1. Morgan operates a machine that packs bottles of water into boxes.

He has 200 bottles of water to pack into identical boxes.
Each box holds 12 bottles.
He completely fills as many boxes as possible.
How many boxes will he fill and how many bottles will be left over? [4]

....

....

....

....

....

....

2. (a) Using the numbers

2 **3** **10** **15**

once only in each case, fill in the boxes so that the equations are correct.

(i) ☐ + ☐ = ☐ − ☐

[1]

(ii) ☐ × ☐ = ☐ × ☐

[1]

(iii) ☐ ÷ ☐ = ☐ ÷ ☐

[1]

(b) Use **two** of the symbols

+ − × ÷

to make the following equation correct.

☐ 6 ☐ ☐ 3 ☐ = ☐ 21 ☐ ☐ 7 ☐

[1]

3.

Fill in the missing numbers. [4]

$$\boxed{\ } + \boxed{1\ \ 6} = \boxed{9\ \ 5}$$

$$\boxed{9\ \ 3} - \boxed{\ } = \boxed{6\ \ 5}$$

$$\boxed{5\ \ 9} \times \boxed{\ } = \boxed{7\ \ 0\ \ 8}$$

$$\boxed{\ \ } \div \boxed{1\ \ 3} = \boxed{4\ \ 9}$$

4.

The table below shows the scores in the final of the Langford Bay Golf Championship.
The player with the lowest score wins the championship.

Name	Score
A. Jenkins	–2
H. Smith	8
J. Evans	1
L. Hakami	–3
F. Loxley	–7
P.J. Ames	5
G. Francis	–1

(a) The table below lists some of the names and scores of the players in order from 1st place to 7th place.
Complete the table.

[3]

Position	Name	Score
1st		
2nd	L. Hakami	–3
3rd		
4th		
5th	J. Evans	1
6th	P.J. Ames	5
7th		

(b) What was the difference between the scores of the players in 2nd and 6th places?

....
....
[1]

(c) Which two players had a difference in their score of 5?

....
....
[1]

5.

(c) The table shows the number of visitors to the museum each year from 2010 to 2013.

Year	Number of visitors
2013	5 289 685
2012	4 891 692
2011	4 712 197
2010	4 388 944

(i) Find the difference between the number of visitors in the years 2010 and 2013. [1]

....

(ii) Sean said that the total number of visitors to the museum from 2010 to 2013 was 20 million, correct to the nearest million.
Is Sean correct?
Give a reason for your answer. [2]

....

....

....

....

(iii) When looking at the data, the customer-relations manager of the museum rounds the figures correct to 2 significant figures.
Write the number of visitors for the year 2013 correct to 2 significant figures. [1]

....

(iv) In a particular month, there were 400 612 visitors to the museum.
Write this number in words. [1]

....

....

5

6.

Karim painted a fence.

On Monday, he painted $\frac{7}{10}$ of the fence.

On Tuesday, he painted another $\frac{1}{5}$ of the fence.

On Wednesday, he finished painting the fence.

What fraction of the fence did Karim paint on Wednesday? [3]

....

....

....

....

....

....

....

....

7.

On the day of his 21st birthday, Peter decided to start saving money regularly.

(a) Starting on that day, he could save £20 on the same date every month.
     How much would he have saved by the day before his 60th birthday? [2]

....

....

....

....

....

(b) Peter considered another option.
     Starting on his 21st birthday, he could save £50 on the same date every year.
     If he saved in this way, how old would he be by the time he had saved £1000? [2]

....

....

....

....

....

....

8.

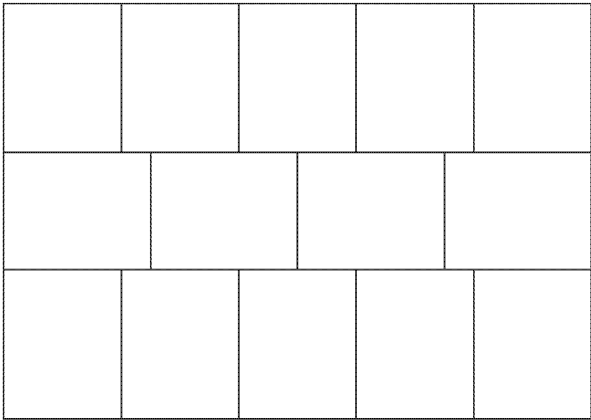The diagram below shows the pattern of tiles on a kitchen wall.

Diagram not drawn to scale

Each tile in the pattern is exactly the same.
Each tile has a width of 12 cm.

12 cm

Diagram not drawn to scale

Find the total area of these tiles on the kitchen wall.   [5]

....

....

....

....

....

....

....

....

....

....

....

....

9.

Sara took part in the RSPB's *Big Garden Birdwatch* where the numbers of different types of birds are counted in a garden for an hour.

Here are Sara's results:

Type of bird	Sparrow	Pigeon	Blackbird	Robin
Frequency	13	8	9	5

(a) Draw a bar chart to display this information. [4]

Frequency

Birds
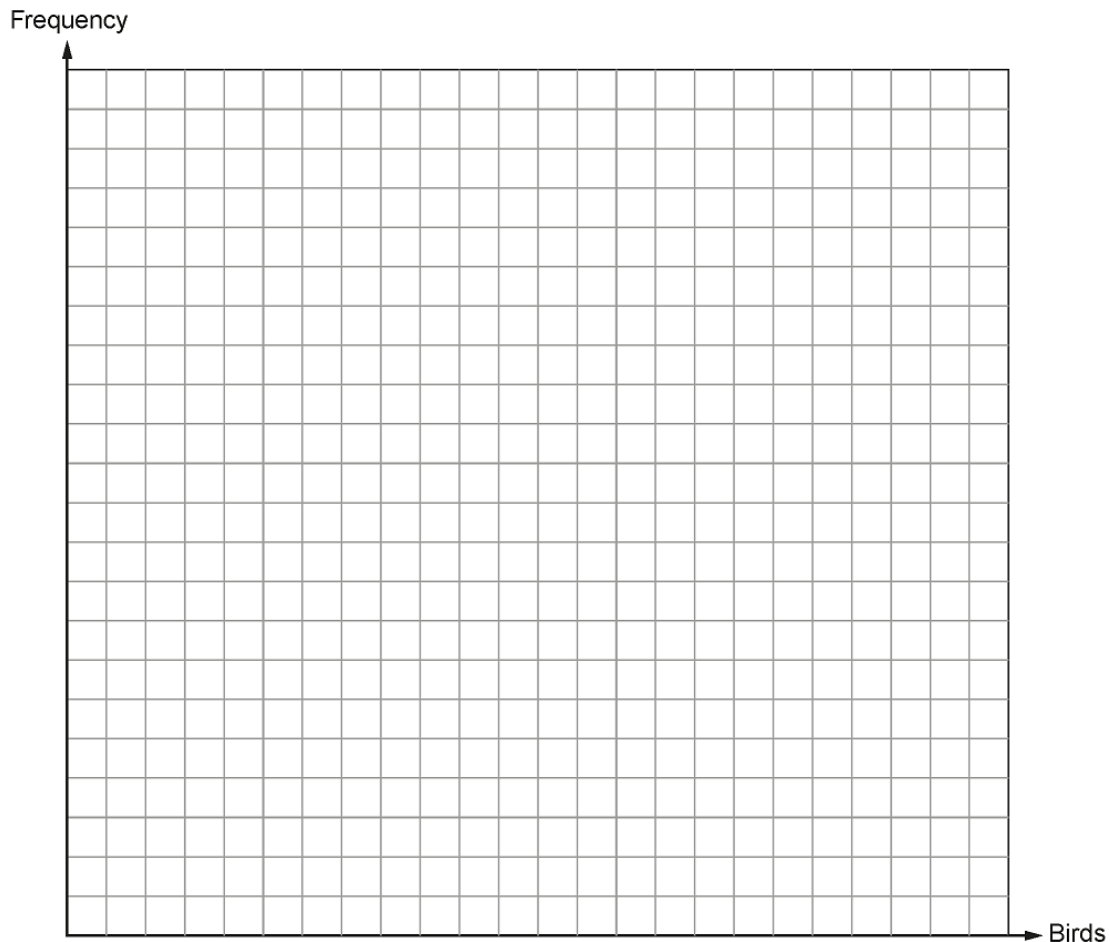
(b) Complete the following sentence with the types of bird. [1]

The total number of .... and .... counted in

Sara's garden is the same as the number of .... counted.

5

10.

Beth has only 20p and 10p coins in her purse.

She has three times as many 20p coins as 10p coins.

If Beth has £2.80 altogether, how many 20p coins does she have? [3]

....

....

....

....

....

....

....

....

11. Find the size of angle x. [2]

105°

x 43°

Diagram not drawn to scale

....

....

....

....
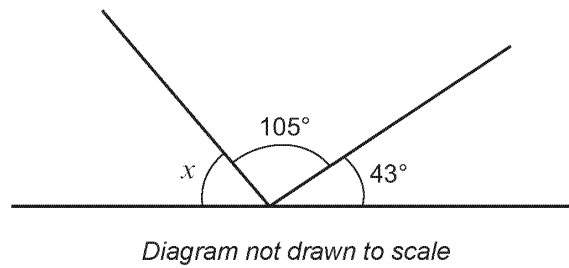
x = ... °

12.

Write down the answer to each calculation in the space provided.
Match the calculations that have the same answer.
One has been done for you.

[5]

$28 \div (4 + 3)$

= ....

$-3 - 2$

= ....

$25 - 6 \times 5$

= ....

$30 + 18 \div 3$

= 36

6^2

= 36

$0 \cdot 4 \times 5$

= ....

$21 - 4 \times 3$

= ....

2^2

= ....

$-7 + 9$

= ....

$\sqrt{81}$

= ....

13.

(a) Jo drew a pictogram to show information about the drinks sold from a vending machine on a Monday afternoon.

The key for the pictogram is incomplete.

KEY ⬯ = ?

Cool Cola ⬯ ⬯ ⬯ ⬯ ⬯

Orange Fizz ⬯ ⬯
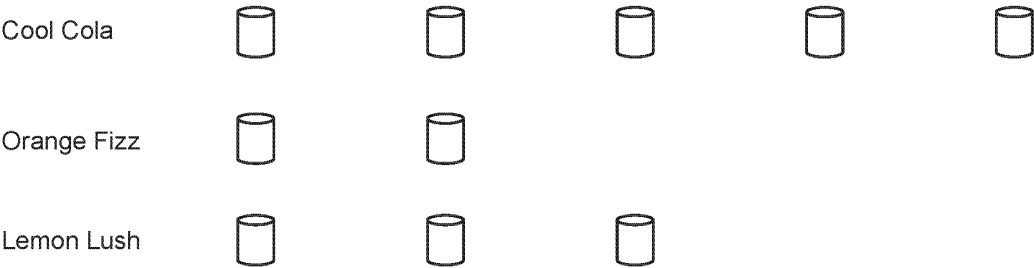
Lemon Lush ⬯ ⬯ ⬯

Jo knew that 80 drinks were sold in total that afternoon.

How many drinks of Lemon Lush were sold that afternoon? [2]

....

....

....

(b) On Tuesday, Jo recorded the sales of drinks that afternoon.

Drink	Number of drinks sold
Cool Cola	24
Orange Fizz	18
Lemon Lush	7

Explain why the key that Jo used for Monday's sales of drinks would not be suitable for him to **clearly represent** Tuesday's sales of drinks in a pictogram. [1]

....

....

....

(c) A **different symbol** is to be used to represent 4 drinks in a new key.

Use this new key to draw a pictogram to represent the drinks sold on Tuesday. [3]

New Key: ⊕ = 4 drinks

Cool Cola	
Orange Fizz	
Lemon Lush	

14.

(a) Simplify $3x + 5y + x - 7y$.

....

.... [2]

(b) Solve

(i) $\frac{y}{6} = 12$,

....

.... [1]

(ii) $7x - 8 = 20$.

....

.... [2]
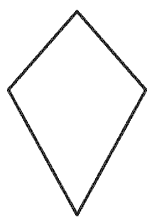
(c) Here is a number machine.

INPUT	→	ADD 4	→	MULTIPLY BY 5	→	OUTPUT
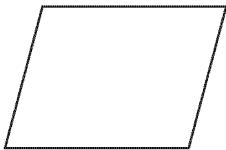
Write down the OUTPUT when the INPUT is n.

....

....

.... [2]

15. Daniel is asked to match the following quadrilaterals to statements that are given to him. The quadrilaterals are
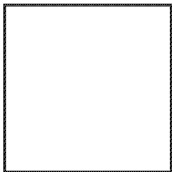
kite   parallelogram   trapezium   square

The statements that Daniel is given are in the table below.
Each quadrilateral can only be used once.

Match each statement to a quadrilateral.   [3]

Statement	Quadrilateral
This quadrilateral has all 4 sides equal in length	
This quadrilateral has opposite sides equal in length	
This quadrilateral only has one pair of parallel sides	
This quadrilateral does not have any parallel sides	

16.

Three neighbours hired a cement mixer.
The cost of hiring the mixer is given by the following formula.

total cost = £30 per day + insurance

(a) They hired the mixer for four days at a total cost of £144.
How much did they pay for the insurance? [2]

....

....

....

....

(b) One of the neighbours said that he would pay $\frac{2}{3}$ of the total cost, as he would be using the mixer the most. The other two neighbours shared the remaining cost equally.

How much did each of these two neighbours pay? [3]

....

....

....

....

....

....

....

17.

(a) Draw a circle around all of the following fractions that are equal to 40%. [2]

$$\frac{8}{20} \qquad \frac{1}{4} \qquad \frac{2}{5} \qquad \frac{10}{40} \qquad \frac{5}{20}$$

(b) Shade 30% of the following figure. [1]
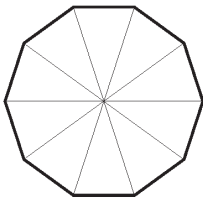
(c) Find, in its simplest form, $\frac{5}{6} - \frac{1}{3}$. [2]

....

....

....

....

....

....

Marking Scheme

1.

200÷12 (=16.666…)	✓	M1	Accept alternative methods eg. Repeated subtraction.
16(full boxes)	✓	A1	
200 − 16×12 (= 200 − 192)	✓	M1	FT 'their 16' provided less than 16.
8	✓	A1	

2.

6.(a)			Must use given numbers once only in each case.
(i) A correct equation formed.		B1	
(ii) A correct equation formed.		B1	
(iii) A correct equation formed.		B1	
6(b) − ÷		B1	

3.

1. 79	B1	
28	B1	
12	B1	
637	B1	
	4	

4.

6. (a)		B3	B2 for 2 or 3 correct

Position	Name	Score
1ˢᵗ	F. Loxley	-7
2ⁿᵈ		
3ʳᵈ	A. Jenkins	-2
4ᵗʰ	G. Francis	-1
5ᵗʰ		
6ᵗʰ		
7ᵗʰ	H. Smith	8

			B1 for 1 correct.
(b) 8		B1	Accept -8
(c) A. Jenkins & F. Loxley		B1	Accept -2 and -7 OR 1ˢᵗ and 3ʳᵈ.
		5	

5.

Applications Unit 2 Foundation Tier June 2015	Mark	Comment
2. (c) (i) 900 741	B1	
(ii) For rounding each of the figures and adding them eg (5.3 + 4.9 + 4.7 + 4.4) million	B1	For use of adding all values:
Sean not correct stated or implied and reason given eg No, as it is 19.3 million when rounded	E1	
(iii) 5 300 000	B1	Accept 5.3 million
(iv) four hundred thousand, six hundred and twelve	B1	
	5	

6.

8. 7/10 + 2/10 or equivalent		M1	Fractions must have a common denominator
9/10 or equivalent		A1	
1/10		B1	FT 'their derived 9/10'
			Alternative – using a length:
			Finding 7/10 and 1/5 of a length AND
			adding them M1
			Correct answer to addition A1
			Final answer of 1/10 B1

7.

2015 November UNIT 3 Foundation TierMark Scheme	Mark	FINAL MARK SCHEME Comments
6.a) (£)9360	B2	B1 for sight of 20×12×39. B1 for (£) 780 from 20×39 or (£) 9120 from 20×12×38 or (£) 9600 from 20×12×40.
b) 40 (years old)	B2 4	B1 for 41 (years old).

8.
9.

Applications Unit 2 Foundation Tier June 2015	Mark	Comment
1. (a) Labels of birds	B1	
Uniform scale starting from zero	B1	
All bars correct heights and same widths	B2	FT if no scale on vertical axis but an implied uniform scale has been applied. Award B1 for 2 or 3 correct bars OR B1 for correct heights with inconsistent widths OR B1 for correct heights but bars not complete or a correct vertical line graph drawn.
(b) Pigeon and Robin in any order AND Sparrow	B1 5	

10.

2015 June Unit 2 (non calculator) Foundation Tier	✓	Marks	Comments
5. Strategy e.g. 3×20(p) + 1 × 10(p) (= 70(p))		M1	Allow M1 for at least two attempts at 'trial and improvement' method using both 20p and 10p coins; i.e. finding two of 70(p), 140(p), 210(p), 280(p) or equivalent.
280(p) ÷ 70(p) (= 4)		M1	Sight of 240(p) + 40(p) or equivalent [i.e.4 lots of each of 60(p) and 10(p)].
(Number of 20p coins= 4× 3 =) 12		A1	Award 3 marks if answer of 12 given with no working. Accept sight of 12 × 20(p).

11.

(*x* =) 180 (°) − 105 (°) − 43 (°) or equivalent		M1	
32 (°)		A1	

12.

Methods in Mathematics June 2015 Unit 1 Foundation Tier	Mark	Comments
5.	B5	For 8 correct calculations with connecting lines B4 for 7 or 8 correct with at least one pair matched B3 for 5 or 6 correct B2 for 3 or 4 correct B1 for 2 correct
	5	

13.
14.

8. (a) $4x - 2y$	B2	B1 for either in an expression of the form $af(x) \pm bg(y)$ Allow B1 for $4-2y$ OR $4x-2$ etc $4x$ and $-2y$ separated gets B1 $4x+-2y$ gets B1
8. (b) (i) $(y=)$ 72	B1	Accept embedded answers such as $72/6 = 12$
8. (b) (ii) $7x = 28$ $x = 4$	B1 B1	Isolate the x term F.T. $ax = b$ $(a \neq 1)$ B0 for 28/7 Accept embedded answers such as $7 \times 4 - 8 = 20$
8. (c) $5(n+4)$ OR $(n+4)5$ OR $5n+20$	B2	B1 for $5 \times n+4$ OR $n+4 \times 5$. B0 for $5n + 4$

15.
16.

7(a) (Insurance =) (£)144 − (£)30 × 4 = (£)24	M1 A1	 Allow embedded answers.
(b) (⅔ × £144 =) (£)96 (Each paid) $\frac{(£)144 - (£)96}{2}$ = (£)24	B1 M1 A1	For sight of (£)96. F.T. 'their £96'. *Alternative Methods 7(b)* (⅓ × £144 =) (£)48 OR Sight of ¹/₆ B1 (£)48 ÷ 2 OR ¹/₆ × 144 M1 = (£)24 A1
	5	

17.

7. (a) ⑧/20 ¼ ②/5 10/40 5/20	B2	B1 for either one correct AND none incorrect OR for both correct and 1 incorrect
7. (b) 3 shaded sectors	B1	
7. (c) $\frac{5}{6} - \frac{2}{6}$ (= 3/6) = 1/2	M1 A1	Or equivalent correct method Must be ½. Unsupported 3/6 gets M1, A0 M1, A1 for (0).5