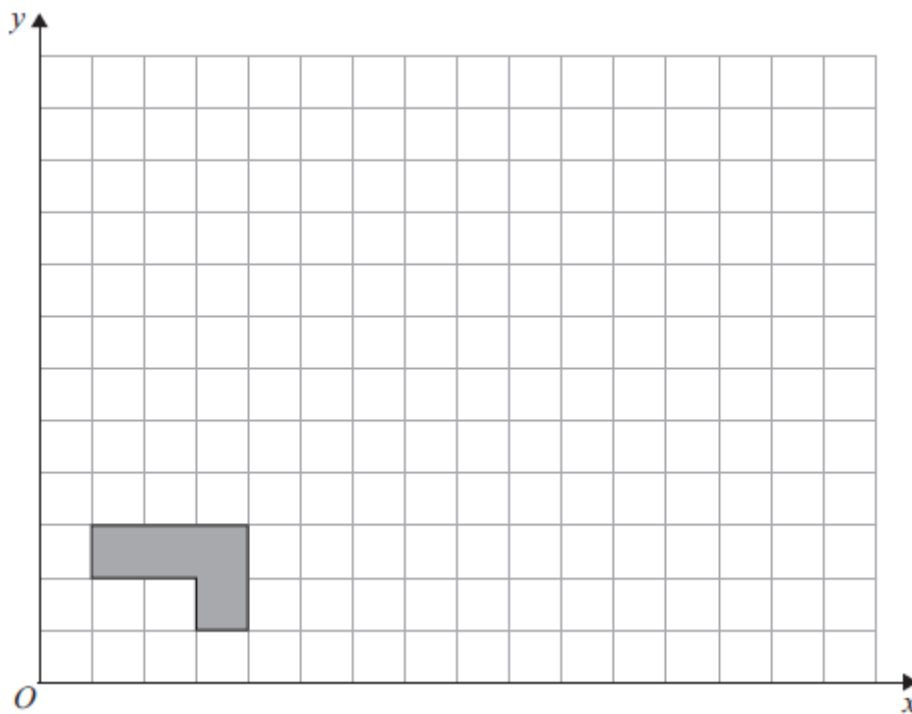
(Total 4 marks)

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)

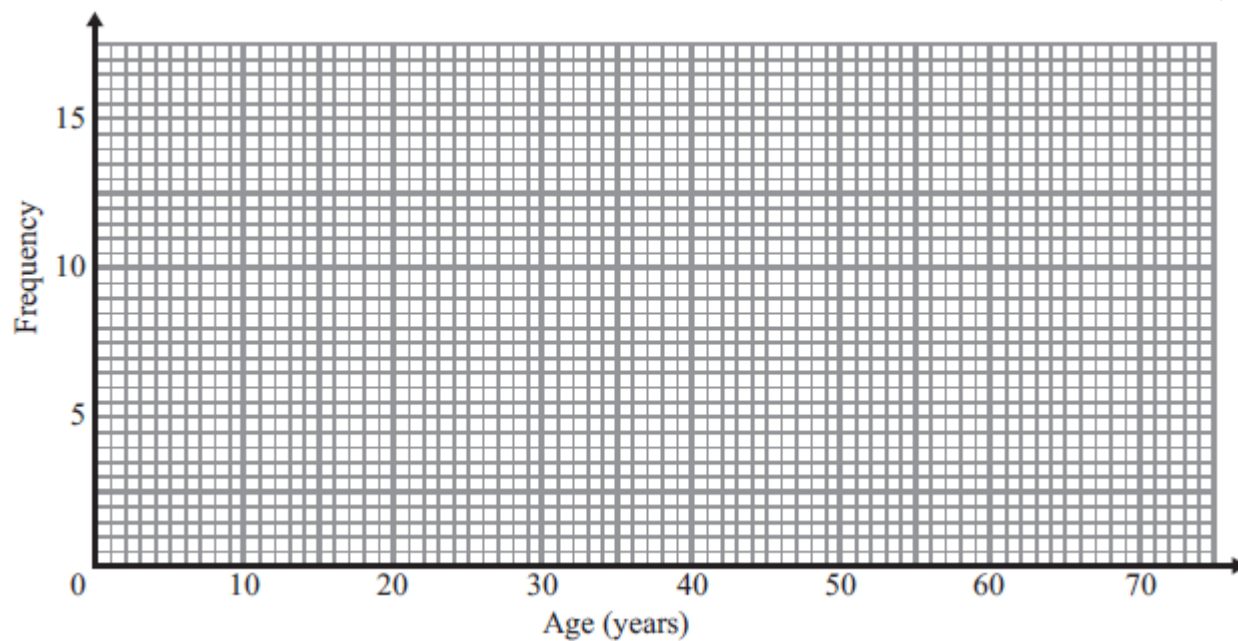
Luke says

“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 .

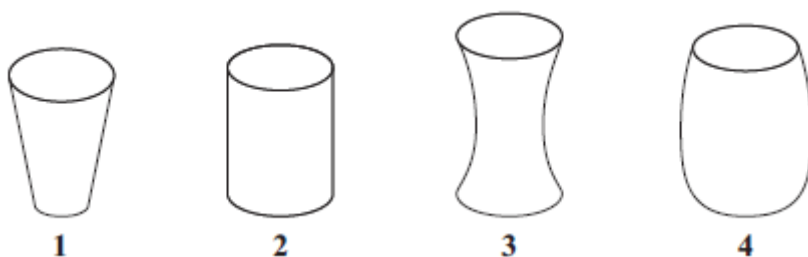
.....
(2)

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

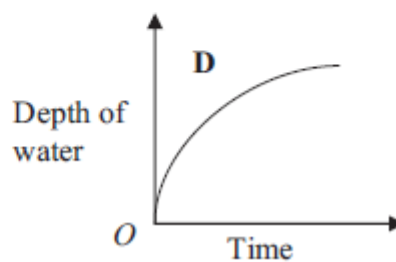
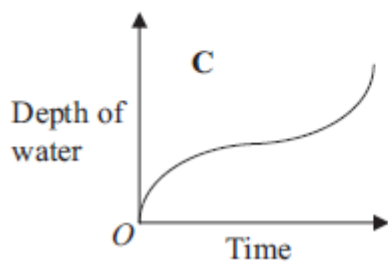
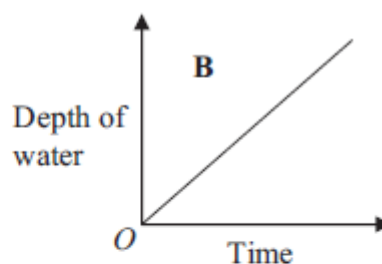
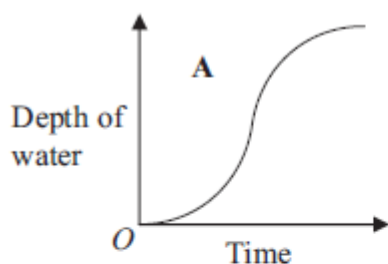
.....
(2)

(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)

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)

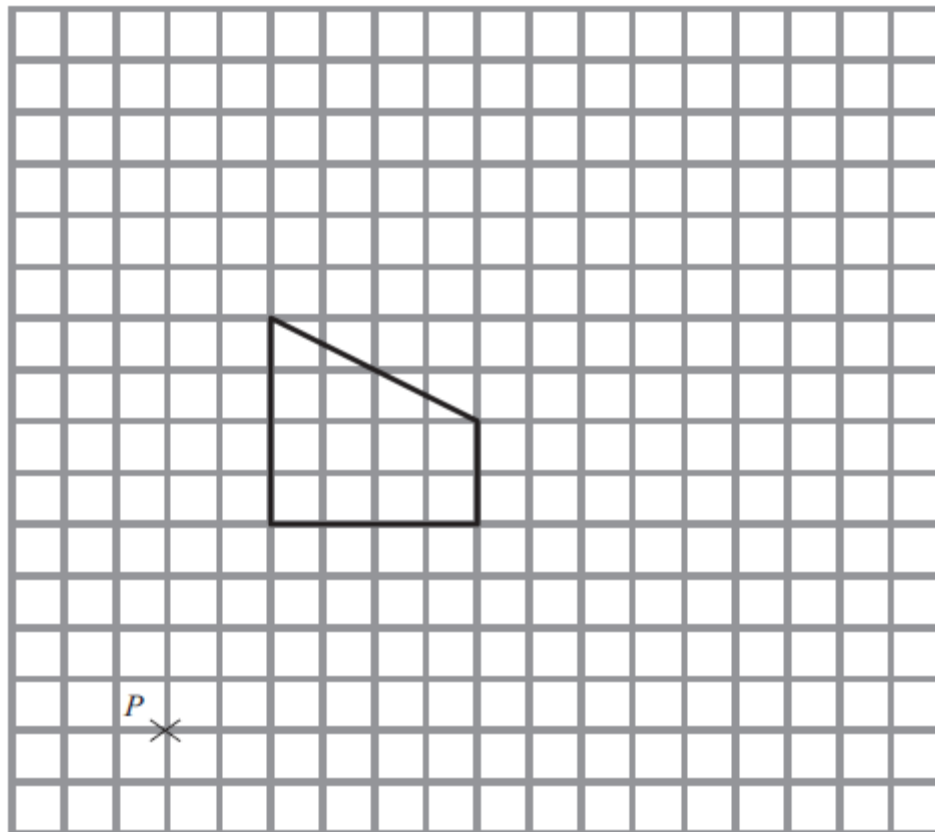
There are 800 students at the college.

- (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.

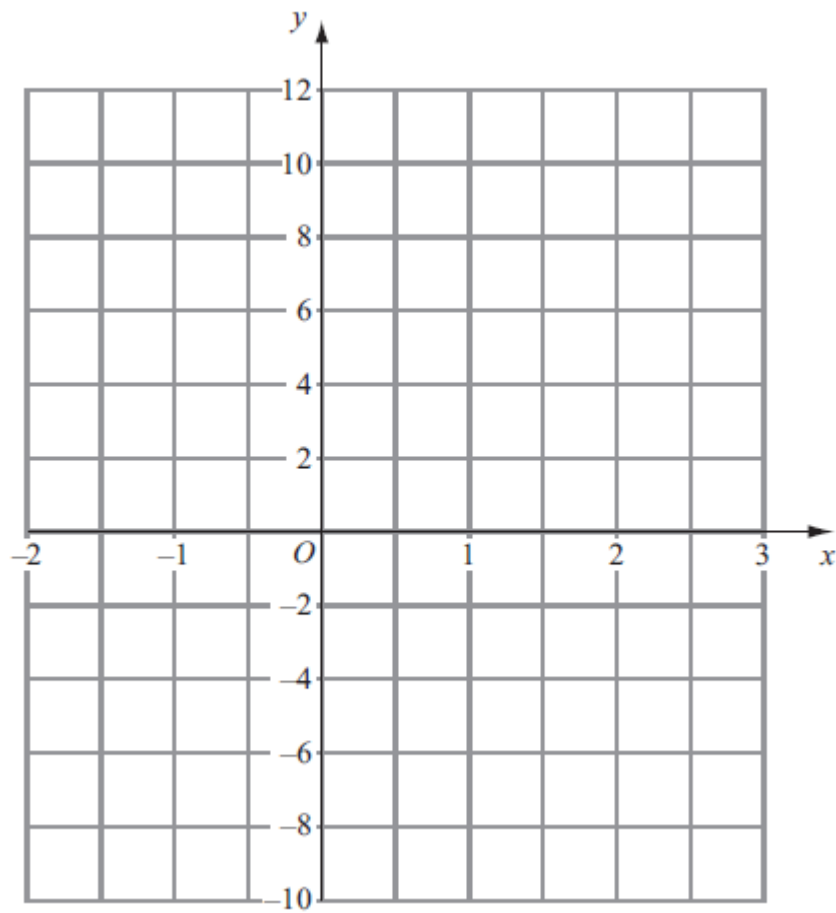
.....
(2)

- (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.

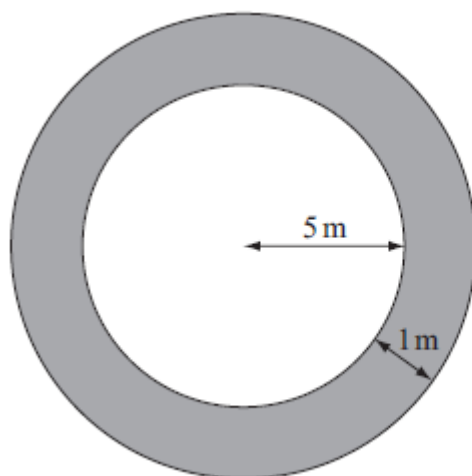


Diagram **NOT**
accurately drawn

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.

..... m²

(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.



Key:

(3)

- (b) Find the median age.

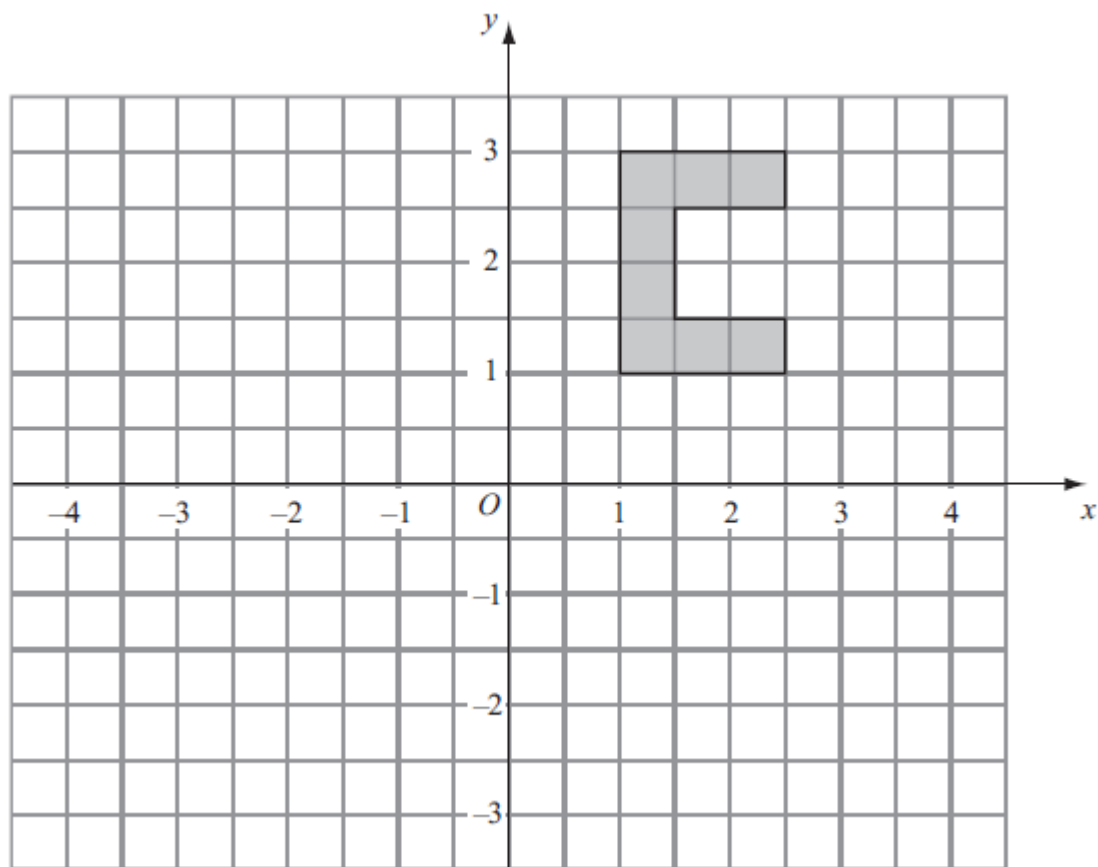
..... years
(2)

(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.

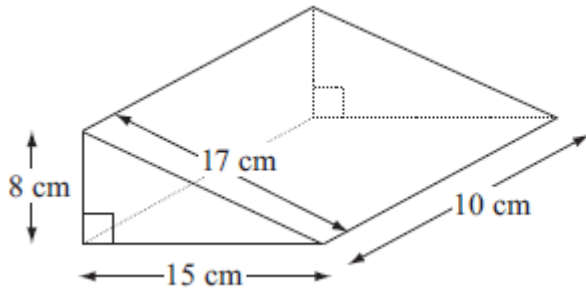


Diagram NOT
accurately drawn

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)

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)

(Total 3 marks)

Q1

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

Work out the total amount of interest Ishmal earned.

£

(Total 3 marks)

Q2



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? | | | |
| <div style="border: 1px solid black; width: 60px; height: 30px; margin: 0 auto;"></div> | <div style="border: 1px solid black; width: 60px; height: 30px; margin: 0 auto;"></div> | <div style="border: 1px solid black; width: 60px; height: 30px; margin: 0 auto;"></div> | <div style="border: 1px solid black; width: 60px; height: 30px; margin: 0 auto;"></div> |
| 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)



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)

(Total 3 marks)

Q4

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?

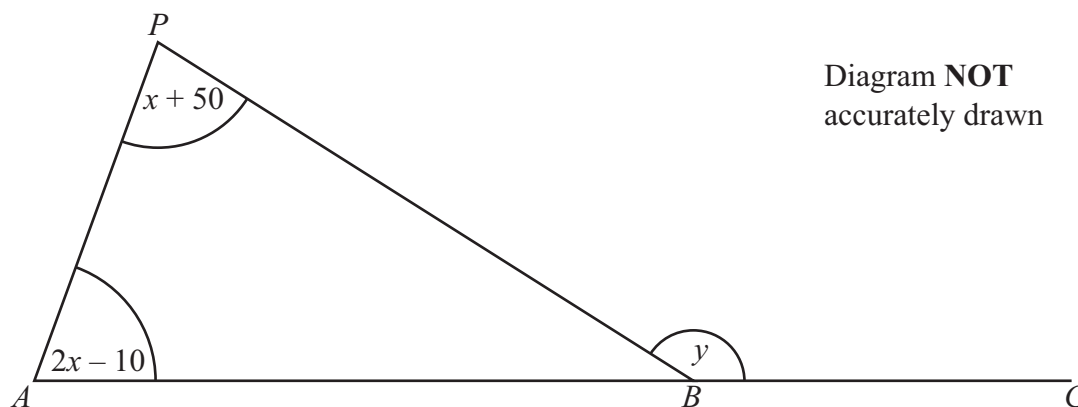
£

(Total 4 marks)

Q5



6.



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 ,

$x = \dots\dots\dots$

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

$\dots\dots\dots^\circ$

(4)

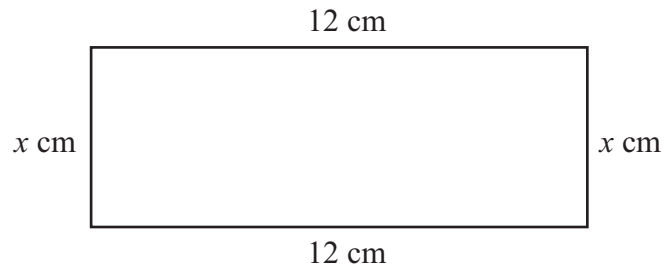
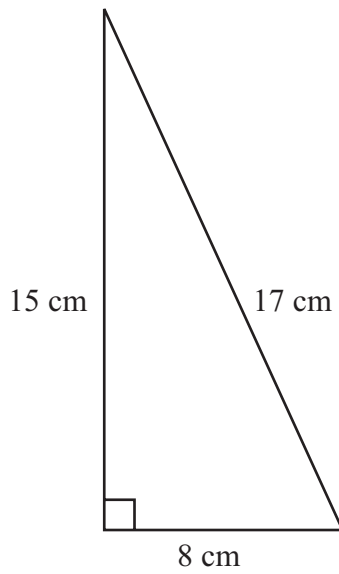
Q6

(Total 7 marks)



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 .

$x = \dots\dots\dots$

(Total 4 marks)

Q7

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

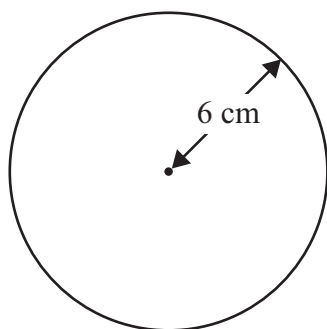


Diagram **NOT**
accurately drawn

- (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



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.

.....

(Total 3 marks)

Q9



10. The temperature ($T^{\circ}\text{C}$) at noon at a seaside resort was recorded for a period of 60 days. The table shows some of this information.

| Temperature ($T^{\circ}\text{C}$) | Number of days |
|-------------------------------------|----------------|
| $10 < T \leq 14$ | 2 |
| $14 < T \leq 18$ | 8 |
| $18 < T \leq 22$ | 14 |
| $22 < T \leq 26$ | 23 |
| $26 < T \leq 30$ | 9 |
| $30 < T \leq 34$ | 4 |

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

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

(Total 4 marks)

Q10



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.

Q2

..... points
(Total 2 marks)



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)

(Total 5 marks)

Q3



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.

Offer of the week
4 for the price of 3



£65 each plus VAT

£

(Total 4 marks)

Q4

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

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



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.

$x = \dots\dots\dots$

(Total 4 marks)

Q6



7.

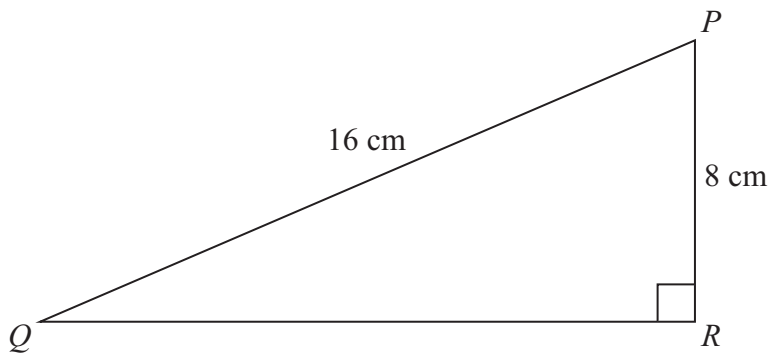


Diagram **NOT**
accurately drawn

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

(Total 3 marks)

Q7



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)

(Total 8 marks)

Q8



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)

(Total 4 marks)

Q9



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 | | |
|----------------------------|-----------|--|--|
| $0 < h \leq 10$ | 2 | | |
| $10 < h \leq 20$ | 8 | | |
| $20 < h \leq 30$ | 9 | | |
| $30 < h \leq 40$ | 7 | | |
| $40 < h \leq 50$ | 4 | | |

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

..... cm

(Total 4 marks)

Q10



JUNE 2012

1

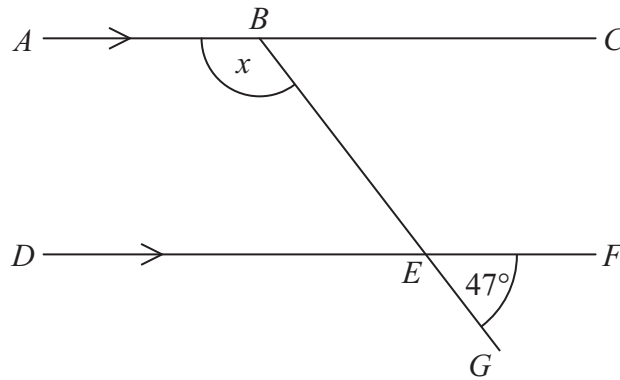


Diagram **NOT**
accurately drawn

ABC and DEF are parallel lines.

BEG is a straight line.

Angle $GEF = 47^\circ$.

Work out the size of the angle marked x .

Give reasons for your answer.

(Total for Question 1 is 3 marks)



P 4 0 6 4 7 A 0 3 2 4

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

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.

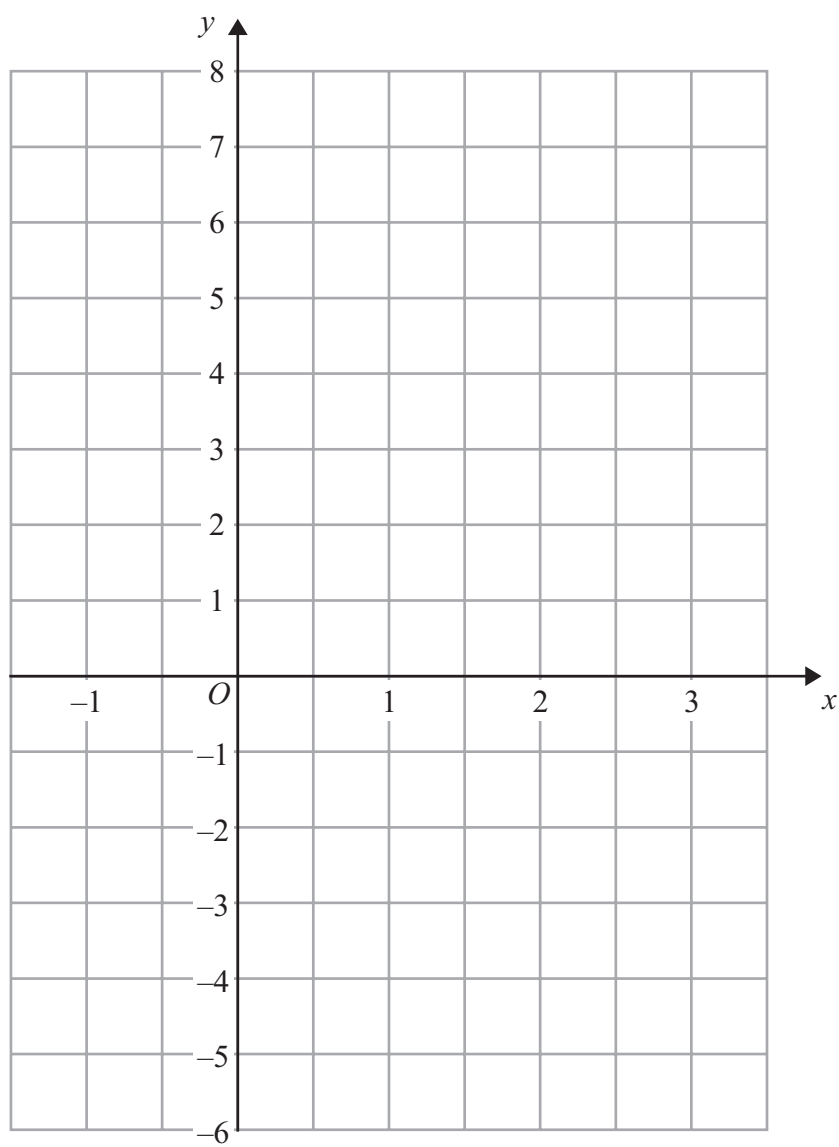
(2)

(Total for Question 3 is 4 marks)



P 4 0 6 4 7 A 0 5 2 4

- 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)

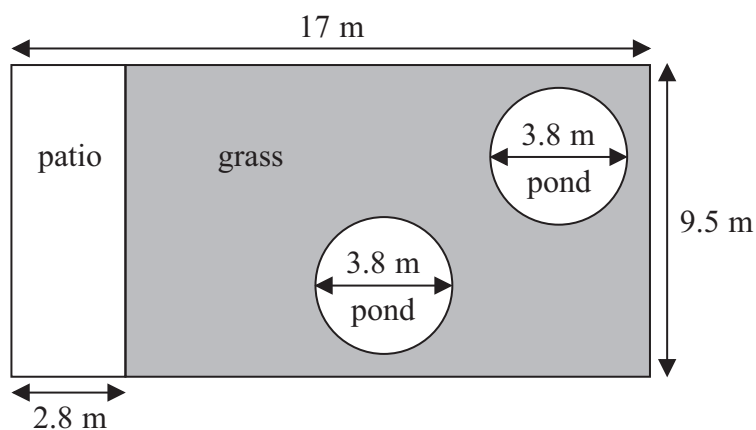


*5 Mr Weaver's garden is in the shape of a rectangle.

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.



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)

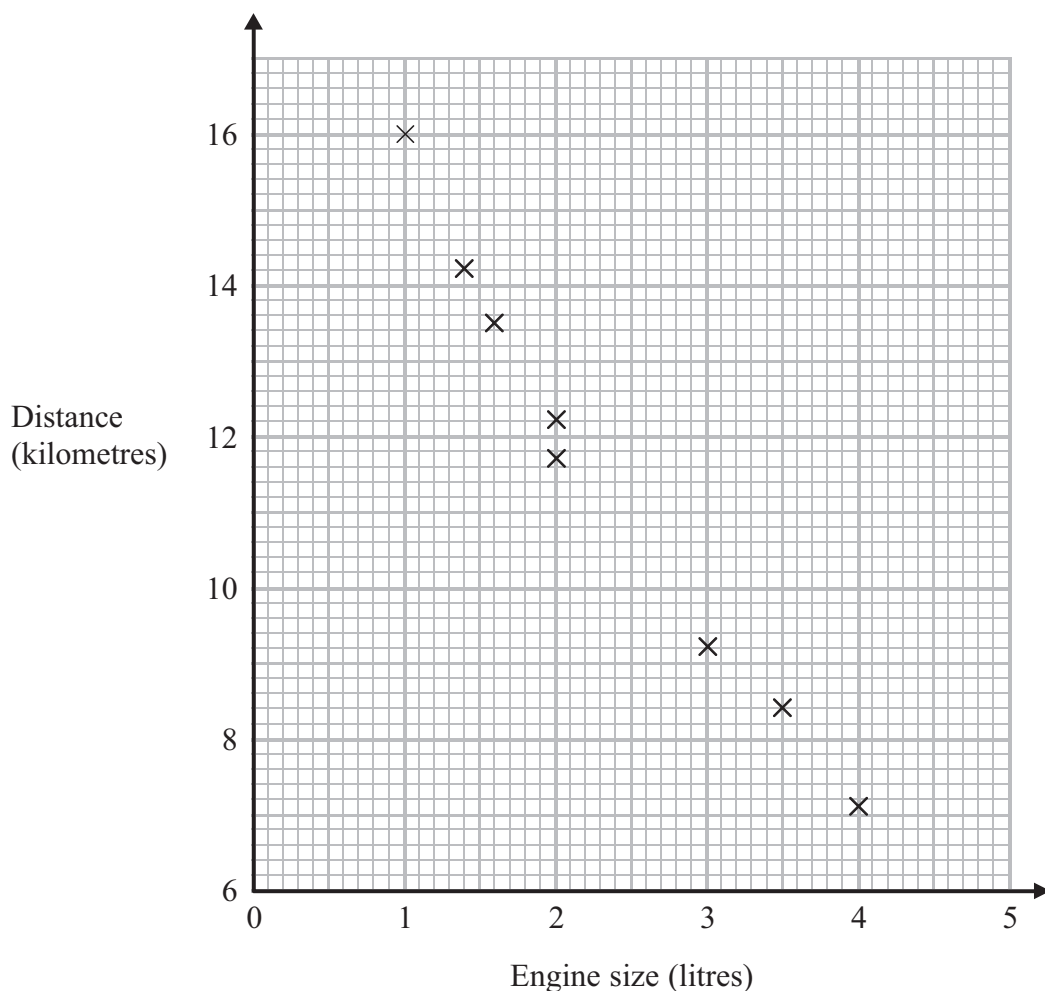


- *6** Potatoes cost £9 for a 12.5 kg bag at a farm shop.
The same type of potatoes cost £1.83 for a 2.5 kg bag at a supermarket.
- Where are the potatoes the better value, at the farm shop or at the supermarket?
You must show your working.

(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)

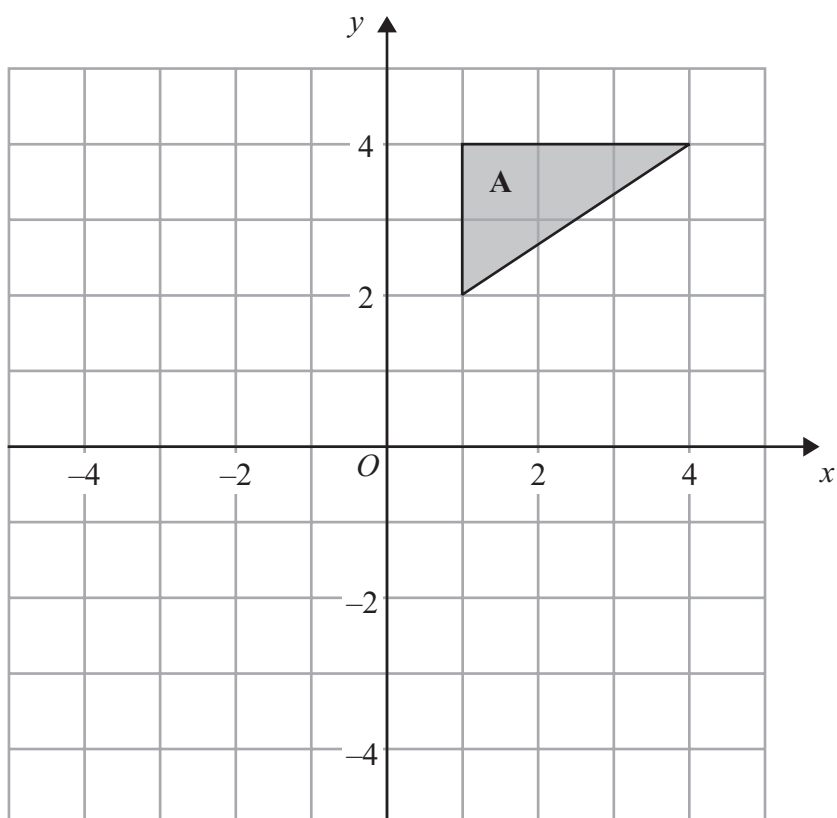
A different car of the same type has an engine size of 2.5 litres.

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

..... kilometres
(2)

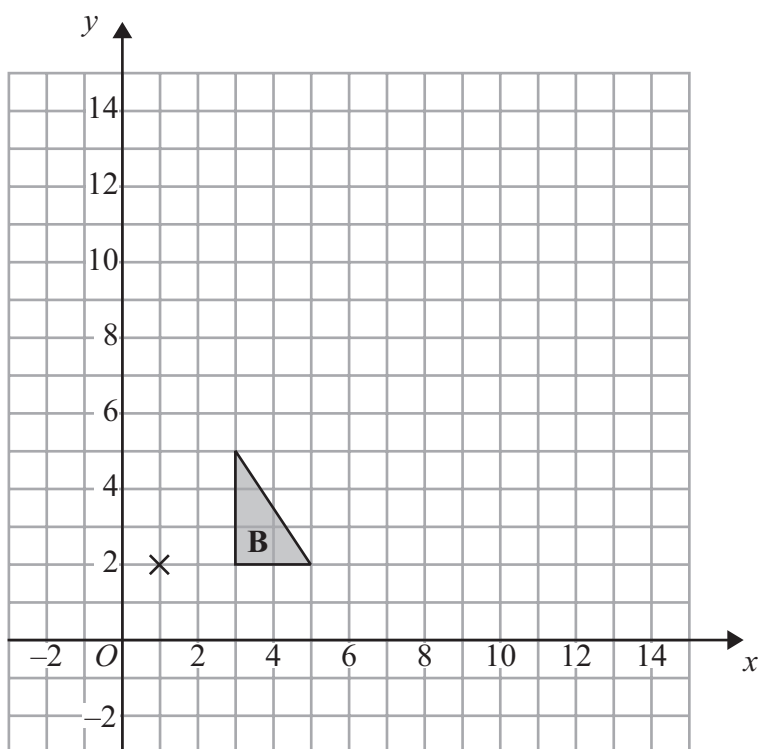
(Total for Question 7 is 3 marks)





(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)



NOVEMBER 2012

- 1 Use a calculator to work out

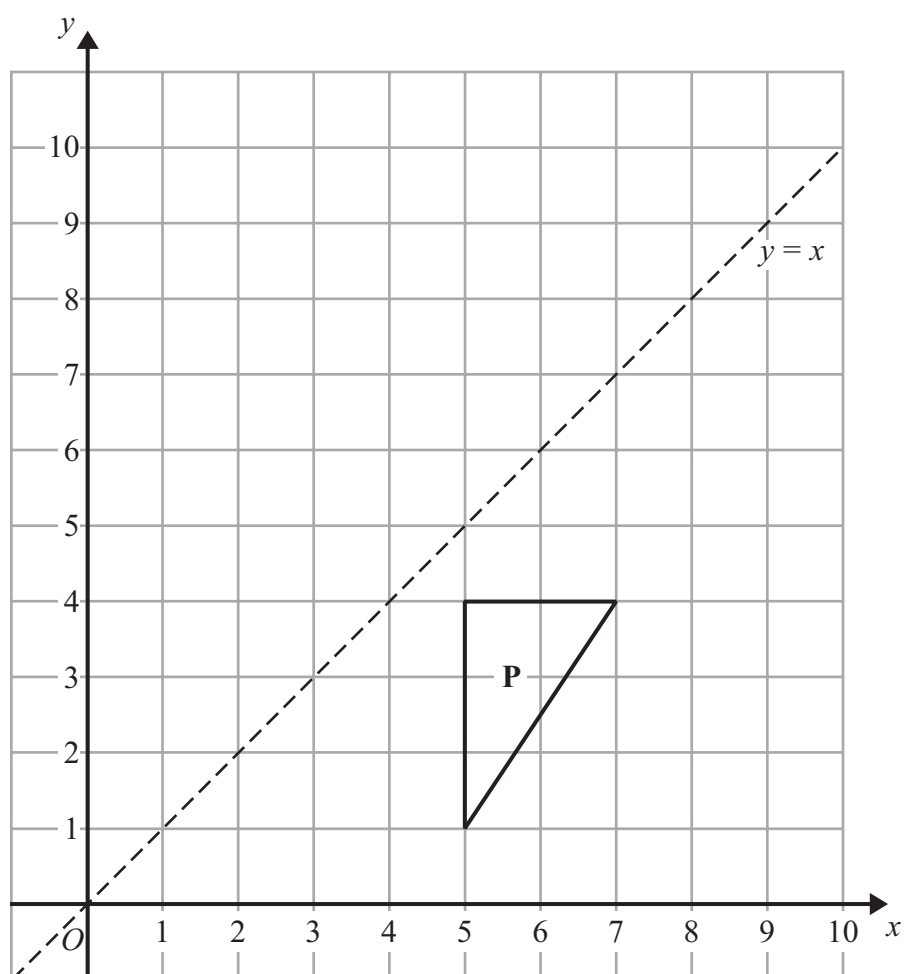
$$\frac{\sqrt{20.4}}{6.2 \times 0.48}$$

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

.....
(Total for Question 1 is 2 marks)



2 (a)

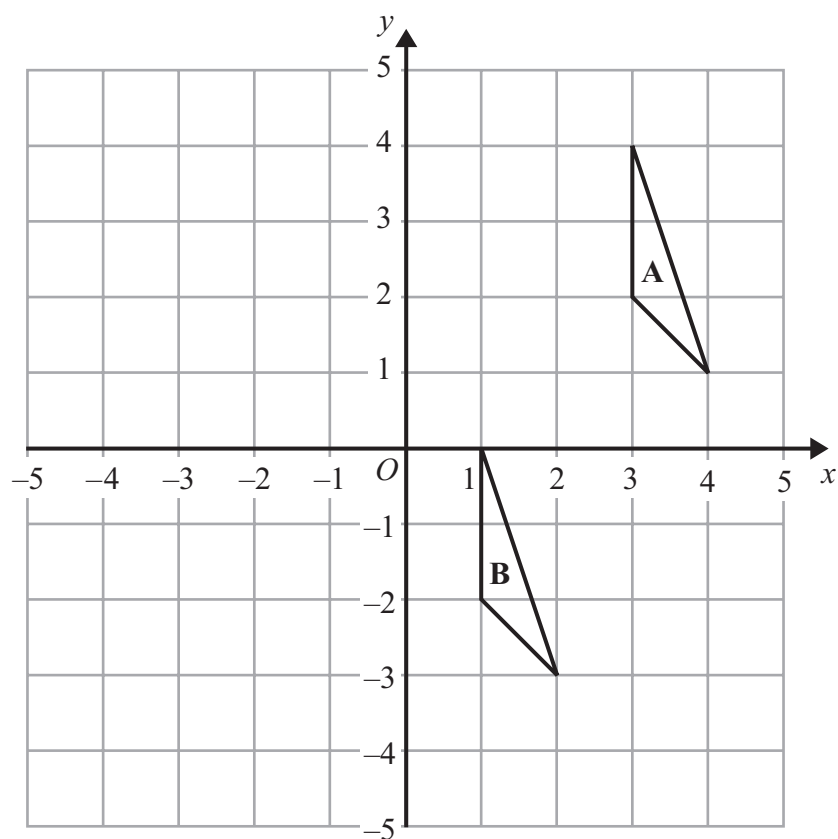


Reflect shape **P** in the line $y = x$

(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.

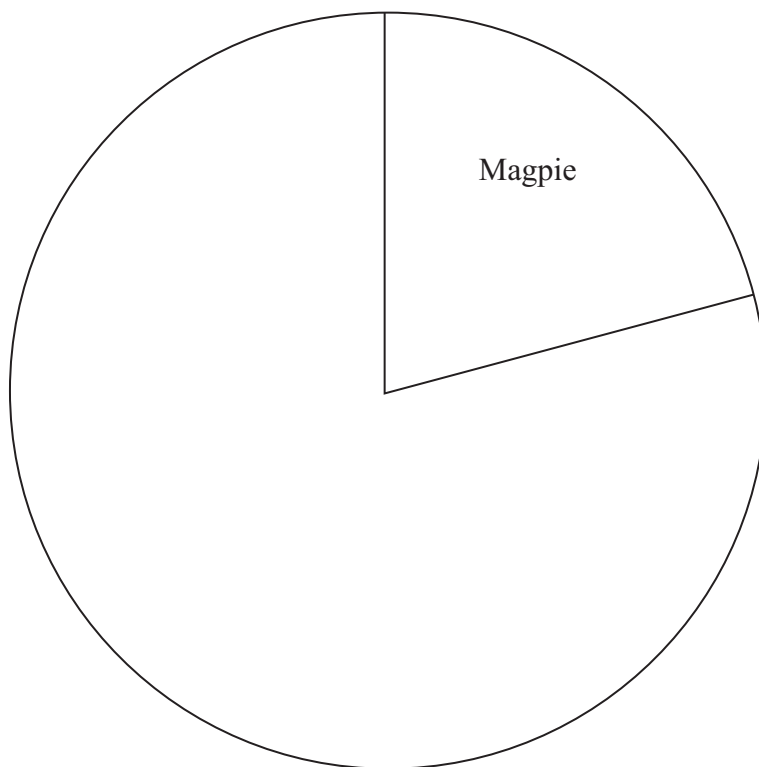
(Total for Question 3 is 5 marks)



- 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 |

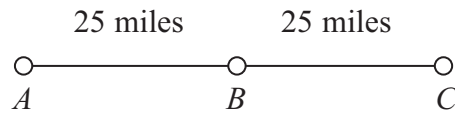
Complete the accurate pie chart.



(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

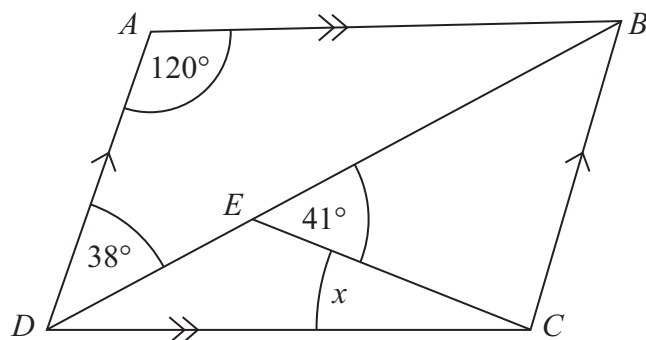


Diagram **NOT**
accurately drawn

$ABCD$ is a parallelogram.

Angle $ADB = 38^\circ$.

Angle $BEC = 41^\circ$.

Angle $DAB = 120^\circ$.

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)

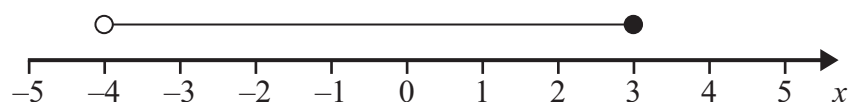
- 8 (a) n is an integer.

$$-1 \leq n < 4$$

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)



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?

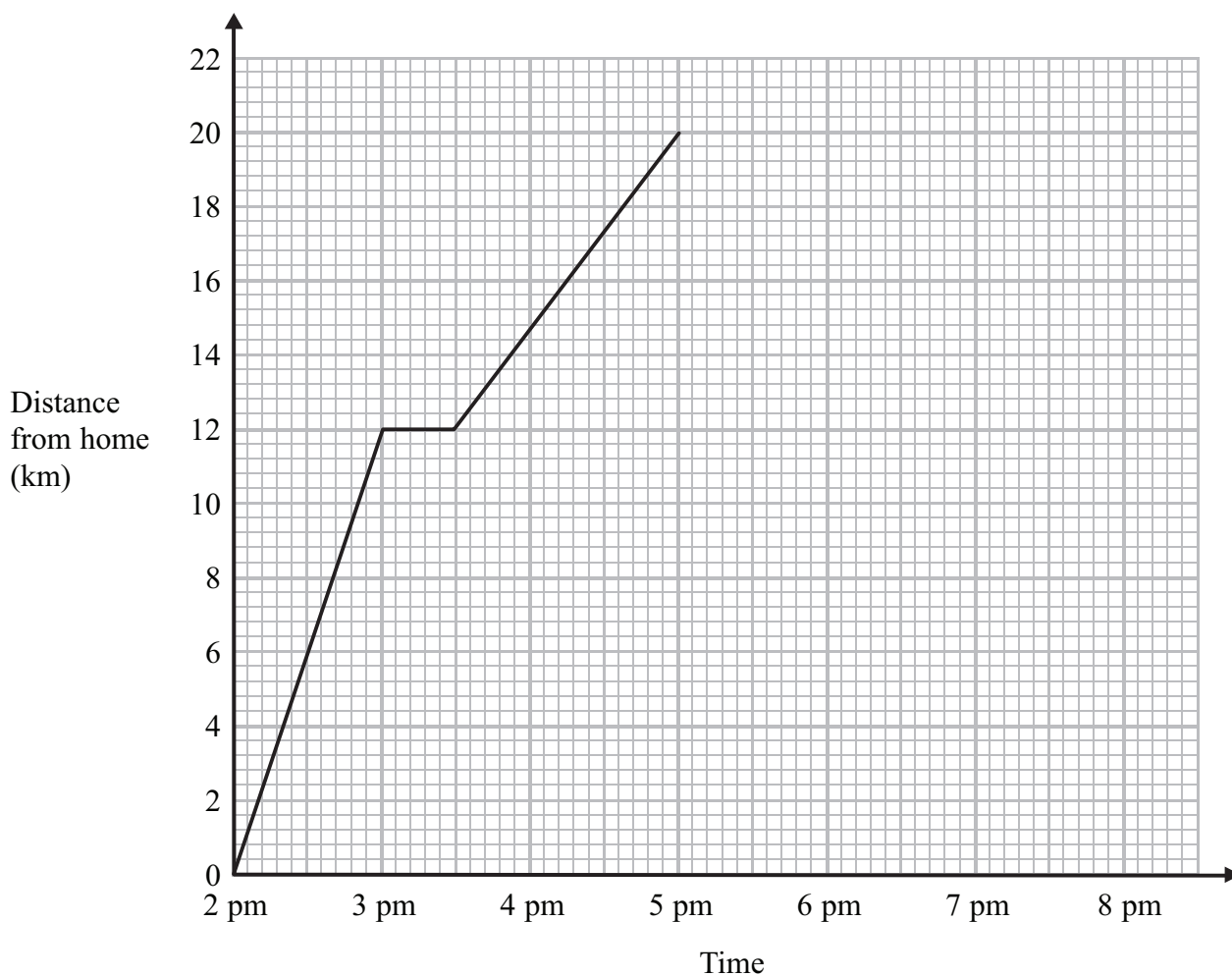
You must show all your working.

(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.

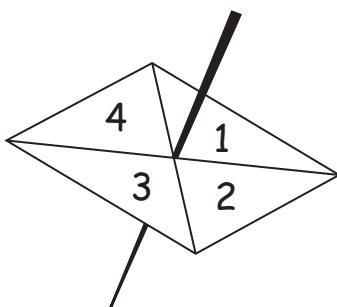
- (c) Complete the travel graph.

(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

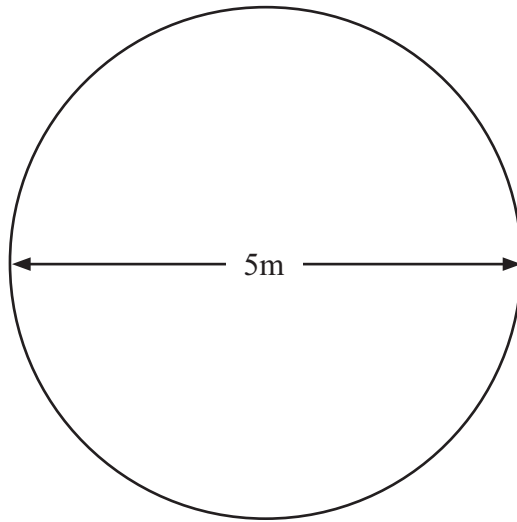


Diagram **NOT**
accurately drawn

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.

$x = \dots\dots\dots$

(Total for Question 8 is 4 marks)



JUNE 2013

- 1 Here is a cuboid.

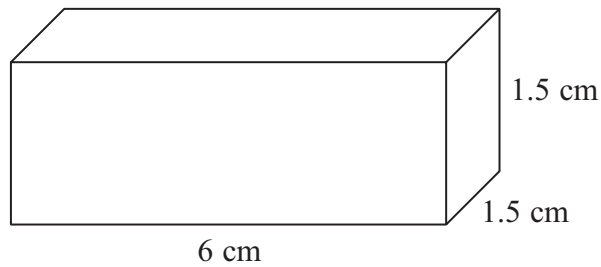


Diagram **NOT**
accurately drawn

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

Work out the total surface area of the cuboid.

..... cm²

(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

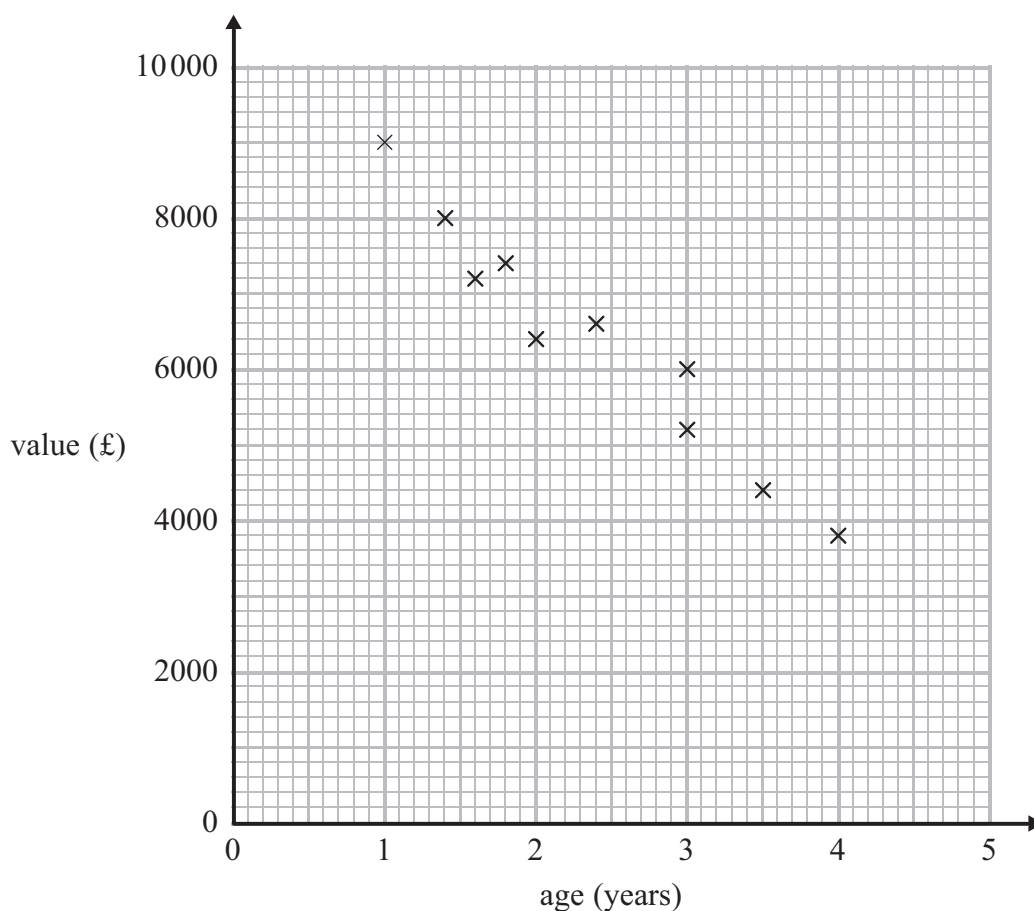
Does Elaine have enough of each ingredient to make 45 mince pies?

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? | | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 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.

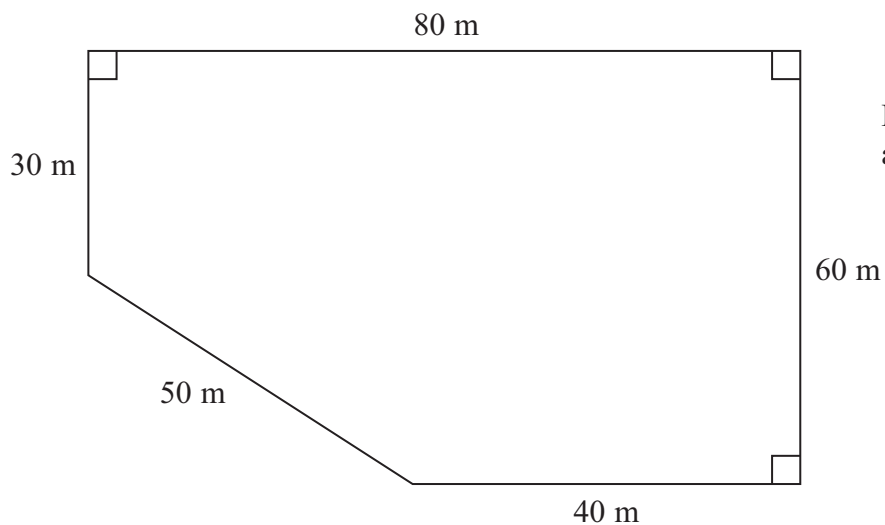
Emma and Dave share the rest of the money in the ratio 3 : 2

What is Dave's share of the money?

.....
(Total for Question 7 is 4 marks)



- 8 The diagram shows the plan of a playground.



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)



NOVEMBER 2013

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

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.

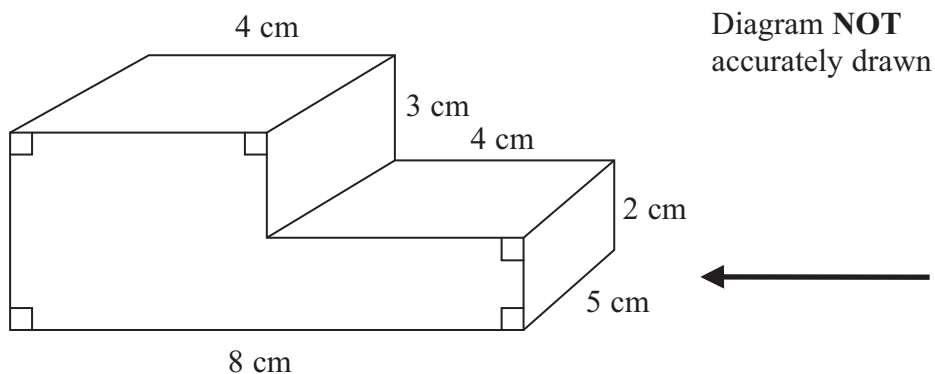
The probability that he takes a yellow counter is $\frac{2}{7}$

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

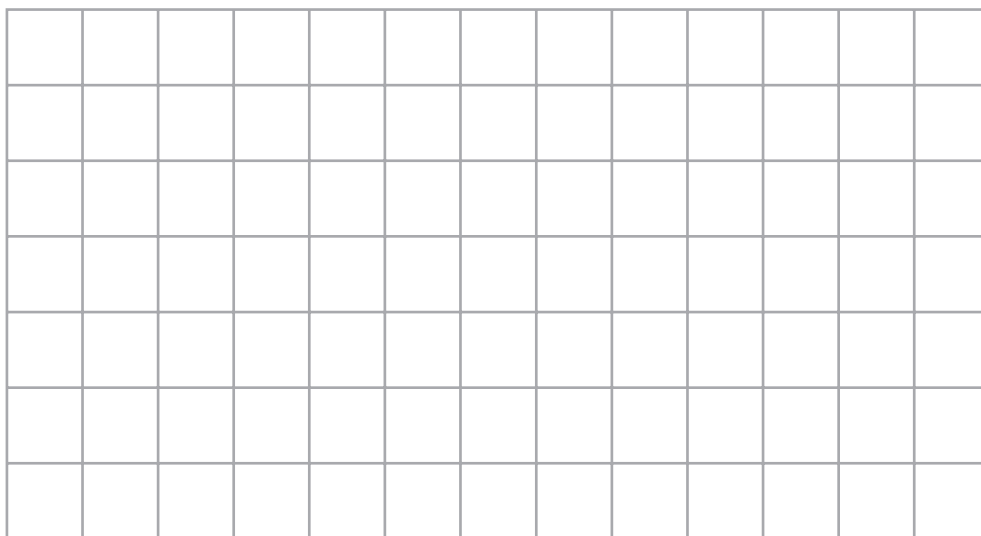
.....
(Total for Question 3 is 2 marks)



- 4 The diagram shows a solid prism.



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)



P 4 4 0 2 4 A 0 7 2 8

*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 n th term of this arithmetic sequence.

.....
(2)

(b) Is 150 a term of this sequence?

You must explain how you get your answer.

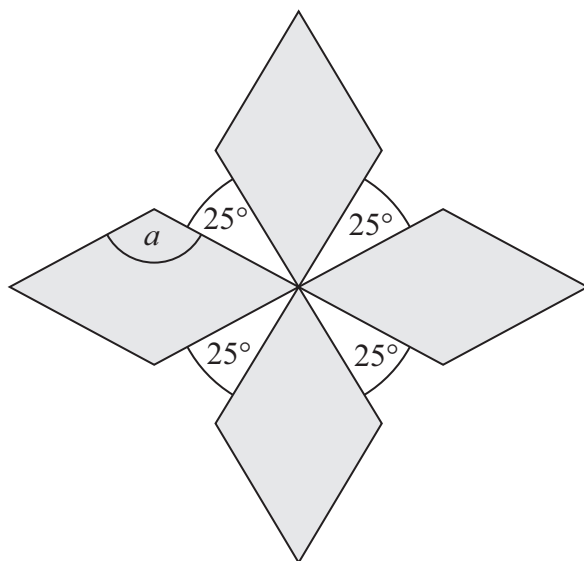
.....
(2)

(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)

