

Name: \_\_\_\_\_

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# Year 11 Predicted Paper 3 2017

## Foundation Exam

Date: \_\_\_\_\_

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**Time:**

**Total marks available:** 137

**Total marks achieved:** \_\_\_\_\_

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This is not an exhaustive set of topics to revise for the exam but is a good starting point. Remember the last exam is a calculator paper.

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## Questions

**Q1.**

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

$$A = \{\text{multiples of 2}\}$$

$$A \cap B = \{2, 6\}$$

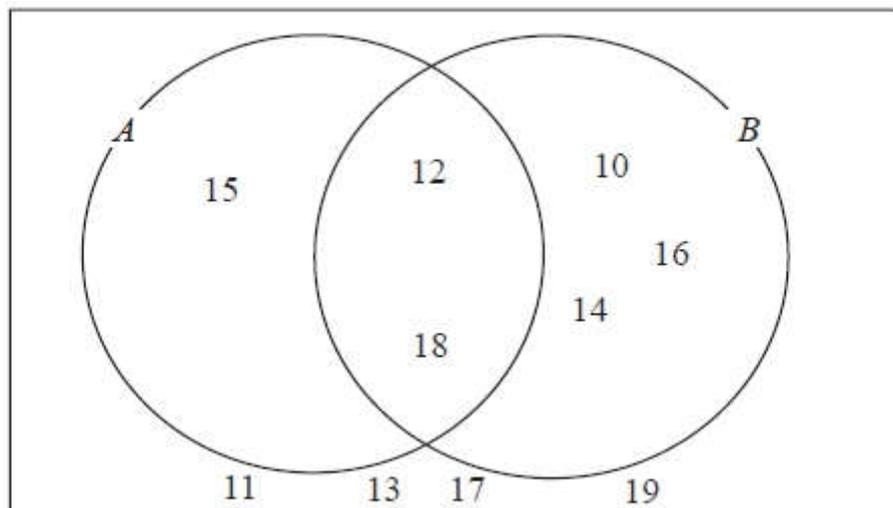
$$A \cup B = \{1, 2, 3, 4, 6, 8, 9, 10\}$$

Draw a Venn diagram for this information.

(Total for question is 4 marks)

**Q2.**

Here is a Venn diagram.



(a) Write down the numbers that are in set

(i)  $A \cup B$

.....

(ii)  $A \cap B$

.....

(2)

One of the numbers in the diagram is chosen at random.

(b) Find the probability that the number is in set  $A'$

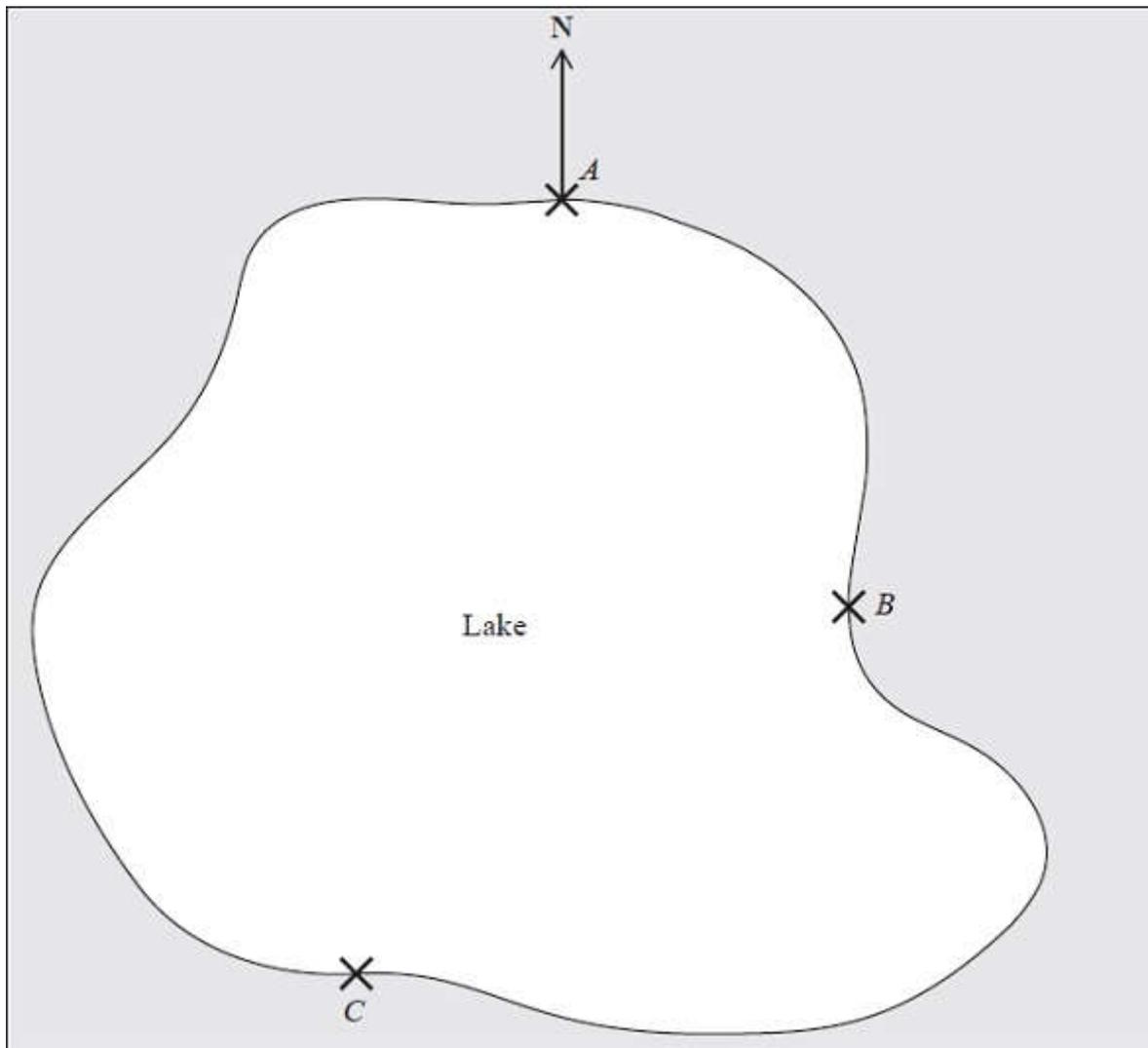
.....

(2)

(Total for question = 4 marks)

**Q3.**

The map shows the positions of three places *A*, *B* and *C* on the edge of a lake.



Scale 1 cm represents 2 km

(a) Find the bearing of *B* from *A*.

..... °  
(1)

A ferry travels in a straight line from *A* to *B*.

It then travels in a straight line from *B* to *C*.

A speedboat travels in a straight line from *A* to *C*.

(b) How many more kilometres does the ferry travel than the speedboat?

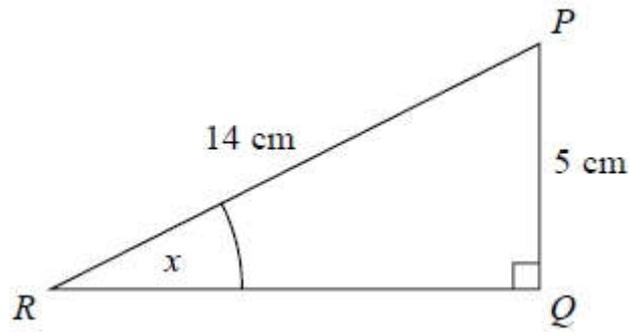
You must show your working.

..... km  
(4)

**(Total for Question is 5 marks)**

**Q4.**

$PQR$  is a right-angled triangle.



Work out the size of the angle marked  $x$ .  
Give your answer correct to 1 decimal place.

.....°

**(Total for question = 2 marks)**

**Q5.**

David drives to the supermarket on his way home from work.

The table shows some information about his journey.

	<b>Time</b>
Leaves work	17 30
Gets to supermarket	17 45
Leaves supermarket	18 10

(a) How many minutes is David at the supermarket?

..... minutes

(1)

David leaves the supermarket at 1810  
He drives 20 miles to his home.  
The speed limit for the journey is 30 mph.

David drives within the speed limit.

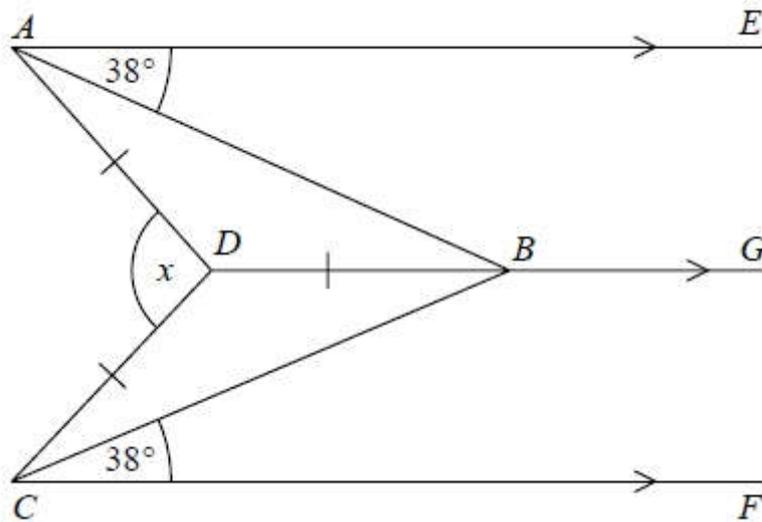
\*(b) Can David get home before 1900?

Give reasons for your answer.

(3)

(Total for question = 4 marks)

Q6.



$AE$ ,  $DBG$  and  $CF$  are parallel.

$DA = DB = DC$ .

Angle  $EAB =$  angle  $BCF = 38^\circ$

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

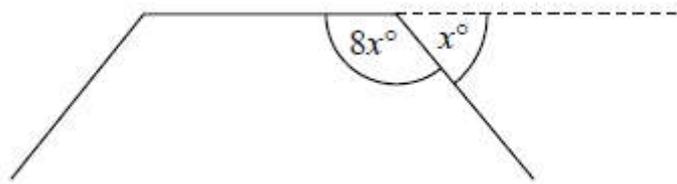
You must show your working.

.....°

(Total for question = 3 marks)

**Q7.**

The diagram shows three sides of a regular polygon.

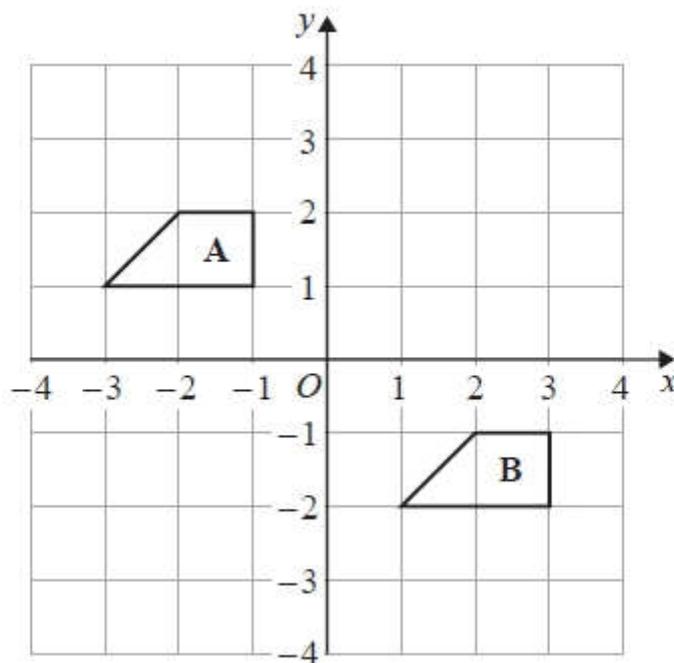


The size of each exterior angle of the regular polygon is  $x^\circ$ .  
The size of each interior angle of the regular polygon is  $8x^\circ$ .

Work out the number of sides the regular polygon has.

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

**Q8.**

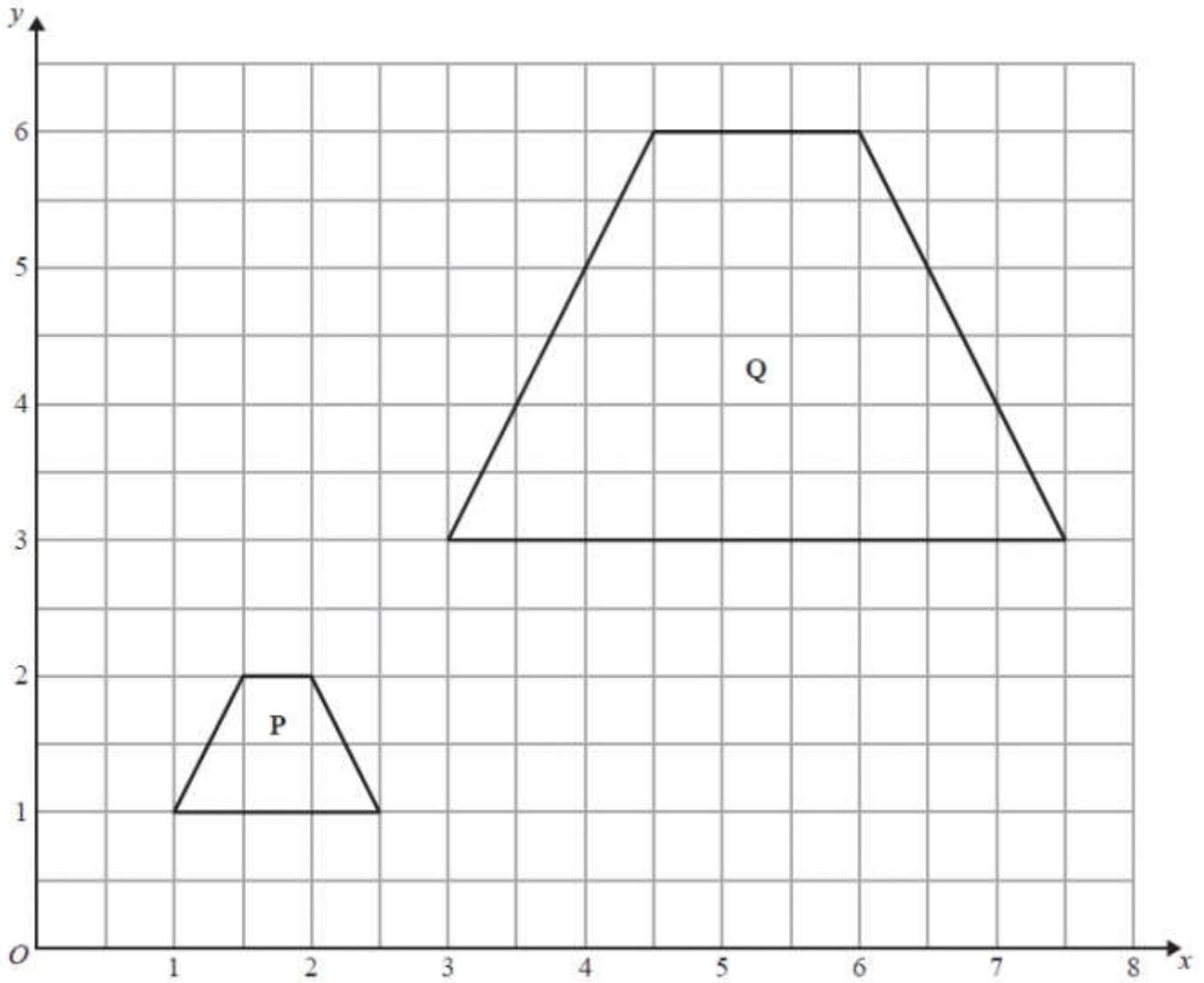


Describe the single transformation that maps shape **A** onto shape **B**.

.....  
.....

**(Total for question = 2 marks)**

Q9.



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

.....  
.....

**(Total for Question is 3 marks)**

**Q10.**

(a) Solve the simultaneous equations

$$3x + 5y = 4$$

$$2x - y = 7$$

(3)

(b) Find the integer value of  $x$  that satisfies both the inequalities

$$x + 5 > 8 \text{ and } 2x - 3 < 7$$

(3)

**(Total for question = 6 marks)**

**Q11.**

Here are the first four terms of an arithmetic sequence.

5

9

13

17

(a) What is the next term of this sequence?

.....  
(1)

(b) Write down an expression, in terms of  $n$ , for the  $n$ th term of the sequence.

.....  
(2)

**(Total for Question is 3 marks)**

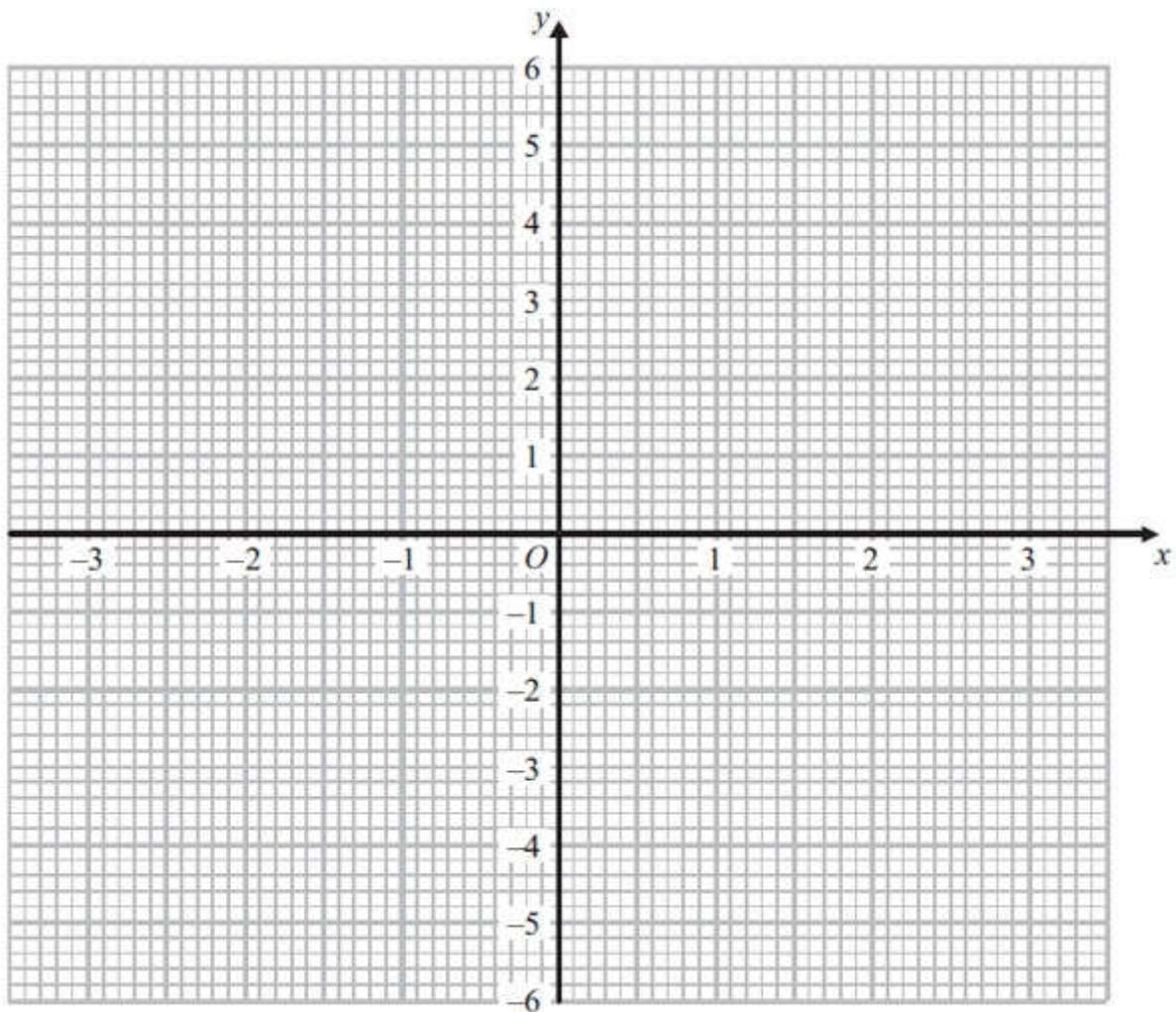
**Q12.**

(a) Complete the table of values for  $y = x^2 - 4$

<b>x</b>	-3	-2	-1	0	1	2	3
<b>y</b>		0	-3			0	5

(2)

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



(2)

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

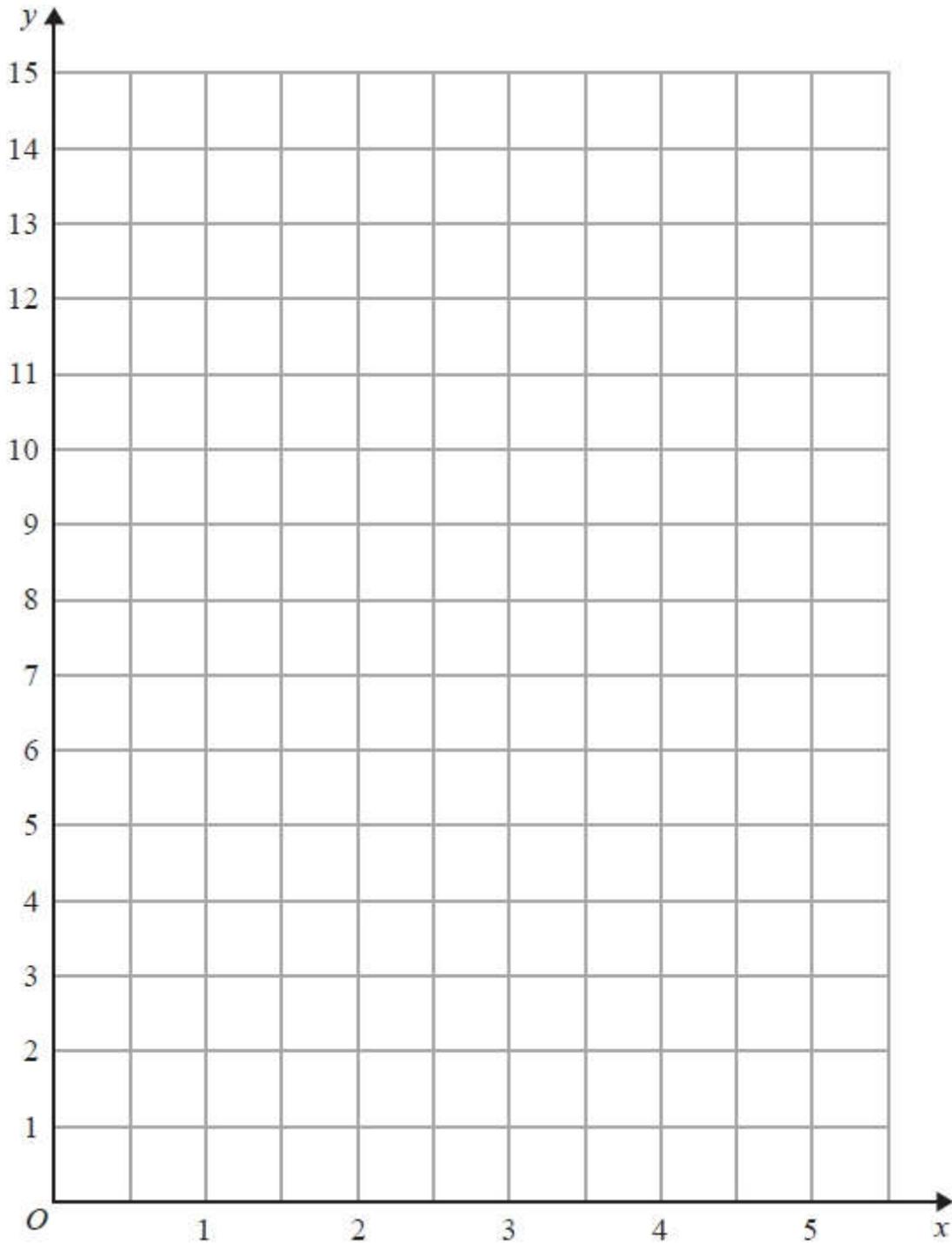
**Q13.**

(a) Complete the table of values for  $y = 2x + 3$  for values of  $x$  from 0 to 5

$x$	0	1	2	3	4	5
$y$		5		9		

(2)

(b) On the grid, draw the graph of  $y = 2x + 3$  for values of  $x$  from 0 to 5



(2)

**(Total for question = 4 marks)**

**Q14.**

Jamal plays 15 games of ten-pin bowling.

Here are his scores.

72	59	75	66	79
75	66	63	89	76
65	79	77	71	83

(a) Draw an ordered stem and leaf diagram to show Jamal's scores.

(3)

Gill plays 15 games of ten-pin bowling.

The table gives some information about her scores.

Highest score	95
Lowest score	75
Mean score	80

\*(b) Compare the distribution of Jamal's scores and the distribution of Gill's scores.

(5)

**(Total for Question is 8 marks)**

**Q15.**

The table shows some information about the foot lengths of 40 adults.

Foot length ( $f$ cm)	Number of adults
$16 \leq f < 18$	3
$18 \leq f < 20$	6
$20 \leq f < 22$	10
$22 \leq f < 24$	12
$24 \leq f < 26$	9

(a) Write down the modal class interval.

.....  
(1)

(b) Calculate an estimate for the mean foot length.

..... cm  
(3)

**(Total for question = 4 marks)**

**Q16.**

100 students had some homework.

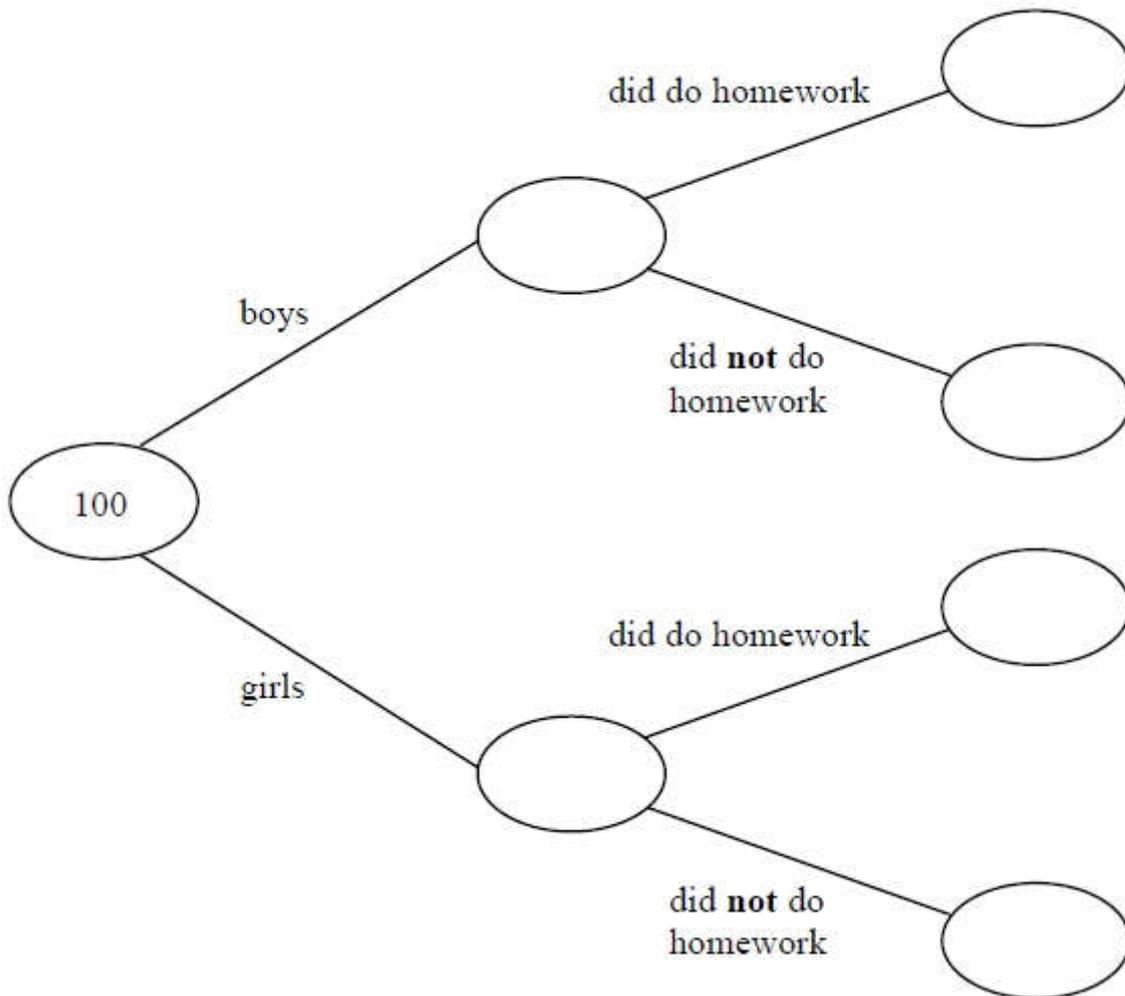
42 of these students are boys.

8 of the 100 students did **not** do their homework.

53 of the girls did do their homework.

(a) Use this information to complete the frequency tree.

(3)



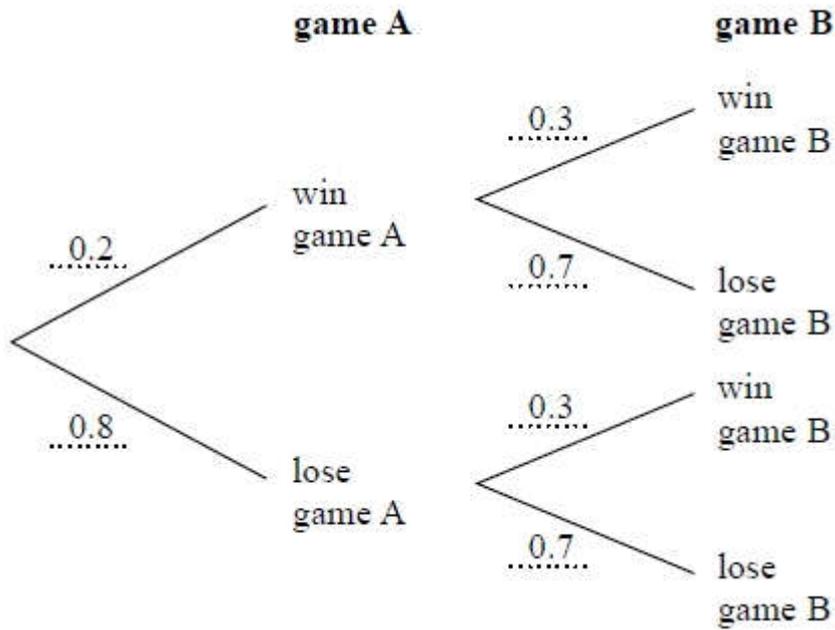
One of the girls is chosen at random.

(b) Work out the probability that this girl did **not** do her homework.

.....  
(2)  
(Total for question = 5 marks)

**Q17.**

Here is a probability tree diagram.



Work out the probability of winning both games.

.....  
(Total for question = 2 marks)

**Q18.**

148 students each choose to study Geography or to study History.

72 of the students choose History.

34 boys choose Geography.

28 girls choose History.

Use this information to complete the two-way table.

	Geography	History	Total
Boys			
Girls			
Total			

(Total for question = 3 marks)

**Q19.**

(a) Write 3500 ml in litres.

..... litres  
(1)

(b) Write 3 kilograms in grams

..... grams  
(1)

(c) Change 3 m<sup>2</sup> to cm<sup>2</sup>.

..... cm<sup>2</sup>  
(2)

**(Total for question = 4 marks)**

**Q20.**

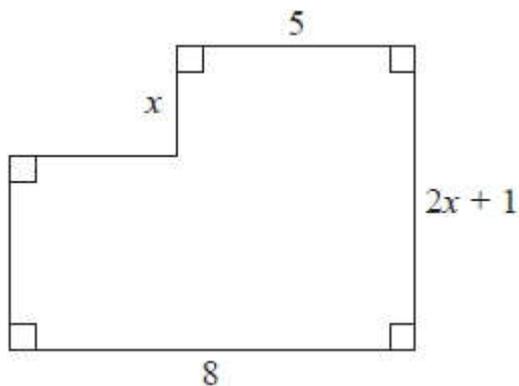


Diagram **NOT**  
accurately drawn

Here is a shape.  
All the measurements are in metres.

The area of the shape is  $A$  m<sup>2</sup>.

Find a formula for  $A$  in terms of  $x$ .

.....

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

**Q21.**

Here is a bill for a dishwasher repair.  
Complete the bill.



## Dishwasher Repair

Description	Number	Cost of each item	Total
Filter	1	£28.95	£28.95
Basket wheel	8	£1.50	£ .....
Spray arm	2	£ .....	£20.90
Labour charge 1½ hours at £18.00 an hour			£ .....
Total cost			£ .....

(Total for Question is 4 marks)

**Q22.**

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

.....  
(1)

(b) Write 0.7 as a fraction.

.....  
(1)

(c) Write 42 out of 50 as a fraction.  
Give your fraction in its simplest form.

.....  
(2)

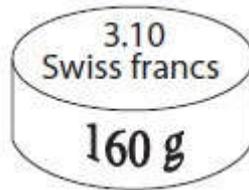
(d) Write 120 as a percentage of 240

..... %  
(1)

**(Total for question = 5 marks)**

**Q23.**

\* The local supermarket sells boxes of Reblochon cheese.



Each box of Reblochon cheese costs 3.10 Swiss francs.  
It weighs 160 g.

In England, a box of Reblochon cheese costs £13.55 per kg.

The exchange rate is £1 = 1.65 Swiss francs.

Work out whether Reblochon cheese is better value for money in Switzerland or in England.

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

**Q24.**

Margaret is going to have a meal.  
She can choose one starter and one main course.

Menu	
Starter	Main course
Pate	Beef
Melon	Salmon
Ham	Lasagne

Write down all the possible combinations Margaret can choose.

.....

.....

.....

.....

.....

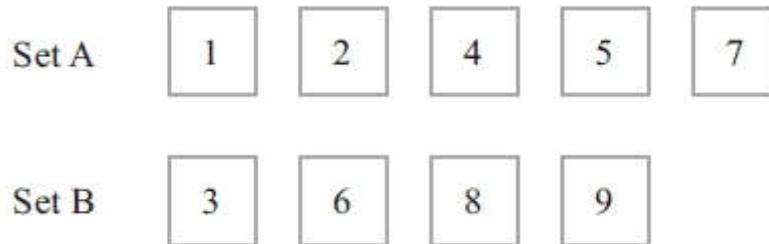
.....

.....

**(Total for Question is 2 marks)**

**Q25.**

Josh plays a game with two sets of cards.



Josh takes at random one card from each set.  
He adds the numbers on the two cards to get the total score.

(a) Complete the table to show all the possible total scores.

		Set A				
		1	2	4	5	7
Set B	3	4	5	7	8	10
	6	7	8	10		
	8					
	9					

(1)

(b) What is the probability that Josh's total score will be greater than 12?

.....

(2)

Josh's year group are raising money for a sponsored skydive.

60 students are each going to play Josh's card game once.  
Each student pays 50p to play the game.

Josh pays £1.50 to any player getting a total of 8

(c) Show that Josh can expect to make a profit of £21 from his game.

(4)

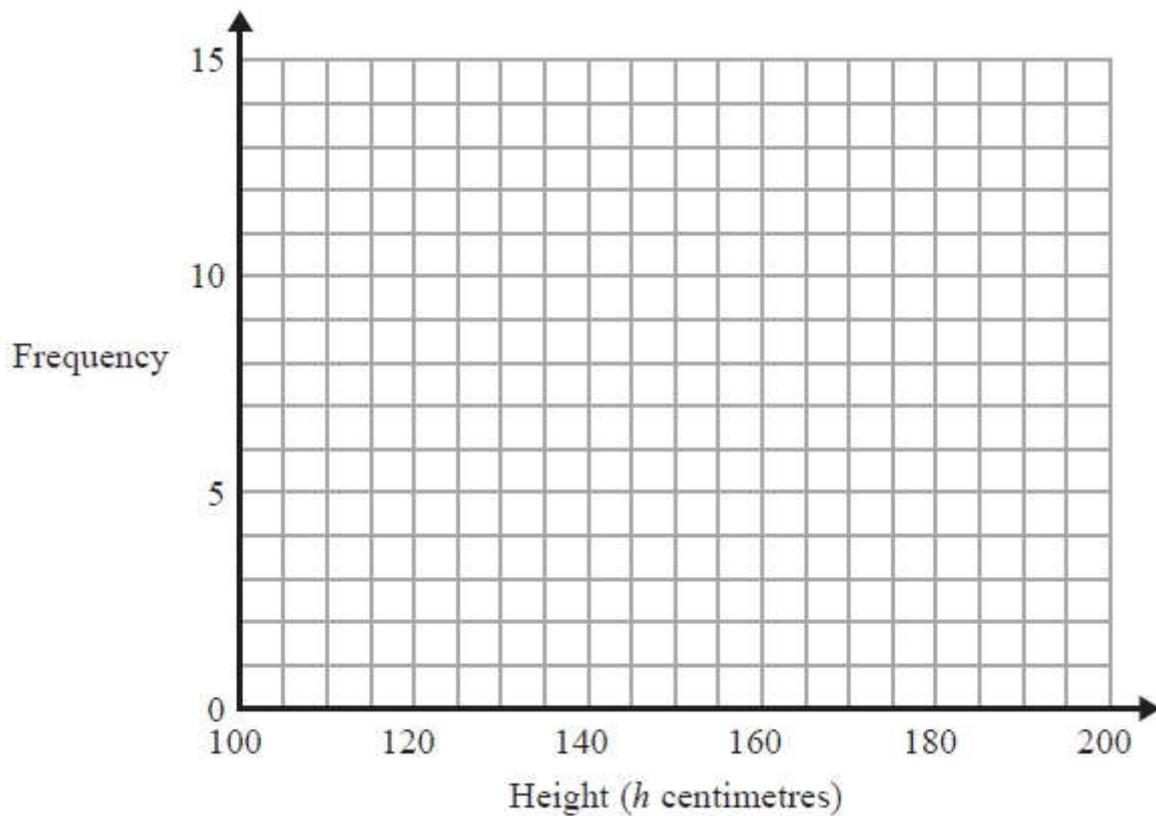
**(Total for Question is 7 marks)**

**Q26.**

The table shows information about the heights, in centimetres, of 30 sunflower plants.

Height ( $h$ centimetres)	Frequency
$100 < h \leq 120$	2
$120 < h \leq 140$	6
$140 < h \leq 160$	7
$160 < h \leq 180$	12
$180 < h \leq 200$	3

(a) On the grid, draw a frequency polygon for this information.



(2)

(b) Write down the modal class interval.

.....

(1)

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

**Q27.**

Jay recorded the colour of each car going past his house one morning.  
The results are shown below.

blue                  red                  silver                  silver                  silver  
red                  silver                  blue                  silver                  blue  
silver                  blue                  red                  red                  silver  
black                  silver                  red                  black                  red

(a) Complete the table for Jay's results.

Colour	Tally	Frequency
blue		
red		
silver		
black		

(2)

(b) Which colour of car did Jay record most often?

.....  
(1)

**(Total for Question is 3 marks)**

**Q28.**

Samina recorded the maximum temperature and the minimum temperature on each of six days in January.

The table shows her results.

	Mon	Tues	Wed	Thurs	Fri	Sat
<b>Maximum temperature</b>	1 °C	3 °C	2 °C	0 °C	3 °C	4 °C
<b>Minimum temperature</b>	- 4 °C	-2 °C	- 4 °C	-5 °C	-3 °C	-2 °C

(a) Write down the lowest temperature.

..... °C  
(1)

(b) Work out the difference between the maximum temperature on Wednesday and the minimum temperature on Wednesday.

..... °C  
(1)

The minimum temperature on Sunday was 5 °C higher than the minimum temperature on Saturday.

(c) Work out the minimum temperature on Sunday.

..... °C  
(1)

**(Total for Question is 3 marks)**

**Q29.**

Work out the reciprocal of 0.125

.....

**(Total for question is 1 mark)**

**Q30.**

Write these numbers in order of size.

Start with the smallest number.

$5^{-1}$

$0.5$

$-5$

$5^0$

.....

**(Total for Question is 2 marks)**

**Q31.**

(a) Work out the value of  $3.1^4$

.....  
(1)

(b) Simplify  $(p^3)^2$

.....  
(1)

(c) Simplify  $t^8/t^3$

.....  
(1)

$2^3 \times 2^n = 2^9$

(d) Work out the value of  $n$ .

.....  
(1)

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

**Q32.**

Jane made some almond biscuits which she sold at a fête.

She had:

5 kg of flour  
3 kg of butter  
2.5 kg of icing sugar  
320 g of almonds

Here is the list of ingredients for making 24 almond biscuits.

<p>Ingredients for 24 almond biscuits</p> <p>150 g flour 100 g butter 75 g icing sugar 10 g almonds</p>
---

Jane made as many almond biscuits as she could, using the ingredients she had.

(a) Work out how many almond biscuits she made.

(3)

Jane sold 70% of the biscuits she made for 25p each.  
She sold the other 30% at 4 for 55p.

The ingredients Jane used cost her £45 and the total of all other costs was £27

(b) Work out the percentage profit.

(6)

**(Total for question = 9 marks)**

**Q33.**

Robert and his family are going on holiday to France.

A bank gives Robert this chart to help him to change between pounds (£) and euros (€).

pounds (£)		euros (€)
1	=	1.2
2	=	2.4
5	=	6.0
10	=	12.0
20	=	24.0
50	=	60.0
100	=	120.0

Robert changes £600 into euros (€).

(a) How many euros should Robert get?

.....

(2)

In France, a laptop costs €540

In England, the same laptop costs £460

(b) Work out the difference between the cost of the laptop in France and the cost of the laptop in England.  
You must show clearly how you got your answer.

.....

(3)

**(Total for Question is 5 marks)**

**Q34.**

There are 200 students in Year 11

75 of the students are girls.

(a) Write down the fraction of the students that are girls.

.....  
(1)

There is a total of 1350 students in the school.

One day, 81 of the 1350 students are absent.

(b) Work out the percentage of the students who are absent.

..... %  
(2)

**(Total for Question is 3 marks)**

**Q35.**

Here are four numbers.

0.43       $\frac{3}{7}$       43.8%       $\frac{7}{16}$

Write these numbers in order of size.  
Start with the smallest number.

.....  
**(Total for question = 2 marks)**

**Q36.**

In a sale, normal prices are reduced by 20%.  
The normal price of a coat is reduced by £15

Work out the normal price of the coat.

£ .....

**(Total for question = 2 marks)**

**Q37.**

Make  $t$  the subject of the formula  $y = \frac{t}{3} - 2a$

.....

**(Total for question = 2 marks)**