

2017 1MA0 Practice Questions – FOUNDATION PAPER AIMING C

You're halfway there already – only one paper to go.

These questions have been compiled to help you practice topics which have not yet been tested in this exam session. You may need rough paper for some working out. There are some challenging questions in here!

Of course, ANY topic can turn up on either paper, but these questions may help focus your revision.

Don't forget your calculator on THURSDAY 8th JUNE.

GOOD LUCK!



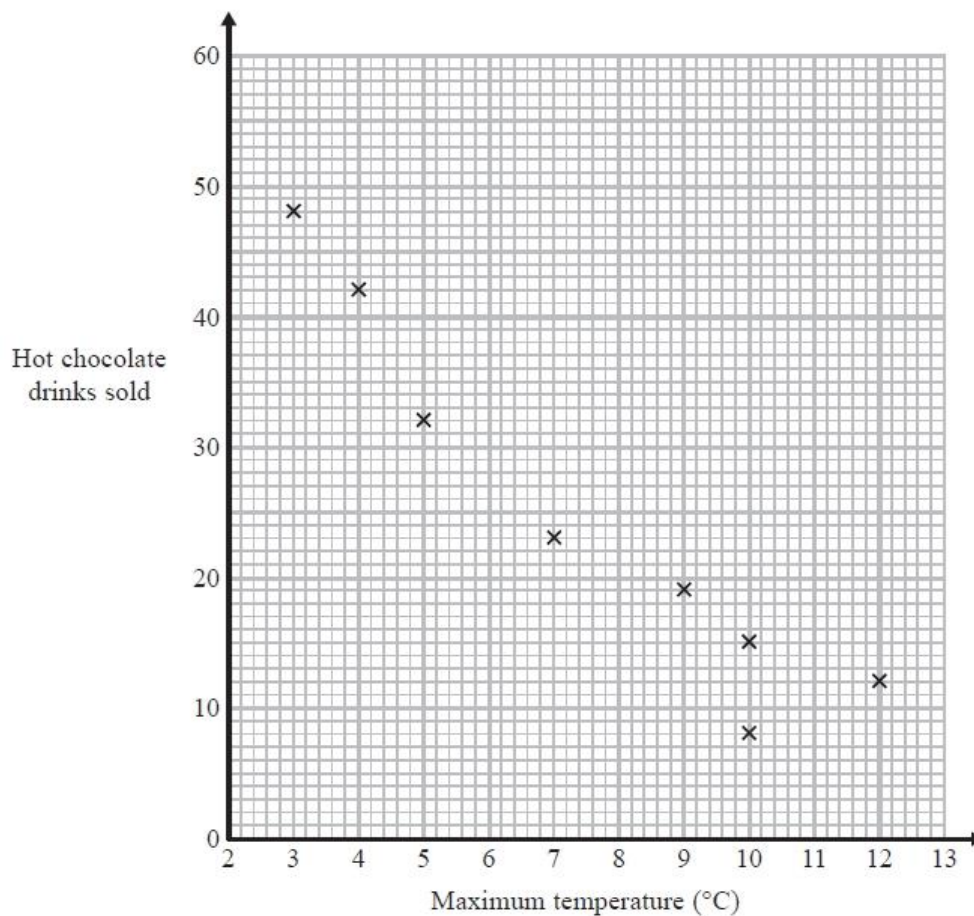
Emma Bell.

Q1.

Carlos has a cafe in Clacton.

Each day, he records the maximum temperature in degrees Celsius ($^{\circ}\text{C}$) in Clacton and the number of hot chocolate drinks sold.

The scatter graph shows this information.



On another day the maximum temperature was 6°C and 35 hot chocolate drinks were sold.

(a) Show this information on the scatter graph.

(1)

(b) Describe the relationship between the maximum temperature and the number of hot chocolate drinks sold.

.....

(1)

(c) Draw a line of best fit on the scatter diagram.

(1)

One day the maximum temperature was 8°C .

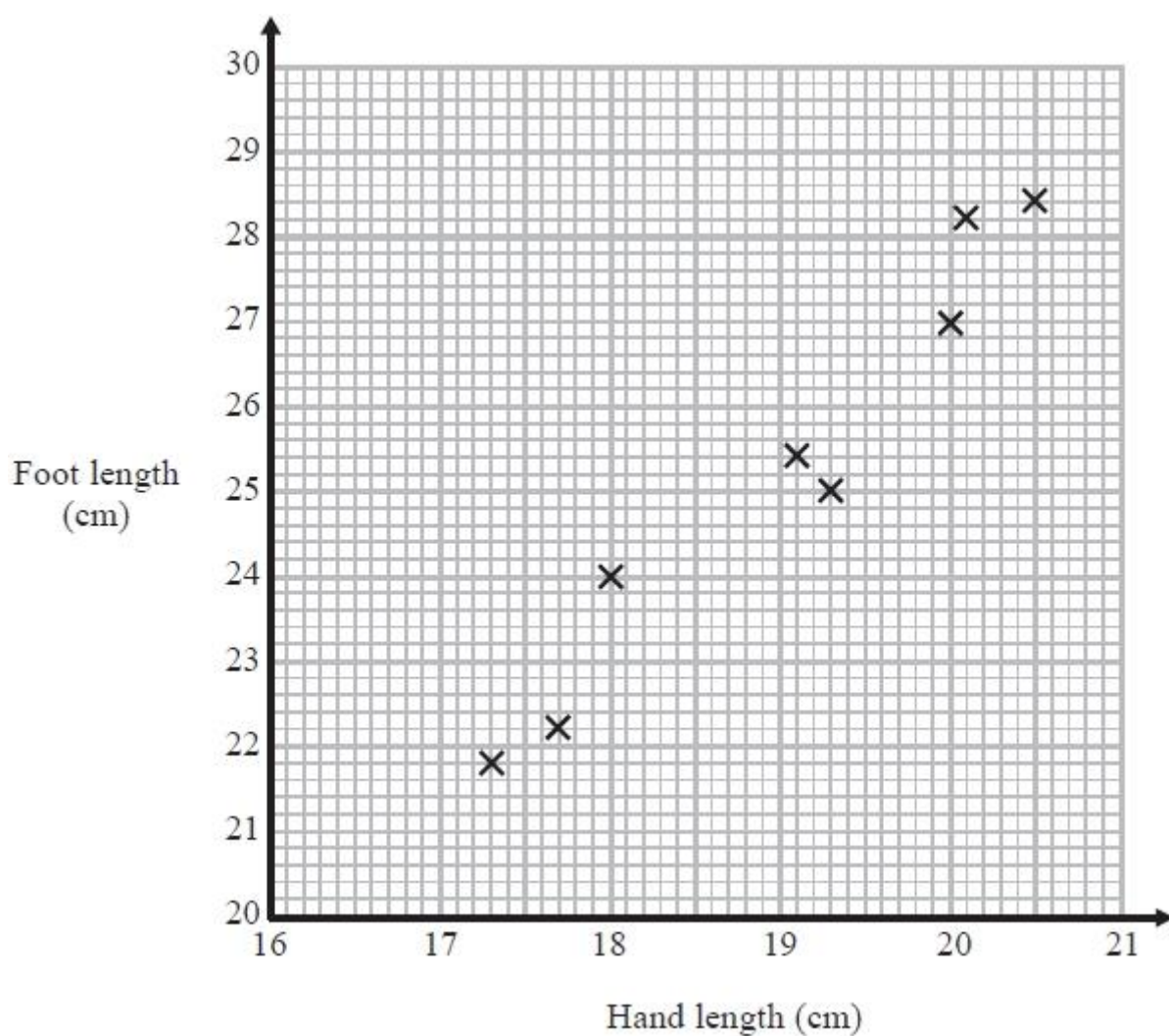
(d) Use your line of best fit to estimate how many hot chocolate drinks were sold.

.....
 (1)

(Total for Question is 4 marks)

Q2.

The scatter graph gives information about the hand length and the foot length of each of 8 people.



(a) Describe the relationship between the hand length and the foot length of these people.

.....
.....

(1)

Toby has a hand length of 18.5 cm.

(b) Find an estimate for Toby's foot length.

..... cm

(2)

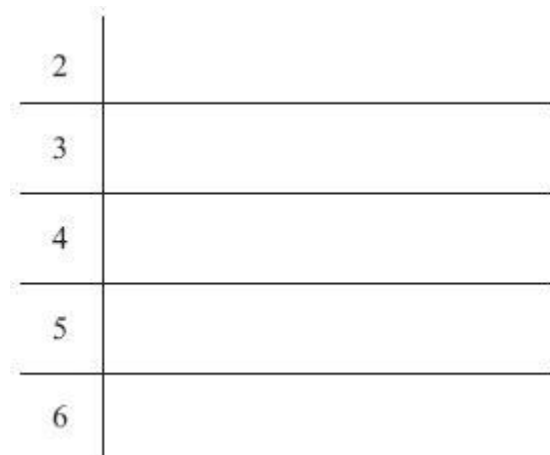
(Total for question = 3 marks)

Q3.

Here are the heights, in cm, of some potato plants.

20	35	48	37	25	56	65	42
34	28	25	32	54	62	39	45

Draw an ordered stem and leaf diagram to show this information.



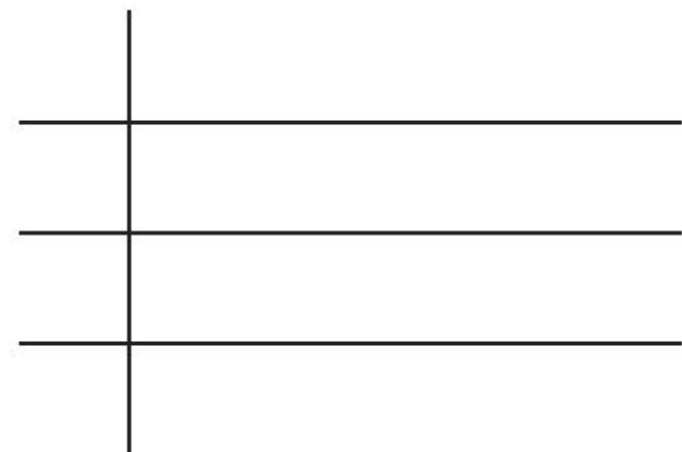
(Total for Question is 3 marks)

Q4.

Here are the heights, in centimetres, of 15 children.

123	147	135	150	147
129	148	149	125	137
133	138	133	130	151

Show this information in an ordered stem and leaf diagram.



(Total for question = 3 marks)

Q5.

An electronic game can show red or blue or green or yellow.

The table shows the probabilities that the colour shown will be red or will be green or will be yellow.

Colour	red	blue	green	yellow
Probability	0.15		0.41	0.24

Arthur plays the game.

(a) Work out the probability that the colour shown will be blue.

.....
(2)

Janice is going to play the game 50 times.

(b) Work out an estimate for the number of times the colour shown will be yellow.

.....
(2)

(Total for question = 4 marks)

Q6.

On an activity day students play one sport.

They play football or hockey or tennis.

120 students are on the activity day.

30 of the students are boys.

12 of the boys and 26 of the girls play hockey.

45 of the students play football.

35 of the 45 students who play football are girls.

Work out the number of girls who play tennis.

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

Q7.

James wants to find out how long his friends spend using the internet.

He uses this question on his questionnaire.

How many hours do you spend using the internet?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 – 5	5 – 10	10 – 20

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

1

.....

.....

2

.....

.....

(2)

(b) Write a better question for James to use on his questionnaire to find out how long his friends spend using the internet.

(2)

(Total for Question is 4 marks)

Q8.
 Helen carries out a survey on healthy eating.
 She uses these two questions in a questionnaire.

question 1
What is your age?

under 20
20 to 40
40 to 60
over 60

question 2
You should eat fruit every day. You do agree, don't you?

Yes
No
Don't know

- a) Write down **one** thing wrong with each of these questions.
- question 1
-
-
- question 2
-
-
- (2)

Helen wants to find out the amount of fruit people eat.

- (b) Design a question that Helen could use in her questionnaire.

(2)

The table shows some information about the people at Helen's college.

	Student	Teacher
Male	536	48
Female	384	73

Helen is going to ask people at her college to do her questionnaire.
 She asks a sample of 100 people stratified by type and gender.

- (c) Work out the number of female teachers in her sample.

(2)

(Total for Question is 6 marks)

Q9.

120 children went on a school activities day.

Some children went bowling.

Some children went to the cinema.

The rest of the children went skating.

66 of these children were girls.

28 of the 66 girls went bowling.

36 children went to the cinema.

20 of the children who went to the cinema were girls.

15 boys went skating.

Work out the number of children who went bowling.

(Total for Question is 4 marks)

Q10.

There are a total of 96 children in Years 4, 5 and 6

37 of these children cannot swim.

11 children in Year 4 cannot swim.

21 children in Year 5 can swim.

There are 30 children in Year 6

18 of these 30 children can swim.

(i) Work out the number of children in Year 4 who can swim.

(ii) Work out the total number of children in Year 5

(Total for Question is 4 marks)

Q11.

* Ketchup is sold in three different sizes of bottle.



A small bottle contains 342 g of ketchup and costs 88p

A medium bottle contains 570 g of ketchup and costs £1.95

A large bottle contains 1500 g of ketchup and costs £3.99

Which bottle is the best value for money?

You must show your working.

(Total for Question is 4 marks)

Q12.

* A shop sells toothpaste in 3 different sizes of tube.

A 70 m/ tube of toothpaste costs £1.79

A 100 m/ tube of toothpaste costs £2.75

A 150 m/ tube of toothpaste costs £3.99

Which size of tube is the best value for money?

You must show all your working.

(Total for Question is 4 marks)

Q13.

Callum has £240

He wants to buy some tickets that cost 10 euros each.

The exchange rate is £1 = 1.20 euros.

Work out the greatest number of tickets that Callum can buy.

.....

(Total for question = 3 marks)

Q14.

* Matches are sold in three sizes of box.

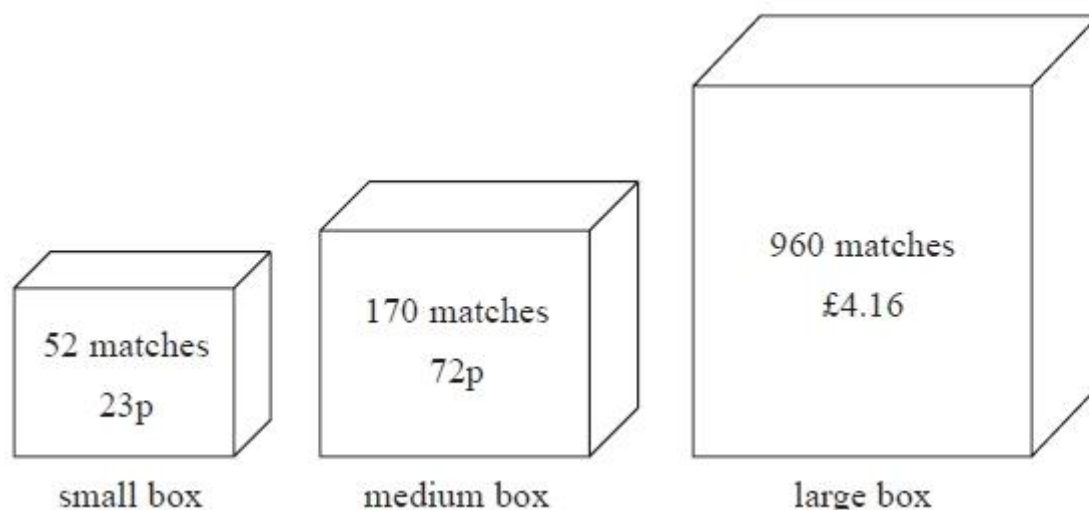


Diagram NOT
accurately drawn

A small box contains 52 matches and costs 23p.

A medium box contains 170 matches and costs 72p.

A large box contains 960 matches and costs £4.16

Which size of box is the best value for money?

Show how you got your answer.

(Total for question = 4 marks)

Q15.

Here is a list of ingredients for making 12 cheese scones.

Ingredients for 12 cheese scones	
240 g	flour
60 g	butter
30 g	cheese
150 ml	milk

Jason is going to make 30 cheese scones.

Work out the amount of each ingredient he needs.

(Total for Question is 3 marks)

Q16.

The cost of 6 cups is £7.80

Work out the cost of 10 of these cups.

(Total for Question is 2 marks)

Q17.

Here are the ingredients needed to make 30 biscuits.

Biscuits	
Ingredients to make 30 biscuits	
400 g	of flour
320 g	of butter
180 g	of sugar

Helen wants to make 20 biscuits.

(a) How much sugar does Helen need?

..... g
(2)

John has 1 kg of flour and enough of the other ingredients.

(b) Work out the greatest number of biscuits John can make.

.....
(2)

(Total for question = 4 marks)

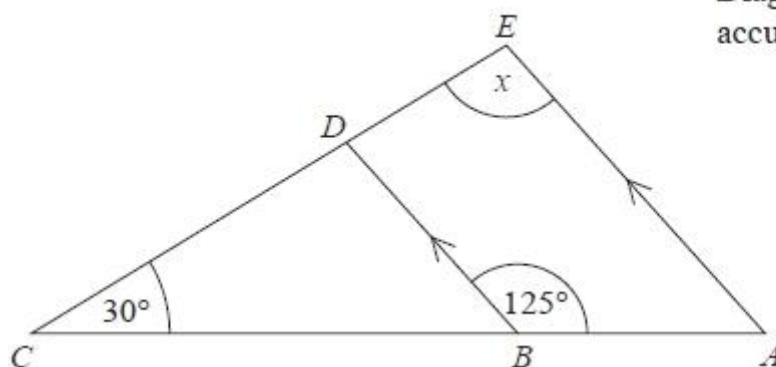
Q18.

Work out an estimate for the value of $\frac{89.3 \times 0.51}{4.8}$

(Total for Question is 2 marks)

Q19.
*

Diagram NOT
accurately drawn



ABC and *EDC* are straight lines.

AE and *BD* are parallel.

Angle *ABD* = 125°

Angle *BCD* = 30°

Work out the size of the angle marked *x*.

Give reasons for your answer.

(Total for question = 4 marks)

Q20.

Tom and Amy set the alarms on their phones to sound at 6.45 am.

Both alarms sound together at 6.45 am.

Tom's alarm then sounds every 9 minutes.

Amy's alarm then sounds every 12 minutes.

At what time will both alarms next sound together?

.....
(Total for question = 3 marks)

Q21.

(a) Express 180 as a product of its prime factors.

(3)

Martin thinks of two numbers.

He says,

"The Highest Common Factor (HCF) of my two numbers is 6

The Lowest Common Multiple (LCM) of my two numbers is a multiple of 15"

(b) Write down **two** possible numbers that Martin is thinking of.

(2)

(Total for Question is 5 marks)

Q22.

The bearing of a ship from a lighthouse is 050°

Work out the bearing of the lighthouse from the ship.

..... $^\circ$

(Total for Question is 2 marks)

Q23.

Manchester airport is on a bearing of 330° from a London airport.

(a) Find the bearing of the London airport from Manchester airport.

..... $^\circ$

(2)

The London airport is 200 miles from Manchester airport.

A plane leaves Manchester airport at 10 am to fly to the London airport.

The plane flies at an average speed of 120 mph.

(b) What time does the plane arrive at the London airport?

.....

(4)

(Total for question = 6 marks)

Q24.



Use ruler and compasses to **construct** the perpendicular bisector of the line segment *AB*.
You must show all your construction lines.

(Total for question = 2 marks)

Q25.

* The diagram shows a flower bed in the shape of a circle.

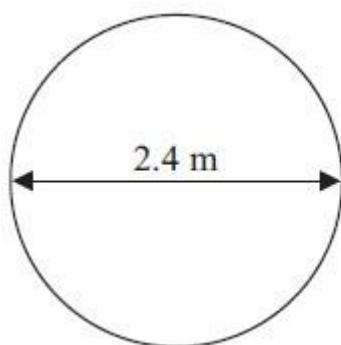


Diagram **NOT**
accurately drawn

The flower bed has a diameter of 2.4 m.

Sue is going to put a plastic strip around the edge of the flower bed.

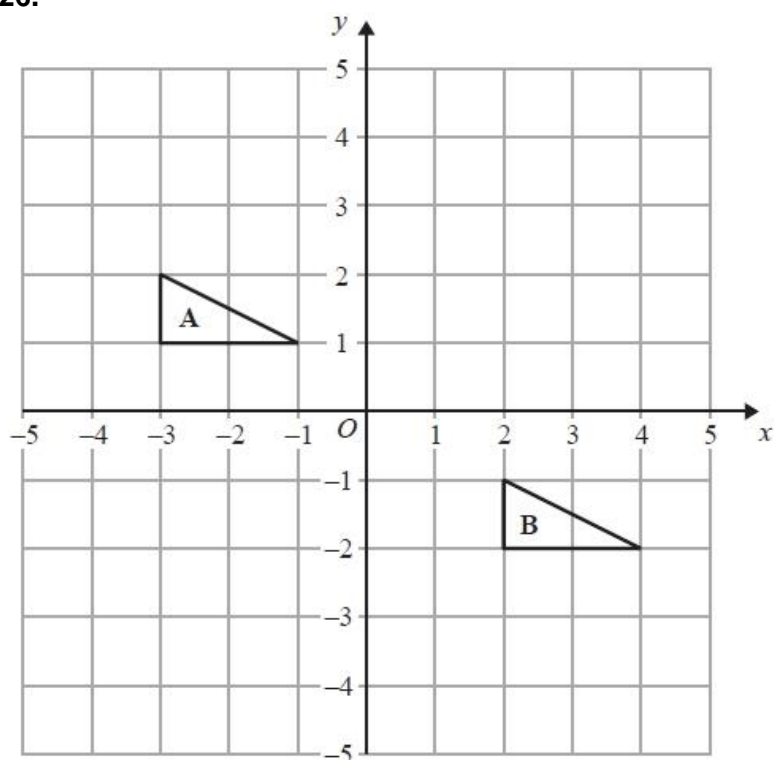
The plastic strip is sold in 2 metre rolls.

How many rolls of plastic strip does Sue need to buy?

You must show all your working.

(Total for Question is 4 marks)

Q26.



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

.....

.....

(Total for Question is 2 marks)

Q27.

The diagram shows a solid prism.

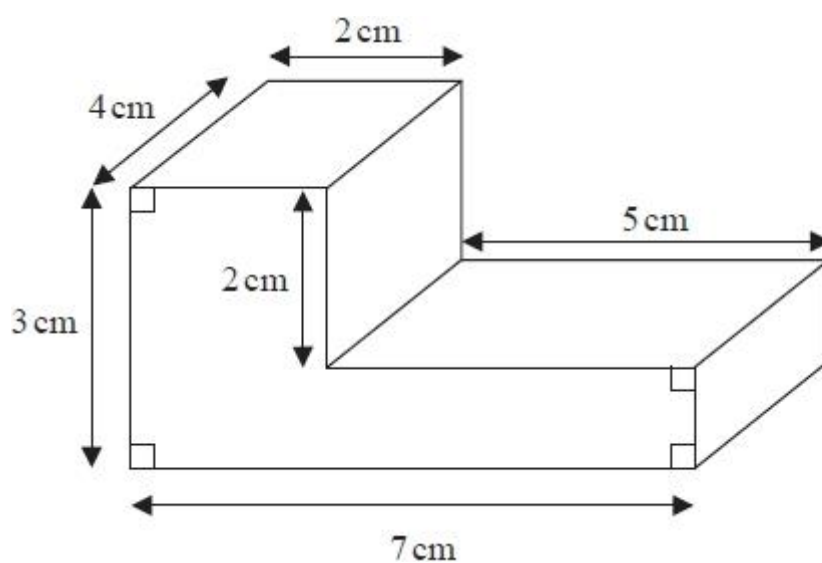
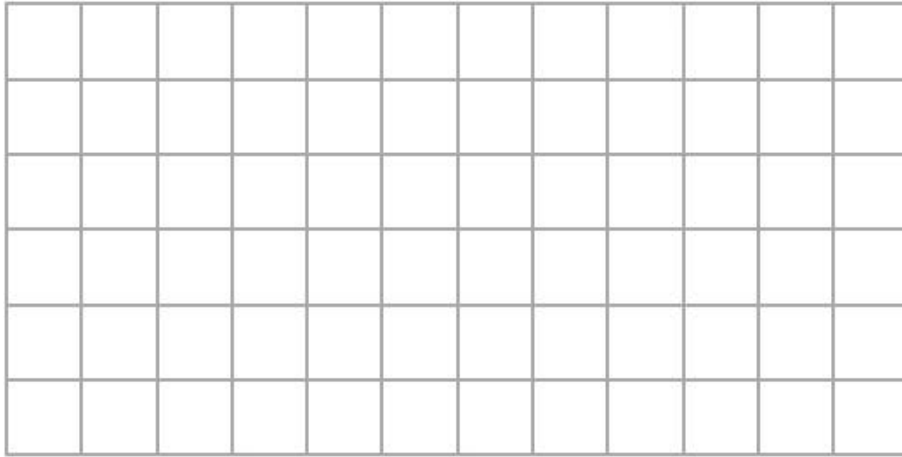


Diagram NOT
accurately drawn

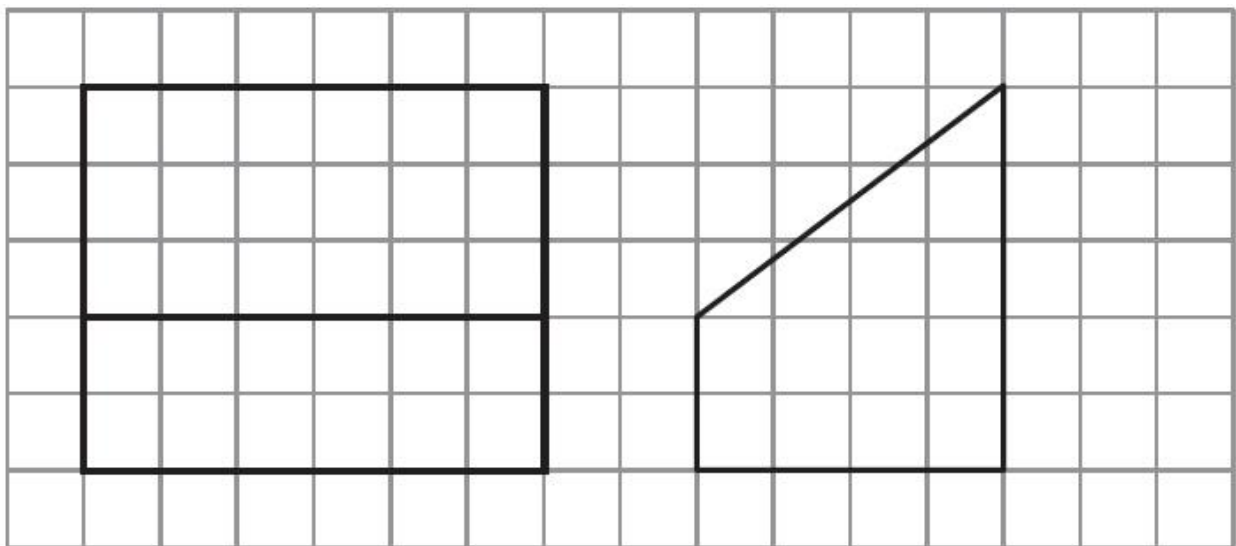
On the grid, draw an accurate plan of the solid prism.



(Total for question = 2 marks)

Q28.

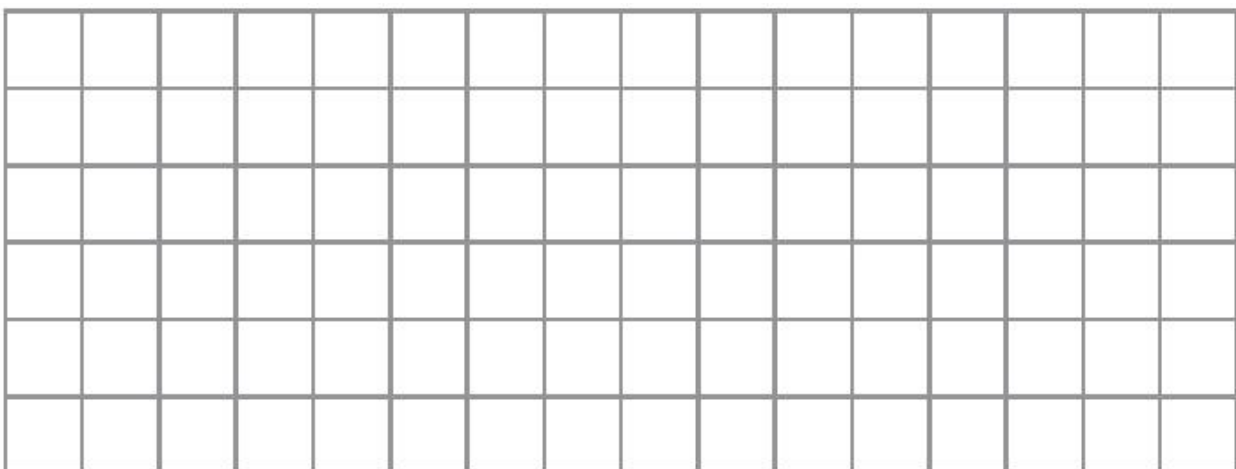
The diagram shows the front elevation and the side elevation of a prism.



Front elevation

Side elevation

(a) On the grid, draw a plan of this prism.



(2)

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

(2)

(Total for Question is 4 marks)

Q29.

(a) Solve $4x = 20$

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

(b) Solve $y + 5 = 12$

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

(Total for Question is 2 marks)

Q30.

There are 100 beads in a bag.

50 of the beads are red

25 of the beads are blue

15 of the beads are green

The rest of the beads are yellow

Sally takes at random a bead from the bag.

What is the probability that the bead is

(a) green,

(2)

(b) black,

(1)

(c) yellow?

(2)

(Total for Question is 5 marks)

Q31.

Jake plays a game of throwing a ball at a target.

The table shows information about the probability of each possible score.

Score	0	1	2	3	4	5
Probability	0.09	x	0.18	0.16	0.21	0.30

Work out the value of x .

(Total for Question is 2 marks)

Q32.

Oliver orders some items from an electrical store.
Here is his bill.

(a) Complete the bill.

Live Wire Store			
Quantity	Item	Unit price	Total
2	Table lamps	£ 14.98	£ 29.96
5	Light switches	£ 6.40	£
.....	Light bulbs	£ 1.83	£ 21.96
Delivery charge			£ 5.00
Total cost			£

(3)

At the beginning of October, Oliver has £452.25 in his bank account.

During October, Oliver

- puts £120 into his bank account
- has £2.56 interest added to his bank account
- spends £64.83 from his bank account.

(b) How much money is in Oliver's bank account at the end of October?

£

(3)

(Total for question = 6 marks)

Q33.

(a) Write 0.1 as a fraction.

(1)

(b) Write $\frac{1}{4}$ a decimal.

(1)

(Total for Question is 2 marks)

Q34.

(a) Write 3 metres in centimetres.

..... centimetres
(1)

(b) Write 4000 grams in kilograms.

..... kilograms
(1)

(c) Write 700 millilitres in litres.

..... litres
(1)

(Total for question = 3 marks)

Q35.

Katie has x pets.

Agatha has twice as many pets as Katie.

Isabel has 3 more pets than Katie.

Write an expression, in terms of x , for the total number of pets that Katie, Agatha and Isabel have.

.....

(Total for Question is 2 marks)

Q36.

Uzma has a biased coin.

When she throws the coin once, the probability of getting heads is x .

(a) Write down an expression, in terms of x , for the probability of getting tails.

.....
(1)

Uzma throws the coin 200 times.

(b) Write down an expression, in terms of x , for an estimate for the number of times she gets tails.

.....
(2)

(Total for question = 3 marks)

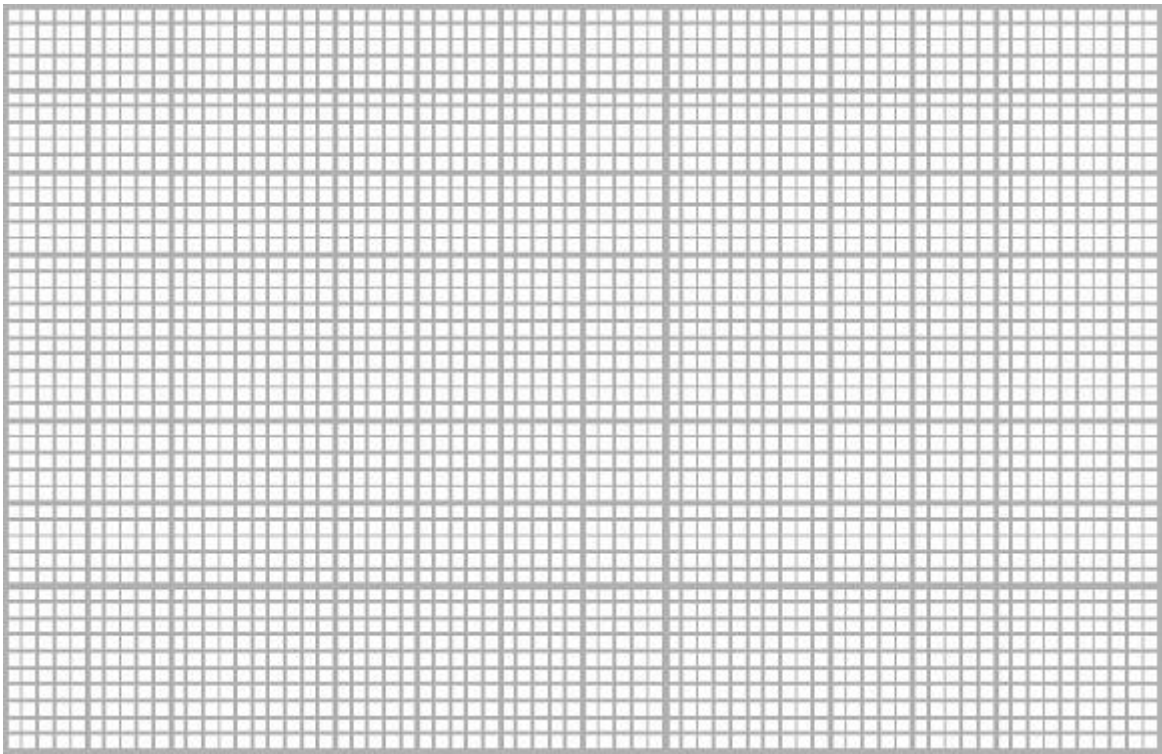
Q37.

* Harry and Shamus recorded the number of minutes they each spent watching TV on Monday to Thursday last week.

The table shows information about their results.

	Monday	Tuesday	Wednesday	Thursday
Harry	35	30	25	20
Shamus	10	20	25	40

(a) Show this information in a suitable diagram.



(4)

(b) Compare the numbers of minutes Harry and Shamus each spent watching TV on Monday to Thursday last week.

Write down two comparisons.

- 1
-
- 2
-

(2)

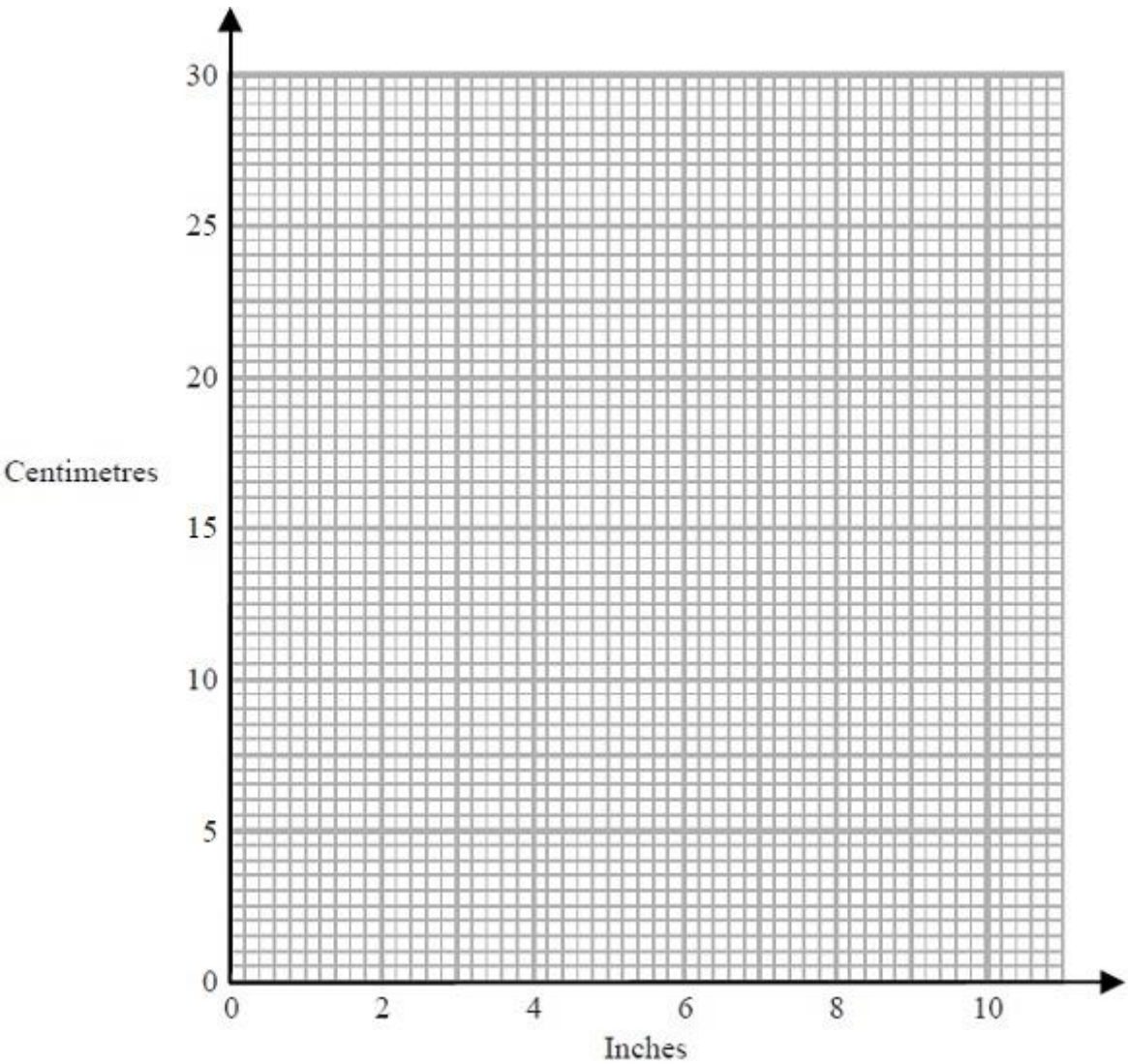
(Total for Question is 6 marks)

Q38.

The table shows some lengths in inches changed into lengths in centimetres.

Length in inches	0	2	6	10
Length in centimetres	0	5	15	25

(a) On the grid, use this information to draw a line graph that can be used to change between inches and centimetres.



(2)
Kate's height is 62 inches.

Helen's height is 150 centimetres.

*(b) Who is the tallest?

(3)
(Total for Question is 5 marks)

Q39.

The diagram shows a semicircle drawn inside a rectangle.

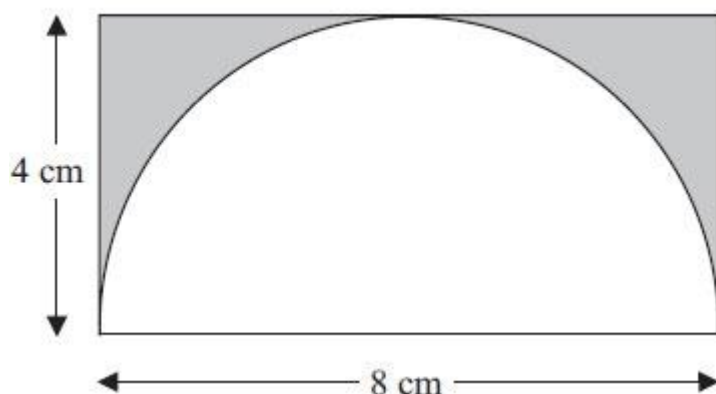


Diagram **NOT**
accurately drawn

The semicircle has a diameter of 8 cm.

The rectangle is 8 cm by 4 cm.

Work out the area of the shaded region.

Give your answer correct to 3 significant figures.

..... cm²

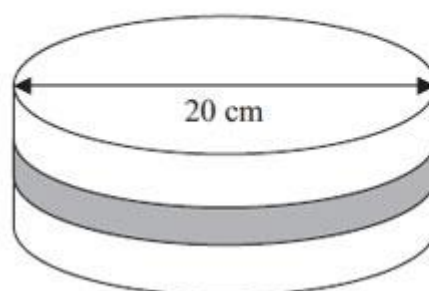
(Total for Question is 4 marks)

Q40.

Susan has a round cake.

The cake has a diameter of 20 cm.

Diagram **NOT**
accurately drawn



Susan wants to put a ribbon round the cake.

What is the least length of ribbon she can use?

.....

(Total for Question is 3 marks)

Q41.

Here are the heights, in metres, that 10 men jumped in a high jump competition.

2.19 2.23 2.23 2.23 2.26 2.28 2.29 2.29 2.31 2.33

(a) For these heights, find

- (i) the mode,
- (ii) the mean,
- (iii) the range.

(4)

In a high jump competition for women, the heights, in metres, that 10 women jumped were recorded.
For these heights

the mean was 1.95 m
the range was 0.18 m

(b) Compare the heights that the men jumped with the heights that the women jumped.

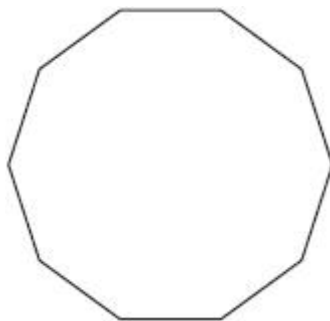
.....
.....
.....
.....

(2)

(Total for Question is 6 marks)

Q42.

Here is a regular 10-sided polygon.



(a) Write down the mathematical name of the polygon.

.....
(1)

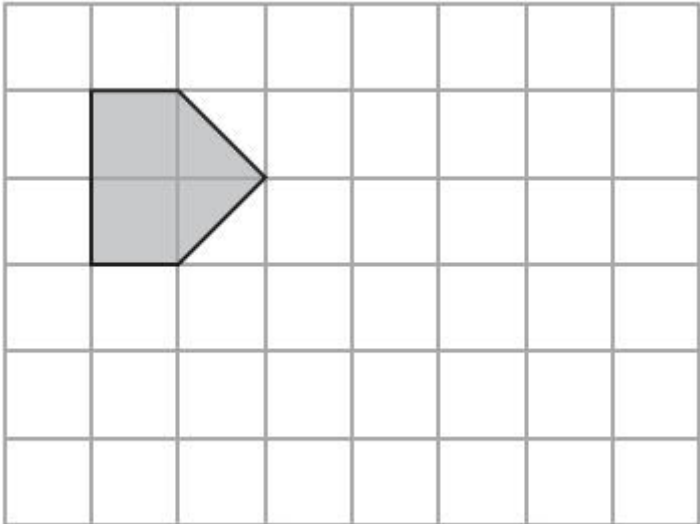
One of the interior angles of this regular polygon is 144°

(b) Work out the sum of the interior angles of the polygon.

.....
(1)

(Total for question = 2 marks)


Q43.
 A shape is drawn on the grid.



On the grid, show how this shape will tessellate.
 You should draw at least 8 shapes.


(Total for question = 2 marks)

Q44.



Single calculator

£3.75



Pack of three calculators

£9

A shop sells calculators.
 In the shop,
 a single calculator costs £3.75
 a pack of three calculators costs £9
 Sarah buys 8 of these calculators.
 She buys the calculators at the least possible cost.
 Sarah pays with two £20 notes.
 How much change should she get?

£
 (Total for Question is 3 marks)

Q45.

* Mr and Mrs Jones are planning a holiday to the Majestic Hotel in the Cape Verde Islands.

The table gives information about the prices of holidays to the Majestic Hotel.

MAJESTIC HOTEL, Cape Verde Islands		
Departures	Price per adult	
	7 nights	14 nights
1 Jan – 8 Jan	£ 694	£ 825
9 Jan – 28 Jan	£ 679	£ 804
29 Jan – 5 Feb	£ 687	£ 815
6 Feb – 18 Feb	£ 769	£ 835
19 Feb – 8 Mar	£ 714	£ 817
9 Mar – 31 Mar	£ 685	£ 805
1 April – 9 April	£ 788	£ 862
10 April – 30 April	£ 748	£ 802
Price per child: 95% of adult price for 7 nights or 85% of adult price for 14 nights.		

Mr and Mrs Jones are thinking about going on holiday

on 20 February for 7 nights

on 10 April for 14 nights.

Mr and Mrs Jones have 2 children.

Compare the costs of these two holidays for the Jones family.

(Total for Question is 5 marks)

Q46.

(a) Solve $k + 4 = 10$

$k = \dots\dots\dots$
(1)

(b) Solve $m + m + m = 21$

$m = \dots\dots\dots$
(1)

(c) Solve $5p - 4 = 9$

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

(Total for Question is 4 marks)

Q47.

Use your calculator to work out

$$\sqrt{84.64} + 3.2^3$$

Write down all the figures on your calculator display.

You must give your answer as a decimal.

(Total for Question is 2 marks)

Q48.

A bag contains 4 beads.

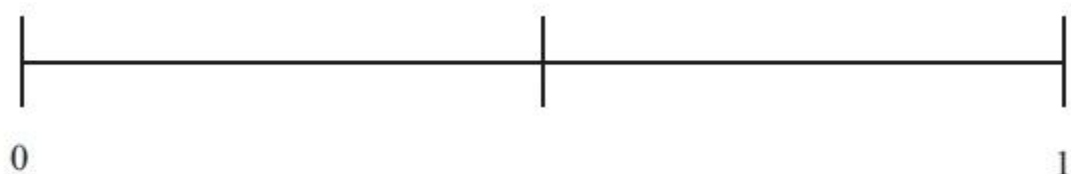
2 beads are blue.

1 bead is red.

1 bead is yellow.

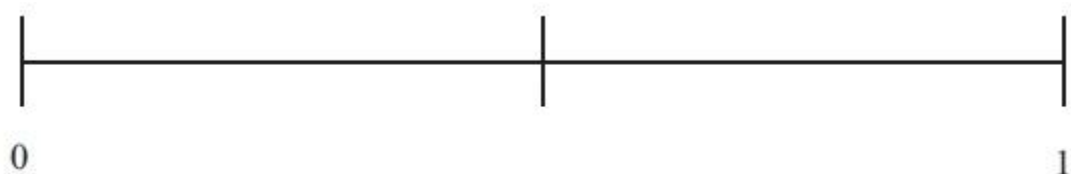
Connor takes at random a bead from the bag.

(a) On the probability scale, mark with a cross (X) the probability that he takes a blue bead.



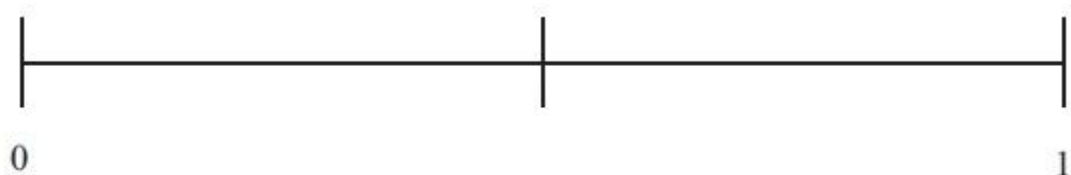
(1)

(b) On the probability scale, mark with a cross (X) the probability that he takes a yellow bead.



(1)

(c) On the probability scale, mark with a cross (X) the probability that he takes a white bead.



(1)

(Total for Question is 3 marks)

Q49.

Abigail is a years old.

Bob is b years old.

Bob is older than Abigail.

(a) Write down, in terms of a and b , an expression for how many years older Bob is than Abigail.

.....

(1)

(b) Write down, in terms of a and b , an expression for the mean age, in years, of Abigail and Bob.

.....

(1)

(Total for Question is 2 marks)

Q50.

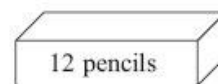
A shop sells pencils in packs and in boxes.

There are

4 pencils in a pack
and 12 pencils in a box.



pack



box

Lola buys d packs of pencils.

(a) Write down an expression, in terms of d , for the number of pencils Lola buys.

(1)

Rory buys x packs of pencils and y boxes of pencils.

(b) Write down an expression, in terms of x and y , for the total number of pencils Rory buys.

(2)

(Total for Question is 3 marks)

Q51.

(a) Expand $5(m + 2)$

(1)

(b) Factorise $y^2 + 3y$

(1)

(c) Simplify $a^5 \times a^4$

(1)

(Total for Question is 3 marks)

Q52.

Simplify $3x + 5y + x + 4y$

(Total for Question is 2 marks)

Q53.

(a) Simplify $x^2 \times x^4$

(1)

(b) Simplify $y^8 \div y^6$

(1)

(Total for Question is 2 marks)

Q54.

Stephanie thinks of a positive number.

She squares the number and adds 7

The result is 43

What number did Stephanie think of?

(Total for question = 3 marks)

Q55.

(a) Work out 6.7^2

(1)

(b) Find $\sqrt{13.69}$

(1)

(Total for Question is 2 marks)

Q56.

(a) Write 7300 correct to one significant figure.

(1)

(b) Write 5.69 correct to one significant figure.

(1)

(Total for question = 2 marks)

Q57.

(a) Write the number 8 million in figures.

(1)

(b) Write the number 7102 in words.

(1)

(c) Write the number 15.46 correct to one decimal place.

(1)

(d) Write the number 421 correct to two significant figures.

(1)

(Total for Question is 4 marks)

Q58.

*

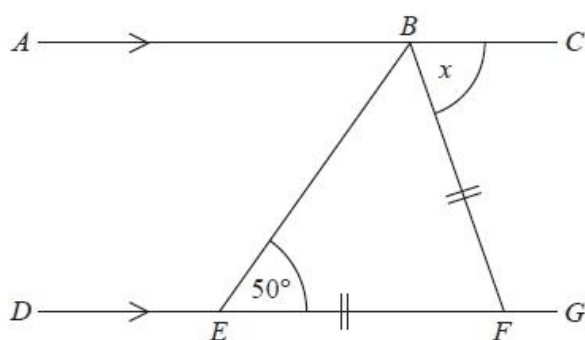


Diagram NOT
accurately drawn

ABC is a straight line.

DEFG is a straight line.

AC is parallel to *DG*.

$EF = BF$.

Angle $BEF = 50^\circ$.

Work out the size of the angle marked x .

Give reasons for your answer.

.....°

(Total for Question is 4 marks)

Q59.

*

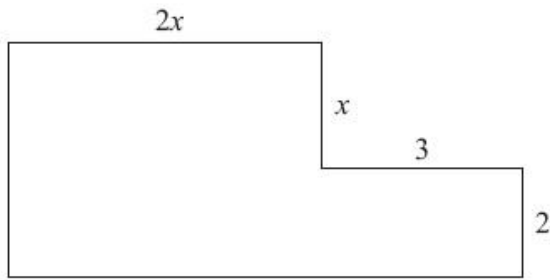


Diagram **NOT**
accurately drawn

In the diagram, all measurements are given in centimetres.

All angles are right angles.

Show that the perimeter of the shape can be written as $2(3x + 5)$.

(Total for Question is 4 marks)

Q60.

* The diagram shows the floor plan of Jill's dining room.

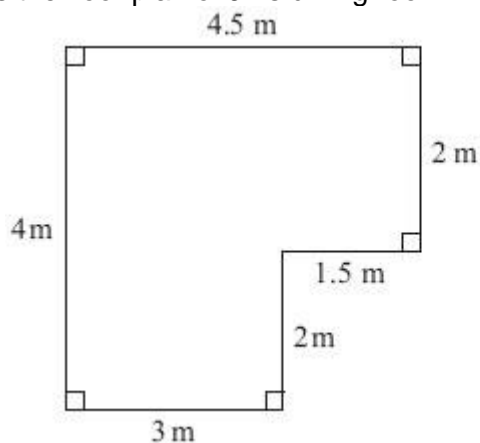


Diagram **NOT**
accurately drawn

Jill is going to cover the floor with wooden floorboards.

The floorboards are sold in packs.

One pack of floorboards will cover 2.25 m^2 .

Work out how many packs Jill needs.

You must show all your working.

(Total for Question is 4 marks)