Name: _____

FOUNDATION MATHS GCSE CALCULATOR SAMPLE

Envision Tuition

MATHEMATICS TUTORS

Date:

Time: 90 MINUTES

Total marks available: 80

Total marks achieved: _____

Questions

Q1.

Write 1.59 correct to 1 decimal place.

.....

(Total for question = 1 mark)

Q2.

There are only red sweets and yellow sweets in a bag.

$\frac{2}{5}$ of the sweets are red.

Write down the ratio of red sweets to yellow sweets.

.....

(Total for question = 1 mark)

Q3.

Here is a list of numbers.

7 10 25 42 13

From the numbers in the list, write down a multiple of 3

.....

(Total for question = 1 mark)

Q4.

Write $\frac{9}{10}$ as a decimal.

.....

(Total for question = 1 mark)

Q5.

Write down the value of the 2 in the number 12 345

.....

(Total for question = 1 mark)

Q6.

A map has a scale of 1 cm to 25 km.

The distance between the cities of Edinburgh and Bristol is 500 km.

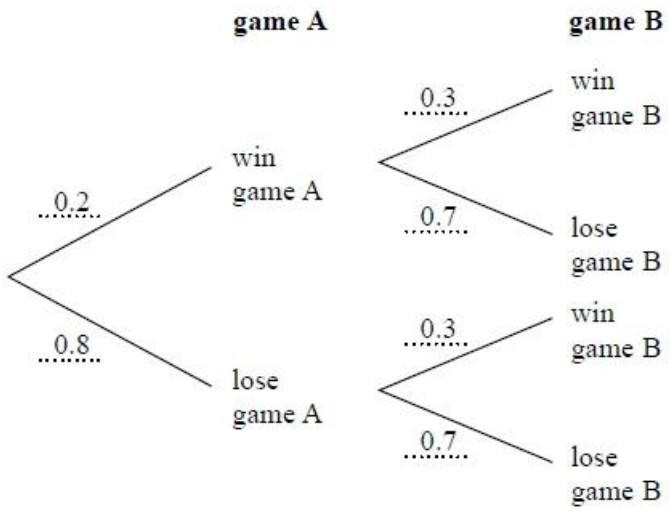
What is the distance on the map between these two cities?

..... cm

(Total for question = 2 marks)

Q7.

Here is a probability tree diagram.



Work out the probability of winning both games.

.....

(Total for question = 2 marks)

Q8.

XYZ is a right-angled triangle.

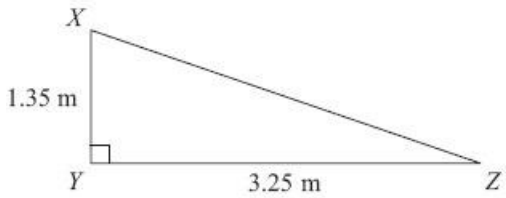


Diagram **NOT** accurately drawn

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

.....

(Total for Question is 3 marks)

Q9.

A ball fell 2 metres onto horizontal ground.
The ball hit the ground and bounced up and down 3 times.

The first time the ball bounced, it rose to 75% of the height it fell from.
The second time the ball bounced, it rose to 75% of the height it reached after the first bounce.
The third time the ball bounced, it rose to 75% of the height it reached after the second bounce.

Work out the height the ball reached after the third bounce.
Give your answer correct to 2 decimal places.

..... m

(Total for question = 3 marks)

Q10.

The probability that a new fridge has a fault is 0.015

What is the probability that a new fridge does **not** have a fault?

.....

(Total for question = 1 mark)

Q11.

What is the time 2 hours 40 minutes after 8.05 am?

..... am

(Total for question = 1 mark)

Q12.

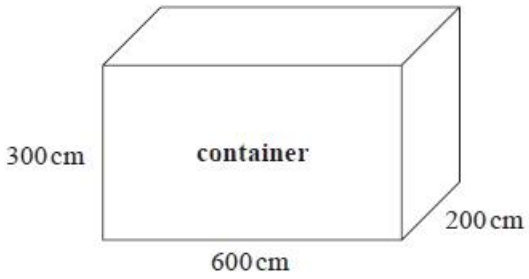
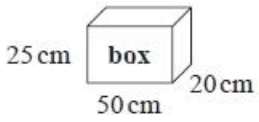


Diagram **NOT** accurately drawn



A company packs boxes into a container.

The container is a cuboid, 600cm by 300cm by 200cm.
Each box is a cuboid, 50cm by 25cm by 20cm.

Work out the largest number of boxes that can be packed into the container.

.....

(Total for question = 3 marks)

Q13.

There are only blue pens, green pens and red pens in a box.

The ratio of the number of blue pens to the number of green pens is 2 : 5
The ratio of the number of green pens to the number of red pens is 4 : 1

There are less than 100 pens in the box.

What is the greatest possible number of red pens in the box?

.....

(Total for question = 3 marks)

Q14.

(a) Solve $8f + 19 = 15$

$f =$ .....

(2)

(b) Solve $2c + 5 = c + 8$

$c =$ .....

(2)

(Total for question = 4 marks)

Q15.

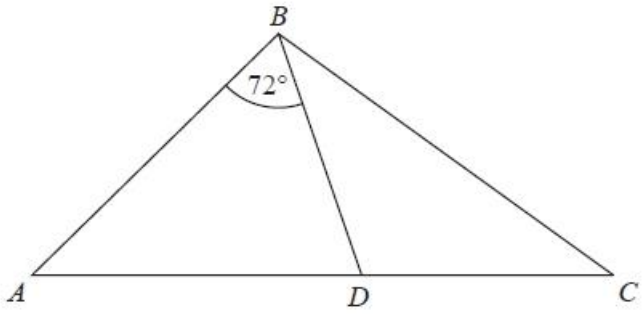
*Jane wants to buy some compost.
Both Suttons Shop and Greens Garden Shop sell compost.

Jane needs 140 litres of compost.
She wants to buy all the compost from the same shop.
She wants to buy the compost as cheaply as possible.

Which shop should Jane buy the compost from?
You must show all your working.

(Total for question = 4 marks)

Q16.



ABC is an isosceles triangle with *BA* = *BC*.

D lies on *AC*.
ABD is an isosceles triangle with *AB* = *AD*.

Angle *ABD* = 72º

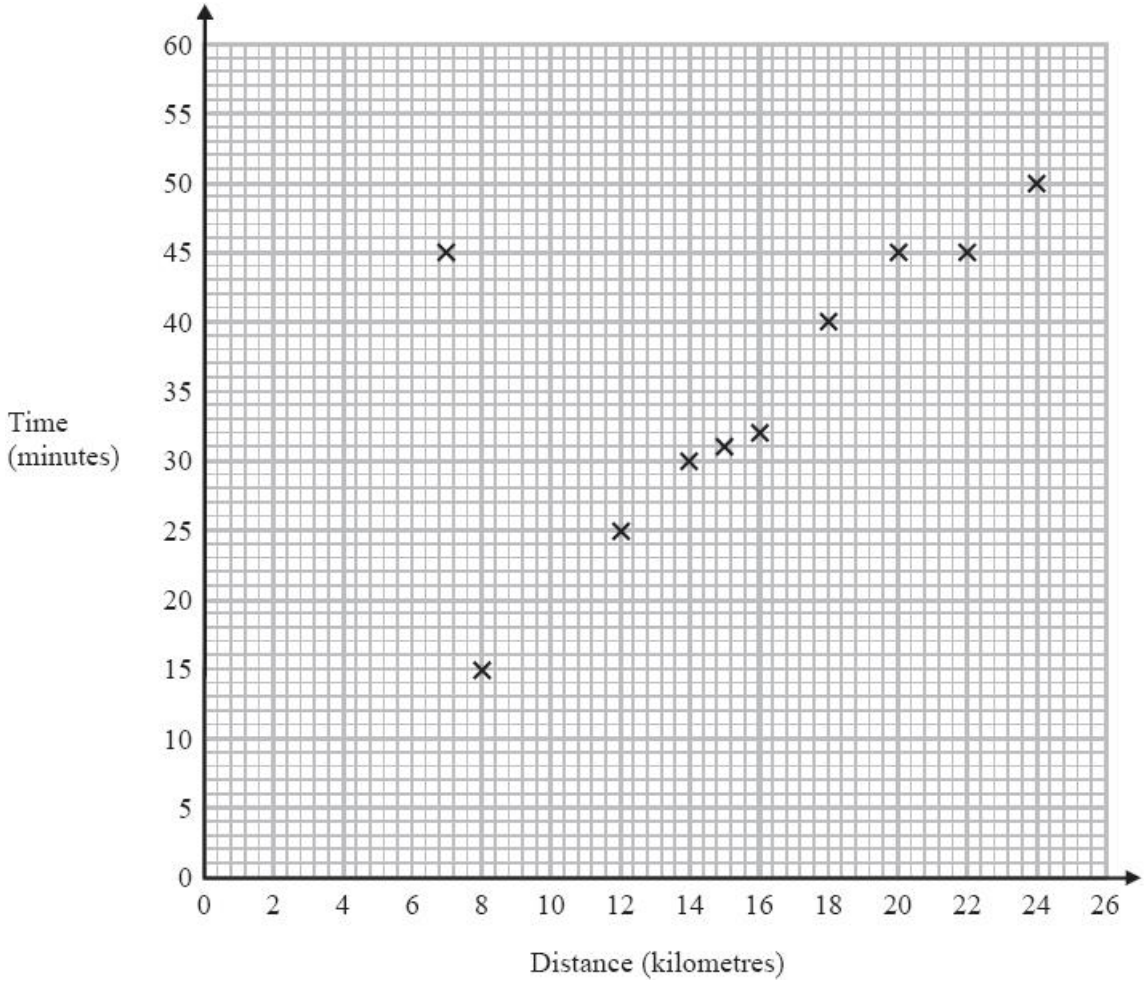
Show that the triangle *BCD* is isosceles.
You must give a reason for each stage of your working.

(Total for question = 5 marks)

Q17.

A delivery driver records for each delivery the distance he drives and the time taken.

The scatter graph shows this information.



For another delivery he drives 22 kilometres and takes 50 minutes.

(a) Show this information on the scatter graph.

(1)

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

.....

(1)

The driver has to drive a distance of 10km for his next delivery.

(c) Estimate the time taken for this delivery. ..... minutes

(2)

During one of the deliveries, the driver was delayed by road works.

(d) Using the graph write down the time taken for this delivery.

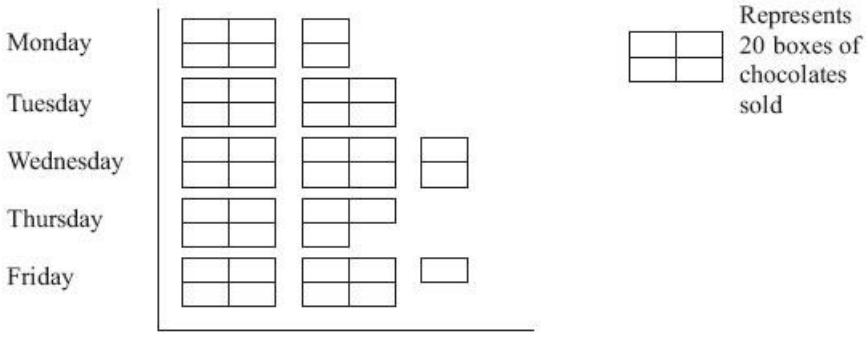
..... minutes

(1)

(Total for question = 5 marks)

Q18.

Here is a pictogram.
It shows the number of boxes of chocolates Mr Fenn sold last week from Monday to Friday.



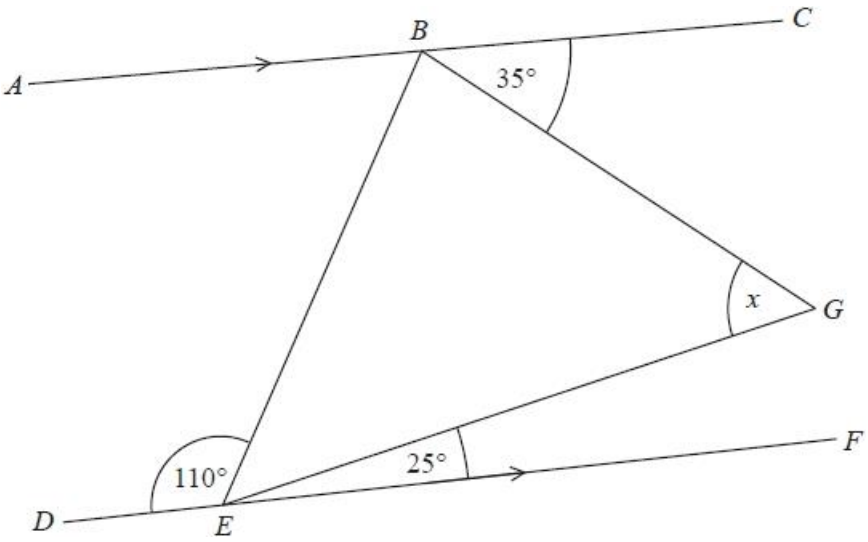
What fraction of the total number of these boxes of chocolates did Mr Fenn sell on Tuesday?

.....

(Total for Question is 3 marks)

Q19.

BEG is a triangle.



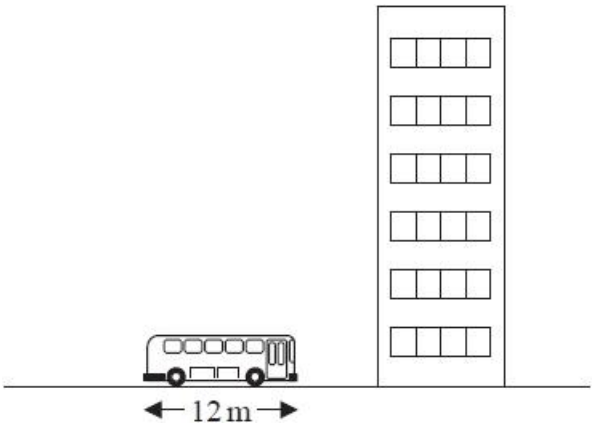
ABC and *DEF* are parallel lines.

Work out the size of angle *x*.
Give a reason for each stage of your working.

..... °

(Total for question = 4 marks)

Q20.



The picture shows a bus next to a building.
The bus has a length of 12 m.

The bus and the building are drawn to the same scale.

Work out an estimate for the height, in metres, of the building.

..... m

(Total for question = 2 marks)

Q21.

The table shows information about the heights of 80 teenagers.

Height (h cm)	Frequency
$150 < h \leqslant 160$	8
$160 < h \leqslant 170$	14
$170 < h \leqslant 180$	24
$180 < h \leqslant 190$	30
$190 < h \leqslant 200$	4

Work out an estimate for the mean height of the teenagers.

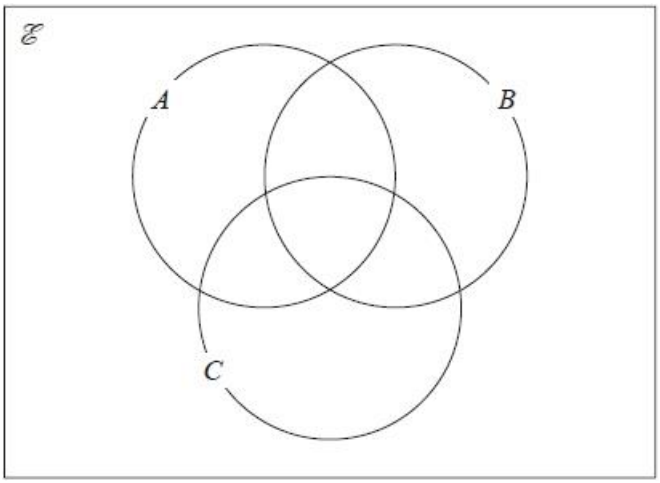
..... cm

(Total for question = 3 marks)

Q22.

$\mathscr{E}$ = even numbers between 1 and 25
A = 2, 8, 10, 14
B = 6, 8, 20
C = 8, 18, 20, 22

(a) Complete the Venn diagram for this information.



(4)

A number is chosen at random from $\mathscr{E}$.

(b) Find the probability that the number is a member of A ∩ B.

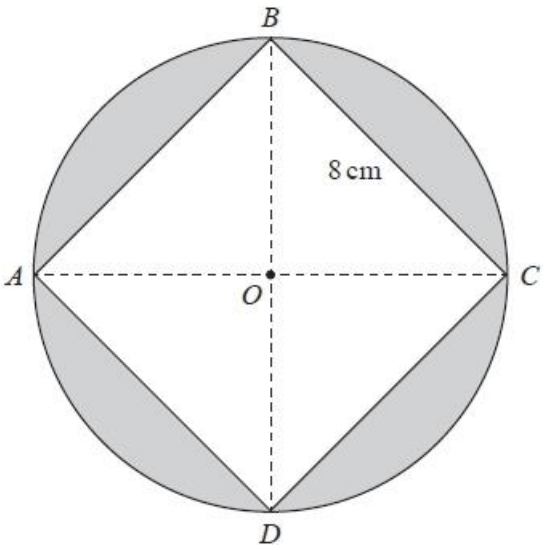
.....

(2)

(Total for question = 6 marks)

Q23.

The diagram shows a square *ABCD* of side 8 cm inside a circle, centre *O*.
The vertices of the square lie on the circle.



Work out the total area of the four shaded segments.

Give your answer correct to 3 significant figures.

..... cm^2

(Total for question = 5 marks)

Q24.

Andy went on holiday to Canada.
His flights cost a total of £1500

Andy stayed for 14 nights.
His hotel room cost $196 per night.

Andy used wifi for 12 days.
Wifi cost $5 per day.

The exchange rate was $1.90 to £1

(a) Work out the total cost of the flights, the hotel room and Wi-Fi.

Give your answer in pounds.

£ .....

(5)

(b) If there were fewer dollars to £1, what effect would this have on the total cost, in pounds, of Andy's holiday?

.....

(1)

(Total for question = 6 marks)

Q25.

(a) Solve $x - 5 = 17$

$x =$ .....

(1)

(b) Solve $\frac{m}{3} = 6$

$m =$ .....

(1)

(c) Solve $5y + 7 = 24$

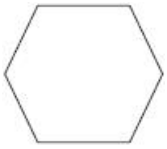
$y =$ .....

(2)

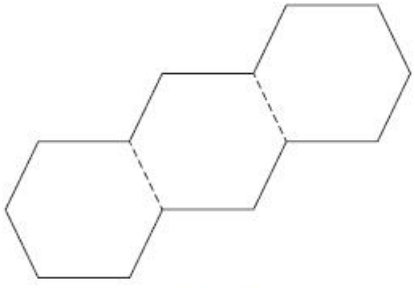
(Total for Question is 4 marks)

Q26.

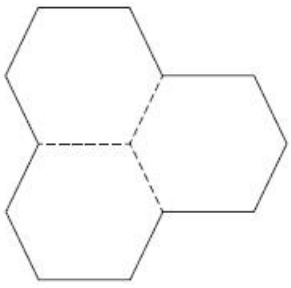
Here is a regular hexagon.



There are six identical hexagons.
Three of the hexagons are joined to make shape **A**.
The other three hexagons are joined to make shape **B**.



Shape A



Shape B

Which shape has the greater perimeter, shape **A** or shape **B**?
You must show how you get your answer.

(Total for question = 2 marks)

Q27.

There are 700 students in a college.
All of the students are 16 years old, 17 years old or 18 years old.

$\frac{1}{10}$ of the students are 16 years old.

$\frac{1}{5}$ of the students are 18 years old.

Work out how many of the students are 17 years old.

.....

(Total for Question is 4 marks)

Mark Scheme

Q1.

Question	Answer	Mark	Mark scheme	Additional guidance
	1.6	B1	cao	

Q2.

Question		Working	Answer	Mark	Notes
			2:3	1	B1 cao

Q3.

Question	Working	Answer	Mark	Notes
		42	B1	for 42

Q4.

Question	Answer	Mark	Mark scheme	Additional guidance
	0.9	B1	cao	Accept with trailing 0s eg 0.90

Q5.

Question	Answer	Mark	Mark scheme	Additional guidance
	2000	B1	cao	Accept two (2) thousand(s) or just thousand(s)

Q6.

Question	Working	Answer	Mark	Notes
		20	M1 A1	for 500 ÷ 25 cao

Q7.

Paper 1MA1: 2F			
Question	Working	Answer	Notes
		0.06	M1 for 0.2 and 0.3 A1 cao

Q8.

		Working	Answer	Mark	Notes
			3.52	3	M1 for $1.35^2 + 3.25^2$ M1 (dep) for $\sqrt{(1.35^2 + 3.25^2)}$ ($=\sqrt{12.385}$) A1 for answer in the range 3.51 to 3.52

Q9.

5MB3H/01 June 2015				
Question	Working	Answer	Mark	Notes
		0.84	3	M2 for 2×0.75^3 (M1 for 2×0.75 (=1.5) or 2×0.25 (=0.5) and 2 – "0.5") A1 for 0.84 – 0.844

Q10.

Question	Working	Answer	Mark	Notes
		0.985	B1	oe

Q11.

Question	Answer	Mark	Mark scheme	Additional guidance
	10 45	B1	for 10 45	Accept any time notation

Q12.

PAPER: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
		1440	3	M1 for correct method to find volume of a cuboid eg 300 × 600 × 200 (=36000000) or 25 × 50 × 20 (=25000) M1 (dep) for "volume of container" ÷ "volume of box" A1 cao Ignore units. OR M1 for correct method to find number of boxes along one edge eg 300 ÷ 25 (=12) or 600 ÷ 50 (=12) or 200 ÷ 20 (=10) M1 (dep) for intention to use 3 values to find total number of boxes A1 cao Ignore units. NB : must use consistent units for M marks.

Q13.

Question	**Working**	**Answer**	**Mark**	**Notes**
		15	P1	strategy to start the problem, eg 8 : 20 and 20 : 5
			P1	process to solve the problem, eg $\frac{5}{33}\times 100$ or 24 : 60 : 15
			A1	cao

Q14.

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
(a)		–0.5	2	M1 for intention to subtract 19 from both sides or divide all terms by 8 as a first step A1 for –0.5 oe
(b)		3	2	M1 for a correct operation to collect the c terms or the number terms on one side of the equation e.g. $2c - c + 5 = 8$, $2c + 5 - 5 = c + 8 - 5$ A1 cao

Q15.

PAPER: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*		Jane should buy Greens Garden Shop + costs	4	M1 for Suttons: 140 ÷ 20 (= 7) bags of compost needed M1 for 3 × 3.25 (= 9.75) + 1 × 2.25 (=12) M1 for Greens: cost of 2 bags eg × 4.99 (= 9.98) , 2 × 5 (=10) etc. C1 for correct conclusion from a comparison of correct appropriate figures

Q16.

Question	Working	Answer	Notes
	$\angle ADB = 72°$ (base angles of isosceles triangle ABD) $\angle BAD = 180° - 2 \times 72°$ (angle sum of a triangle is 180°) $\angle BCA = 36°$ (base angles of isosceles triangle ABC) $\angle BDC = 180° - 72°$ (angles on a straight line sum to 180°) $\angle DBC = 180° - 36° - 108°$ (angle sum of a triangle is 180°)	Result shown	M1 for $\angle ADB = 72°$ and $\angle BAD = 180° - 2 \times 72°$ M1 for $\angle BCA =$ "36°" M1 for $\angle BDC = 180° - 72°$ C1 for complete chain of reasoning to find angle $DBC = 36°$ and one correct reason C1 C1 dependent on all previous marks for correct deduction and full reasons.

Q17.

Question	Working	Answer	Mark	Notes
(a)		Point plotted	1	B1 cao
(b)		positive	1	B1 cao
(c)		18 - 22	2	M1 for a single line segment with positive gradient that could be used as a line of best fit or a vertical line from 10 or a point plotted at $(10, y)$ where y is in the range 18 - 22 A1 18 - 22
(d)		45	1	B1 cao

Q18.

		Working	Answer	Mark	Notes
			$^{40}/_{200}$	3	**(uses frequencies)** M1 for 40 or 200 or any correct day total M1 for $^{40}/_{T}$, $T > 40$ or $^{n}/_{200}$, $n < 200$ A1 for $^{40}/_{200}$ oe accept 20% OR **(uses boxes)** M1 for 2 or 10 M1 for $^{2}/_{T}$, $T > 2$ or $^{n}/_{10}$, $n < 10$ A1 for $^{2}/_{10}$ oe accept 20% OR **(uses rectangles)** M1 for 8 or 40 M1 for $^{8}/_{T}$, $T > 8$ or $^{n}/_{40}$, $n < 40$ A1 for $^{8}/_{40}$ oe accept 20% [SC B2 for 40 out of 200 oe]

Q19.

Question	Answer	Mark	Mark scheme	Additional guidance
	60	M1	use of parallel lines to find an angle eg *ABE*=70 **or** *EBG*=75 **or** *EBC* = 110 **or** shows parts of *x* as 35 or 25	Parts of *x* should be identified on the diagram by the insertion of a dividing line through angle *x* (need not be identified or drawn parallel).
		M1	for a complete method to find angle *x*; could be in working or on the diagram	Correct method can be implied from angles on the diagram if no ambiguity or contradiction.
		A1	for *x* = 60	
		C1	(dep on M1) for one reason linked to parallel lines and one other reason, supported by working taken from: alternate angles are equal, allied angles / co-interior angles add up to 180, angles on a straight line add up to 180, angles in a triangle add up to 180°	Underlined words need to be shown; reasons need to be linked to their method; any reasons not linked do not credit. There should be no incorrect reasons given.

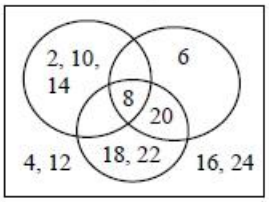
Q20.

Question	Working	Answer	Mark	Notes
		30	M1	for 12 m = 1.9 to 2 cm or for a scale factor of 2.25 to 2.75 (comparing length of bus with height of the building) or a **complete** method using the height of the bus to compare with the height of the building.
			A1	answer in range 27 to 33

Q21.

Question	Answer	Mark	Mark scheme	Additional guidance
	176	M1	for a method to find 5 products within intervals (including end points)	Min fx / Max fx: 1200 / 1280; 2240 / 2380; 4080 / 4320; 5400 / 5700; 760 / 800
		M1	for Σ"fx" ÷ (8 + 14 + 24 + 30 + 4) **or** (155×8 + 165×14 + 175×24 + 185×30 + 195×4) ÷ (8 + 14 + 24 + 30 + 4) **or** ("1240" + "2310" + "4200" + "5550" + "780") ÷ "80" **or** "14080" ÷ "80"	Σ"fx" **must** come from 5 products fx within intervals (including end points)
		A1	cao	

Q22.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	Venn diagram	C4	fully correct Venn diagram	
		(C3	7 of the 8 regions correct **or** for a diagram with only one number incorrectly placed)	
		(C2	5 or 6 of the 8 regions correct)	
		(C1	3 or 4 of the 8 regions correct)	
(b)	$\frac{1}{12}$	M1	ft for identification of 1 or 12 eg from the diagram	Need not be written as a fraction or probability at this stage. eg could be a ratio 1:12
		A1	ft oe	Acceptable equivalents are (eg, could ft) any fraction equivalent to $\frac{1}{12}$, 0.08(33..) or 8(.33..)%

Q23.

Question	Working	Answer	Mark	Notes
		36.5	P1	for process to form equation to determine the radius, Pythagoras or trigonometry, e.g. $r^2 + r^2 = 8^2$
			P1	for $r^2 = 32$ or $r = 8\cos 45°$ oe
			P1	(dep first P1) for process to find area of circle, e.g. $\pi \times 5.6^2$ dependant on first P1
			P1	for complete process to find shaded area, e.g. $32\pi - 8^2$
			A1	for 36.5 to 36.6

Q24.

Question	Working		Answer	Mark	Notes
(a)	$	£	2975.79	P1	for process to find total room cost eg 196 × 14 (= 2744)
	5	2.631...		P1	for process to find total wifi cost eg 5 × 12 (= 60)
	60	31.578...		P1	for using exchange rate appropriately (could be used earlier in the question),
	196	103.157...			eg "2804" ÷ 1.90 (= (£)1475.789...) or 1500 × 1.90 (= ($)2850)
	2744	1444.21...			
	2804	1475.789...		P1	for process to find the total cost in £, eg "1475.79(..)" + 1500
					or in $, eg "2850" + "2804" (= 5654)
				A1	2975 to 2976
(b)			Statement	C1	Statement about the total price rising May comment that flights will not change but the rest will rise

Q25.

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
	(a)		22	1	B1 cao
	(b)		18	1	B1 cao
	(c)		3.4	2	M1 for intention to subtract 7 from both sides or divide all terms by 5 as a first step. A1 for 3.4 oe

Q26.

Question		Working	Answer	Mark	Notes
			Shape A	2	P1 finds total perimeter, 14 or 12, or missing edges 4, or 6, for one shape. A1 shape A with 14 and 12 or 4 and 6

Q27.

		Working	Answer	Mark	Notes
			490	4	M1 for $\frac{1}{10}$ × 700 (= 70) M1 for $\frac{1}{5}$ × 700 (= 140) M1 (dep on M1) for 700 – ("70" + "140") A1 cao OR M1 for $\frac{1}{10}$ + $\frac{1}{5}$ or $\frac{3}{10}$ oe M1 for 1 – $\frac{3}{10}$ or $\frac{7}{10}$ or $\frac{3}{10}$ × 700 or 210 M1 (dep on M1) for "$\frac{7}{10}$"× 700 or 700 – "210" A1 cao