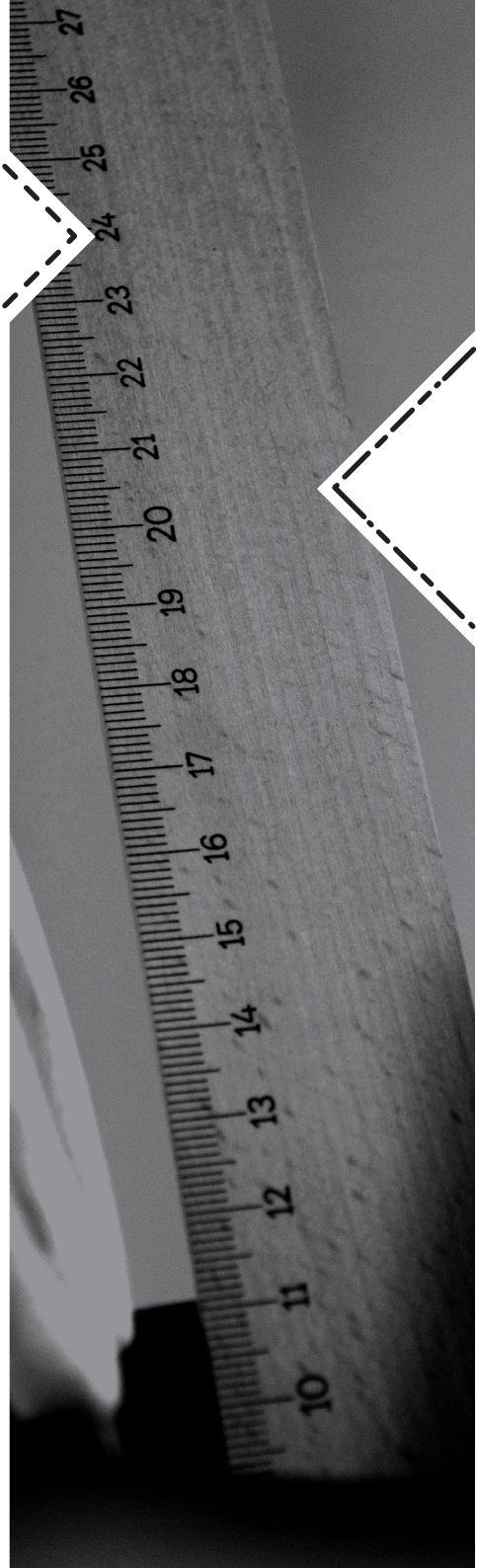

Answers

Non-Calculator

KS4 Mastery: Foundation Booklet

3

BEYOND MATHS

Non-Calculator

KS4 Mastery: Foundation Booklet 3 **Answers**

Question Number	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
1							
2							
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Week 1

1. Evaluate -4 × 7

   -28

2. Factorise $4x + 12$

   $4(x + 3)$

3. Work out 1.45 + 2.32

   3.77

4. 3 apples cost £1.20. How much would 6 apples cost?

   £1.20 × 2 = £2.40

5. The first five terms of a number sequence are 1, 1, 2, 3 and 5. What is the next term?

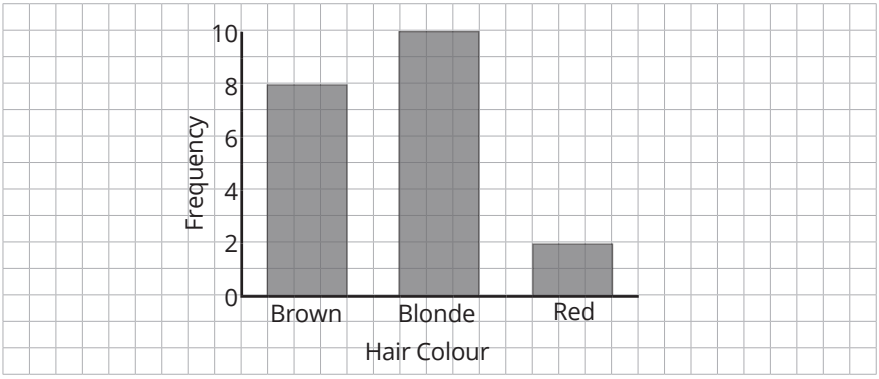
   5 + 3 = 8

6. Write 1294 in words.

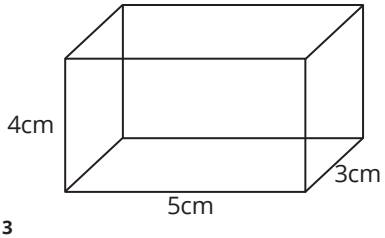
   One thousand, two hundred and ninety-four.

7. The table gives information about the hair colour of 20 students. Draw a bar chart to represent this data.

Hair Colour	Frequency
Brown	8
Blonde	10
Red	2



8. Find the volume of the cuboid.



$3 \times 4 \times 5 = 60\text{cm}^3$

9. Calculate 3×128

384

10. Write down the number of faces on a triangular prism.

5

11. Complete the table for the graph of $y = 2x$

x	0	1	2	3	4
y	0	**1**	**4**	6	**8**

12. Calculate 120 ÷ 10

    12

13. Change $\frac{15}{7}$ into a mixed number.

    15 ÷ 7 = 2 r 1

    $2\frac{1}{7}$

14. A minibus can hold up to 15 people. How many minibuses would be required to transport 200 people?

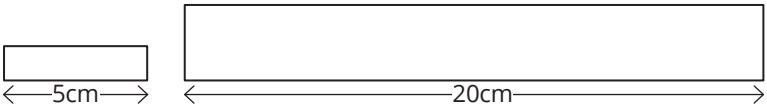
    200 ÷ 15 = 13 r 5

    14 minibuses

15. Solve $4x > 12$

    $x > 3$

16. The diagram shows two similar rectangles. Work out the linear scale factor of enlargement.



    20 ÷ 5 = 4

17. A straight line has a gradient of 4 and a y-intercept of 5.
Write down the equation of the line.

$y = 4x + 5$

18. Carla is paid mileage at a rate of 40p per mile. In 2017, she travelled 14 000 miles. Work out how much mileage she will be paid in total, giving your answer in pounds.

40 × 14 000 = 560 000

560 000p = £5600

19. A box contains red and blue counters. There are three times as many red counters as there are blue counters. Write down the ratio of red to blue counters, giving your answer in its simplest form.

3:1

20. Mustafa is going to make some squash. He uses squash concentrate and water in the ratio 1:4. He wants to make 260ml of squash. He has 70ml of squash concentrate and 205ml of water. Does he have enough ingredients to make 260ml of squash?

260 ÷ 5 = 52

52 × 1 = 52ml squash concentrate

52 × 4 = 208ml water

He has enough squash concentrate but not enough water.

Week 2

1. Evaluate -30 ÷ -6

   5

2. Factorise $6x - 24$

   $6(x - 4)$

3. Work out 3.72 + 1.934

   5.654

4. 3 apples cost £1.20. How much would 1 apple cost?

   £1.20 ÷ 3 = £0.40 or 40p

5. The first four terms of a number sequence are 1, 4, 9 and 16. What is the next term?

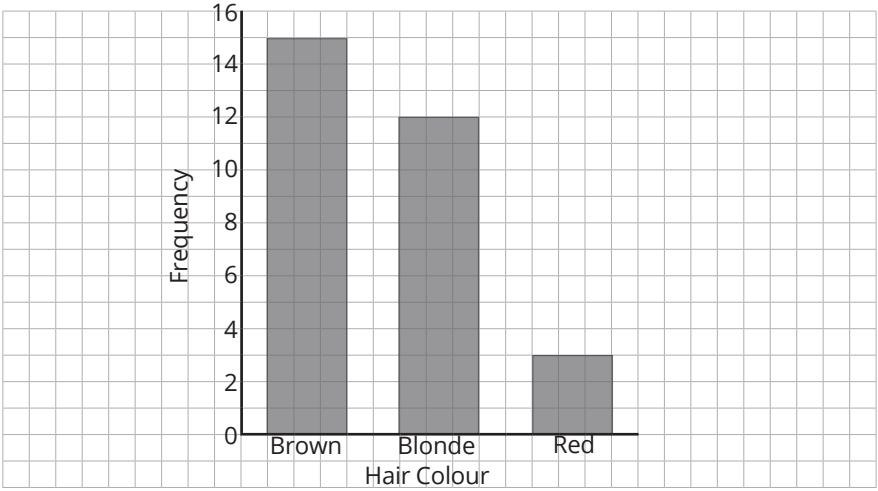
   $5^2 = 25$

6. Write 743 210 in words.

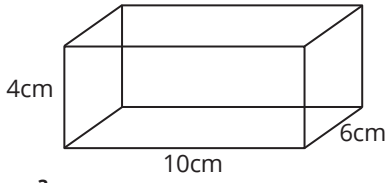
   Seven hundred and forty-three thousand, two hundred and ten.

7. The table gives information about the hair colour of 30 students. Draw a bar chart to represent this data.

Hair Colour	Frequency
Brown	15
Blonde	12
Red	3



8. Find the volume of the cuboid.



$4 \times 6 \times 10 = 240\text{cm}^3$

9. Calculate 24×98

2352

10. Write down the number of edges on a cuboid.

12

11. Complete the table for the graph of $y = x + 8$

x	0	1	2	3	4
y	8	**9**	**10**	**11**	12

12. Calculate 70 ÷ 100

    0.7

13. Change $\frac{23}{4}$ into a mixed number.

    23 ÷ 4 = 5 r 3

    $5\frac{3}{4}$

14. A minibus can hold up to 12 people. How many minibuses would be required to transport 80 people?

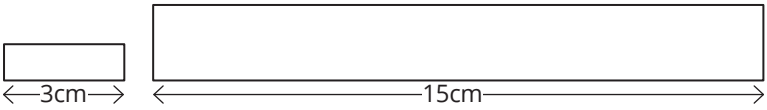
    80 ÷ 12 = 6 r 8

    7 minibuses

15. Solve $x - 5 < 14$

    $x < 19$

16. The diagram shows two similar rectangles. Work out the linear scale factor of enlargement.



    15 ÷ 3 = 5

17. A straight line has a gradient of 3 and a y-intercept of -2. Write down the equation of the line.

$y = 3x - 2$

18. Carla is paid mileage at a rate of 25p per mile. In September, she travelled 900 miles. Work out how much mileage she was paid in total, giving your answer in pounds.

25 × 900 = 22 500p

22 500p = £225

19. A box contains red and blue counters. The number of red counters is half the number of blue counters. Write down the ratio of red to blue counters, giving your answer in its simplest form.

1:2

20. Mustafa is going to make some squash. He uses squash concentrate and water in the ratio 1:5. He wants to make 210ml of squash. He has 40ml of squash and 180ml of water. Does he have enough ingredients to make 210ml of squash?

210 ÷ 6 = 35

35 × 1 = 35ml squash concentrate

35 × 5 = 175ml water

He has enough of each ingredient.

Week 3

1. Evaluate $(-9)^2$

   81

2. Factorise $10x + 25$

   $5(2x + 5)$

3. Work out 4.59 – 2.61

   1.98

4. Three apples cost £1.20. How much would four apples cost?

   £1.20 ÷ 3 = £0.40

   4 × 0.40 = £1.60

5. The first four terms of a geometric sequence are 1, 2, 4 and 8. What is the next term?

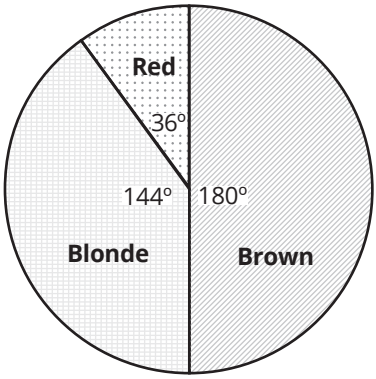
   8 × 2 = 16

6. Write 3 189 043 in words.

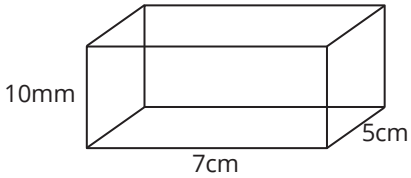
   Three million, one hundred and eighty-nine thousand and forty-three.

7. The table gives information about the hair colour of 30 students. Draw a pie chart to represent this data.

Hair Colour	Frequency
Brown	15
Blonde	12
Red	3



8. Find the volume of the cuboid, giving your answer in cm^3.



$5 \times 7 \times 1 = 35cm^3$

9. Calculate 52×308

16 016

10. Write down the number of vertices on a cuboid.

8

11. Complete the table for the graph of $y = 2x + 1$

x	0	1	2	3	4
y	**1**	3	**5**	**7**	**9**

12. Calculate 0.4 ÷ 10

0.04

13. Change $\frac{92}{8}$ into a mixed number, giving your answer in its simplest form.

92 ÷ 8 =11 r 4

$11\frac{4}{8} = 11\frac{1}{2}$

14. A minibus can hold up to 18 people. How many minibuses would be required to transport 125 people?

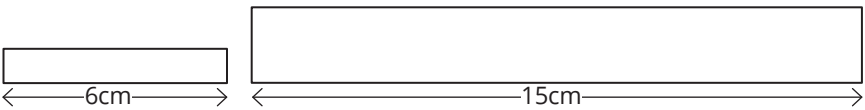
125 ÷ 18 = 6 r 17

7 minibuses

15. Solve $\frac{x}{3} < 9$

$x < 27$

16. The diagram shows two similar rectangles. Work out the linear scale factor of enlargement.



15 ÷ 6 = 2.5

17. A straight line has a gradient of 1 and a y-intercept of 0. Write down the equation of the line.

    $y = x$

18. Carla is paid mileage at a rate of 13p per mile. In one week, she travels 85 miles. Work out how much mileage she will be paid in total, giving your answer in pounds

    85 × 13 = 1105p

    1105p = £11.05

19. A box contains red and blue counters. The probability of choosing a red counter at random from the bag is $\frac{1}{6}$. Write down the ratio of red to blue counters, giving your answer in its simplest form.

    1:5

20. Mustafa is going to make some squash. He uses squash concentrate and water in the ratio 2:7. He wants to make 180ml of squash. He has 38ml of squash concentrate and 150ml of water. Does he have enough ingredients to make 180ml of squash?

    180 ÷ 9 = 20

    20 × 2 = 40ml squash concentrate

    20 × 7 = 140ml water

    He does not have enough squash concentrate.

Week 4

1. Evaluate -7 + (-4)

   -11

2. Factorise $24x - 16$

   $8(3x - 2)$

3. Work out 4.7 – 2.33

   2.37

4. 4 apples cost £1.80. How much would 7 apples cost?

   £1.80 ÷ 4 = £0.45

   7 × 0.45 = £3.15

5. The first four terms of a geometric sequence are 200, 100, 50 and 25. What is the next term?

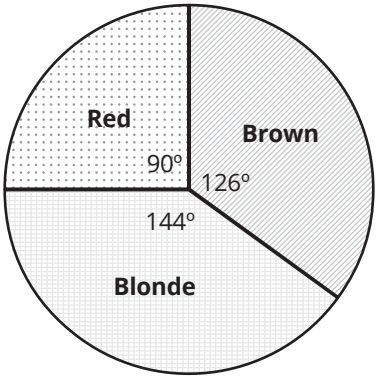
   25 ÷ 2 = 12.5

6. Write three thousand and seventeen in figures.

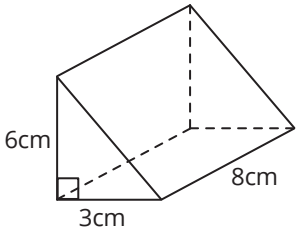
   3017

7. The table gives information about the hair colour of 20 students. Draw a pie chart to represent this data.

Hair Colour	Frequency
Brown	7
Blonde	8
Red	5



8. Find the volume of the triangular prism, giving your answer in cm^3.



$6 \times 3 \div 2 = 9$

$9 \times 8 = 72cm^3$

9. Calculate 17×3.2

54.4

10. Write down the number of vertices on a sphere.

0

11. Complete the table for the graph of $y = 3x - 5$

x	0	1	2	3	4
y	**-5**	**-2**	**1**	**4**	**7**

12. Calculate 1.9 ÷ 100

    0.019

13. Change $4\frac{2}{3}$ into an improper fraction, giving your answer in its simplest form.

    4 × 3 = 12

    12 + 2 = 14

    $\frac{\mathbf{14}}{\mathbf{3}}$

14. A pot of paint can cover up to $20m^2$ of wall. Alex needs to cover a wall measuring $150m^2$. How many pots should she buy?

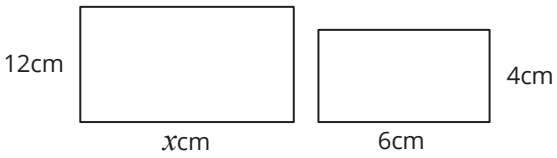
    150 ÷ 20 = 7 r 10

    8 pots

15. Solve $4x - 7 \geq 11$

    $\mathbf{x \geq 4.5}$

16. The diagram shows two similar rectangles. Work out the missing length marked x.



    12 ÷ 4 = 3

    3 × 6 = 18cm

17. A vertical line passes through the point (7, 0). Write down the equation of the line.

$x = 7$

18. Carla is paid mileage at a rate of 30p per mile. In one week, she earns £51 from her mileage. Workout how many miles she travelled that week.

5100 ÷ 30 = 170 miles

19. A box contains red and blue counters. The probability of choosing a red counter at random from the bag is $\frac{2}{5}$. Write down the ratio of red to blue counters, giving your answer in its simplest form.

2:3

20. Mustafa is going to make some punch. He uses squash concentrate, soda and juice in the ratio 1:4:3. He wants to make 2 litres of punch. He has 380ml of squash concentrate, 1.5 litres of soda and 700ml of juice. Does he have enough ingredients to make 2 litres of punch?

2000 ÷ 8 = 250

250 × 1 = 250ml squash concentrate

250 × 4 = 1000ml soda

250 × 3 = 750ml juice

He does not have enough juice.

Week 5

1. Evaluate 9 – (-3)

   12

2. Factorise $x^2 + 3x$

   $x(x + 3)$

3. Work out 8 – 1.93

   6.07

4. A shop sells three apples for the price of two. Three apples cost £1.50. How much would 4 apples cost?

   £1.50 ÷ 2 = £0.75

   1.50 + 0.75 = £2.25

5. The first three terms of a geometric sequence are 3, 9, 27. What is the next term?

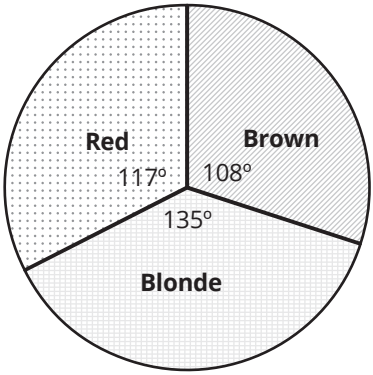
   27 × 3 = 81

6. Write eight hundred and fifty-three and two tenths in figures.

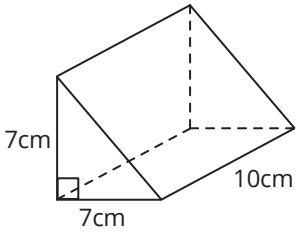
   853.2

7. The table gives information about the hair colour of 40 students. Draw a pie chart to represent this data.

Hair Colour	Frequency
Brown	12
Blonde	15
Red	13



8. Find the volume of the triangular prism, giving your answer in cm^3.



$7 \times 7 \div 2 = 24.5$

$24.5 \times 10 = 245cm^3$

9. Calculate 3.7×2.5

9.25

10. Write down the number of faces on a trapezoidal prism.

6

11. Complete the table for the graph of $x + y = 5$

x	0	1	2	3	4
y	**5**	**4**	**3**	**2**	**1**

12. Calculate 0.47 ÷ 1000

    0.00047

13. Change $7\frac{3}{5}$ into an improper fraction, giving your answer in its simplest form.

    7 × 5 = 35

    35 + 3 = 38

    $\frac{\mathbf{38}}{\mathbf{5}}$

14. A pot of paint can cover up to 15m^2 of wall. Alex needs to cover a wall measuring 160m^2. How many pots should she buy?

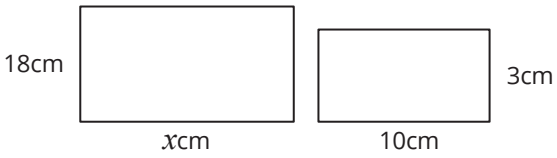
    160 ÷ 15 = 10 r 10

    11 pots

15. Solve $2x \leq x + 3$

    $\boldsymbol{x \leq 3}$

16. The diagram shows two similar rectangles. Work out the missing length marked x.



    18 ÷ 3 = 6

    6 × 10 = 60cm

17. A horizontal line passes through the point (2, 5). Write down the equation of the line.

$y = 5$

18. Carla is paid mileage at a rate of 18p per mile. In one week, she earns £36 from her mileage. Work out how many miles she travelled that week.

3600 ÷ 18 = 200 miles

19. A box contains red and blue counters. The probability of choosing a red counter at random from the bag is $\frac{9}{10}$. Write down the ratio of red to blue counters, giving your answer in its simplest form.

9:1

20. Mustafa is going to make some punch. He uses squash concentrate, soda and juice in the ratio 1:4:2. He wants to make 3.5 litres of punch. He has 600ml of squash concentrate, 2.5 litres of soda and 1.2 litres of juice. Does he have enough ingredients to make 3.5 litres of punch?

3500 ÷ 7 = 500

500 × 1 = 500ml squash concentrate

500 × 4 = 2000ml soda

500 × 2 = 1000ml juice

He has enough of all ingredients.

Week 6

1. Evaluate -11 − (-15)

   4

2. Factorise $5x^2 + 10x$

   $5x(x + 2)$

3. Work out 3.2 + 7.45 – 0.093

   10.557

4. A shop sells three apples for the price of two. Three apples cost £2.10. How much would 4 apples cost?

   £2.10 ÷ 2 = £1.05

   2.10 + 1.05 = £3.15

5. The first five terms of a number sequence are 4, 5, 9, 14, 23. What is the next term?

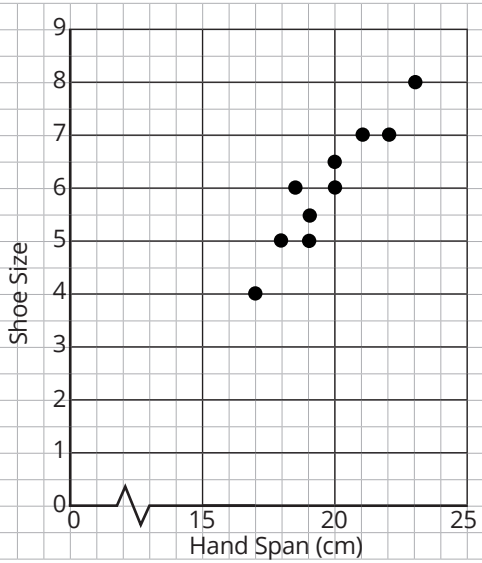
   23 + 14 = 37

6. Write ninety-seven and four hundredths in figures.

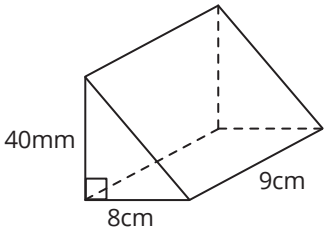
   97.04

7. The table gives information about the hand spans and shoe sizes of 10 people. Draw a scatter graph representing this data.

Hand Span (cm)	Shoe Size
19	5
21	7
18	5
17	4
18.5	6
20	6.5
23	8
22	7
19	5.5
20	6



8. Find the volume of the triangular prism, giving your answer in cm^3.



$8 \times 4 \div 2 = 16$

$16 \times 9 = 144cm^3$

9. Calculate 7.8×0.19

1.482

10. Write down the number of edges on a cylinder.

2

11. Complete the table for the graph of $x - y = 1$

x	0	1	2	3	4
y	**-1**	**0**	**1**	**2**	**3**

12. Calculate $0.05 \div 10^2$

0.0005

13. Change $6\frac{1}{9}$ into an improper fraction, giving your answer in its simplest form.

6 × 9 = 54

54 + 1 = 55

$\frac{55}{9}$

14. A pot of paint can cover up to $15m^2$ of wall. Alex needs to cover a rectangular wall measuring 8m by 3.5m. How many pots should she buy?

8 × 3.5 = 28

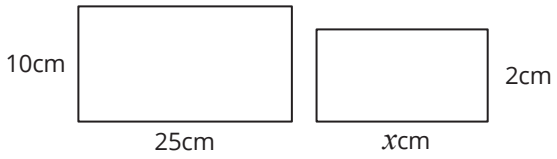
28 ÷ 15 = 1 r 13

2 pots

15. Solve $2x + 7 > 5 - x$

$x > -\frac{2}{3}$

16. The diagram shows two similar rectangles. Work out the missing length marked x.



10 ÷ 2 = 5

25 ÷ 5 = 5cm

17. A straight line passes through the point (0, 1) and has a gradient of 4. Write down the equation of the line.

$y = 4x + 1$

18. Carla is paid mileage at a rate of 60p per mile. In January, she earns £54 from her mileage and in February she earns £75. Workout how many more miles she travelled in February than January.

5400 ÷ 60 = 90

7500 ÷ 60 = 125

125 – 90 = 35 miles

19. A box contains red, blue and green counters. The probability of choosing a blue counter at random from the bag is $\frac{1}{15}$ and the probability of choosing a green counter is $\frac{3}{5}$. Write down the ratio of red to blue to green counters, giving your answer in its simplest form.

5:1:9

20. Mustafa is going to make some punch. He uses squash concentrate, soda and juice in the ratio 3:10:4. He wants to make 3.4 litres of punch. He has half a litre of squash concentrate, 1.7 litres of soda and three quarters of a litre of juice. How much more of each ingredient does he need buy so that he can make 3.4 litres of punch?

3400 ÷ 17 = 200

200 × 3 = 600ml squash concentrate

200 × 10 = 2000ml soda

200 × 4 = 800ml juice

He should buy 100ml of squash concentrate, 300ml of soda and 50ml of juice.

Week 7

1. Evaluate $(-8)^2 - (-4)$

   68

2. Factorise $18x^2 - 27x$

   $9x(2x - 3)$

3. Work out 19 + 3.2 – 1.045

   21.155

4. A shop sells five apples for the price of three. Five apples cost £2.40. How much would 8 apples cost?

   £2.40 ÷ 3 = £0.80

   2.40 + 0.80 × 3 = £4.80

5. The first four terms of a number sequence are 8, 8, 16, 24. What is the next term?

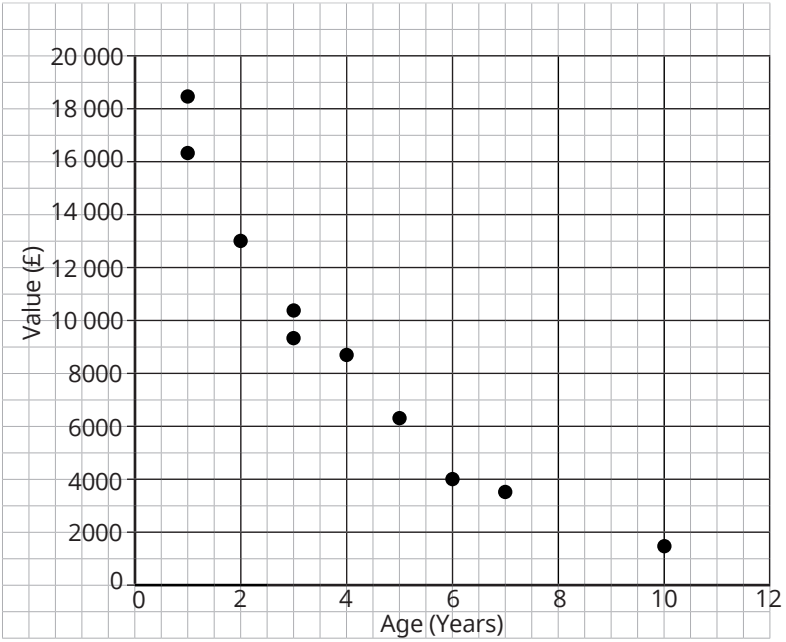
   24 + 16 = 40

6. Write eighteen hundredths and nine thousandths in figures.

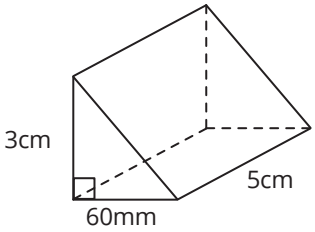
   0.189

7. The table gives information about the age of 10 cars and their value. Draw a scatter graph representing this data.

Age (Years)	Value (£)
1	18 500
7	3700
10	1500
2	13 000
3	10 300
1	16 200
6	4000
4	8800
5	6100
3	9200



8. Find the volume of the triangular prism, giving your answer in cm^3.



$3 \times 6 \div 2 = 9$

$9 \times 5 = 45cm^3$

9. Calculate 0.24×0.375

0.09

10. Write down the number of vertices on a square-based pyramid.

5

11. Complete the table for the graph of $y + x = 7$

x	0	1	2	3	4
y	**7**	**6**	**5**	**4**	**3**

12. Calculate $0.032 \div 10^3$

0.000032

13. Change $7\frac{2}{3}$ into an improper fraction, giving your answer in its simplest form.

7 × 3 = 21

21 + 2 = 23

$\frac{\mathbf{23}}{\mathbf{3}}$

14. A pot of paint can cover up to $8m^2$ of wall. Alex needs to cover a rectangular wall measuring 6.5m by 2.3m. How many pots should she buy?

6.5 × 2.3 = 14.95

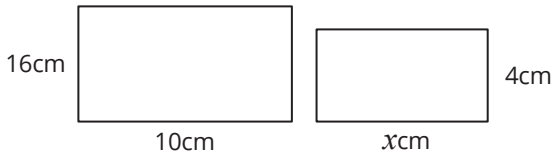
14.95 ÷ 8 = 1 r 6.95

2 pots

15. Solve $\frac{1}{5}x - 2 \leq 4 - x$

$\boldsymbol{x \leq 5}$

16. The diagram shows two similar rectangles. Work out the missing length marked x.



16 ÷ 4 = 4

10 ÷ 4 = 2.5cm

17. A straight line passes through the point (0, 6) and has a gradient of -1. Write down the equation of the line.

$y = -x + 6$ or $y = 6 - x$

18. Carla is paid mileage at a rate of £0.35 per mile. In January, she earns £224 from her mileage. How many miles did she travel in January?

224 ÷ 0.35 = 640 miles

19. A box contains red, blue and green counters. The probability of choosing a red counter at random from the bag is 0.21 and the probability of choosing a blue counter is $\frac{1}{10}$. Write down the ratio of red to blue to green counters, giving your answer in its simplest form.

21:10:69

20. Mustafa is going to make some punch. He uses squash concentrate and soda in the ratio 2:7. He wants to make 5 pints of punch. Given that 1 pint is approximately 0.6 litres, work out how many litres of squash concentrate and soda he will need. Give your answers as fractions in their simplest form.

5 × 0.6 = 3 litres punch

2 + 7 = 9

3 ÷ 9 = $\frac{1}{3}$

2 × $\frac{1}{3}$ = $\frac{2}{3}$ litres of squash concentrate

7 × $\frac{1}{3}$ = $\frac{7}{3}$ or $2\frac{1}{3}$ litres of soda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