

Questions

Q1.

Lethna worked out $\frac{2}{5} + \frac{1}{2}$

She wrote:

$$\frac{2}{5} + \frac{1}{2} = \frac{2}{10} + \frac{1}{10} = \frac{3}{10}$$

The answer of $\frac{3}{10}$ is wrong.

(a) Describe one mistake that Lethna made.

.....
.....

(1)

Dave worked out $1\frac{1}{2} \times 5\frac{1}{3}$

He wrote:

$$1 \times 5 = 5 \quad \text{and} \quad \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$

$$\text{so } 1\frac{1}{2} \times 5\frac{1}{3} = 5\frac{1}{6}$$

The answer of $5\frac{1}{6}$ is wrong.

(b) Describe one mistake that Dave made.

.....
.....

(1)

(Total for question is 2 marks)

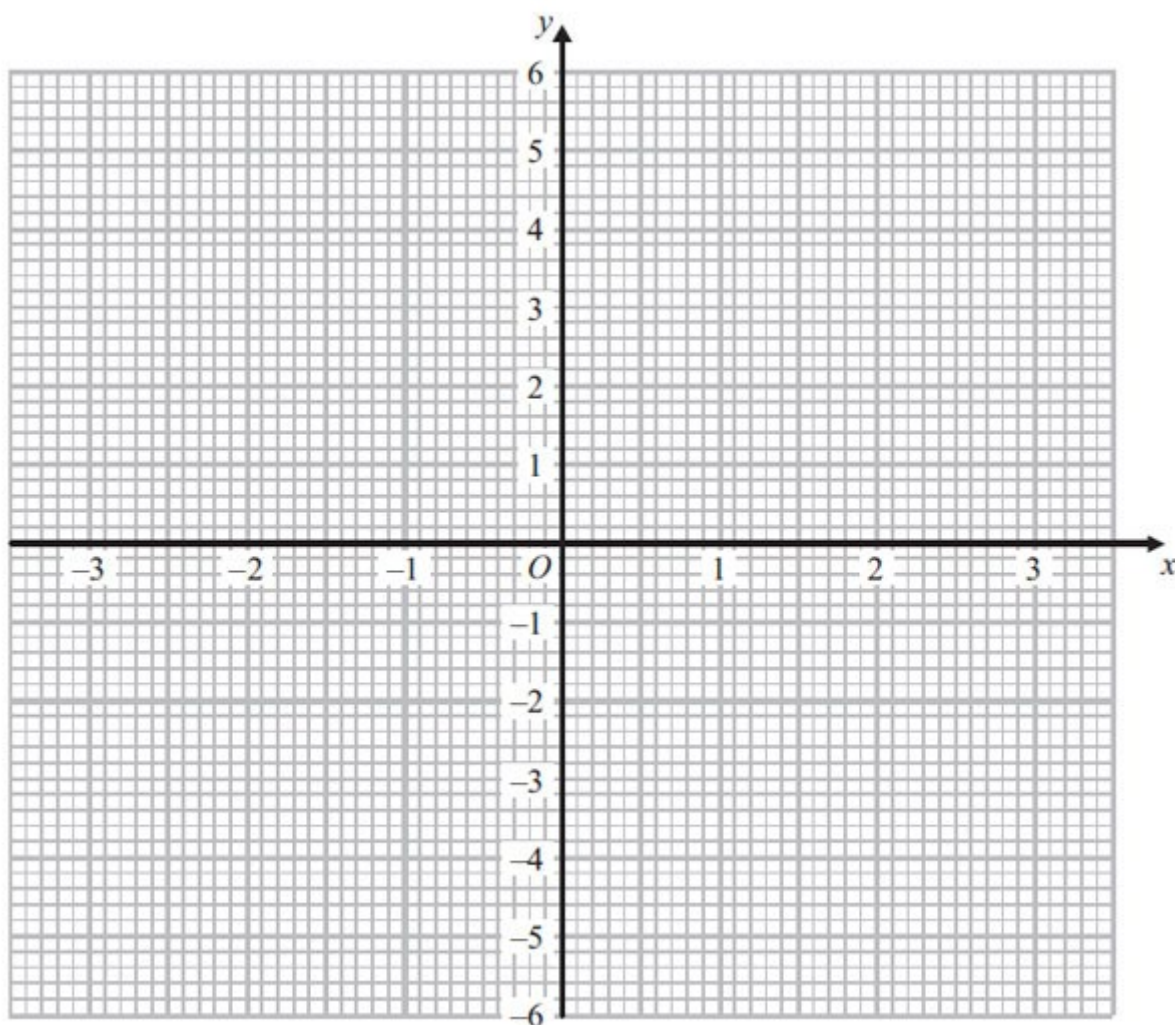
Q2.

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

x	-3	-2	-1	0	1	2	3
y		0	-3			0	5

(2)

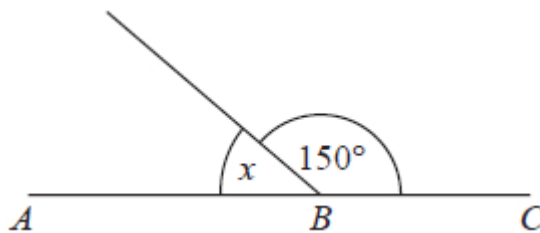
(b) On the grid, draw the graph of $y = x^2 - 4$ for $x = -3$ to $x = 3$



(2)

(Total for Question is 4 marks)

Q3.



ABC is a straight line.

(a) (i) Work out the size of the angle marked x .

.....^o

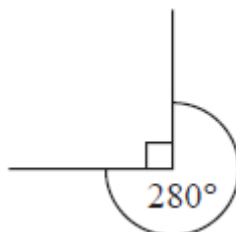
(1)

(ii) Give a reason for your answer.

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

(1)

The diagram below is wrong.



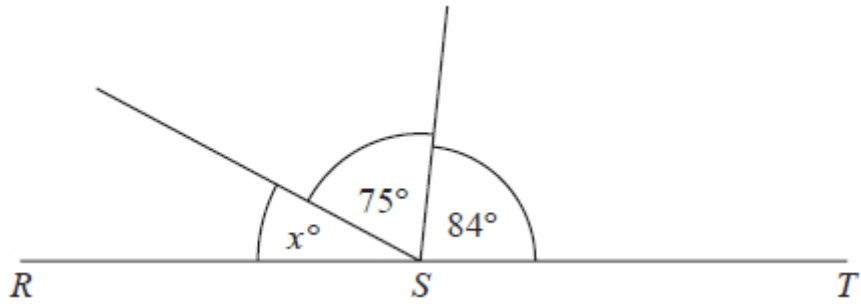
(b) Explain why.

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

(1)

(Total for question = 3 marks)

Q4.



RST is a straight line.

(i) Work out the value of x .

.....
(2)

(ii) Give a reason for your answer.

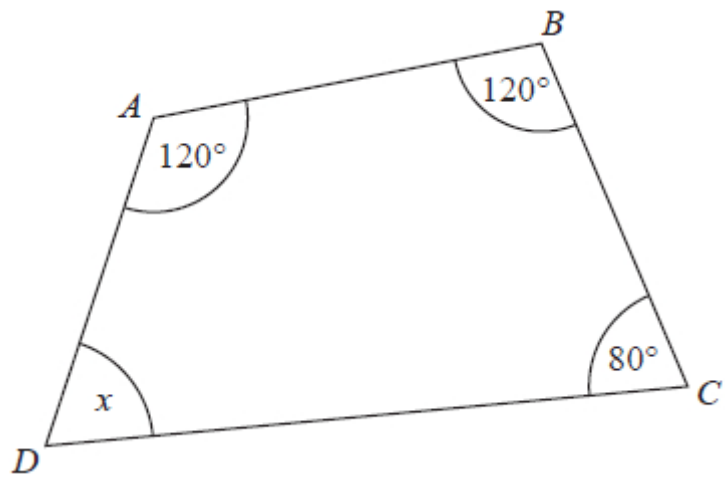
.....
.....
.....

(1)

(Total for question = 3 marks)

Q5.

ABCD is a quadrilateral.



(a) (i) Work out the size of angle x .

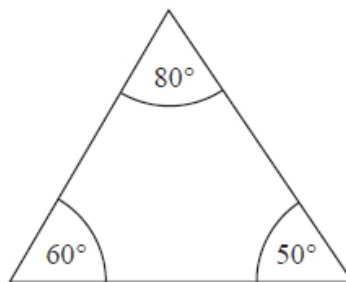
.....°
(1)

(ii) Give a reason for your answer.

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

(1)

The diagram below shows a triangle.



The diagram is wrong.

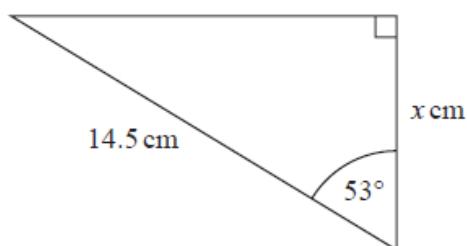
(b) Explain why.

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

(1)

(Total for question = 3 marks)

Q6.



Work out the value of x .
Give your answer correct to 3 significant figures.

$x =$

(Total for question = 2 marks)

Q7.

Sally used her calculator to work out the value of a number y .
The answer on her calculator display began

8.3

Complete the error interval for y .

..... $\leq y <$

(Total for question = 2 marks)

Q8.

Write 478 to the nearest hundred.

.....

(Total for question = 1 mark)

Q9.

Write 1476 to the nearest 10

.....

(Total for question = 1 mark)

Q10.

(a) Write 7357 correct to 3 significant figures.

.....

(1)

(b) Work out $\frac{\sqrt{17 + 4^2}}{7.3^2}$

Write down all the figures on your calculator display.

.....

(2)

(Total for question = 3 marks)

Q11.

A number, m , is rounded to 1 decimal place.

The result is 9.4

Complete the error interval for m .

(..... $\leq m <$ )

(Total for question = 2 marks)

Q12.

Write 29 381 correct to the nearest 1000

.....
(Total for question = 1 mark)

Q13.

(a) Work out $\sqrt{\frac{13.82}{4.06}}$
Write down all the figures on your calculator display.

.....
(2)

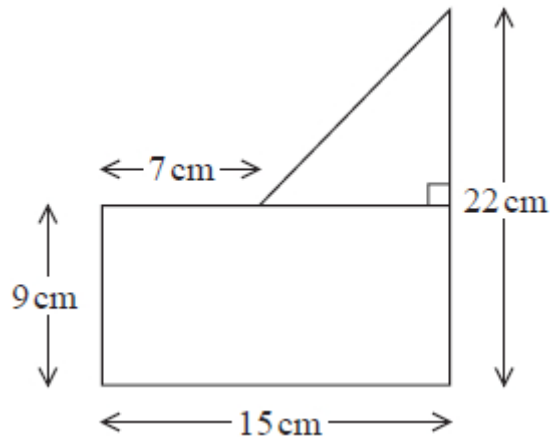
(b) Give your answer to part (a) correct to 2 decimal places.

.....
(1)

(Total for question = 3 marks)

Q14.

Here is a shape made from a rectangle and a triangle.



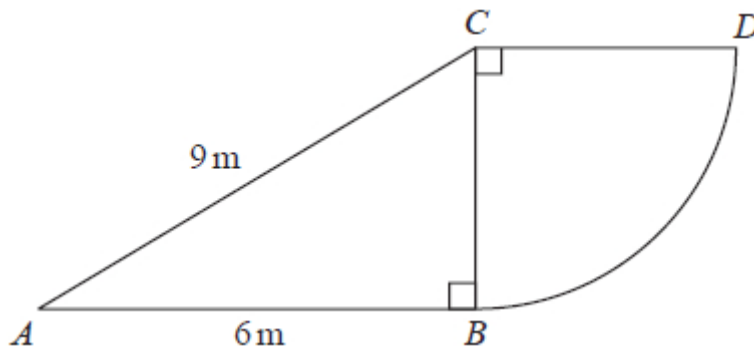
Work out the total area of the shape.

..... cm²

(Total for question = 3 marks)

Q15.

#The diagram shows a right-angled triangle and a quarter circle.



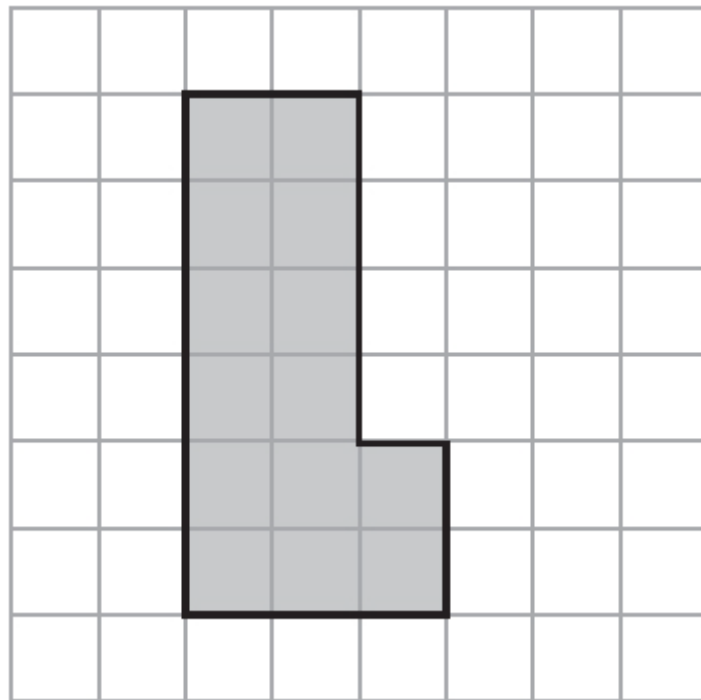
The right-angled triangle ABC has angle $ABC = 90^\circ$
The quarter circle has centre C and radius CB .

Work out the area of the quarter circle.
Give your answer correct to 3 significant figures.
You must show all your working.

..... m²
(Total for question = 4 marks)

Q16.

The diagram shows a shape on a centimetre grid.



(a) Find the area of the shape.

..... cm²
(1)

(b) Find the perimeter of the shape.

..... cm
(1)

(Total for question = 2 marks)

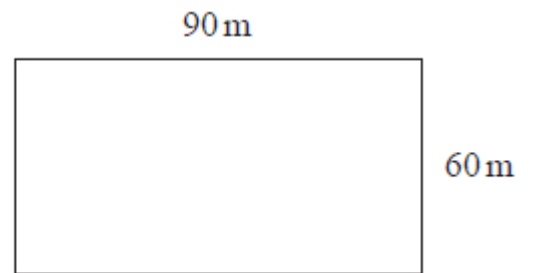
Q17.

A garden is in the shape of a rectangle 90 m by 60 m.

Flowers are grown in 40% of the garden.

The rest of the garden is grass.

Work out the area of the garden that is grass.



..... m²

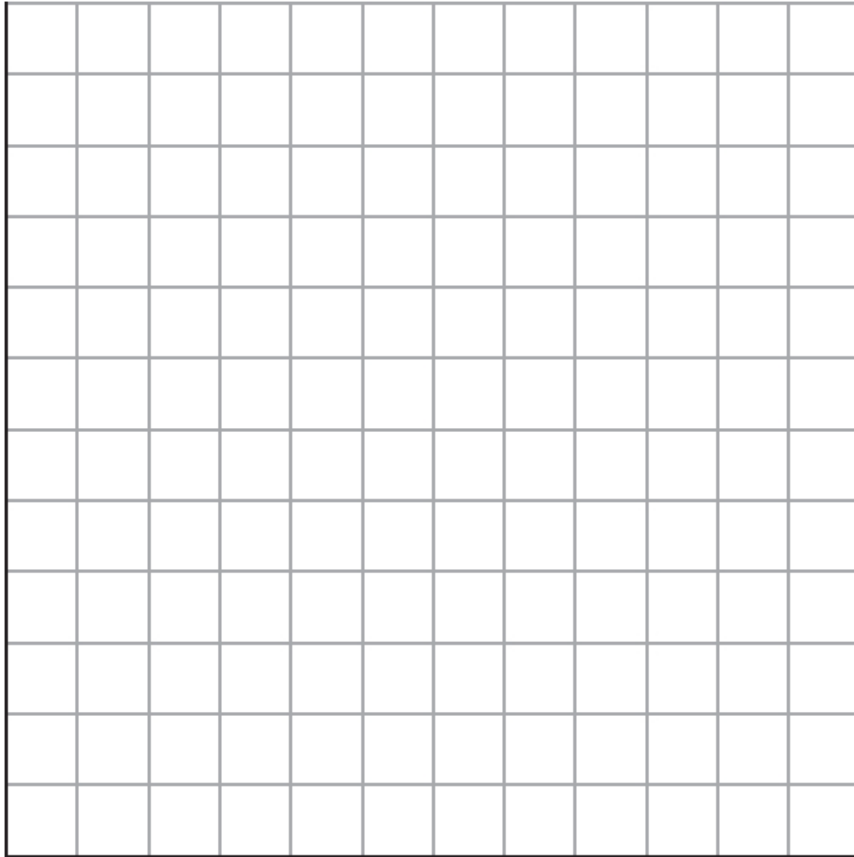
(Total for question = 4 marks)

Q18.

The table shows information about the number of students who arrived late at school each day one week.

	Number of students
Monday	9
Tuesday	10
Wednesday	8
Thursday	6
Friday	3

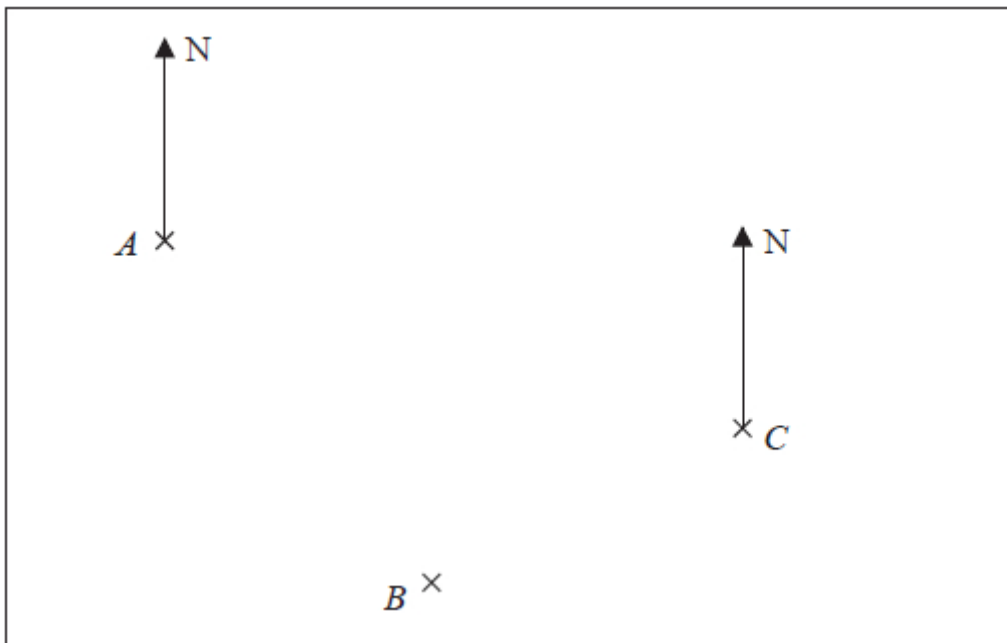
On the grid, draw a bar chart for this information.



(Total for question = 3 marks)

Q19.

The accurately drawn map shows the positions of three points, *A*, *B* and *C*, in a field.



Scale: 1 cm represents 150 metres

Parveen walks in a straight line from *A* to *B*.
She then walks in a straight line from *B* to *C*.

Susan walks in a straight line from *A* to *C*.

Parveen walks more metres than Susan.

(a) How many more?

..... metres
(3)

(b) Find by measurement the bearing of *A* from *C*.

.....°
(1)

(Total for question = 4 marks)

Q20.

The diagram shows the position of town *T*.



Town *R* is 55 km from town *T* on a bearing of 065°

Mark the position of town *R* with a cross (\times).

Use a scale of 1 cm to 10 km.

(Total for question = 2 marks)

Q21.

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

The result is 12.7

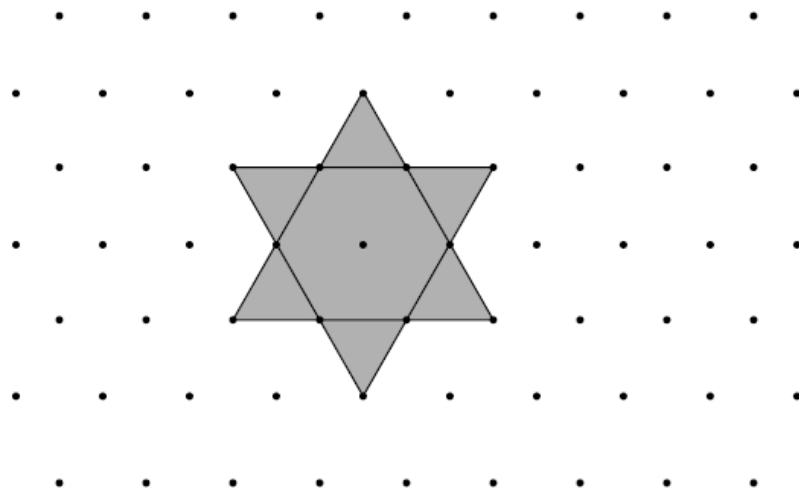
Complete the error interval for *d*.

..... $\leq d <$

(Total for question = 2 marks)

Q22.

Here is a star shape.



The star shape is made from a regular hexagon and six congruent equilateral triangles.

The area of the star shape is 96 cm^2 .

Work out the area of the regular hexagon.

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

Q23.

A sprinter runs a distance of 200 metres in 25 seconds.

Work out the average speed of the sprinter.

..... m/s
(Total for question = 1 mark)

Q24.

Emily drives 186 miles in 3 hours.

(a) What is her average speed?

..... mph
(2)

Sarah drives at an average speed of 58 mph for 4 hours.

(b) How many miles does Sarah drive?

..... miles

(2)

(Total for question = 4 marks)

Q25.

Toby invested £7500 for 2 years in a savings account.
He was paid 4% per annum compound interest.

How much money did Toby have in his savings account at the end of 2 years?

£

(Total for question is 2 marks)

Q26.

The table shows information about the numbers of Year 10 students absent from Ellen's school last week.

	Monday	Tuesday	Wednesday	Thursday	Friday
Number of students	12	6	7	10	13

(a) Work out the mean number of Year 10 students absent each day.

.....

(2)

Ellen's school has a total of 240 Year 10 students.

(b) What percentage of Year 10 students were absent on Monday?

..... %

(2)

(Total for question = 4 marks)

Q27.

Here is a list of numbers.

4 8 5 9 10 5 6 3 4

(a) Work out the median.

.....
(2)

(b) Work out the mean.

.....
(2)

(Total for Question is 4 marks)

Q28.

Here is the list of ingredients for making 30 biscuits.

<p style="text-align: center;">Ingredients for 30 biscuits</p> <p style="text-align: center;">225 g butter 110 g caster sugar 275 g plain flour 75 g chocolate chips</p>

Lucas has the following ingredients.

- 900 g butter
- 1000 g caster sugar
- 1000 g plain flour
- 225 g chocolate chips

What is the greatest number of biscuits Lucas can make?
You must show your working.

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

Q29.

Franz invests £2500 for 2 years at $3\frac{1}{2}\%$ per annum compound interest.
Work out the value of his investment at the end of 2 years.

£

(Total for question = 3 marks)

Q30.

Work out $(13.8 \times 10^7) \times (5.4 \times 10^{-12})$
Give your answer as an ordinary number.

.....

(Total for question = 2 marks)

Q31.

Bronwin works in a restaurant.

The table gives her rates of pay.

Day	Rate of pay
Monday to Friday	£8.40 per hour
Weekend	£11.20 per hour

Bronwin worked for a total of 20 hours last week.
She worked 8 of these 20 hours at the weekend.

Show that Bronwin was paid less than £200 last week.

(Total for question = 3 marks)

Q32.

Find the value of 5^4

.....
(Total for question = 1 mark)

Q33.

The same number is missing from each box.

$$\square \times \square \times \square = 343$$

(a) Find the missing number.

.....
(1)

(b) Work out 4^4

.....
(1)

(Total for question is 2 marks)

Q34.

(a) Work out the value of $3 \cdot 1^4$

.....
(1)

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

.....
(1)

(c) Simplify $\frac{t^8}{t^3}$

.....
(1)

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

(d) Work out the value of n .

.....
(1)

(Total for Question is 4 marks)

Q35.

Here is a number machine.



(a) Work out the **output** when the input is 4

.....
(1)

(b) Work out the **input** when the output is 11

.....
(2)

(c) Show that there is a value of the input for which the input and the output have the same value.

(2)
(Total for question = 5 marks)

Q36.

In a sale, normal prices are reduced by 17%.
The normal price of a washing machine is reduced by £42.50

Work out the sale price of the washing machine.

£

(Total for question = 3 marks)

Q37.

(a) Work out $+3 - 5$

.....

(1)

(b) Work out $-12 - 6$

.....

(1)

(Total for Question is 2 marks)

Q38.

60% of the students at a school walk to school.

Work out the percentage of the students who do **not** walk to school.

..... %

(Total for question = 1 mark)

Q39.

A film starts at 17:50

The film ends at 19:30

(a) How long does the film last?

.....

(2)

Jackie buys some tickets to see the film.

Each ticket costs £4.50

Jackie pays with two £20 notes.

Jackie gets £8.50 change.

(b) How many tickets did Jackie buy?

.....
(3)

(Total for Question is 5 marks)

Q40.

(a) How many minutes are there between 8.50 pm and 10.05 pm?

..... minutes

(1)

(b) (i) Write 15 25 using the 12-hour clock.

.....

(ii) Write 9.15 pm using the 24-hour clock.

.....

(2)

Lucy and Saad went to a cafe on the same day.

Lucy was in the cafe from 10.15 am to 10.45 am.

Saad was in the cafe from 10.25 am to 11.05 am.

(c) Work out the number of minutes that Lucy and Saad were in the cafe at the same time.

..... minutes

(2)

(Total for Question is 5 marks)

Q41.

$$q = \frac{p}{r} + s$$

Make p the subject of this formula.

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

Q42.

Make h the subject of the formula $x = 5h + 8$

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

Q43.

Make t the subject of the formula $w = 3t + 11$

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

Q44.

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

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

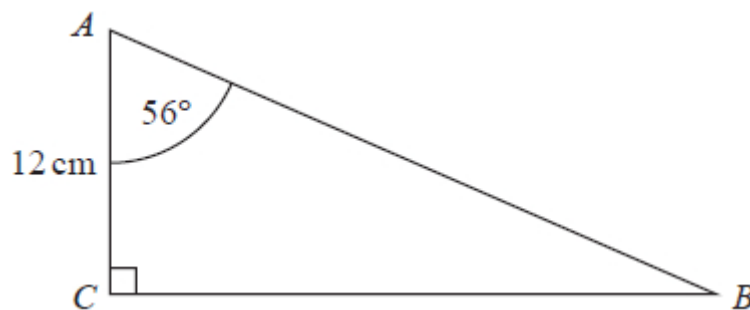
Q45.

Make h the subject of the formula $G = 3h - 5$

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

Q46.

ABC is a right-angled triangle.

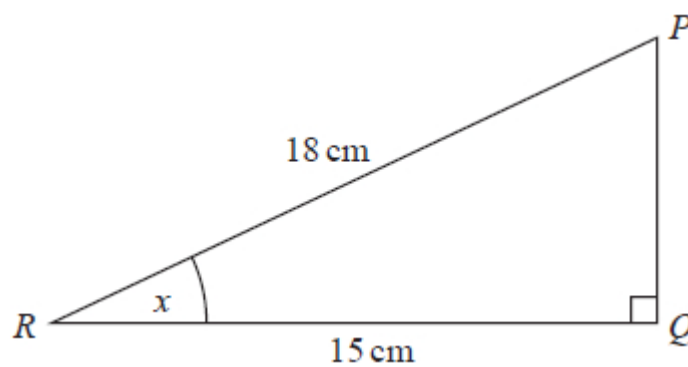


(a) Work out the length of BC .

Give your answer correct to 1 decimal place.

..... cm
(2)

PQR is a right-angled triangle.



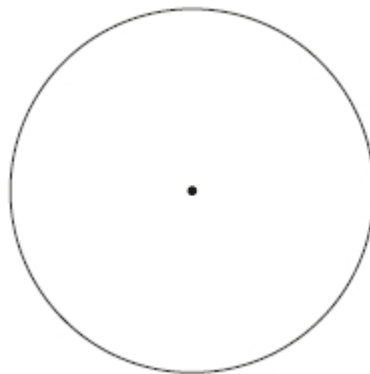
- (b) Work out the size of the angle marked x .
Give your answer correct to 1 decimal place.

..... °

(2)

(Total for question = 4 marks)

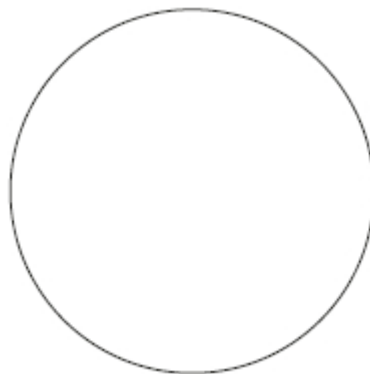
Q47.



- (a) On the diagram above, draw a diameter of the circle.

(1)

- (b) On the diagram below, draw a segment of the circle.
Shade the segment.



(1)

(Total for question = 2 marks)

Q48.

The table shows information about the number of social media accounts used by each of 300 students.

Number of social media accounts	Frequency
0	3
1	57
2	84
3	75
4	81

(a) Work out the total number of social media accounts used by these students.

.....
(2)

(b) Find the median number of social media accounts used by these students.

.....
(2)

(Total for question = 4 marks)

Q49.

(a) Simplify $5f - f + 2f$

.....
(1)

(b) Simplify $2 \times m \times n \times 8$

.....
(1)

(c) Simplify $t^2 + t^2$

.....
(1)

(Total for question is 3 marks)

Q50.

(a) Solve $f + 2f + f = 20$

$f = \dots\dots\dots$
(1)

(b) Solve $18 - m = 6$

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

c) Simplify $d^2 \times d^3$

$\dots\dots\dots$
(1)

(Total for question is 3 marks)

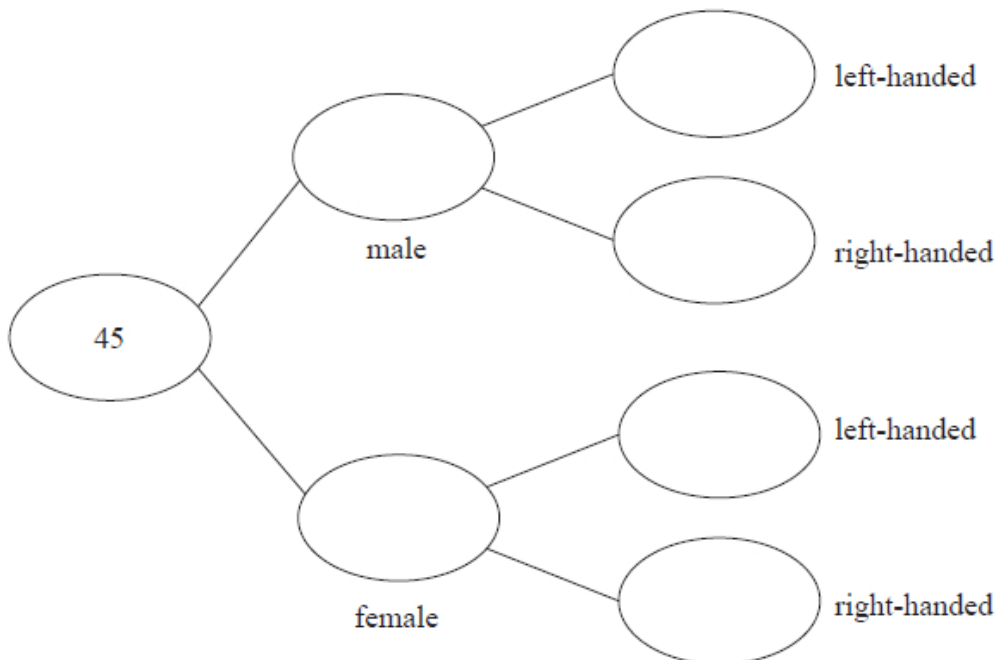
Q51.

Each worker in a factory is either left-handed or right-handed.

22 of the 45 workers are male.

16 of the 34 right-handed workers are female.

Complete the frequency tree for this information.



(Total for question = 3 marks)

Q52.

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 .

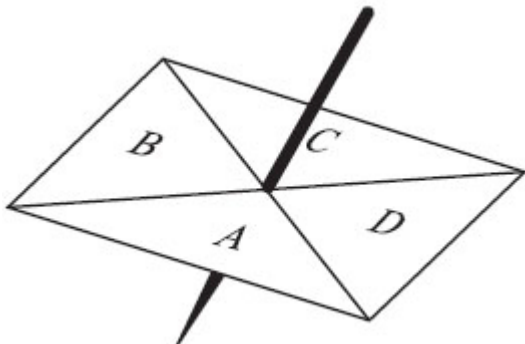
.....
(Total for Question is 2 marks)

Q53.

Sandy has a 4-sided spinner.

The sides of the spinner are labelled A, B, C and D.

The spinner is biased.



The table shows the probability that the spinner will land on A or on B or on C.

Side	A	B	C	D
Probability	0.15	0.32	0.27	

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

.....
(2)

Sandy spins the spinner 300 times.

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

.....
(2)

(Total for Question is 4 marks)

Q54.

Kerry has two fair 6-sided dice, A and B.

Kerry is going to roll both dice.

(a) Complete the sample space diagram to show all the possible outcomes.

		Dice B					
		1	2	3	4	5	6
Dice A	1	(1, 1)	(1, 2)	(1, 3)	(1, 4)	(1, 5)	(1, 6)
	2	(2, 1)	(2, 2)	(2, 3)	(2, 4)	(2, 5)	(2, 6)
	3	(3, 1)	(3, 2)	(3, 3)	(3, 4)	(3, 5)	(3, 6)
	4	(4, 1)	(4, 2)	(4, 3)	.....	.....	.....
	5	(5, 1)	(5, 2)	(5, 3)	.....	.....	.....
	6	(6, 1)	(6, 2)	(6, 3)	.....	.....	.....

(1)

(b) Write down the probability that Kerry will get a 1 on dice A and a 1 on dice B.

.....
(1)

Kerry rolls dice A and dice B.

*(c) Compare the probability that Kerry will get a total of 6 with the probability that she will get a total of 7

.....
.....
(1)

(Total for question = 3 marks)

Q55.

Here are the marks 20 students got in a French test.

76 82 84 69 80 64 70 81 75 91
87 67 80 70 94 76 81 69 71 77

(a) Show this information in a stem and leaf diagram.



(3)

One of these students is going to be chosen at random.

The pass mark in the French test is 71

Omar writes,

The probability that this student failed the French test is $\frac{1}{4}$

Omar is wrong.

(b) Explain why.

.....
.....

(2)

(Total for question = 5 marks)

Q56.

The table shows information about some items for sale in a clothes shop.

Item	Size	Colour	Price
Dress	large	red	£28
Trousers	medium	black	£19
Shirt	medium	red	£15
Blouse	large	white	£12
Shorts	small	blue	£16
Fleece	extra large	red	£23

(a) Write down the colour of the blouse.

.....

(1)

(b) Write down the size of the cheapest item that is red.

.....

(1)

Kate bought the dress and the shirt.

(c) Work out the total cost.

£.....

(1)

(Total for Question is 3 marks)

Q57.

Complete this bill.

Jill's Wool Shop			
Item	Number of items	Cost of one item	Total
Pattern	2	£2.85	£5.70
Button	16	£0.52	£.....
Balls of wool	.....	£4.65	£37.20
Total cost			£.....

(Total for Question is 3 marks)

Q58.

Some students went on an activity course.

Each student had to choose one activity from art or drama or music.

There were 41 students.

15 of the students chose music.

30 of the students were girls.

8 of the girls chose art.

No boys chose art.

Equal numbers of boys and girls chose drama.

Complete the two-way table.

	art	drama	music	total
girls				
boys				
total				41

(Total for question = 3 marks)

Q59.

The two-way table shows some information about the numbers of ice creams sold in a shop.

	Friday	Saturday	Sunday	Total
Morning		34		
Afternoon	38		63	153
Total	65			265

Complete the two-way table.

(Total for question = 3 marks)

Q60.

The incomplete two-way table shows information about the nationality of 80 people staying in either a tent or a caravan at a campsite.

	French	British	Dutch	Total
Tent	8		25	44
Caravan		17		
Total			32	80

Complete the two-way table.

(Total for question = 3 marks)

Q61.

100 students each chose one activity.
Each student chose bowling or karting or ice skating.

The two-way table shows some information about the activities the students chose.

	Bowling	Karting	Ice skating	Total
Boys		13		47
Girls			34	
Total	26	20		100

(a) Complete the two-way table.

(3)

One of the boys is chosen at random.

(b) What is the probability that this boy chose karting?

.....
(2)

(Total for Question is 5 marks)

Q62.

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?

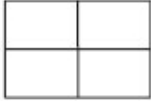
.....
(1)

(Total for Question is 3 marks)

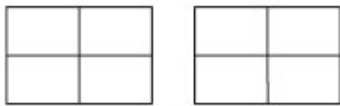

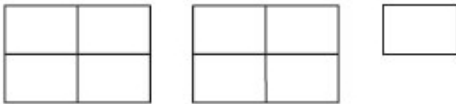
Q63.

The pictogram shows the number of laptops sold in a shop on Monday, on Tuesday and on Wednesday.

Key:



represents 8 laptops

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

(a) How many laptops were sold on Wednesday?

.....
(1)

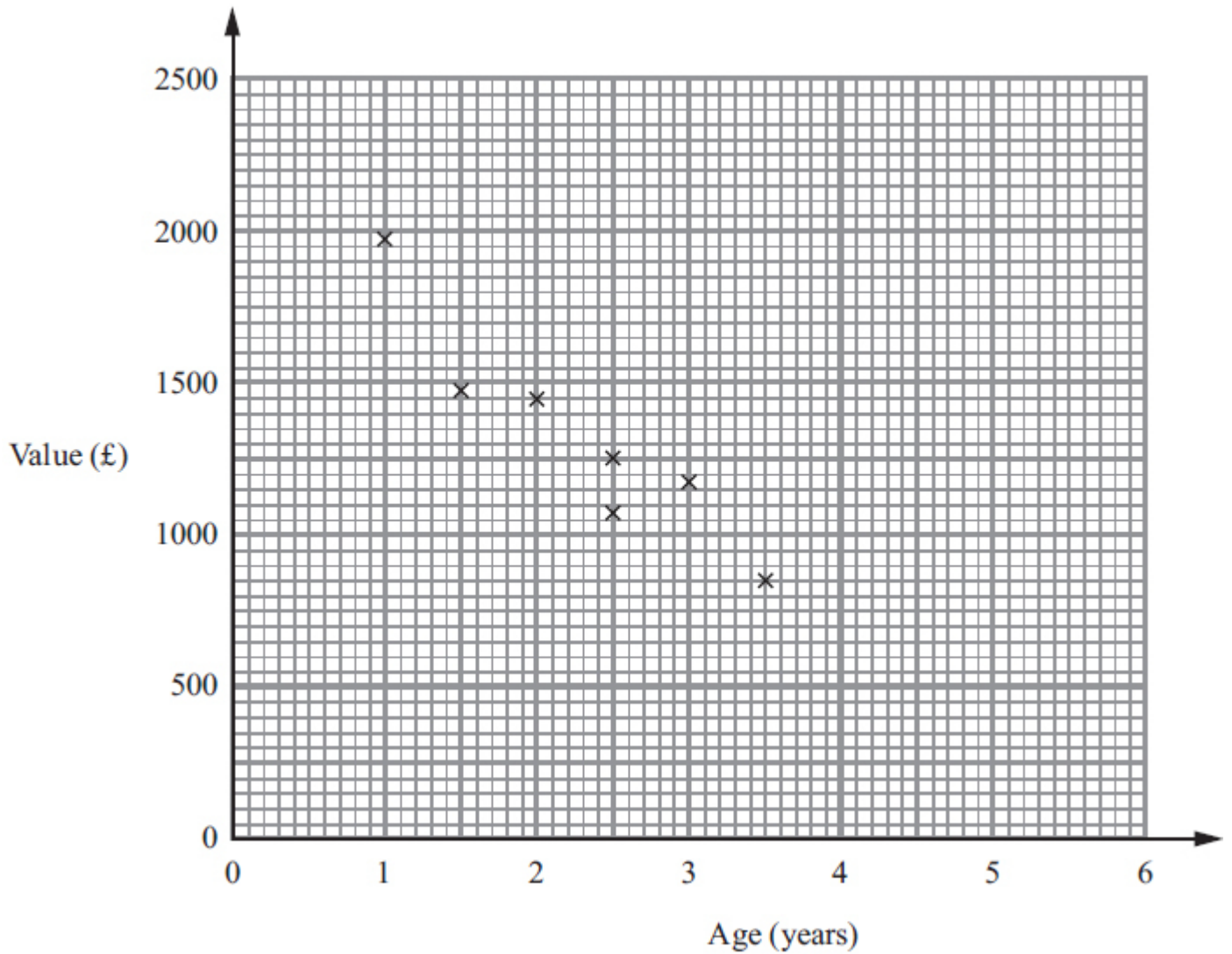
On Thursday 2 laptops were sold.
On Friday 24 laptops were sold.

(b) Show this information on the pictogram.

(2)

Q64.

The scatter graph shows information about the ages and values of seven Varley motor scooters.



Another Varley motor scooter is 5 years old.
It has a value of £300

(a) Show this information on the scatter graph.

(1)

(b) Describe the relationship between the age and the value of Varley motor scooters.

.....
.....

(1)

A Varley motor scooter is 4 years old.

(c) Estimate its value.

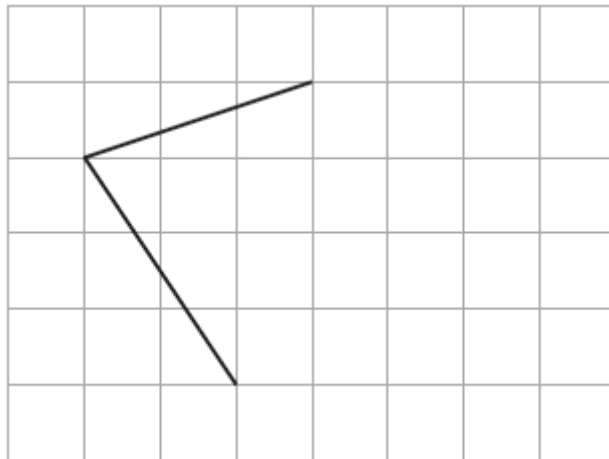
£

(2)

(Total for Question is 4 marks)

Q65.

On the grid, complete the diagram of a parallelogram.



(Total for question = 1 mark)

Q66.

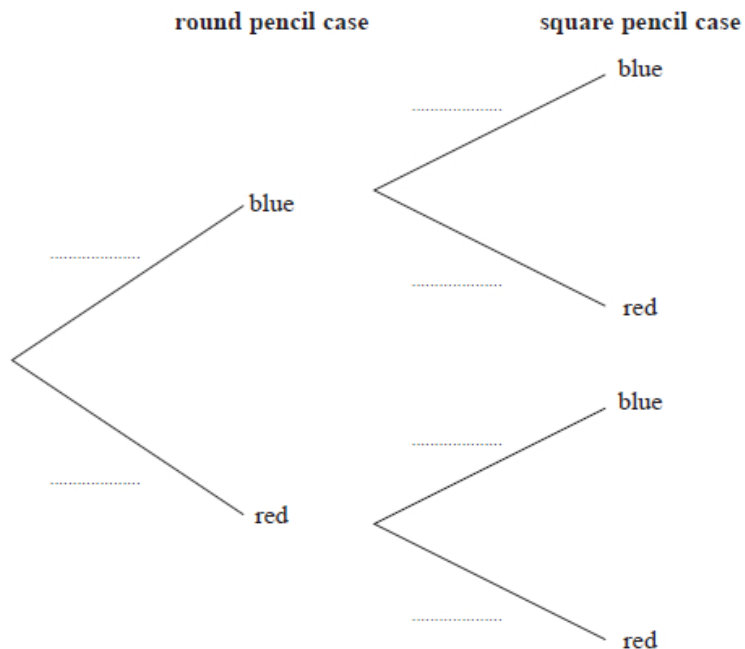
Sameena has a round pencil case and a square pencil case.

There are 4 blue pens and 3 red pens in the round pencil case.

There are 3 blue pens and 5 red pens in the square pencil case.

Sameena takes at random one pen out of each pencil case.

(a) Complete the probability tree diagram.



(2)

(b) Work out the probability that the pens Sameena takes are both red.

.....

(2)

(Total for question = 4 marks)

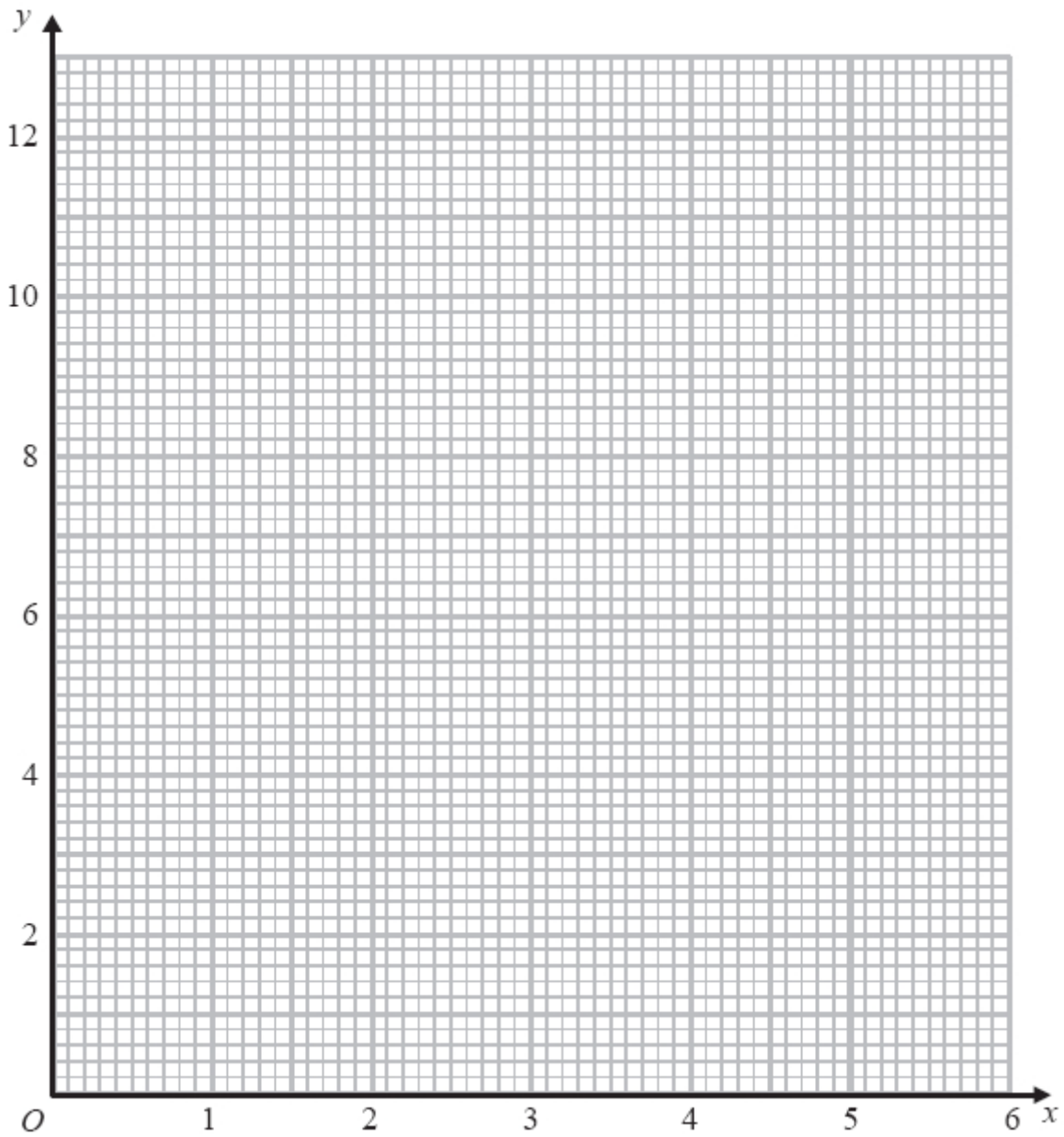
Q67.

(a) Complete the table of values for $y = \frac{6}{x}$

x	0.5	1	1.5	2	3	4	5	6
y		6		3		1.5		

(2)

(b) On the grid below, draw the graph of $y = \frac{6}{x}$ for values of x from 0.5 to 6



(2)

(Total for question = 4 marks)

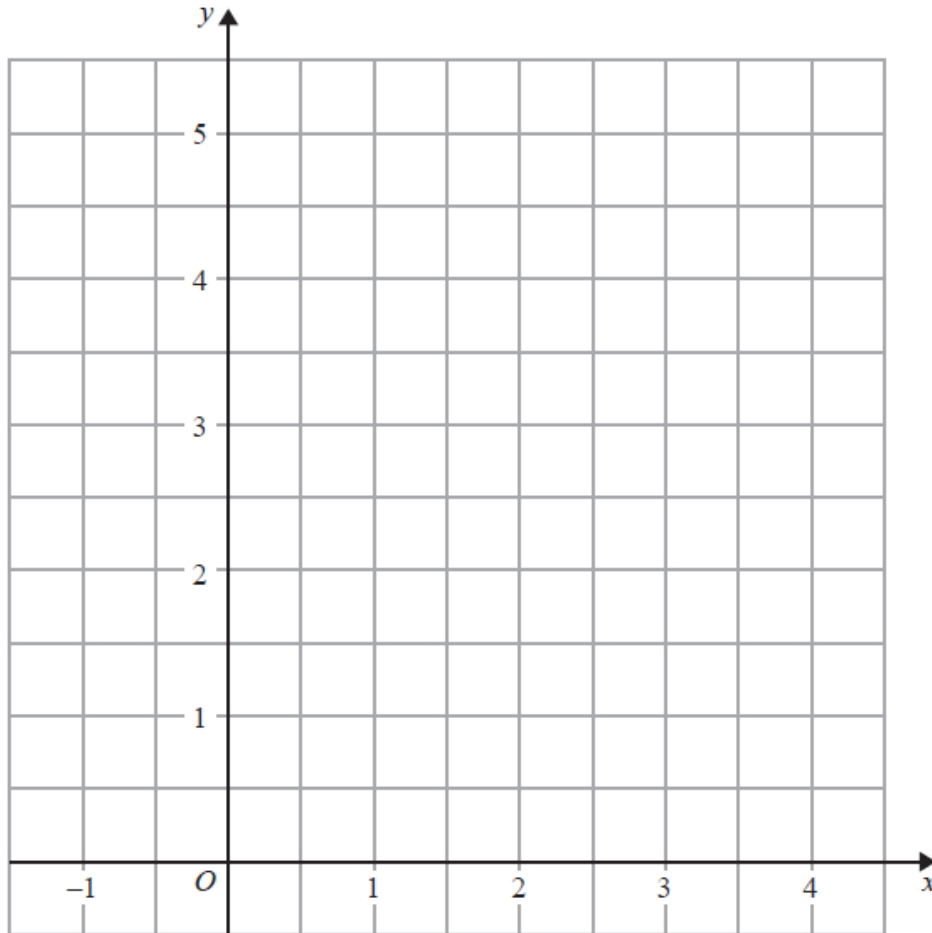
Q68.

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

x	-1	0	1	2	3	4
y			3			0

(2)

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



(2)

(Total for question = 4 marks)

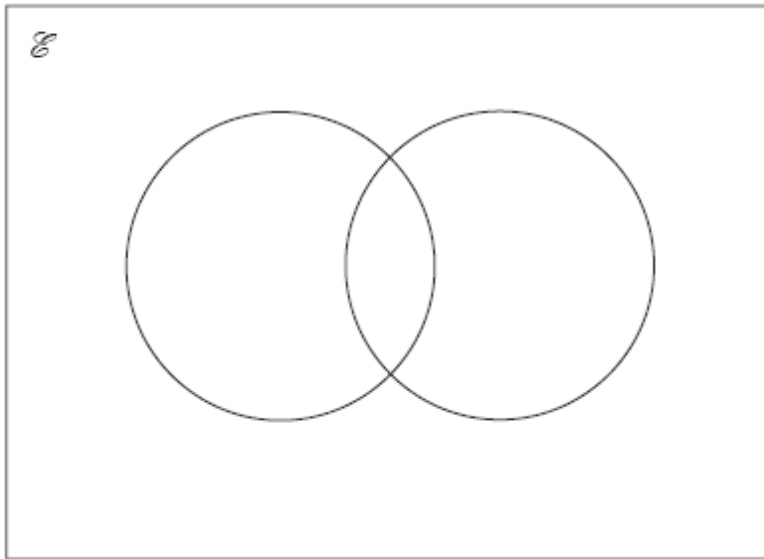
Q69.

\mathcal{E} = odd numbers less than 30

$A = 3, 9, 15, 21, 27$

$B = 5, 15, 25$

(a) Complete the Venn diagram to represent this information.



(b)

(4)

A number is chosen at random from the universal set, \mathcal{E} .

(b) What is the probability that the number is in the set $A \cup B$?

.....
(2)

(Total for question = 6 marks)

Q70.

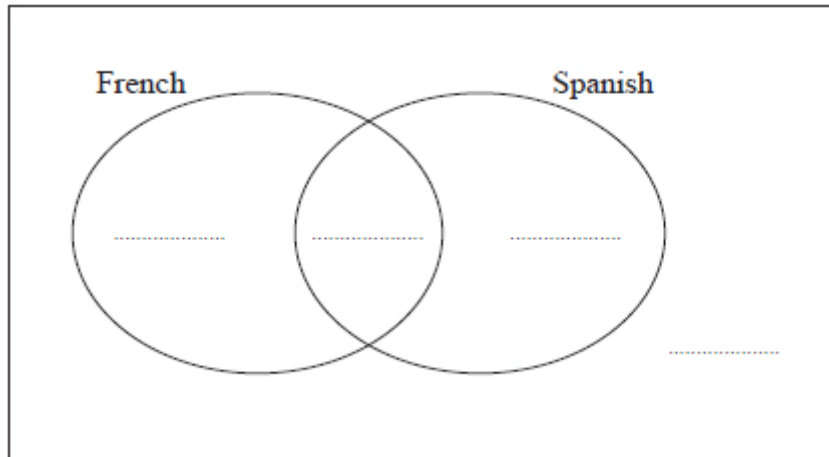
There are 60 students at a college.

20 students study both French and Spanish.

13 students study French but not Spanish.

A total of 43 students study Spanish.

(a) Complete the Venn diagram for this information.



(3)

One of the students at the college is to be selected at random.

(b) Write down the probability that this student studies neither French nor Spanish.

.....

(1)

(Total for question = 4 marks)

Q71.

Bill wants to increase 150 by 3%

He writes down

$$150 \times 1.3 = 195$$

Bill's method is wrong.

(a) Explain why.

.....
.....

(1)

Sally wants to decrease 150 by 3%

(b) Complete this statement to show how Sally can decrease 150 by 3%

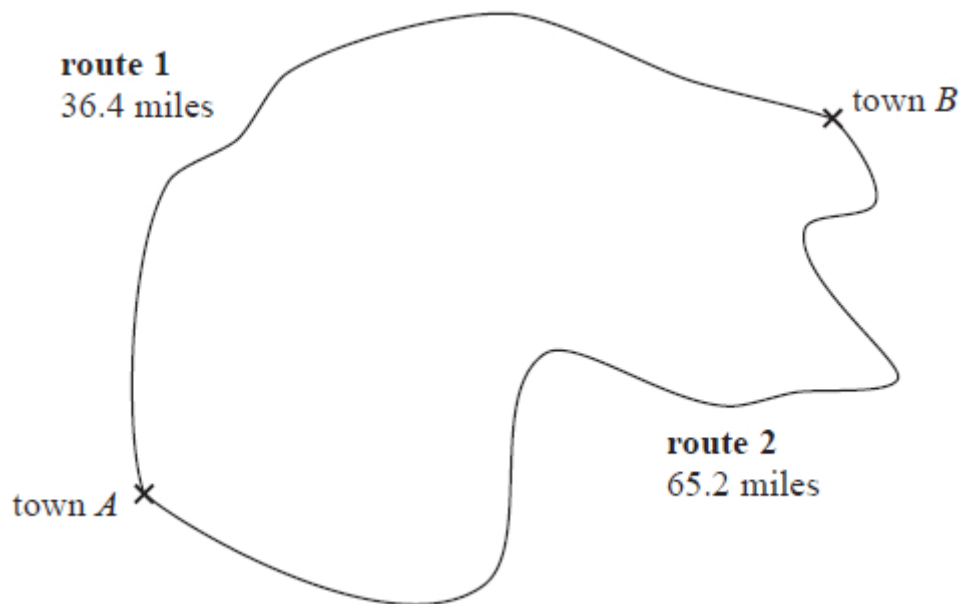
$$150 \times \dots = \dots$$

(1)

(Total for question = 2 marks)

Q72.

Eric and Geraldine both drove from town *A* to town *B*.



Both Eric and Geraldine left town *A* at 2 pm.

Eric drove on route 1
He got to town *B* at 2 48 pm.

Geraldine drove on route 2
She got to town *B* at 3 25 pm.

Who drove at the greater average speed?
You must show all your working.

(Total for question = 3 marks)

Q73.

Machine A and machine B both make car parts.

Machine A makes 6 parts every 10 minutes.

Machine B makes 13 parts every 15 minutes.

On Monday

machine A makes parts for 12 hours

machine B makes parts for 10 hours

Work out the total number of parts made by the two machines on Monday.

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

Q74.

Jessica runs for 15 minutes at an average speed of 6 miles per hour.

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

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

Work out Amy's average speed.

Give your answer in miles per hour.

..... miles per hour
(Total for question = 4 marks)

Q75.

In the space below, use ruler and compasses to **construct** an equilateral triangle with sides of length 8 cm.

You must show all your construction lines.

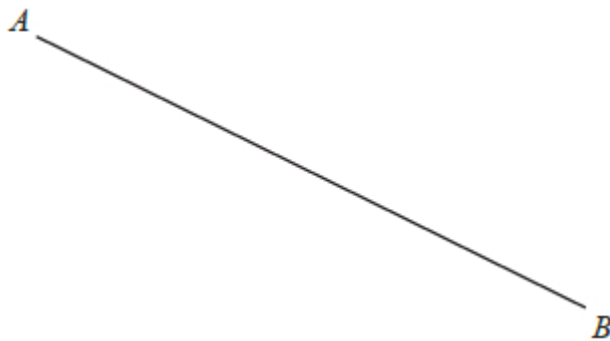
One side of the triangle has already been drawn for you.



(Total for Question is 2 marks)

Q76.

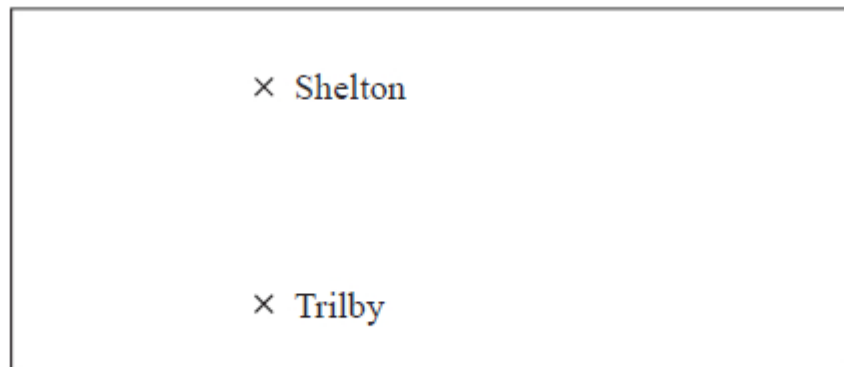
In the space below, use ruler and compasses to construct the perpendicular bisector of line AB .



(Total for question = 2 marks)

Q77.

The diagram shows two places on a map.



Scale: 1 centimetre represents 20 kilometres

(a) What is the actual distance, in kilometres, from Shelton to Trilby?

..... kilometres

(2)

On a scale drawing, the scale is given as 1 : 1200

(b) How many metres does 5 centimetres represent on this drawing?

..... metres

(2)

(Total for question = 4 marks)

Q78.

Change 53 centimetres to millimetres.

..... millimetres

(Total for question = 1 mark)

Q79.

Polly has a full 5 kg sack of rice.

She pours the rice from this sack into bags.
She fills as many bags as possible.

Each full bag contains 350 g of rice.

(a) How many bags did Polly fill from this sack of rice?

.....

(3)

Polly assumes that the rice from two sacks will fill twice as many bags as the rice from one sack.

(b) Is Polly correct?

You must give a reason for your answer.

.....

.....

(1)

(Total for question = 4 marks)

Q80.

Change 350 centimetres into metres.

..... metres

(Total for question = 1 mark)

Q81.

1 kg = 2.2 pounds

Change 319 pounds to kg.

..... kg

(Total for question = 2 marks)

Q82.

Change 7 metres to centimetres.

..... centimetres

(Total for question = 1 mark)

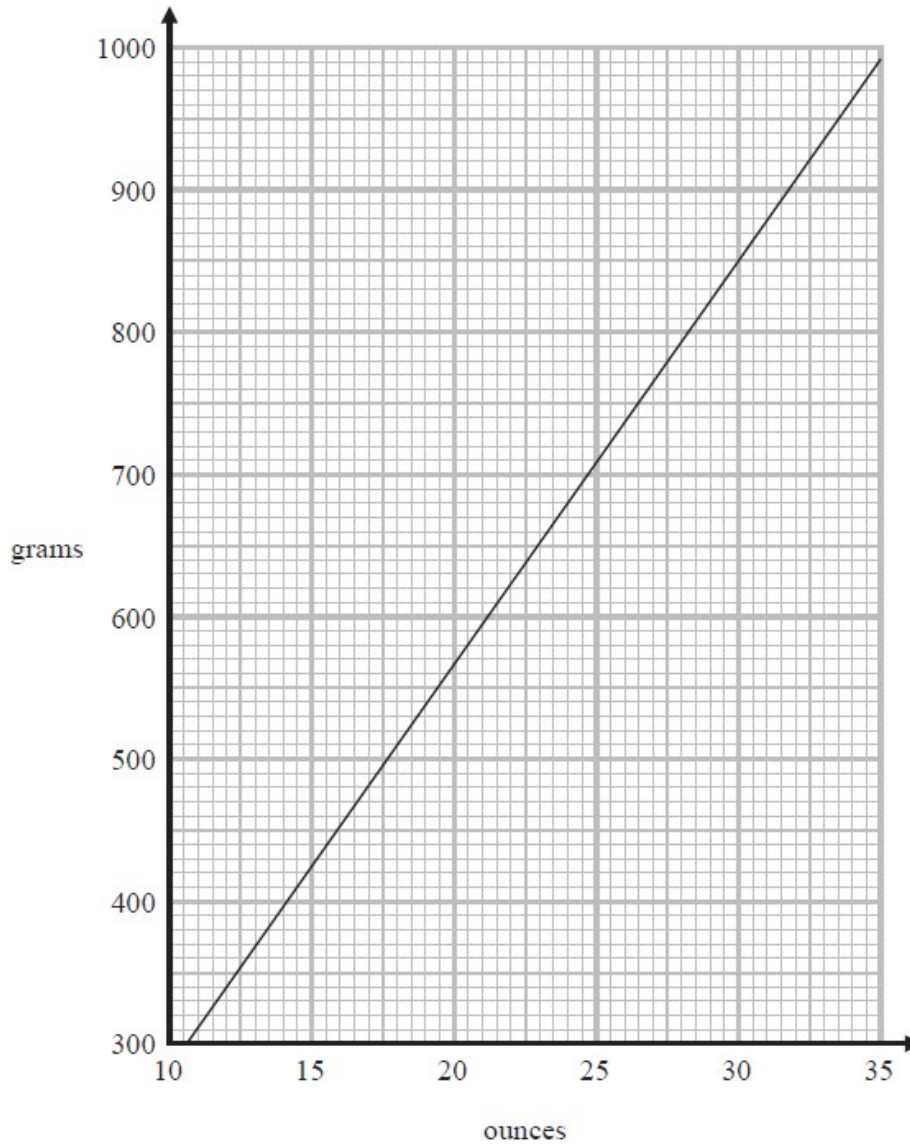
Q83.

Write 37 cm^3 in mm^3

..... mm^3
(Total for question = 1 mark)

Q84.

You can use this graph to change between ounces and grams.



(a) Change 850 grams to ounces.

..... ounces
(1)

(b) Change 80 ounces to grams.

..... grams
(2)

(Total for question = 3 marks)

Q1.

No Examiner's Report available for this question

Q2.

Most candidates made good attempts at this final question. A small number of candidates scored one mark for getting at least one value in the table correct but then not plotting at least five of their points correctly. The most common error in completing the table was to write -5 instead of 5 for the value of y when x was -3 .

Most candidates were able to plot their points from the table accurately to gain one mark in part (b). Many went on to draw a correct curve to gain the second mark and in some cases recovered from incorrect values in the table.

Around a third of the candidates scored all four marks with many of the candidates who scored three marks either failing to join their correctly plotted points or joining their points with straight lines.

Results Plus: Examiner Tip

Candidates should know that a quadratic expression gives rise to a parabola. In part (a), many calculated the y -value to be -5 when x was -3 . This resulted in a curve that was clearly not a parabola. This should have alerted candidates to realise they had made an incorrect calculation.

Q3.

Part (a)(i) was generally well answered with the vast majority of students gaining the mark. Unfortunately, the main error was that some students actually measured the angle and so lost the mark.

Part (a)(ii) was not so well answered with many students failing to give the correct reason. A list of the requirements for reasoning marks to be awarded has been communicated to centres. Students need to give an accurate statement which is not contradicted. In this particular case 'a straight line is $180'$ was seen but did not gain the mark as the 'angles' was omitted from the reason.

The vast majority of students gave a correct answer for part (b) of this question. Many were able to correctly compare the fact of 360 degrees around a point with the total of 370 degrees given in the incorrect diagram shown. Some did this by comparing 270° and 280° others compared 90° with 80° , all correct comparisons were acceptable.

Q4.

The majority of students scored both marks in part (i) calculating the angle to be 21 degrees. A small number of students used 360 in their calculation instead of 180 and this resulted in an incorrect answer of 201 degrees. The other error most often seen was arithmetic, again suggesting that students may have been reluctant to use their calculator for this question.

Part (ii) was less well answered. Students who did score the communication mark often wrote 'angles on a straight line add up to $180'$. The mark was most commonly lost for missing out the word angles, other incorrect response included, 'half a circle is $180'$, here neither angle nor line

were mentioned. However, the most common error was for students to state or re state their numerical calculation without mention of geometrical properties. Centres should encourage students to write short succinct explanations.

Q5.

In part (a)(i) the answer of 40 was most often correct. The most common incorrect answer for this part was 80 the misconception being that the angles at C and D were equal. In part (ii) most candidates were able to give the standard response. Some omitted either angles or quadrilateral from their answer, which was a requirement for the mark.

In part (b) a high proportion of candidates were able score the C mark. The most common responses included: stating that the angles in a triangle should sum to 180° or that the angles of the given triangle incorrectly sum to 190° . Unfortunately, there were a number of responses seen that either stated incorrectly or spoiled a good response by asserting that the triangle should be equilateral or isosceles, which of course was an incorrect statement. Some also chose to change the 60° angle to 50° while this answer may imply the correct angle sum it is not a correct statement as that angle did not need to be that size.

Q6.

Many students did not recognise the need to use trigonometry in this 2 mark question, with many trying to work with the area, finding missing angles or using Pythagoras' theorem. Of those who did recognise that the use of trigonometry was needed, many selected to use the wrong ratio, with Sine being the most common incorrect ratio used. When the correct ratio was used, the majority of students found a correct answer within the acceptable range.

Of the students gaining only the method mark, it was often due to early rounding of figures. The incorrect use of the Cosine ratio due to writing $\cos(53 \times 14.5)$ was occasionally seen so students should be encouraged to practice the correct use of trigonometric ratios and have a better understanding of the order of operations applied.

Q7.

Only a very few students gained the full two marks in this question. Some did earn one mark for one correct entry, usually 8.3. Near misses included answers of $8.25 \leq y < 8.35$ indicating some understanding of error intervals but from a rounded rather than a truncated number.

Q8.

A very well answered question. Most students gave the correct answer of 500 but 400 was sometimes seen.

Q9.

A good accessible start to the paper with a question, that was well answered with most students scoring the mark.

Q10.

Rounding to a given number of significant figures appeared to be a struggle for many students, with many giving answers of a completely different magnitude. Time spent on the understanding of what significant figures are would be well spent for centres. Part (b) assessed understanding of the order of operations and the ability to use their calculators. Most were able to gain at least one mark for one of the suitable intermittent values or for a correct value given to less than 4 decimal places. It is important that students read the guidance carefully as this question required all the figures on the calculator display to be written down. A common incorrect answer seen was 0.78692... where students took the square root of the whole fraction instead of the denominator only.

Q11.

Error intervals remain a weakness and was poorly attempted. Some were able to correctly give 9.35 but rarely gave 9.45; a few 9.44 but not 9.4499...

Q12.

This question was not well answered. 30 000 and 29 400 were given as popular incorrect answers.

Q13.

It was pleasing to see that a high proportion of students gained full marks on both parts of this question.

A common incorrect answer to part (a) was 0.9156... from $\frac{\sqrt{13.82}}{4.06}$ i.e., failing to square root the whole calculation, this gained no marks.

The students that wrote down intermediate stages in their calculations could gain a mark for their working eg $\sqrt{13.82} = 3.717\dots$

Some students lost the mark for part (b) by writing 1.8, rather than 1.84. It was pleasing to see that many students gained the mark in part (b) by correctly rounding their answer, even if incorrect, from part (a).

Q14.

No Examiner's Report available for this question

Q15.

This question combined the skills of using Pythagoras' Theorem and finding the area of a quarter circle and as such it was not well answered by foundation students. Some students realised that Pythagoras' Theorem had to be used but then often added the values squared rather than subtracting. Other students were able to indicate the intention to use the correct process to find the area of a quarter circle, these students were awarded a process mark. A very few students scored full marks on this question.

Q16.

In part (a) very few incorrect answers were seen. A common incorrect answer was 288 where they worked out the length of each side and multiplied these all together, usually showing $6 \times 2 \times 4 \times 1 \times 2 \times 3 = 288$

In part (b) the perimeter caused more issues when candidates missed some sides or double counted some sides.

Some candidates confused area and perimeter by giving the answers the wrong way around, for which no marks could be awarded.

Q17.

Although a few students did work with perimeter instead of area, the vast majority gained at least one mark for 90×60 . Many, failing to read the question carefully, then simply found the area of the garden where flowers are grown. It was however pleasing to see so many fully correct solutions. Many used non calculator methods to find 40% (or 60%). Some found 40% or 60% of **both** dimensions as opposed to just one before finding the area.

Q18.

Most students were awarded full marks. Of those not scoring full marks, a common error was with the linear scale. Many chose an appropriate linear scale of one square to one unit, although there were some candidates who labelled the spaces rather than the lines and others who did not start their scale at zero which often resulted in the 3 bar being only 2 squares high. Other errors with linear scale included using a scale of 3 to a square or 5 to a square, which caused issues when drawing their bars as it was difficult to clearly represent all of the frequencies.

Centres should give students practice in identifying an appropriate scale when drawing graphs.

Q19.

Part (a) was well attempted by most students who were able to measure accurately and convert to metres. It was pleasing to see that most showed the calculations required for the conversion. The majority of these went on to gain full marks correctly, adding the appropriate two distances and subtracting the other to find the difference in the overall total. There were a few who used their measurements to calculate the difference of 2 and then multiply by 150 which is a very efficient method. Those that did not measure accurately often went on to gain one mark for showing clear working for conversion and then the difference between the distances, but it was disappointing to find students using measurements that were more than $\frac{1}{2}$ cm different to the diagram, leading to the suspicion that they either did not have a ruler, or did not know how to use it accurately.

In part (b) the vast majority were unable to tackle this bearings question. Of those who did attempt this question it was common to see the bearing of C from A given. There were very few correct answers in the range with quite a few answers of 285 seen, which was just out of range.

Q20.

It was disappointing to find that this question was answered so poorly with many candidates leaving this blank. Whether this was due to the absence of a ruler and protractor is unknown. The correct distance was the most successful part of their answers although indicating where exactly their point was sometimes led to confusion. The bearing was very poorly done with candidates often using the N line, which could be due to a failure to use a protractor correctly; certainly, there was evidence of some candidates using the wrong "63" on their protractor.

Q21.

The majority attempted the question and but very few fully correct answers were seen. Of the

students who gained partial marks for finding one correct value, usually 12.65, it was common to provide the incorrect upper bound of 12.74. In addition to blank responses, whole number answers of 12 and 13 or 12.6 and 12.8 were often seen as incorrect values that gained no credit. The most successful answers were often those where a number line was drawn showing 12.6 to 12.8 and subsequently identifying where the bounds would be. Therefore, to improve student outcomes, centres should encourage students to use a number line method where the number to add or subtract is half the degree of accuracy asked for. Students would also benefit from having a better understanding of inequality notation.

Q22.

No Examiner's Report available for this question

Q23.

No Examiner's Report available for this question

Q24.

Part (a) was answered well by students, with $186 \div 3$ often written in the body with 62 on the answer line. There were a lot of distance, speed, time triangles, but not all were correct and those that were written in the correct orientation were not always used correctly. Some students chose to convert 3 hours to 180 minutes and then do $186 \div 180$, this gained the method mark but not the accuracy as the answer was required in miles per hour. The most common error seen was to multiply the figures. A few students did not use their calculator and tried to round the given figures; this was not appropriate for this question. For this question an exact answer was required. If students are expected to estimate they will be told to do so in the question.

In part (b), as with part (a), the majority of students worked correctly with the relationship between distance, speed and time and arrived at the correct distance travelled in 4 hours. A small number divided speed by time or converted the 4 hours to minutes before doing speed \times time. These students arrived at answers of 14.5 or 13920, both results being very unrealistic for the distance travelled by a car in 4 hours. It is a good idea for students to check answers at the end to see if they are sensible.

Q25.

No Examiner's Report available for this question

Q26.

Most gave answers of 9.6, 9 or 10; the latter two gained full credit as long as they also showed the 9.6 from which these came. Some confused the mean with another average, or even range. Some answers of 48 were given without the division by 5.

Part (b) was not well answered, with confused working frequently leading to 28.8, 20, 12 and 0.05. There were many using a trial and improvement approach, finding, 20%, 10%, and sometimes even 5% to get the answer.

Q27.

It is encouraging to report that over half of all candidates gave fully correct responses to this question. It was common to see the correct method for each part clearly written in the working space. Where candidates had identified a correct method, some made careless errors.

For example the answer "5.5" was seen often for part (a) and in part (b) candidates often totalled the numbers correctly only to divide their total by 8 or 10 instead of by 9. In working out the mean candidates often omitted brackets and wrote " $4 + 8 + 5 + 9 + 10 + 5 + 6 + 3 + 4 \div 9$ " instead of the correct " $(4 + 8 + 5 + 9 + 10 + 5 + 6 + 3 + 4) \div 9$ ". When trying to find the median many candidates forgot to order the list before selecting the "middle number".

A significant minority of candidates were confused between the different statistical measures and it was not uncommon to see the mean worked out for part (a) and the median for part (b).

The range also appeared in some candidates' responses to either part (a) or Part (b).

Q28.

There were a variety of approaches that students could use to answer this question, with many choosing to calculate the maximum number of batches that could be made with the amount of ingredients available, some rounded to whole batches whilst others used exact figures, both were acceptable. The majority of students were able to identify the ingredient that provided the limiting factor, with many successfully continuing to show a fully correct method to **test all ingredients** and conclude that 90 was the most biscuits that could be made.

However, some students chose to work with just one ingredient often the butter and gave an incorrect answer of 120 biscuits. Others worked out all the batches but then failed to multiply by 30 and so did not have a complete method for the number of biscuits possible.

Another common error was to find the correct number but then add up how many biscuits could be made with each ingredient to give an impossible total from these ingredients.

Students who chose to use a unitary method were often unsuccessful in calculating accurately to reach the correct final answer, sometimes through arithmetic errors, other times through rounding prematurely.

Although the question stated clearly that working **must** be shown, a significant number of responses arrived at the correct answer but failed to gain full credit due to not showing any justification involving all ingredients to support their final answer.

Q29.

This question was a good discriminator. There were a good number of fully correct solutions but more frequently students scored only part or no marks because they did not fully understand the concept of compound interest or were unable to show a correct method for calculating $3\frac{1}{2}\%$ of a

quantity.

Q30.

The digits '7452' were often seen and many students gained one mark for this. Often the answer was correctly given in Standard Form instead of as an ordinary number and often correct Standard Form was converted incorrectly; 0.00007452 and 74520000 were common errors.

Q31.

This question was answered well as most students were able to understand the context of this question. The omission of the final zero in £190.40 was condoned, however students should be encouraged to use correct money notation. Further work that led to students stating the difference was not necessary. Some students that did not understand the context of the question decided to share the 8 or 20 hours between days, while others multiplied the two numbers given in the question by the two rates stated. The most common error was to simply multiply one of the hourly rates by 20.

Q32.

No Examiner's Report available for this question

Q33.

No Examiner's Report available for this question

Q34.

This question about powers proved a bit too difficult for many candidates. Part (a) was the best answered as candidates could use their calculators to work out the correct answer but after this candidates did struggle with p^5 often being given as an incorrect answer for (b). Part (c) was usually better answered and in part (d) a few more gave the correct answer of 6.

Q35.

No Examiner's Report available for this question

Q36.

No Examiner's Report available for this question

Q37.

Eighty five per cent and sixty seven per cent of candidates were awarded a mark in parts (a) and (b) respectively of this question. The use of a calculator had clearly helped candidates to avoid

errors such as using "two minuses make a plus" incorrectly in part (b) though 18 was the most often seen incorrect answer.

Q38.

No Examiner's Report available for this question

Q39.

Almost all candidates understood that they had to find the difference between the two times of 17 50 and 19 30 but many candidates "forgot" that there are 60 minutes in an hour and subtracted two numbers on their calculator giving the answer of 180 which they often wrote as 1 hour 80 minutes or even 2 hours 20 minutes and so failed to gain any marks. The most successful candidates were those that counted on from 17 50 to 1800 then 1800 to 19 00 and then on to 19 30 and gained full marks for 100 minutes or 1 hour 40 minutes. Some candidates correctly recognised the answer was 1 hour 40 minutes, but used poor time notation, e.g. 1:40, 140, 1-40 etc. and did not gain the accuracy mark. In part (b) many candidates did not read the question properly and based their answer on one £20 note instead of two, this usually earned them just one method mark for subtracting £8.50 from £20.

Q40.

In part (a), Incorrect answers of 115 and 155 were common.

Part (b)(i) was usually correctly answered, although 'am' was sometimes seen instead of 'pm'. This gained no credit. In part (ii) 20 15 and 22 15 were the most common mistakes made.

Part (c) was not very well answered at all. Many candidates were able to find the number of minutes both Lucy (30) and Saad (40) were in the café; this was often followed by an answer of 70 minutes or 10 minutes. The more able candidates were able to find the required time often without the need to show their working. This is however a risky strategy since they would gain full credit or none at all.

Q41.

No Examiner's Report available for this question

Q42.

Students had little success with changing the subject of this formula with a few managing the first step, invariably to subtract 8 from both sides. Errors with algebraic manipulation were common with addition of 8 or even subtraction of 5 from both sides seen.

Q43.

No Examiner's Report available for this question

Q44.

No Examiner's Report available for this question

Q45.

This was not a well answered question. Algebraic processes were frequently performed in the wrong order. There were many who failed to attempt the question.

Q46.

Neither part of this question was well answered and there were a disappointing number of blank responses.

A few students indicated the recognition of the need to use trigonometric ratios. Of these, some wrote down SOHCAHTOA or drew "formula triangles" but were not able to select the most appropriate ratio to use.

Students who correctly identified they needed to use the tangent ratio in part (a) normally scored both marks. When only 1 mark was awarded, the final mark was often lost due to poor application of the calculator for example the calculator was not in degree mode. The most common incorrect approach seen was to use the sum of the angles in a triangle by subtracting 90° and 34° from 180° , despite the question requiring a missing length to be calculated. Some attempted to use Pythagoras, squaring the 34 and the 12, mixing angles and side lengths was seen.

Part (b) was very similar to part (a) in the quality of response. For those who realised the need to use trigonometry many did not identify the correct ratio to use or know that the inverse function

was needed in order to find an angle. Although $\frac{15}{18} = 0.83$ was sometimes calculated and formed part of the working, this was insufficient for credit to be given as a correct equation involving $\cos x$ was required.

Some students gave an answer of 34 which had evidently come from assuming the angles in the diagram from part (a) were the same as $90 - 56$ was also seen as the working.

Less often seen was an answer of 33 from adding the side lengths. Another common incorrect answer of 45 came from assuming the triangle is isosceles. Some attempted to use Pythagoras's Theorem but were unable to complete the alternative approach far enough to be credit worthy.

Q47.

Part (a) required students to draw a diameter on a circle, which the vast majority were able to do. The most common incorrect response was to draw a radius rather than a diameter, or to extend the diameter beyond the circumference of the circle.

In part (b) the question demanded the student draw a segment. A significant proportion of students made the mistake of drawing a sector instead.

Q48.

Part (a) was accurately answered by about half the cohort. Several students made an arithmetic error, writing $3 \times 0 = 3$. This gave an answer of 777 which gained one mark. Where this question was not well answered, common misconceptions were the addition of the frequency column leading to 300 or the addition of the social media accounts column leading to an answer of 10. Both these responses show a lack of understanding of the meaning of the frequency column in the table. Centres should practice using frequency tables in a variety of ways.

Students found the second part of this question more challenging. There were some correct answers seen from correct methods but efficient methods were not always seen. Some students wrote out ALL of the data and then found the median from a very long list. A few students used the method of $300 \div 2 = 150$ to identify the 150th item as the median and then stated 3 as the answer.

There were many incorrect methods used for example many students ordered the number of social media accounts and found the median of those i.e. 0, 1, 2, 3, 4 with a median of 2.

Others ordered the frequencies and found the median of those i.e. 3, 57, 75, 81, 84 with a median of 75, with a few also achieving a final answer of 3 incorrectly from equating their 75 to the number of social media accounts. Another common incorrect method which sometimes led to a correct answer was the calculation of the mean using $772 \div 300 = 2.58$ and rounding to 3, this was clearly the wrong method and gained no credit. A small number of students identified the mode instead of the median.

Students need to be familiar with all the different types of averages they can be asked to find and be able to distinguish between them, using a variety of tables as well as a list of numbers.

Q49.

No Examiner's Report available for this question

Q50.

No Examiner's Report available for this question

Q51.

This question was well attempted, with many gaining full marks for correctly interpreting the question and showing the ability to calculate the missing values and place them in the frequency tree correctly.

Of those who were not awarded full marks, the vast majority were able to correctly place at least one of the given values, and then able to calculate at least 1 or 2 of the missing values. However, these were often located in the incorrect place in the frequency tree, showing a lack of understanding of what those missing values actually represented or an inability to re-read the question and check where to put the individual answers.

The most common numerical mistakes tended to be made on the last branch for males, for example a common incorrect answer was to divide 22 by 2. 23 and 18 were the most common 'calculated value' seen. Students preferred not to show any working out and most of the time the answers in the frequency tree were not backed up by calculations, provided the values given were correct this wasn't a problem. A minority of students completed the frequency tree with probabilities rather than frequencies.

Q52.

Candidates who realised that the sum of the probabilities was 1, usually gained at least one mark, poor arithmetic often accounting for the loss of the final mark

Some candidates worked in percentages and nearly always failed to give the units of their answer of 6.

A great many candidates treated the information given as a linear sequence and attempted to interpolate an answer of 0.12 or 0.13 or 0.14 between 0.09 and 0.18

Some thought they were trying to find the mean and divided by 6.

Q53.

This question was well attempted with a number of candidates scoring 2 or more marks, 35% of which gained full marks.

In part (a) this question was well attempted with few blank responses seen. A common incorrect response was $\frac{1}{4}$ and, in some cases, after correctly writing 0.26 in the table. Many candidates demonstrated that they understood what was required but poor arithmetic led to them losing the accuracy mark. Another common incorrect response was 0.74 which lost both marks.

In part (b) this question was well attempted with few blank responses seen. Common incorrect responses included $300 \div .15$ and finding $\frac{1}{4}$ of 300. Some candidates demonstrated that they knew to multiply the probability by 300 but used their answer to part (a) or selected an incorrect value from the table.

Q54.

Part (a) was well answered by all students. Part (b) was well answered by most students with 'unlikely' being a common incorrect response instead of providing the correct numerical probability. Most students were able to score this mark for either writing down the probability of getting a total of 6 or the probability of getting a total of 7.

Q55.

The majority of students knew what a stem and leaf diagram was in part (a) and most of those who had done an earlier unordered version completed their ordered diagram successfully to gain 2 marks. There were cases of an omitted number in the leaves; a simple check that there were 20 pieces of data would have been beneficial for these students. A key was not always present, but when offered was usually correct.

In part (b) many students were able to identify $\frac{6}{20}$ (or equivalent) from their data, though some students miscounted the number of students failing, with 7 seen quite often. Others that lost marks were comparing those that had passed instead of those that have failed. One mark was achieved by either identifying the correct number of fails (6) or by knowing a quarter of 20 was 5. Some students worked on the misconception that 71 was the percentage who passed rather than the value of the pass mark. Also, a lot of students commented on the denominator being 4, when there were 20 pieces of data, therefore not understanding the probability. It was common for students to make observations which did not make for a comparison. Many responses were not specific enough making vague statements about more or less than a quarter passed without evidence.

Q56.

This question was extremely well done with the majority of students gaining all 3 marks.

Q57.

This bill-type question was well understood. Almost all candidates were able to gain at least two marks usually for the number of balls of wool or the follow-through on the total cost.

Q58.

A well understood question with almost all students scoring at least one mark and many scoring all three. A surprising number of students incorrectly used tallies in their response to this question.

Q59.

Nearly all students were able to complete the two-way table correctly.

Q60.

Most students were able to complete the two-way table correctly.

Q61.

Most students were able to correctly evaluate all of the missing values in the two way table in part (a). Checking their final answers by adding across or down the table in a different way could have enabled those who did make an error to correct their work.

Part (b) was completed less well, although most students were able to read the correct numerator value of 13 boys choosing karting. Many did not appreciate that it was one of the **boys** that was to be chosen at random and instead gave a denominator of 100, the total number of all students. With a calculator to hand, some students went on to give acceptable equivalent decimal or percentage answers but there were a few instances of incorrect ratio notation and 13:47 seen.

Q62.

Most candidates were able to present a correct set of frequencies, though it was not uncommon to find some errors occurring. Candidates who only presented tallies (without frequencies) failed to get full marks. Nearly all candidates were able to give the correct answer to part (b).

Q63.

Nearly all candidates gave the correct answer to part (a).

It was therefore surprising when incorrect diagrams were sometimes given in part (b), having demonstrated sound understanding in part (a), even inconsistently in part (b). For example, it was not uncommon to find a correct answer for Friday, and then a diagram similar to that in Tuesday given for Thursday. Most were able to give the correct diagrams for Friday. Whilst some latitude was given for poor diagrams, the size of the single ($\frac{1}{4}$) box in Friday sometimes prevented the award of the mark, particularly when it approximated the size of a full box, though without the internal lines.

Q64.

This question was well attempted with candidates scoring 3 or 4 marks.

In part (a) this question was well attempted with very few blank responses seen. Most candidates correctly plotted the value but too many plotted at 250, 350 or were just incorrect.

In part (b) this question was well attempted with few blank responses seen. More candidates attempted to explain the relationship, as asked, than wrote negative correlation. The more able candidates were able to describe the relationship correctly and sufficiently clearly but the less able tended to state facts about specific points than describe a trend.

In part (c) candidates were most successful on this part of question 12. Most did not draw a line of best fit but gained full marks for an answer in range. The most common correct answer was 500. Incorrect answers were very varied.

Q65.

No Examiner's Report available for this question

Q66.

No Examiner's Report available for this question

Q67.

The table in part (a) was generally completed well and students were often able to use their values to draw a fully correct curve in part (b). Some students plotted the points correctly but then didn't join them or else joined them with straight line segments or joined them with a curve that missed one or more of the points, resulting in one mark only. When plotting the points from the table most mistakes were made plotting (4, 1.5) and (5, 1.2).

Q68.

This was a well answered question. Nearly all students generated a correct list of numbers in part (a). The greatest error in part (b) was in plotting the points, but not joining them. A few plotted only some of the points from their table.

Q69.

Students who started by putting 15 in the intersection generally went on to answer part (a) quite well and often placed all seven numbers correctly inside the circles. Some students, however, wrote two 15s in the intersection or wrote 15 in more than one region. The outside region, $(A \cup B)'$, proved to be much more problematic. It was very common to see either no numbers at all in this region or duplicates of the numbers that had already been placed inside the circles. Those who did attempt to put the rest of the odd numbers in the outside region sometimes failed to include all eight numbers. It should be emphasised to students that each number in the universal set should appear just once in a Venn diagram. Many students scored the one mark for labelling the circles, usually with A and B but occasionally with "multiples of 3" and "multiples of 5".

In part (b) many students scored one mark for a correct denominator of 15 or, more usually, for a denominator that followed through correctly from their Venn diagram. A correct numerator was seen far less frequently and it was evident that many students confused $A \cup B$ with $A \cap B$. Some incorrect notation for probability, e.g. ratio, was seen.

Q70.

No Examiner's Report available for this question

Q71.

Some good explanations were seen in part (a). Many students identified that Bill had used an

incorrect multiplier and explained that he should have used 1.03 or that he had increased 150 by 30% rather than by 3%. Statements that he should have used 0.03 or that 3% is 0.03 were accepted since the student had identified that the multiplier was wrong. Instead of focusing on the multiplier some students increased 150 by 3% and explained that Bill is wrong because his answer should have been 154.5. These explanations were also accepted. Many answers were incomplete and didn't explain why Bill's method is wrong, e.g. "he needs to find 3% and subtract it from 150" or "he needs to find 1% and multiply it by 3". Others were simply incorrect, e.g. "he increased 150 by 13%, not by 3%" or "he should have used 0.3" or "he should have divided not multiplied".

Part (b) was answered quite poorly with many students unable to complete the statement correctly. Although many could decrease 150 by 3% they did not know how to do so using a suitable multiplier in a single stage calculation. A common incorrect answer was $150 \times 0.03 = 4.5$, often with $150 - 4.5 = 145.5$ written underneath. Some students wrote $150 \times 0.3 = 45$ or $150 \times -3\% = 145.5$.

Q72.

No Examiner's Report available for this question

Q73.

It was pleasing to see so many students gaining at least two marks for working out the number of parts produced by either of the machines; machine B (520) being the more successful. Many then went on to gain full marks. Simply converting hours into minutes was not seen as a sufficient start in solving the problem and no credit was given just for this. The most efficient process for each machine was to work out the number of parts made each hour, 36 for machine A and 52 for machine B, students working along these lines usually went on to give a fully correct solution. Mistakes were made by many when working out the number of parts made per minute or the time taken to make one part. Some students, failing to carefully read the question, mixed up the values and therefore were unable to gain any credit.

Many students were happy saying there were 4 lots of 15 minutes in an hour and successfully getting 52 for machine B, but did not apply the same reasoning for lots of 10 minutes in an hour for machine A. $60 \times 12 = 720$ was a common incorrect answer for machine A.

Q74.

The most common method for this question was to find the distance of 7.5 by working out the two parts of the journey and adding them together. The difficulty came when trying to find the average speed for Amy and using the time converted to a decimal. Other students used the other method to get to the final answer of 10 by doing $450 \div 45$ but this was not as common. Students who were successful in following this question through, often worked in minutes using 15, 40 and 45 which gave the correct answer without having to convert them first. Very few students

converted the times into hours and when they did, a common issue was the use of 0.6 for $\frac{40}{60}$. A good proportion of students scored full marks for this question though many students just found the average of the two speeds.

Q75.

The majority of candidates gained both marks for this construction giving an equilateral triangle with sides' length within a +2mm tolerance. Students need to understand that accuracy is essential and take the time to measure very carefully or risk losing marks unnecessarily.

Q76.

No Examiner's Report available for this question

Q77.

In part (a) there were, surprisingly, too many instances of students incorrectly measuring the distance between Shelton and Trilby. Failure to indicate where their measurements came from resulted in lost marks for many. For example, those who just estimated (or prematurely rounded) their distance to 3 cm but did not indicate this was the distance between Shelton and Trilby could not be credited any marks. This was not uncommon. Some measured accurately and then failed to use the scale correctly. Common incorrect answers were $35 \times 2 = 70$, or doing 2×20 then adding on $0.5 = 40.5$

There were far fewer correct answers to part (b). When 1 mark was awarded, it was usually for finding 6000 but failing to convert to metres. Knowledge of unit conversion remains a weakness.

Q78.

In line with previous series students found this conversion question more difficult. Just over half of the cohort were able to do this simple conversion. Centres are advised to spend time on this skill as it is often required.

Q79.

No Examiner's Report available for this question

Q80.

No Examiner's Report available for this question

Q81.

No Examiner's Report available for this question

Q82.

Over two thirds of students could change between metres and centimetres. Converting between metric units still remains challenging for some students with many forgetting the conversion

factor to use.

Q83.

Conversion of metric units of volume is clearly something that students at this level find difficult. Various powers of 10 were used, most commonly 10 and 100 rather than 1000.

Q84.

In part (a) the answer of 30 was most often correct. But in part (b) many candidates were unprepared for the requirements for reading from the graph and scaling their reading. There were very few who chose the most appropriate value of 20 to scale to 80, and many who took inaccurate readings from the axis. This question highlighted that candidates need more practice with this topic of the curriculum.

Mark Scheme

Q1.

Paper 1MA1: 2F			
Question	Working	Answer	Notes
(a)			C1 for a correct evaluation of the method shown by giving at least one correct error made, eg. "didn't multiply the 1 by 5"
(b)			C1 for a correct evaluation of the method shown by giving at least one correct error made, eg. "can't split a mixed number" or "should convert to improper (oe) fractions first"

Q2.

	Working	Answer	Mark	Notes
(a)		5, -4, -3	2	B2 for 5, -4 and -3 (B1 for 5 or -4 or -3)
(b)		correct curve	2	B2 for fully correct curve (B1 ft for at least 5 points plotted correctly)

Q3.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)(i)	30	B1	cao	
(ii)	Reason	C1	reason, eg <u>angles</u> on a <u>straight line</u> add up to 180°	
(b)	Explanation	C1	for explanation eg the two angles don't add up to 360 Acceptable examples $90 + 280 = 370$ The two angles don't add up to 360 280 should be 270 Angles around a point equal 360° It should be 360 (in a circle) It should be 80 It should not be a right angle It cannot be 280° Not acceptable examples They don't add up to 180 365 degrees in a circle ┘ means 90 degrees	

Q4.

Question	Answer	Mark	Mark scheme	Additional guidance
(i)	21	M1 A1	for $180 - 75 - 84$ cao	Angle may be indicated on the diagram
(ii)	Reason given	C1	for reason that <u>Angles</u> on a <u>straight line</u> add up to 180	The key words underlined must be present There should be no incorrect reasons given

Q5.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)(i)	40	B1	cao	Underlined words need to be shown.
(ii)	Reason	C1	Reason given <u>Angles</u> in a <u>quadrilateral</u> add up to 360. Accept "4-sided shape"	
(b)	Explanation	C1	Explanation Acceptable examples 190 > 180 It does not add up to 180 80+60+50=190 Angles in a triangle add up to 180 Not acceptable examples One of the angles needs to be less You cannot draw this triangle	

Q6.

Question	Answer	Mark	Mark scheme	Additional guidance
	8.73	M1	for a correct trig statement, eg $14.5 \times \cos 53$ or $\cos 53 = x \div 14.5$	Can use a combination of skills but must have only one unknown in x to score this mark If an answer is given in the range in working and then rounded incorrectly award full marks.
		A1	answer in the range 8.726 to 8.73	

Q7.

Question	Answer	Mark	Mark scheme	Additional guidance
	8.3 and 8.4	B1	for 8.3 in the correct position	Accept 8.39 or 8.399...
		B1	for 8.4 in the correct position	

Q8.

Question	Answer	Mark	Mark scheme	Additional guidance
	500	B1	cao	

Q9.

Question	Answer	Mark	Mark scheme	Additional guidance
	1480	B1	cao	

Q10.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	7360	B1	cao	
(b)	0.1077981356	B2 (B1	for 0.1077(981...) for 5.74(45626...) or 53.29 or 0.11 or 0.107 or 0.108)	Answer must be given to at least 4 decimal places rounded or truncated Accept a clear indication of the decimal point. Check first four decimal places only

Q11.

Question	Answer	Mark	Mark scheme	Additional guidance
	9.35, 9.45	B1 B1	for 9.35 in the correct position for 9.45 in the correct position	Accept 9.449 oe or 9.4499... oe

Q12.

Question	Answer	Mark	Mark scheme	Additional guidance
	29 000	B1	cao	

Q13.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	1.844977205	M1	for 3.403(940887) or 3.717(526059) or 2.014(944168) or 1.84(...) or 1.8(...)	Accept consistent use of a comma to indicate a decimal point
(b)	1.84	A1	for 1.844(977205)	Answer must be given to at least 3
		B1	for 1.84 or ft from (a) provided answer to (a) has at least 3 dp	decimal places rounded or truncated

Q14.

Question	Working	Answer	Mark	Notes
		187	M1	for a method to find a missing length, e.g. $15 - 7 (= 8)$ or $22 - 9 (= 13)$ (may be seen on the diagram)
			M1	for a method to find the area of the triangle, e.g. $((15 - 7) \times (22 - 9)) \div 2 (= 52)$ or to find the area of the rectangle, e.g. $9 \times 15 (= 135)$
			A1	cao

Q15.

Question	Answer	Mark	Mark scheme	Additional guidance
	35.3	P1	for starting the process to find length of third side of triangle, eg $9^2 - 6^2 (=45)$ or $6^2 + x^2 = 9^2$	
		P1	for $\sqrt{9^2 - 6^2}$ or $\sqrt{81 - 36}$ or $\sqrt{45}$ or $3\sqrt{5}$ ($= 6.7..$) or $r^2 = 45$	
		P1	for stating or using $\pi \times [\text{radius}]^2 \div 4$	[radius] is any value
		A1	for answer in range 35.2 to 35.4	If an answer in the range 35.2 to 35.4 is given in the working space then incorrectly rounded, award full marks No working, answer only no marks

Q16.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	14	B1	cao	
(b)	18	B1	cao	

Q17.

Question	Answer	Mark	Mark scheme	Additional guidance
	3240	P1	for $90 \times 60 (= 5400)$ OR $40 \div 100 \times 90 (= 36)$ OR $40 \div 100 \times 60 (= 24)$	
		P1	for a process to work out area that is flowers eg. $40 \div 100 \times "5400" (= 2160)$ OR $"36" \times 60 (= 2160)$ OR $90 \times "24" (= 2160)$	
		P1	for a full process to find the area that is grass eg. $"5400" - "2160" (= 3240)$	
		A1	cao	
		P1	ALTERNATIVE for $100 - 40 (= 60)$	
		P1	(indep) for $90 \times 60 (= 5400)$ OR $90 \times 60 \div 100 (= 54)$ or $60 \times 60 \div 100 (= 36)$	
		P1	for a full process to find the area that is grass eg. $"60" \div 100 \times "5400" (= 3240)$ OR $"54" \times 60 (= 3240)$ or $"36" \times 90 (= 3240)$	
		A1	cao	

Q18.

Question	Answer	Mark	Mark scheme	Additional guidance
	Chart	B1	for correct day labels or a linear scale	Accept key in place of labels Condone bars of varying widths Condone no gaps or inconsistent gaps Labels of Day and Frequency not essential
		M1	for correct bars showing information for at least 3 days	
		A1	for a fully correct bar chart	

Q19.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	300	M1	for a correct method to measure and convert one line to a distance in metres, eg. $(AB \Rightarrow) 5 \times 150 (= 750$ or in the range 720 to 780) or $(BC \Rightarrow) 4 \times 150 (= 600$ or in the range 570 to 630) or $(AC \Rightarrow) 7 \times 150 (= 1050$ or in the range 1020 to 1080)	Accept measurements given in mm instead of cm for the first mark. Accept measurements given to a tolerance of ± 2 mm Where “750”, “600”, “1050” and “2” have come from their measurements
		M1	or for $5 + 4 - 7 (= 2$ or in the range 1.4 to 2.6) for a complete method, eg. “750” + “600” – “1050” or “2” $\times 150$	
		A1	for answer in the range 210 to 390	
(b)	288	B1	for answer in the range 286 to 290	

Q20.

Question	Answer	Mark	Mark scheme	Additional guidance
	Drawing	B1	for drawing point R from T at a distance of 5.5 cm.	Unless ambiguous point R can be indicated by a cross, dot, or interpreted as the end of a line drawn from T .
		B1	for drawing point R from T on a bearing of 65°	

Q21.

Question	Answer	Mark	Mark scheme	Additional guidance
	12.65, 12.75	B1	for 12.65 in correct position	Accept 12.749 or 12.7499(...)
		B1	for 12.75 in correct position	

Q22.

Paper 1MA1: 3F			
Question	Working	Answer	Notes
		48	P1 For start to process eg. $96 \div 12$ or $96 \div 2$ A1 cao

Q23.

Question	Working	Answer	Notes
		8	B1 cao

Q24.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	62	M1 A1	for distance ÷ time eg $186 \div 3$ or $186 \div (3 \times 60)$ (=1.03..) cao	May use hours or minutes at this point
(b)	232	M1 A1	for speed × time eg 58×4 or $58 \times 4 \times 60$ (=13920) cao	May use hours or minutes at this point

Q25.

Paper 1MA1: 2F			
Question	Working	Answer	Notes
		8112	M1 for complete method, eg. A1 7500×1.04^2 cao

Q26.

PAPER: IMA0/2F				
Question	Working	Answer	Mark	Notes
(a)		9.6	2	M1 for complete method to calculate the mean eg $(12+6+7+10+13) \div 5$ A1 for 9.6 oe
(b)		5	2	M1 for $\frac{12}{240} \times 100$ oe A1 cao

Q27.

Question	Working	Answer	Mark	Notes
(a)	3 4 4 5 5 6 8 9 10	5	2	M1 for ordering the 9 numbers A1 cao
(b)	$(4 + 8 + 5 + 9 + 10 + 5 + 6 + 3 + 4) \div 9$ $54 \div 9$	6	2	M1 for $(4 + 8 + 5 + 9 + 10 + 5 + 6 + 3 + 4) \div 9$ or $54 \div 9$ A1 cao

Q28.

Question	Answer	Mark	Mark scheme	Additional guidance
	90	P1	for a process to find the number of batches for at least 2 ingredients, eg $900 \div 225 (= 4)$ or $1000 \div 110 (= 9.09..)$ or $1000 \div 275 (= 3.6....)$ or $225 \div 75 (= 3)$ OR A full method to find the maximum number of biscuits for 1 ingredient eg $900 \div 225 \times 30$ OR Amount required for 1 biscuit for at least 2 ingredients eg $225 \div 30 (= 7.5)$ or $110 \div 30 (= 3.6..)$ or $275 \div 30 (= 9.1..)$ or $75 \div 30 (= 2.5)$ OR Amount required for 3 batches for at least 2 ingredients eg $225 \times 3 (= 675)$ or $110 \times 3 (= 330)$ or $275 \times 3 (= 825)$ or $75 \times 3 (= 225)$	
		P1	(dep P1) for a complete process to find the maximum number of biscuits after considering at least 3 different ingredients eg “3” $\times 30$	They must use their smallest multiplier after considering at least 3 different ingredients
		A1	(dep P2) cao from fully correct working	90 without working award no marks

Q29.

5MB1H 01 November 2015				
Question	Working	Answer	Mark	Notes
	$2500 + 2500 \times 3.5 \div 100 =$ $2500 + 87.50 = 2587.50$ $2587.50 + 2587.50 \times 3.5 \div$ $100 = 2587.50 + 90.5625$	2678.06	3	M1 for 2500×1.035 or $2500 + 2500 \times 0.035$ oe or for $2587.5(0)$ or $87.5(0)$ or 8750 or $2412.5(0)$ M1 (dep) for “2587.5” $\times 1.035$ or for “2587.5” + “2587.5” $\times 0.035$ or for “2578.5” + “90.56(25)” or for 2678 or 2678.1(0) or 2678.07 or 2678.06... A1 cao NB: if correct answer seen then ignore any extra years Alternative method: M2 for 2500×1.035^n where $n \geq 2$ or for 2678 or 2678.07 or 2678.06... A1 cao

Q30.

Question	Working	Answer	Mark	Notes
		0.000 7452	M1 A1	for digits 7452 seen cao

Q31.

Question	Answer	Mark	Mark scheme	Additional guidance
	Shows earnings	M1 M1 C1	for a method to start to work out earnings eg $11.2 \times 8 (= 89.6)$ or $20 - 8 (= 12)$ or $8.4 \times 12 (= 100.8)$ for a complete method eg $11.2 \times 8 + 8.4 \times (20 - 8)$ or "89.6" + "100.8" or $200 - "89.6" - "100.8" (= 9.6)$ Shows earnings eg 190.4(0) or 9.6(0) with fully correct arithmetic	Accept calculations in pence, or £ written in decimal form. Conclusion in figures; ignore written conclusion.

Q32.

Question	Working	Answer	Notes
		625	B1 cao

Q33.

Paper 1MA1:3F				
Question	Working	Answer	Notes	
(a)		7	B1 cao	
(b)		256	B1 cao	

Q34.

PAPER: IMA0_2F				
Question	Working	Answer	Mark	Notes
(a)		92.3521	1	B1 cao
(b)		p^6	1	B1 cao
(c)		t^5	1	B1 cao
(d)		6	1	B1 cao

Q35.

Paper 1MA1: 3F																			
Question	Working					Answer	Notes												
(a)						8	B1												
(b)	$11 + 4 = 15$ $15 \div 3 = 5$					5	M1 Start of method A1												
(c)	<table border="1"> <tr> <td>in</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>out</td> <td>-4</td> <td>-1</td> <td>2</td> <td>5</td> <td>8</td> </tr> </table>					in	0	1	2	3	4	out	-4	-1	2	5	8	2	M1 For complete method that leads to answer eg. table of values or $x = 3x - 4$ C1 For 2 or for statement that the equation has a unique solution
	in	0	1	2	3	4													
out	-4	-1	2	5	8														

Q36.

Question	Working	Answer	Mark	Notes
		207.50	M1	for a first step to solve the problem, e.g. $42.5 \div 17$
			M1	for a complete method
			A1	cao

Q37.

Question	Working	Answer	Mark	Notes
(a)		-2	1	B1 cao
(b)		-18	1	B1 cao

Q38.

Question	Working	Answer	Mark	Notes
		40	B1	cao

Q39.

PAPER: 1MA0 2F				
Question	Working	Answer	Mark	Notes
*(a)		1 hour 40 minutes	2	M1 for correct working shown to find the difference between 17 50 and 19 30 e.g. using a carry of 60 minutes in a take away or counting on from 17 50 to 19 30 A1 for 1 hr 40 mins or 100 mins
(b)		7	3	M1 for $2 \times 20 - 8.5 (= 31.5)$ or $20 - 8.5 (= 11.5)$ M1 (dep) for " $31.5 \div 4.5$ or $(20 + "11.5") \div 4.5$ or 7×4.5 oe (eg by addition/subtraction method) A1 cao

Q40.

Question	Working	Answer	Mark	Notes
(a)	$10 + 60 + 5$	75	1	B1 (accept 1 hour 15 minutes or 1.25 hours or $1\frac{1}{4}$ hours with units)
(b)(i)		3.25 pm	2	B1 for 3.25 pm oe [accept 3.25 only and 03.25 pm but do not accept 3.25 am or 03.25]
(b)(ii)		21 15		B1 for 21 15 (ignore am or pm written)
(c)	$10.45 - 10.25$ OR $10.25 + 5 + 10 + 5$	20	2	M1 for an attempt to find the time difference between 10.25 and 10.45 A1 cao

Q41.

Paper 1MA1: 2F			
Question	Working	Answer	Notes
		$p = qr - sr$	M1 for multiplying all 3 terms by r or isolating p/r term A1 oe

Q42.

Paper: 5MB3F_01				
Question	Working	Answer	Mark	Notes
		$h = \frac{x-8}{5}$	2	M1 for intention to either subtract 8 from both sides or divide each term by 5 as a first stage of working A1 for $h = \frac{x-8}{5}$ oe

Q43.

Paper 1MA1: 2F			
Question	Working	Answer	Notes
		$t = \frac{w-11}{3}$	M1 for $3t = w - 11$ or $\frac{w}{3} = \frac{3t}{3} + \frac{11}{3}$ A1 for $t = \frac{w-11}{3}$ oe

Q44.

Question	Working	Answer	Notes
		$t = 3(y + 2a)$	M1 adding $2a$ to both sides or multiplying each term by 3 A1 $t = 3(y + 2a)$ or $t = 3y + 6a$

Q45.

PAPER: 5MB3F 01				
Question	Working	Answer	Mark	Notes
		$h = \frac{G+5}{3}$	2	M1 for intention to isolate the $3h$ or divide all terms by 3 as the first step A1 oe

Q46.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	17.8	M1	for $\tan 56 = \frac{x}{12}$ or $(BC) = 12 \times \tan 56$ oe or alternative method to find BC	For any alternative method candidates must arrive at an equation with BC as the only unknown
		A1	for an answer in the range 17.7 to 17.8	If an answer in the range 17.7 to 17.8 is given in the working space then incorrectly rounded, award full marks.
(b)	33.6	M1	for $\cos x = \frac{15}{18}$ or $\cos x = 0.83\ldots$ or $x = \cos^{-1} \frac{15}{18}$ or alternative method to find x	For any alternative method candidates must arrive at an equation with x as the only unknown
		A1	for an answer in the range 33.5 to 33.91	If an answer in the range 33.5 to 33.91 is given in the working space then incorrectly rounded, award full marks.

Q47.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	Diameter drawn	B1	diameter drawn	Accept hand drawn, intention through centre and from edge to edge. Ruler not required but intention clear.
(b)	Segment shaded	B1	segment drawn unambiguously	Line must go edge to edge (condone extending outside the circle). Freehand acceptable. Can also draw a diameter here (as semi-circle).

Q48.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	774	M1	for at least three of $0 \times 3 (= 0)$ or $1 \times 57 (= 57)$ or $2 \times 84 (= 168)$ or $3 \times 75 (= 225)$ or $4 \times 81 (= 324)$ or for $0 \times 3 + 1 \times 57 + 2 \times$ $84 + 3 \times 75 + 4 \times 81$	Note if 2 non zero products are seen award M1 Use of the figure 777 is enough for M1
		A1	cao	
(b)	3	M1	for method to begin to work with the median, eg $300 \div 2 (= 150)$	Accept 301 in place of 300
		A1	cao	NB mean = 2.58

Q49.

Paper 1MA1: 2F			
Question	Working	Answer	Notes
(a)		$6f$	B1
(b)		$16mn$	B1
(c)		$2t^2$	B1 cao

Q50.

Paper 1MA1: 3F			
Question	Working	Answer	Notes
(a)		5	B1 cao
(b)		12	B1 cao
(c)		d^5	B1

Q51.

Question	Answer	Mark	Mark scheme	Additional guidance
		C1	for correctly placing at least one piece of data (22 or 16) OR for finding at least one unknown piece of data (4, 18, 7 or 23)	Unknown figures may be seen in working and need not be on the diagram
	4 22 45 18 23 7 16	C1	for correctly placing at least one piece of data (22 or 16) and for finding at least one unknown piece of data (4, 18, 7 or 23)	Award of this mark implies the first C1
		C1	for a complete correct tree. SC C2 if all 6 figures are shown as the numerator of fractions in the correct places	

Q52.

Question	Working	Answer	Mark	Notes
		0.06 or 6%	2	M1 for $1 - (0.09 + 0.18 + 0.16 + 0.21 + 0.30)$ oe OR M1 for $100 - (9 + 18 + 16 + 21 + 30)$ oe OR M1 for $1 - (\frac{9}{100} + \frac{18}{100} + \frac{16}{100} + \frac{21}{100} + \frac{30}{100})$ A1 for 0.06 or 6% (6 only gets A0) or $\frac{6}{100}$ oe [SC; B1 for 6 on the answer line without working, if M0 scored]

Q53.

Question	Working	Answer	Mark	Notes
(a)	$1 - (0.15 + 0.32 + 0.27)$ $1 - (15 + 32 + 27)$ $1 - (\frac{15}{100} + \frac{32}{100} + \frac{27}{100})$	0.26 26% $\frac{26}{100}$ (oe)	2	M1 for $1 - "(0.15 + 0.32 + 0.27)"$ oe or 26 seen A1 for 0.26 or $\frac{26}{100}$ (oe) or 26% (must include the % sign) [Note: 0.26 seen in the table and contradicted by an incorrect answer on the answer line gets M1A0]
(b)	0.15×300	45	2	M1 for $0.15 \times 300 (=45)$ oe A1 accept 45 out of 300

Q54.

PAPER: 5MB1F 01						
Question	Working			Answer	Mark	Notes
(a)	(4, 4)	(4, 5)	(4, 6)	Complete diagram	1	B1 cao
	(5, 4)	(5, 5)	(5, 6)			
	(6, 4)	(6, 5)	(6, 6)			
(b)				$\frac{1}{36}$	1	B1 for $\frac{1}{36}$
*(c)				7 has greater probability with correct reason	1	C1 for 7 has greater probability oe with correct reason, eg gets a total of 7 more often

Q55.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	6 | 4799	B2	for correct ordered stem and leaf	
	7 | 0015667	(B1)	for fully correct unordered or ordered with one error or omission)	
	8 | 0011247			
9 | 14	B1	(indep) for key (units not required but must be correct if stated) eg 6 | 4 = 64 (marks)		
(b)	Explanation	C1	for identifying "6" students failed (ft their diagram) OR for $20 \div 4 (= 5)$	Explanation does not need to state that Omar is wrong, but just needs to provide two comparable values (that are not the same) unless ft values show that Omar is not wrong in which case a statement is needed.
		C1	for comparing $\frac{1}{4}$ with $\frac{6}{20}$ or $\frac{3}{10}$ (ft their diagram) OR for comparing "6" with 5	

Q56.

Question	Working	Answer	Mark	Notes
		10 10 (3) 23 (18) 4 (9) (31) 28 (14) 12(54)	3	B3 for all 6 correct (B2 for 4 or 5 correct) (B1 for 1 or 2 or 3 correct)

Q57.

Question	Working	Answer	Mark	Notes
		8.32 8 51.22	3	B1 cao B1 cao B1 ft from '8.32'

Q58.

5MB1F/01 June 2015																											
Question	Working				Answer	Mark	Notes																				
	<table border="1"> <thead> <tr> <th></th> <th>A</th> <th>D</th> <th>M</th> <th>T</th> </tr> </thead> <tbody> <tr> <th>G</th> <td>8</td> <td>9</td> <td>13</td> <td>30</td> </tr> <tr> <th>B</th> <td>0</td> <td>9</td> <td>2</td> <td>11</td> </tr> <tr> <th>T</th> <td>8</td> <td>18</td> <td>15</td> <td>41</td> </tr> </tbody> </table>					A	D	M	T	G	8	9	13	30	B	0	9	2	11	T	8	18	15	41	Correct Table	3	B3 for fully correct table (B2 for at least 7 of their entries correct) (B1 for at least 4 of their entries correct)
	A	D	M	T																							
G	8	9	13	30																							
B	0	9	2	11																							
T	8	18	15	41																							

Q59.

PAPER: 5MB1F_01																											
Question	Working				Answer	Mark	Notes																				
	<table border="1"> <thead> <tr> <th></th> <th>Friday</th> <th>Saturday</th> <th>Sunday</th> <th>Total</th> </tr> </thead> <tbody> <tr> <th>Morning</th> <td>27</td> <td>34</td> <td>51</td> <td>112</td> </tr> <tr> <th>Afternoon</th> <td>38</td> <td>52</td> <td>63</td> <td>153</td> </tr> <tr> <th>Total</th> <td>65</td> <td>86</td> <td>114</td> <td>265</td> </tr> </tbody> </table>					Friday	Saturday	Sunday	Total	Morning	27	34	51	112	Afternoon	38	52	63	153	Total	65	86	114	265	Complete two-way table	3	B3 cao (B2 for 4 or 5 correct) B1 for 2 or 3 correct)
	Friday	Saturday	Sunday	Total																							
Morning	27	34	51	112																							
Afternoon	38	52	63	153																							
Total	65	86	114	265																							

Q60.

Question		Working				Answer	Mark	Notes
		F	B	D		Completed table	3	B3 for fully correct table (B2 for 4 or 5 correct entries) (B1 for 2 or 3 correct entries)
	T	8	11	25	44			
	C	12	17	7	36			
		20	28	32	80			

Q61.

PAPER: IMA0_2F					
Question		Working	Answer	Mark	Notes
	(a)		14 13 20 47 12 7 34 53 26 20 54 100	3	B3 for fully correct table (B2 for 3 or 4 or 5 correct entries) (B1 for 1 or 2 correct entries)
	(b)		$\frac{13}{47}$	2	M1 for $\frac{13}{n}, n > 13$ or for $\frac{n}{47}, n < 47$ A1 for $\frac{13}{47}$ (or 0.27 - 0.28 or 27% - 28%)

Q62.

Question		Working	Answer	Mark	Notes
	(a)		4, 6, 8, 2	2	B2 all frequencies correct (B1 2 frequencies correct OR 2 tallies correct OR 1 tally with its frequency correct)
	(b)		silver	1	B1 for silver or ft from table

Q63.

Question		Working	Answer	Mark	Notes
	(a)		18	1	B1 cao
	(b)		$\frac{1}{4}$ box 3 full size boxes	2	B1 cao B1 cao

Q64.

Question	Working	Answer	Mark	Notes
(a)		(5, 300) plotted	1	B1 for point plotted at (5, 300) allow $\pm \frac{1}{2}$ square tolerance
(b)		The greater the age the less the value	1	B1 for the greater the age the less the value (price, cost etc.) Accept negative correlation but "negative" or "negative relationship" gets B0
(c)		500 to 800 inc.	2	B2 for an answer in the range 500 to 800 (inc.) OR M1 for a single straight line segment with negative gradient that could be used as a line of best fit A1 ft from their line of best fit [SC: B1 ft reading from their single straight line with negative gradient at Age = 4 if M0 scored]

Q65.

Question	Working	Answer	Mark	Notes
		Parallelogram	1	B1 complete parallelogram

Q66.

Question	Working	Answer	Mark	Notes
(a)			2	B1 places probs for round, e.g. $\frac{4}{7}$ and $\frac{3}{7}$ B1 places probs for square, e.g. $\frac{3}{8}$, $\frac{5}{8}$, $\frac{3}{8}$, $\frac{5}{8}$
(b)		$\frac{15}{56}$	2	M1 ft for " $\frac{3}{7}$ " \times " $\frac{5}{8}$ " A1 $\frac{15}{56}$ oe

Q67.

Question	Working	Answer	Mark	Notes
(a)		12, 4, 2, 1.2, 1	B2 (B1)	for fully correct table (allow fractions or decimals) for 3 or 4 of 12, 4, 2, 1.2, 1
(b)		Correct curve	M1 A1	ft (dep on B1 in (a)) for plotting at least 6 points from their table correctly for a fully correct curve

Q68.

Question	Working	Answer	Mark	Notes
(a)		5, 4, (3), 2, 1, (0)	2	M1 for 1 or 2 or 3 correct entries A1 cao
(b)		Line drawn	2	M1 plots 5 of their points correctly or a straight line with gradient -1 or a straight line through (0, 4) A1 correct line between $x = -1$ and $x = 4$

Q69.

Question	Working	Answer	Mark	Notes
(a)		Venn Diagram	B1 M1 M1 C1	for labels on diagram for just 15 in the intersection for just 5 and 25 in only set B or just 3, 9, 21 and 27 in only set A or just 1, 7, 11, 13, 17, 19, 23, 29 in $(A \cup B)$ for all numbers correctly placed in the Venn Diagram Ignore all entries except the region you are marking for each method mark
(b)		$\frac{7}{15}$	P1 A1	ft for $\frac{"7"}{a}$ where $a \geq "7"$ or $\frac{b}{"15"}$ where $b \leq "15"$ ft $\frac{7}{15}$ oe

Q70.

Question	Working	Answer	Mark	Notes
(a)		Correct diagram	3	B1 13 and 20 in correct positions M1 $43 - 20 (= 23)$ or $60 - 43 - 13 (= 4)$ A1 correct diagram
(b)		$\frac{4}{60}$	1	B1 $\frac{4}{60}$ oe or ft Venn diagram for $\frac{"4"}{60}$

Q71.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	explanation	C1	<p>explanation eg should be 1.03, this is 30% (not 3%)</p> <p>Acceptable examples Because 1.3 is 130% He is increasing it by 30% 1.3 means 1.30, not 1.03 He needs to put a 0 in front of the 3 1.3 is the wrong decimal He should multiply by 0.03 3% is 0.03, (not 1.3)</p> <p>His answer should be 154.5 He is meant to increase it by 4.5, not by 45</p> <p>Not acceptable examples Because he is increasing by 130%, not 3% He needs to find 1% and then times it by 3</p>	
(b)	$(150 \times)$ 0.97 = 145.5	B1	for 0.97 (or $\frac{97}{100}$ or 97%) and 145.5	

Q72.

Question	Working	Answer	Mark	Notes
	$36.4 \div \frac{48}{60} = 45.5$	Geraldine with correct figures	P1	for a process using speed, e.g. distance/time $36.4 \div 48$ or $65.2 \div 85$ or $36.4 \div (48 \div 60)$
	$65.2 \div \frac{85}{60} = 46.0(2352941\dots)$		P1	for process to find one correct speed, e.g. $36.4 \div (48 \div 60)$ or $65.2 \div (85 \div 60)$
			C1	for Geraldine with correct figures, e.g. 45.5 and 46.0(...)

Q73.

Question	Answer	Mark	Mark scheme	Additional guidance
	952	P1	for starting to work with parts, eg. $6 \times 60 \div 10 (= 36)$ or $10 \div 6 (= 1.66\dots)$ or $6 \div 10 (= 0.6)$ or $13 \times 60 \div 15 (= 52)$ or $15 \div 13 (= 1.15\dots)$ or $13 \div 15 (= 0.866\dots)$ OR for $60 \div 10 \times 12 (= 72)$ or $10 \times 60 \div 15$ $(= 40)$	
		P1	for a full process to find the number of parts made by machine A eg “36” $\times 12 (= 432)$ or $12 \times 60 \div “1.66\dots” (= 432)$ or $12 \times 60 \times “0.6” (= 432)$ OR “72” $\times 6 (= 432)$	
		P1	for a full process to find the number of parts made by machine B eg “52” $\times 10 (= 520)$ or $10 \times 60 \div “1.15\dots” (= 520)$ or $10 \times 60 \times “0.866\dots” (= 520)$ OR “40” $\times 13 (= 520)$	
		A1	for 952 or 432 and 520	

Q74.

Question	Answer	Mark	Mark scheme	Additional guidance
	10	P1	for a process to use distance = speed \times time for either of the parts of Jessica’s journey, eg. $6 \times \frac{15}{60} (= 1.5)$ or $9 \times \frac{40}{60} (= 6)$ or $6 \times 15 (= 90)$ or $9 \times 40 (= 360)$	
		P1	for a process to add the 2 distances for Jessica, eg $6 \times \frac{15}{60} + 9 \times \frac{40}{60} (= 7.5)$ or $6 \times 15 + 9 \times 40 (= 450)$	
		P1	for complete process to find Amy’s average speed, eg. “7.5” \div “0.75” oe or “450” \div 45	
		A1	cao	Must be consistent units at this stage.

Q75.

Question	Working	Answer	Mark	Notes
		overlay	2	B2 within overlay guidelines (B1 for construction arcs 8cm away from each end of given line but point of intersection not joined to this line.)

Q76.

Question	Working	Answer	Mark	Notes
		construction	B2 (B1)	correct construction showing all necessary arcs. (pair of intersecting arcs centred on <i>A</i> and <i>B</i>)

Q77.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	50	M1	$[2.5] \times 20 (=50)$	[2.5] a number in the range 2.3 to 2.7 or identified as the distance from Shelton to Trilby
		A1	for an answer in the range 46 to 54	
(b)	60	M1	$5 \times 1200 (=6000)$ or $1200 \div 100 (=12)$ or conversion $5 \div 100 (=0.05)$	
		A1	cao	

Q78.

Question	Answer	Mark	Mark scheme	Additional guidance
	530	B1	cao	

Q79.

Question	Working	Answer	Mark	Notes
(a)		14	B1 P1 A1	for use of $1000 \text{ g} = 1 \text{ kg}$ for process to find number of bags, e.g. $5000 \div 350 (= 14.2\dots)$ cao
(b)		Yes (supported)	B1	for Yes, with explanation, e.g. will fill 28 bags, ft from (a)

Q80.

Question	Working	Answer	Mark	Notes
		3.5	B1	for 3.5 oe

Q81.

Question	Working	Answer	Mark	Notes
		145	M1 A1	for $319 \div 2.2$ cao

Q82.

Question	Answer	Mark	Mark scheme	Additional guidance
	700	B1	cao	

Q83.

Question	Answer	Mark	Mark scheme	Additional guidance
	37 000	B1	cao	

Q84.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	30	B1	cao	
(b)	2238 to 2296	M1 A1	for a complete method eg attempts to read from the graph at a factor of 80 and scales up to 80 using a correct scale or attempts to read from the graph using numbers that sum to 80 and finds the sum of their readings or attempts to read from the graph a number that they then go on to scale up to 80 using a correct scaling factor for an answer in the range 2238 to 2296	Condone some inaccuracy in reading from the graph, which should be given to within the nearest 50g