

Surname	
Other Names	

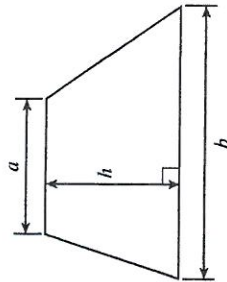
Centre Number	Candidate Number
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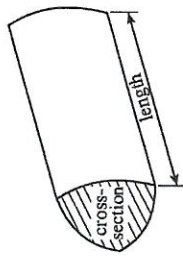
GCSE
4370/04
MATHEMATICS – LINEAR
PAPER 2
FOUNDATION TIER

A.M. MONDAY, 12 November 2012
1 ³/₄ hours

Formula List



$$\text{Area of trapezium} = \frac{1}{2}(a + b)h$$



$$\text{Volume of prism} = \text{area of cross-section} \times \text{length}$$

ADDITIONAL MATERIALS

A calculator will be required for this paper.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.
Write your name, centre number and candidate number in the spaces at the top of this page.
Answer all the questions in the spaces provided.
Take π as 3.14 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.
Unless stated, diagrams are not drawn to scale.
Scale drawing solutions will not be acceptable where you are asked to calculate.
The number of marks is given in brackets at the end of each question or part-question.
You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question 11(a).

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	6	6
2	4	10
3	7	17
4	9	26
5	4	30
6	4	34
7	4	38
8	11	49
9	4	53
10	8	61
11	9	70
12	3	73
13	4	77
14	10	87
15	6	93
16	7	100
TOTAL MARK		

4
3
2
1
0
4370/04

1. (a) A builder is renovating some flats. He buys a washing machine, 6 tables, 2 sets of chairs and 3 cabinets. Complete the following table to show his bill for these items.

Item	Cost (£)
1 washing machine @ £242.68	242.68
6 tables @ £24.36 each	146.16
2 sets of chairs @ £43.75 per set	87.50
3 cabinets @ £53.52 each	160.56
Total	636.90

- (b) The builder gets a 10% discount. How much does the builder have to pay?

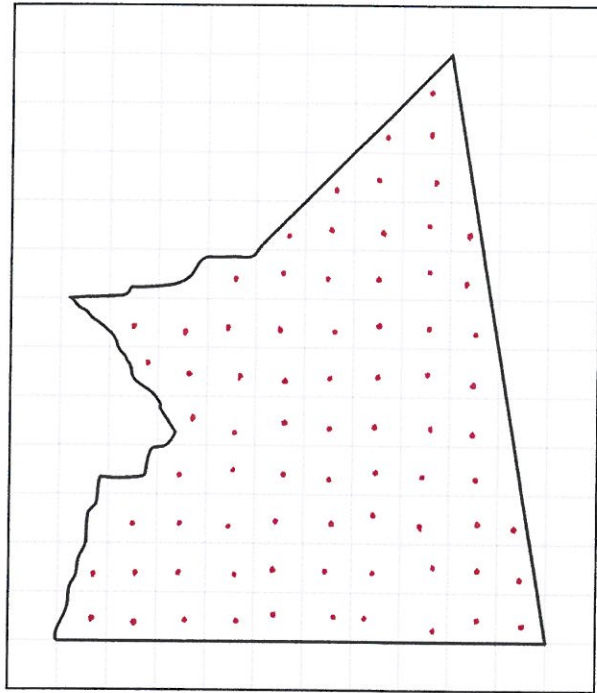
$0.10 \times 636.90 = 63.69$

$636.90 - 63.69 = 573.21$

2. Circle the quantity that is the appropriate estimate for each of the following.

Weight of a woman	50 g	500 kg	50 mg	50 kg
Volume of a glass of water	27 litres	270 ml	2.7 cm ³	270 litres
Height of a man	180 cm	18 m	180 mm	1800 cm
Distance from Calais to Paris	266 mm	266 cm	266 m	266 km

3. (a)

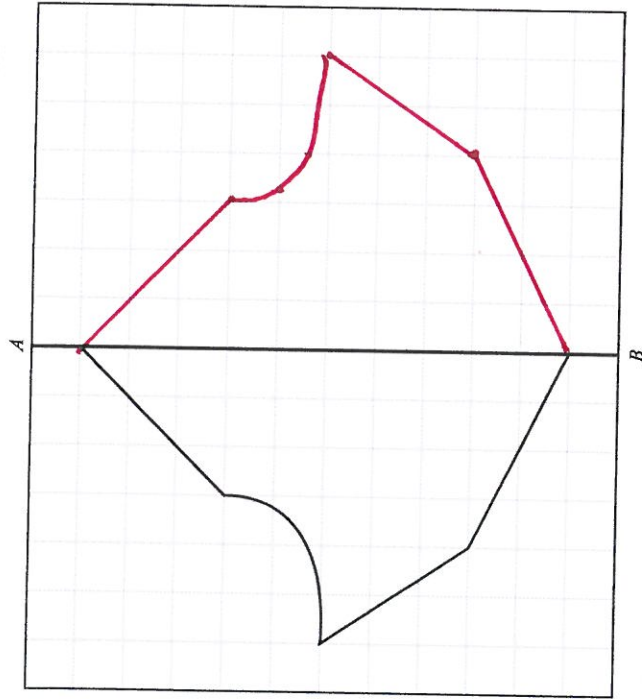


The above shape has been drawn on a centimetre squared grid. Estimate the area of the above shape.

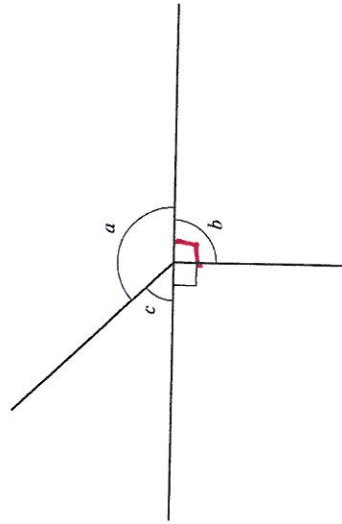
Count squares if more than half covered.

Area of the shape = 78 cm²

(b) Complete the following figure so that it is symmetrical about the line AB.



(c) Look at the angles a , b and c .
Write the letter of the angle alongside its special name.



acute angle **C** obtuse angle **a** right angle **b**

[2]

B1
B1

4. Forty pupils were asked to choose which of the seasons they preferred. The results are shown below, using the codes:

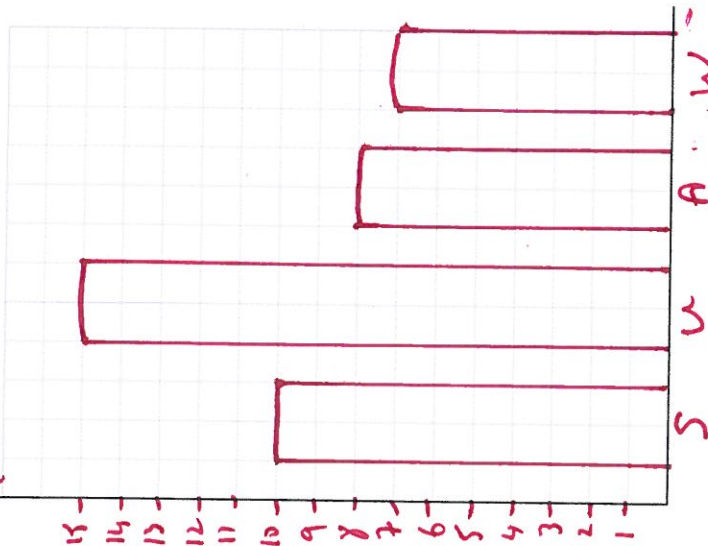
	Spring (S)	Summer (U)	Autumn (A)	Winter (W)
S	U	U	U	U
A	U	S	A	U
U	S	U	W	W
W	U	U	U	S

(a) Using the centimetre squared grid on the opposite page, draw a bar chart for the data given.

Season	Frequency
S	10
U	15
A	8
W	7
	40

B2

Frequency



(b) Write down the mode.

Summer

(c) Using these results, write down an estimate for the probability that a randomly chosen child prefers winter.

$$\frac{7}{40}$$

(G)

5. (a) Kevin has 10 coloured balls. Some are yellow (Y), some are green (G) and some are pink (P).

P P Y P P G P Y P P

B2 correct height

B2 labels & scale

He puts the 10 balls, shown above, into a bag, and then picks one ball at random from the bag.

On the probability scale shown below, mark the points A, B and C where

A is the probability that Kevin picks a pink ball.

B is the probability that Kevin does NOT pick a black ball.

C is the probability that Kevin picks a green ball.



4378-04

- (b) Circle the best expression from those given below to describe the chance of the event A occurring.

impossible unlikely an even chance likely certain

6. Each row of the following table needs to show equivalent fractions, decimals and percentages. The first row has been done for you. Complete the rest of the table.

Fraction	Decimal	Percentage
$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{60}{100}$ or $\frac{3}{5}$	0.6	60%
$\frac{75}{100}$ or $\frac{3}{4}$	0.75	75%

[4]

B1 B1 B1

B1

B1

B1 B1

B1

7. Gareth has tiles which are shaped like isosceles triangles. For each tile, the side of the tile that is not equal to either of the other 2 sides has glue on it. The glued side of each tile is the same length.

- (a) Gareth takes two identical isosceles triangular shaped tiles. Gareth sticks the two glued sides together so that the two tiles make a quadrilateral shape.

What is the special name of the quadrilateral that Gareth has made? Draw a sketch to show this.



Name of quadrilateral

Rhombus

[2]

- (b) Gareth now takes two different isosceles triangular shaped tiles. These tiles are not identical but their glued sides are of the same length. Gareth sticks the two glued sides together so that the two tiles make a quadrilateral shape.

What is the special name of the quadrilateral that Gareth has made? Draw a sketch to show this.



Name of quadrilateral

Kite

[2]

8. (a) Describe in words a rule for continuing each of the following sequences.

- (i) 82, -7, 75, -2, 68, -2, 61, -2, 54,

Rule:

previous term subtract 14 seven

[1]

- (ii) 2, $x-2$, -4, $x-2$, 8, -16, 32,

Rule:

multiply previous term by negative two

[1]

- (b) (i) A sweet weighs w grams. Write down, in terms of w , the weight of 10 sweets.

5

$w \times 10$ or $10w$

[1]

- (ii) A boy is 6 years older than his brother. One of the boys is x years old. Write down, in terms of x , the 2 possible ages of his brother.

if youngest is x the other $x+6$
if eldest is x the other $x-6$

[1]

- (c) Calculate $\frac{4}{9}$ of 45.

$\frac{4}{9} \times 45 = 20$

[2]

- (d) Given that $5W = 2P + 3R$, find the value of P when $W = 4$ and $R = -4$.

$5 \times 4 = 2P + 3 \times -4$

$20 = 2P - 12$

$20 + 12 = 2P$

$32 = 2P$

$P = \frac{32}{2} = 16$

[3]

(e) Solve $4x + 3 = 21$.

$$4x = 21 - 3$$

$$4x = 18$$

$$x = \frac{18}{4} = 4.5$$

9. Toby went on holiday to China.

(a) He changed £700 into Chinese yuan (CNY) when the exchange rate was £1 = 9.79 CNY. How many Chinese yuan (CNY) did he receive?

$$700 \times 9.79 = 6853 \text{ CNY}$$

(b) Whilst on holiday, he went on a tour which cost 2447.50 yuan. What was the cost of the tour in pounds?

$$2447.50 \div 9.79 = £250$$

Examiner only

B1
B1

M1
A1

M1
A1

Examiner only

10. Number sequences can be created by choosing a starting number and a step number. For example, if the starting number is 20 and the step number is 5, then the sequence would be

20	25	30	35	40
----	----	----	----	----

(a) Write down the next 3 numbers of a sequence when the starting number is 10 and the step number is 7.

10	17	24	31
----	----	----	----

[1]

A sequence can have negative steps.

(b) Write down the next 3 numbers of a sequence when the starting number is 35 and the step number is -4.

35	31	27	23	19
----	----	----	----	----

[1]

(c) A sequence has a starting number of 40 and a step number of 6.

By considering the difference between 100 and 40, explain how you can decide whether or not the sequence will show the number 100 at some stage.

$$100 - 40 = 60 \div 6 = 10$$

divisible by 6 so 100 will be in sequence.

[2]

(d) Two pupils, John and Megan, play a game together.

They each make up a sequence by independently choosing a starting number and a step number. Their choices are in the following table.

Pupil	Starting number	Step number
John	30	9
Megan	40	7

After how many steps will they show the same number at the same time and what is that number?

$$J: 30, 39, 48, 57, 66, 75$$

$$M: 40, 47, 54, 61, 68, 75$$

after 5 steps they are both on 75

[2]

- (e) They decide to find out, without writing down the sequences, if they can predict whether or not their sequences will show the same number at the same time, as they did in part (d). They choose the following starting numbers and step numbers.

Pupil	Starting number	Step number
John	9	12
Megan	53	8

Explain how they can predict whether or not their sequences will show the same number at the same time.

$\begin{array}{r} 9 \\ 21 \\ 33 \end{array}$ $\begin{array}{r} 53 \\ 61 \\ 69 \end{array}$ $\begin{array}{r} 12 \\ 24 \\ 36 \end{array}$

Difference between numbers in sequences is decreasing by 4 each time, so will get to zero where both numbers will be the same.

B1

B1

11. (a) You will be assessed on the quality of your written communication in this question. ABC is an equilateral triangle and $BCDE$ is a square.

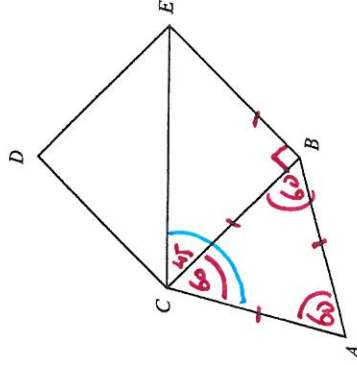


Diagram not drawn to scale

Find the size of $\angle ACE$.

You must explain each step of your calculation and show all your working.

Equilateral triangle has all equal length sides
Avg each angle is 60°

$\angle BCE = 45^\circ$ because diagonal line cuts right angle
in half

So $\angle ACE = 60 + 45 = 105^\circ$

$\angle ACE = \dots\dots\dots^\circ$

[5]

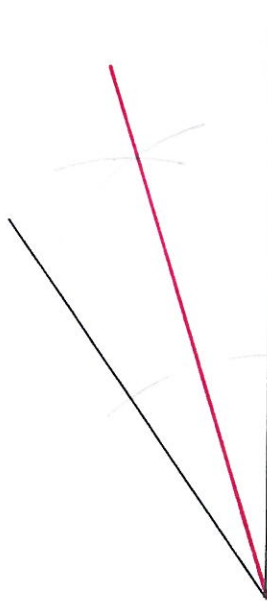
B1

B1

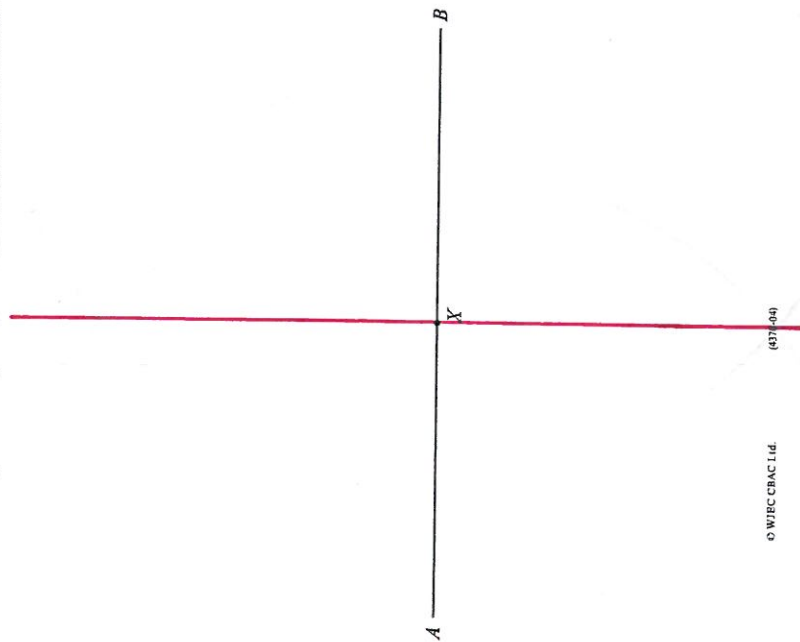
B1

C2

(b) Using a ruler and a pair of compasses, bisect the angle given below.



(c) Using a ruler and a pair of compasses, construct a perpendicular to the line AB at X .



[2]

B1

B1

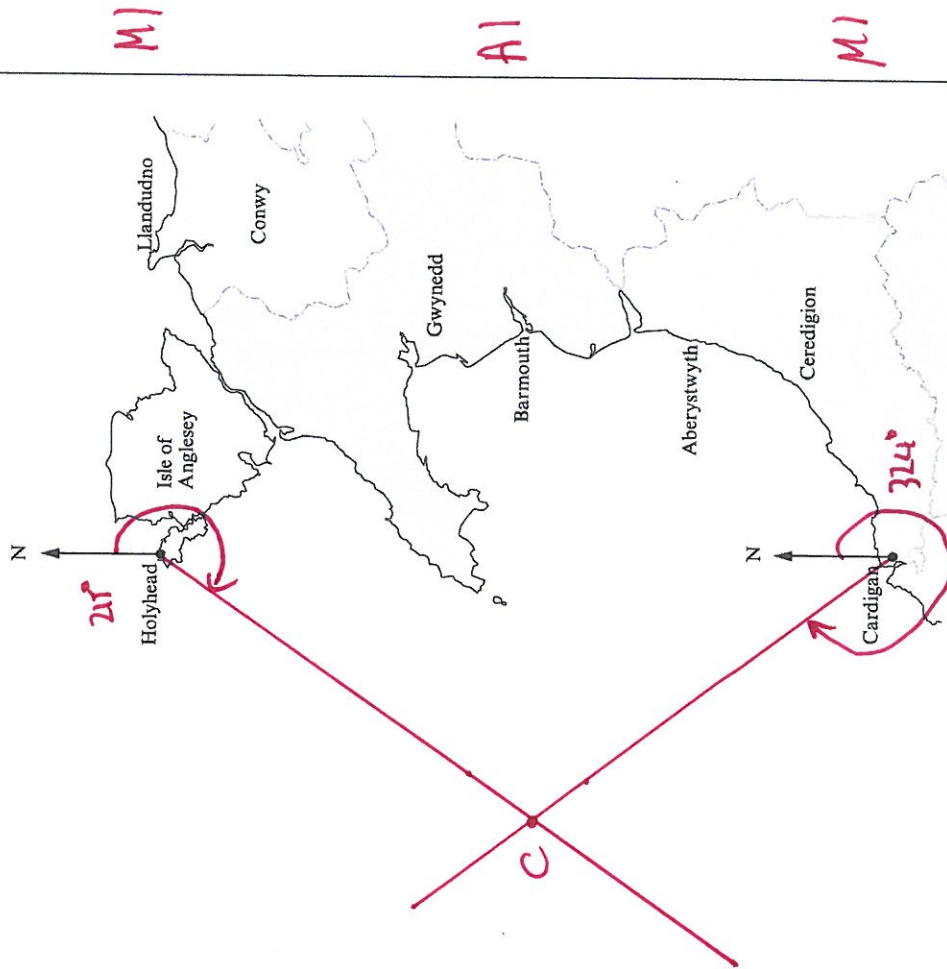
B1

B1

C

12. A ship is on a bearing of 215° from Holyhead and on a bearing of 324° from Cardigan. By drawing suitable lines, mark the position of the ship as C.

[3]



M1

A1

M1

13. A solution to the equation

$$x^3 - 7x - 2 = 0$$

lies between 2 and 3.

Find this solution correct to 1 decimal place.

When $x = 2.5$ $(2.5)^3 - 7(2.5) - 2 = -3.875$ too small

So x is between 2.5 and 3

When $x = 2.7$ $(2.7)^3 - 7(2.7) - 2 = -1.217$ too small

So x is between 2.7 and 3

When $x = 2.8$ $(2.8)^3 - 7(2.8) - 2 = 0.352$ too big

So x is between 2.7 and 2.8

To decide which

$x = 2.75$ $(2.75)^3 - 7(2.75) - 2 = -0.45$ too small

So x is between 2.75 and 2.8

$x = 2.8$ to 1 dp.

[4]

A1

too small M1

B1

B1

14. The table below gives information from the Highway Code on stopping distances for cars.

Speed in mph	Stopping distance in metres = Thinking distance + Braking distance (Thinking distance is given first, followed by Braking distance)
20 mph	6 m > 6 m
30 mph	9 m > 14 m
40 mph	12 m > 24 m
50 mph	15 m > 38 m

Diagram not drawn to scale

(a) A warning sign for a crossroads is to be placed on a road, which has a speed limit of 30 mph.

Use the data given above to find the minimum distance that the warning sign should be placed from the crossroads.

$$9 + 14 = 23 \text{ m}$$

B1

[1]

(b) An average car is approximately 4 metres in length. How many car lengths is the stopping distance for a car travelling at 40 mph?

$$\text{Stopping dist} = 12 + 24 = 36 \text{ m}$$

$$\text{No of cars} = 36 \div 4 = 9 \text{ cars}$$

A1

[2]

(c) Complete the table below.

Speed	
mph	km/h
30	$\times 1.6 = 48$
50	$\times 1.6 = 80$
70	$\times 1.6 = 112$

$$80 \div 50 = 1.6 \quad \leftarrow \text{multiplier}$$

[3]

(d) The stopping distances given in the Highway Code are given assuming good driving conditions and alert drivers.

When a driver is tired, the thinking distance increases by 30% and the braking distance increases by 20%.

Calculate the stopping distance, in metres, for a tired driver travelling at 50 mph in good driving conditions.

$$\text{New thinking dist: } 0.30 \times 15 = 4.5 + 15 = 19.5$$

$$\text{New braking dist: } 0.20 \times 38 = 7.6 + 38 = 45.6$$

$$\text{So total stop dist} = 19.5 + 45.6 = 65.1 \text{ m}$$

[4]

Examiner only

15. Mr Jones' electricity quarterly statement from Welsh Energy is shown below. Some of the entries have been removed.

He pays for his electricity by monthly direct debit payments.

He gets a discount of £27.50 for paying by direct debit.

Use the information given on the statement to complete all of the missing entries and to calculate the balance of Mr Jones' account.

Welsh Energy		Electricity Statement		
A Jones 54 Forest View Swansea		Period: 1 st July 2012 to 30 th September 2012		
Meter reading last time	Meter reading this time	Units used	Price of each unit in pence	Amount £
4267	4921	654	26.5	173.31
		Units used		30.45
		Quarterly charge		203.76
		Total charge		10.19
		VAT at 5% of the total charge		42.36 CR
		Balance from previous quarter		171.59
		Total to pay		
		Payments received		
		Direct Debit Discount		27.50 CR
		Payment received 18th July 2012		55.00 CR
		Payment received 18th August 2012		55.00 CR
		Payment received 18th September 2012		55.00 CR
		Balance to carry forward to next quarter		-20.91

Working

$$\text{Units used} = 4921 - 4267 = 654 \text{ units}$$

$$\text{Cost of units} = 654 \times 0.265 = £173.31$$

$$\text{VAT} = 0.05 \times 203.76 = £10.19$$

$$\text{Total to pay} = 203.76 + 10.19 - 42.36 = 171.59$$

[6]

16. (a)

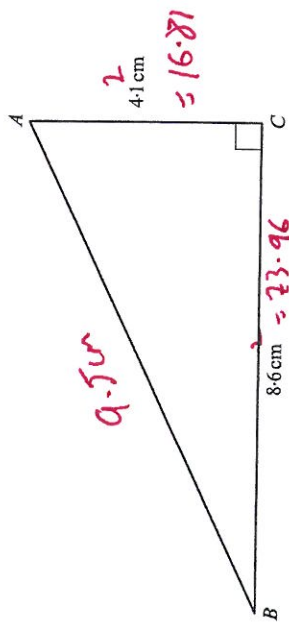
Examiner
only

Diagram not drawn to scale

(a) Calculate the area of the triangle ABC .

$$\text{Area} = \frac{1}{2} \times 8.6 \times 4.1 = 17.63 \text{ cm}^2$$

M1

A1

[2]

(b) Calculate the perimeter of the triangle ABC , giving your answer correct to 2 significant figures.

$$AB = 16.81 + 73.96$$

$$AB = 90.77$$

$$AB = \sqrt{90.77} = 9.5 \text{ cm}$$

M1

A1

A1

$$\text{Perimeter} = 9.5 + 8.6 + 4.1 = 22.2 \text{ cm}$$

M1

$$= 22 \text{ to 2 sig figs}$$

A1

[5]

PAPER 2 - FOUNDATION TIER

PAPER 2 (Calculator allowed) Foundation Tier	Marks	FINAL MARK SCHEME Comments
1. (a) (242.68) 146.16 (tables) 87.5(0) (chairs) 160.56 (cabinets) (£) 636.9(0) (b) Builder pays (£) 573.21	B1 B1 B1 B1 B2 6	F.T. their figures for 1 error F.T. their total rounded or truncated. <u>Must be in 2 dec. places for the B2</u> B1 for a correct 10% (£) 63.69. <u>2 dec. pl. NOT required for B1</u>
2. 50g 500kg 50mg 50kg 27 litres 270 ml 2.7 cm ³ 270litres 180cm 18m 180mm 1800cm 266mm 266cm 266m 266km	B1 B1 B1 B1 4	
3. (a) Evidence of square counting 72 – 78 <u>(inclusive)</u> 3. (b) Lines Arc 3. (c) c a b	M1 A1 B1 B1 B1 B1 B1 7	Correct curvature starting and ending at the candidate's 2 lines. <u>If angle values used then they must be appropriate on the diagram AND in the correct place on the answer line.</u>
4. (a) Spring (S) 10, Summer (U) 15, Autumn (A) 8, Winter (W) 7 Both axes labelled, e.g. frequency along one axis and Spring (S), Summer (U), Autumn (A), Winter (W) along other axis (or on the bars) Anywhere within the base (inc.) of the corres. bar. and uniform scale for the frequency axis starting at 0 and labelled 'frequency' OR 'number of pupils'. Four bars at correct heights (bars must be of equal width). Can be in any order. (b) Summer OR U (c) 7/40 I.S.W.	B2 B2 B2 B1 B2 9	May be inferred from their bar chart. B1 for any two/three correct frequencies If frequencies score 0, then give B1 for all 4 correct tallies. B1 if no scale, but allow one square to represent 1 OR B1 if not labelled as 'frequency' or similar. If frequency scale starts with 1 at the top of the first square the starting at 0 will be implied for this axis. <u>Condone frequency numbers alongside square instead of at the top of the squares.</u> F.T. their frequencies throughout. B1 for any 2 or 3 correct bars on F.T. If no frequencies given in their working, penalise –1 for each incorrect frequency on their bars up to –4 (First and third B2s) Accept 15 and (Summer OR U), but B0 for 15 only B1 for the 7 (in a fraction < 1) OR B1 for a denominator of 'their 40' (in a fraction < 1). <u>F.T. their frequencies.</u> Penalise –1 for incorrect notation, e.g. '7 out of 40', '7:40' Allow decimals and percentages including on F.T. For example, (0).175 or 17.5% for 7/40

PAPER 2 (Calculator allowed) Foundation Tier	Marks	FINAL MARK SCHEME Comments
5. (a)  (b) likely	B1 B1 B1 B1 4	A should be between $\frac{1}{2}$ and $\frac{3}{4}$ (<u>Accept P for A</u>). <u>A should be to the right of the halfway and up to alongside the gap between the a and l in ball (OR between ê and l in pêl in the Welsh version)</u> B should be at 1. C should be between 0 and $\frac{1}{4}$ (<u>Accept G for C</u>). <u>C should be to the right of the 0 and up to alongside the y in probability (OR the y in tebygolrwydd in the Welsh version)</u>
6. $\left(\frac{1}{4}\right)$ (0.25) (25%) any fraction equiv. to $\frac{6}{10}$ (0.6) <u>60(%)</u> any fraction equiv. to $\frac{3}{4}$ (0.75) (75%)	B1 B1, B1 B1 4	<u>ISW for the fractions $\frac{6}{10}$ and $\frac{3}{4}$</u> <u>Do not accept fractions like $\frac{7.5}{10}$</u>
<u>All triangles must be 'base' side to 'base' side</u> 7. (a) Rhombus <u>OR square</u> Sketch 7. (b) Kite Sketch	B1 B1 B1 B1 4	<u>Mark name first then sketch</u> B0 for what looks more like a parallelogram than rhombus <u>Mark name first then sketch</u>
8. (a) (i) Decrease previous term by 7 (ii) Multiply previous term by -2 8. (b) (i) $10w$ (ii) $x - 6$ and $x + 6$ 8. (c) $\frac{1}{9} \times 45 = 5$ and $4 \times 5 = 20$ 8. (d) $5 \times 4 = 2P + 3 \times -4$ $2P = 20 + 12$ OR 32 $P = 16$ 8. (e) $4x = 18$ $(x =) 4\frac{1}{2}$ OR 4.5	B1 B1 B1 B1 M1 A1 B1 B1 B1 11	Accept -7. <u>B0 for $n - 7$</u> Accept $\times -2$ <u>B0 for $n \times -2$</u> <u>Allow $10 \times w$, $w \times 10$ and $w10$. Ignore any g(rams)</u> <u>Ignore $w =$ and $=w$</u> For both Any correct method Correct substitution, not awarded until the 2 multiplications are seen to be implemented. <u>Sight of 20 and -12 gets B1 F.T.</u> $P = 32/2$ gets B0. Must be 16 F.T. $P =$ 'their $32/2$. <u>Allow embedded answers, such as $20 = 2 \times 16 - 12$.</u> <u>Must be 18 NOT 21-3</u> $(x =) 18/4$ gets B0. $(x =) 9/2$ gets B0
9. (a) yuan = 700×9.79 $= 6853$ (yuan) <u>ISW</u> 9. (b) Pounds = $2447.5/9.79$ $= (£) 250$ <u>ISW</u>	M1 A1 M1 A1 4	Yuan not required but A0 for £6853 £ not required but A0 for 250 yuan

PAPER 2 (Calculator allowed) Foundation Tier	Marks	FINAL MARK SCHEME Comments
10. (a) (10) 17 24 31 (b) (35 31) 27 23 19 (c) <u>(Yes)</u> because 100 is 60 away and 60 is divisible by 6 (d) After 5 steps 75 (e) Starting numbers are 44 apart. 44 is divisible by 4	B1 B1 E2 B1 B1 B1 B1 8	E2 for $6 \times 10 + 40$ OR equivalent, e.g. Yes, in 10 steps (E2) E1 for considering 60 with an indication of steps of 6 e.g. listing all numbers between 40 to 100. <u>75 can be answered in lists, but the 5 must be given as an answer.</u> Allow B1 for sight of 44 <u>OR 40 by comparing 21 and 61 after one step etc.</u> SC1 for only listing the correct sequences.
11. (a) $(\hat{ACB}) = 60^\circ$ $(\hat{BCE}) = 45^\circ$ $(\hat{ACE}) = 105^\circ$ 11. (a) (continued) QWC Look for - Spelling - Clarity of text explanations - Some geometrical statements, e.g. angles of an equilateral triangle are 60° QWC2: Candidates will be expected to - present work clearly, with words explaining their processes or steps AND - make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer QWC1: Candidates will be expected to - present work clearly, with words explaining their processes or steps OR - make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer	B1 B1 B1 QWC 2	Look for the angles shown in their diagram (Angles of an equilateral triangle are 60°) (Half the angle of a square is 45°) C.A.O. 105° with NO supporting work gets 0. QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar. QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar. OR Evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar. QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling
11. (b) First arcs Final arcs and line 11. (c) First arcs Final arcs and line	B1 B1 B1 B1 9	<u>If no pair of compasses used (i.e no arcs) then 0 for their work in (b) and (c)</u> <u>They can use the points A and B for this first B1</u> <u>Remember the 2 methods discussed in the conference.</u>
Use Overlay 12. Bearing from Holyhead Bearing from Cardigan Position of Ship	M1 M1 A1 3	Use Overlay Within $\pm 2^\circ$. <u>Watch out for unambiguous 'dots' within</u> Within $\pm 2^\circ$ <u>the boundaries of the overlay and award M1s</u> <u>F.T. provided at least M1</u> <u>One unambiguous 'dot' within the 'box' on the overlay gets all 3 marks.</u>

PAPER 2 (Calculator allowed) Foundation Tier		Marks	FINAL MARK SCHEME Comments																																																																			
13. One correct evaluation (1 dec.pl.) of x^3-7x-2 $2 \leq x \leq 3$ Watch for pupils who are trying to make x^3-7x equal to 2 rather than x^3-7x-2 equal to 0. Two correct evaluations (1 dec.pl.) x^3-7x-2 $2.65 \leq x \leq 2.85$ which give opposite signs for $f(x)$. Two correct (OR F.T.) evaluations (1 dec.pl.) $2.75 \leq x \leq 2.85$ which give opposite signs for $f(x)$. Thus solution is 2.8 correct to 1 decimal place. <u>Note that candidates must give a method that proves the solution is 2.8 correct to 1 decimal place.</u> <u>Just stating 0.3520 is closer than -1.217 is NOT enough</u>		B1 B1 M1 A1 4	Calculations should be accurate to 1 decimal place rounded or truncated If no calculations are given accept use of "too low" or "too high" OR >0 and <0 . <u>Useful Data</u> <table><tr><td>2</td><td>-8</td><td>2.7</td><td>-1.217</td><td>2.65</td><td>-1.9404</td></tr><tr><td>2.1</td><td>-7.4390</td><td>2.71</td><td>-1.067489</td><td>2.66</td><td>-1.7989</td></tr><tr><td>2.2</td><td>-6.7520</td><td>2.72</td><td>-0.916352</td><td>2.67</td><td>-1.6558</td></tr><tr><td>2.3</td><td>-5.9330</td><td>2.73</td><td>-0.763583</td><td>2.68</td><td>-1.5112</td></tr><tr><td>2.4</td><td>-4.9760</td><td>2.74</td><td>-0.609176</td><td>2.69</td><td>-1.3649</td></tr><tr><td>2.5</td><td>-3.8750</td><td>2.75</td><td>-0.453125</td><td>2.8</td><td>0.3520</td></tr><tr><td>2.6</td><td>-2.6240</td><td>2.76</td><td>-0.295424</td><td>2.81</td><td>0.5180</td></tr><tr><td>2.7</td><td>-1.2170</td><td>2.77</td><td>-0.136067</td><td>2.82</td><td>0.6858</td></tr><tr><td>2.8</td><td>0.3520</td><td>2.78</td><td>0.024952</td><td>2.83</td><td>0.8552</td></tr><tr><td>2.9</td><td>2.0890</td><td>2.79</td><td>0.187639</td><td>2.84</td><td>1.0263</td></tr><tr><td>3</td><td>4</td><td>2.8</td><td>0.352</td><td>2.85</td><td>1.1991</td></tr></table>		2	-8	2.7	-1.217	2.65	-1.9404	2.1	-7.4390	2.71	-1.067489	2.66	-1.7989	2.2	-6.7520	2.72	-0.916352	2.67	-1.6558	2.3	-5.9330	2.73	-0.763583	2.68	-1.5112	2.4	-4.9760	2.74	-0.609176	2.69	-1.3649	2.5	-3.8750	2.75	-0.453125	2.8	0.3520	2.6	-2.6240	2.76	-0.295424	2.81	0.5180	2.7	-1.2170	2.77	-0.136067	2.82	0.6858	2.8	0.3520	2.78	0.024952	2.83	0.8552	2.9	2.0890	2.79	0.187639	2.84	1.0263	3	4	2.8	0.352	2.85	1.1991
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14.(a) 23 (m) (b) $(12+24) \div 4$ 9 (car lengths) (c) <table><tr><th colspan="2">Speed</th></tr><tr><th>mph</th><th>km/h</th></tr><tr><td>30</td><td>48</td></tr><tr><td>70</td><td>112</td></tr></table> (d) $15 + 0.30 \times 15$ OR $38 + 0.20 \times 38$ or equivalents 19.5 and 45.6 65(.1 m)		Speed		mph	km/h	30	48	70	112	B1 M1 A1 M1 A2 M1 A2 A1 10	Evidence of a method, e.g. $\div 5$ and $\times 8$, or $\times 5$ and $\div 8$ as appropriate, or sight of a correct scale, e.g. $80 \times 30 / 50$ A1 for either answer correct. Also implies M1 A1 for either correct answer. Accept 20 and 46 FT from M1, A1 FT from rounding to 'their 20' + 'their 46' = 66(m) Unsupported 65 or 66 gain full credit <u>If no marks, award SC1 for an answer of 12.1 or 12 (giving the increase not the total).</u>																																																											
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15. 654 173.31 203.76 10.18(8) 171.58(8) 20.91(2) CR	a b c d e	B1 B1 B1 B1 B1 B1 6	F.T. F.T. F.T. F.T. F.T. F.T.	$a \times 0.265$ $b + 30.45$ $c \times 0.05$ B0 if 105% given here $c + d - 42.36$ $e - 192.50$ Allow $\pm 2p$																																																																		
<u>Answers in the bill take precedence over answers on the 'working lines' below it.</u>																																																																						
16. (a) Area = $\frac{1}{2} \times 8.6 \times 4.1$ 17.6(3 cm ²) (b) $(AB^2 =) 8.6^2 + 4.1^2$ OR $73.96 + 16.81$ $(AB^2 =) 90.77$ $(AB) = 9.5(273..) (cm)$ Perimeter = $12.7 + 9.5 = 22.2 (cm)$ = 22 (cm)		M1 A1 M1 A1 A1 M1 A1 7	Correct substitution in Pythagoras' Theorem <u>This work could be seen in (a) and should be credited appropriately.</u> <u>FT their 8.6+4.1+ 'their AB if from Pythagoras work'</u> Given to 2 sig. figs.																																																																			