Non-Calculator

KS4 Mastery: Foundation Booklet

3

BEYOND
MATHS

BEYOND
MATHS

KS4 Mastery:
Foundation Booklet 3

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

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?

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.

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.

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

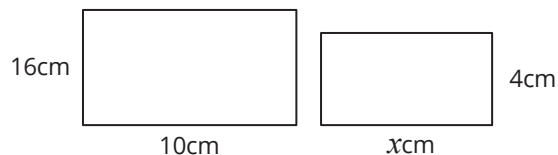| x	0	1	2	3	4
y					

12. Calculate $0.032 \div 10^3$

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

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?

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

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

16cm ... 10cm ... 4cm ... $x$cm

Question Number	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
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16							
17							
18							
19							
20							

BEYOND MATHS

1. Evaluate -4 × 7

2. Factorise $4x + 12$

3. Work out 1.45 + 2.32

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

5. The first five terms of a number sequence are 1, 1, 2, 3 and 5. What is the next term?
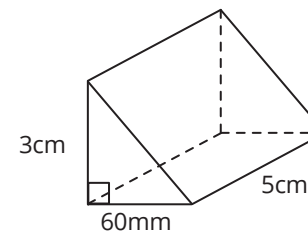
6. Write 1294 in words.

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.

3cm
5cm
60mm
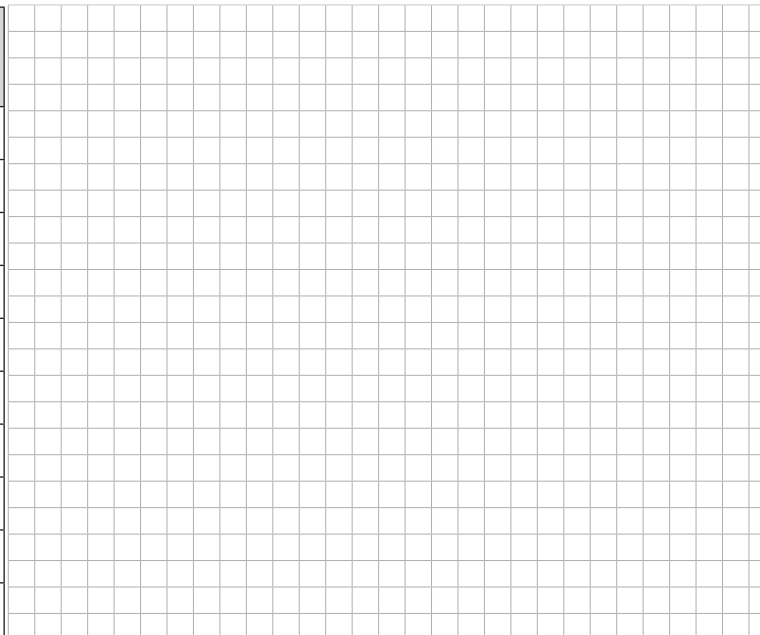
9. Calculate 0.24 × 0.375

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

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BEYOND M A T H S

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

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

3. Work out $19 + 3.2 - 1.045$

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

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

6. Write eighteen hundredths and nine thousandths in figures.

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
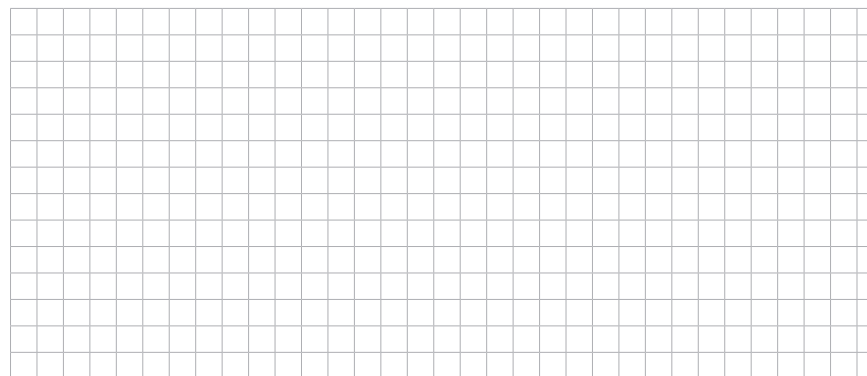
8. Find the volume of the cuboid.
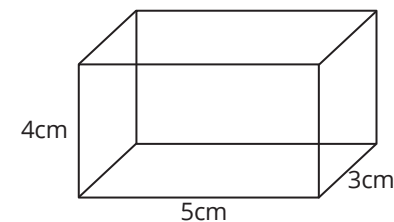
9. Calculate 3×128

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

BEYOND M A T H S

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

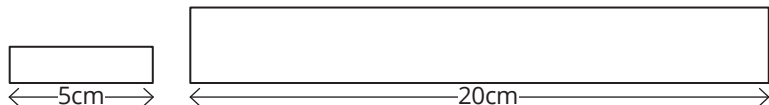| x	0	1	2	3	4
y	0			6	

12. Calculate $120 \div 10$

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

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

15. Solve $4x > 12$

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

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

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.

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.

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?

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BEYOND MATHS

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

x	0	1	2	3	4
y					

12. Calculate $0.05 \div 10^2$

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

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?

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

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

10cm — 25cm

$x$cm — 2cm
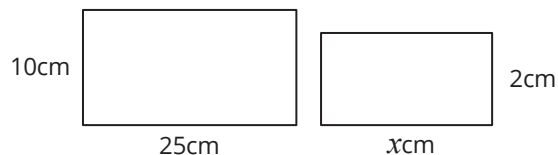
17. A straight line has a gradient of 4 and a y-intercept of 5. Write down the equation of the line.

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.

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.

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?

1. Evaluate -30 ÷ -6

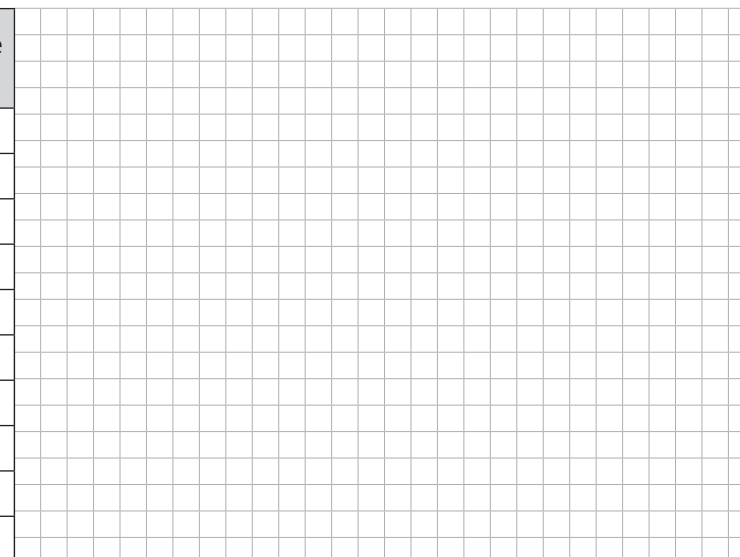2. Factorise $6x - 24$

3. Work out 3.72 + 1.934

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

5. The first four terms of a number sequence are 1, 4, 9 and 16. What is the next term?
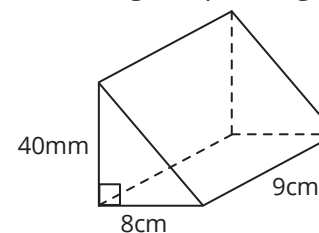
6. Write 743 210 in words.

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.

40mm
8cm
9cm

9. Calculate 7.8 × 0.19

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

1. Evaluate -11 − (-15)

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

3. Work out 3.2 + 7.45 − 0.093

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

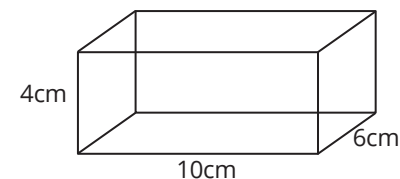5. The first five terms of a number sequence are 4, 5, 9, 14, 23. What is the next term?

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

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
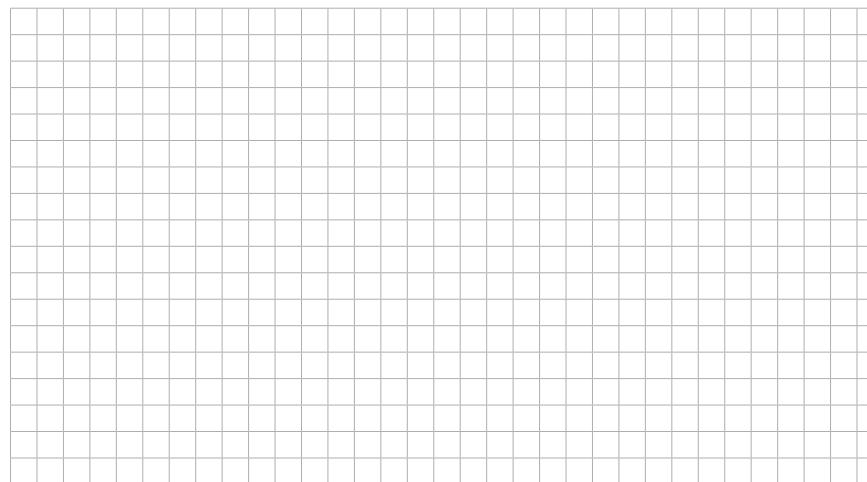
8. Find the volume of the cuboid.

9. Calculate 24 × 98

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

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

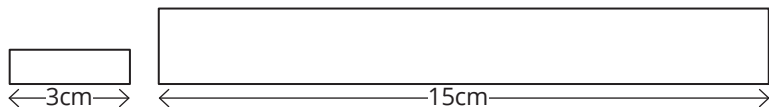| x	0	1	2	3	4
y	8				12

12. Calculate $70 \div 100$

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

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

15. Solve $x - 5 < 14$

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

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

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.

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.

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?

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

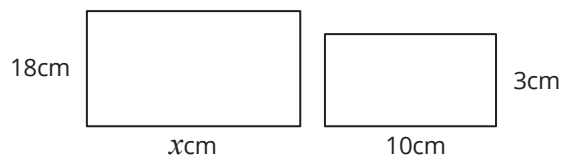| x	0	1	2	3	4
y					

12. Calculate $0.47 ÷ 1000$

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

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?

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

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

18cm ▢ $x$cm   ▢ 3cm 10cm

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

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.

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.

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?

BEYOND MATHS

1. Evaluate $(-9)^2$

2. Factorise $10x + 25$

3. Work out $4.59 - 2.61$

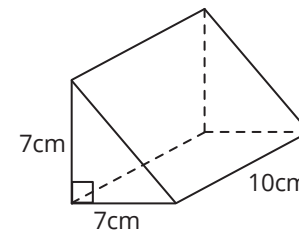4. Three apples cost £1.20. How much would four apples cost?

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

6. Write 3 189 043 in words.

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.

9. Calculate 3.7×2.5

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

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BEYOND MATHS

1. Evaluate 9 – (-3)

2. Factorise $x^2 + 3x$

3. Work out 8 – 1.93

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

5. The first three terms of a geometric sequence are 3, 9, 27. What is the next term?
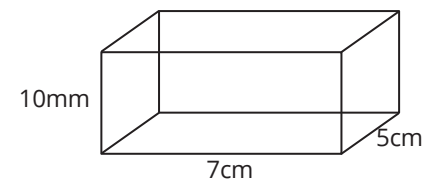
6. Write eight hundred and fifty-three and two tenths in figures.

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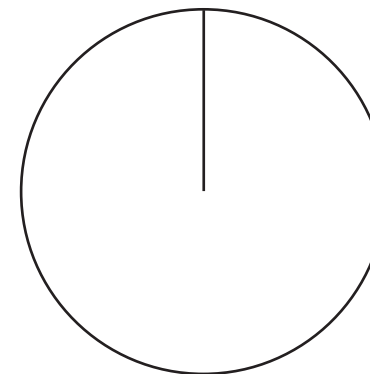
8. Find the volume of the cuboid, giving your answer in cm^3.

10mm   7cm   5cm

9. Calculate 52 × 308

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

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BEYOND M A T H S

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

x	0	1	2	3	4
y		3			

12. Calculate $0.4 \div 10$

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

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

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

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

←——6cm——→ ←——————15cm——————→
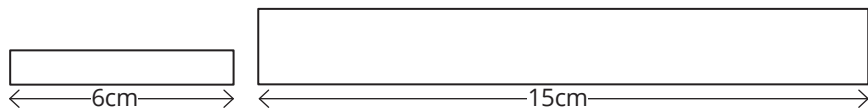
17. A vertical line passes through the point (7, 0). Write down the equation of the line.

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.

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.

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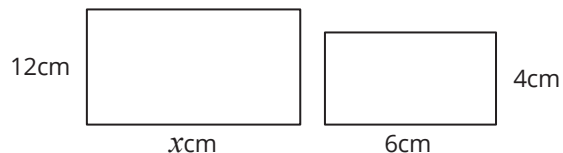
11. Complete the table for the graph of $y = 3x - 5$

x	0	1	2	3	4
y					

12. Calculate $1.9 \div 100$

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

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?

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

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


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

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

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.

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?

1. Evaluate -7 + (-4)

2. Factorise 24x – 16

3. Work out 4.7 – 2.33

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

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

6. Write three thousand and seventeen in figures.

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.
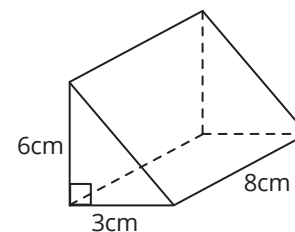
9. Calculate 17 × 3.2

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