MATHEMATICS

YEAR 7

1.
- Complete the sequence
- Create the inverse function machine

2.
- Write as a %
- Write a mix of FDP in ascending order
- Write 3 numbers with a range of 5 and a median of 4

3.
- Calculate the perimeter and area of a right-angled triangle with sides of 144, 270 and 306 cm
- There is £2413 in an account. It is charged for 4 months rent at £319 per month. How much remains?
- Calculate the mean of a set of integers

4.
- -7 × 3 - -30
- Calculate 30% of $^4/_5$

5.
- Correctly classify polygons
- Calculate the missing angles in a quadrilateral

6.
- Accurately place events on a blank probability scale
- Create a Venn diagram to calculate HCF

YEAR 8

1.
- Children to adults is 5:3. There are 80 more adults than children, how many adults are there?
- Calculate the perimeter of a building from a scale drawing
- $^3/_5 \div {}^3/_4$

2.
- Calculate the gradient of the line segment from (0,1) to (2,9)
- Plot the graph of $y = 2x + 3$

3.
- Factorise fully $6a + 10ab$
- Simplify $a^5 \times a^3$

4.
- There were 40 boys and 25 girls in a club. There are now 15% fewer boys and 20% more girls. How many are in the club now?
- Answer in standard form: $2 \times 10^3 \times 7.5 \times 10^5$

5.
- Calculate missing angles on parallel lines
- Calculate the area of a circle with diameter 10 cm
- Reflect a shape in the line $y = x$

6.
- What is wrong with the groups £5 – £10, £10 – £20, £30 – £50?
- Justify the best average for: 7, 51, 14, 8 and 11

YEAR 9

1.
- Write the equation of the line from a graph in the form $y = mx + c$
- Solve $2 > 6 - 2y$

2.
- Calculate whether a cuboid or a cylinder has the greater volume
- Compare their surface areas
- Construct an equilateral triangle with sides of 4.5 cm

3.
- A wage of £10.40 is given a pay rise of 4%. Calculate the new wage
- Compare 70% to 29 out of 40
- A value increased by 25% to £1000. What was it before?

4.
- Translate a shape by a column vector
- Rotate a shape by 90° clockwise about (0,0)
- Calculate the length of a diagonal in a square with an area of 36 cm^2

5.
- Enlarge the shape by scale factor 2, centre (1, 2)
- Two triangles are similar. Work out the indicated sides and angles
- 2 workers take 6 hours, how long would 4 workers take?

6.
- Calculate the speed given a car travels 9 km in 20 minutes
- A and B are independent, calculate $P(A \cap B)$, given P(A) and P(B)
- Show x > 2 on a number line

GCSE

FOUNDATION

8.
- Solve by factorising: $x^2 - 5x - 36 = 0$
- Give the solution on a number line: $x - 10 < 3x + 2x < x + 18$

7.
- Give the equation of the line through (2,7) and (5,-5)
- From the distance-time graph, calculate the average speed of the journey

6.
- Without a calculator, evaluate $\frac{17^7 \times 17^{-2}}{17^4}$
- Calculate the missing terms of a geometric sequence

5.
- 40,000 attend an event, to the nearest 100. Create an inequality to show the range of possible attendees
- Calculate the modal class and estimate the mean from a grouped frequency table

4.
- £5000 is deposited at 4% p.a. for 3 years. Calculate the interest earned
- 2 discs are taken from a bag containing 5 red and 4 blue. Calculate the probability both are red if after one disc is taken it is replaced

3.
- A from B is 256°. Give the bearing of B from A
- Calculate the area a sector with r = 12 cm and an angle of 45°

2.
- Solve $3(x + 2) = 5x - 14$
- 2 apples and 3 bananas cost £2.70. 3 apples and 4 bananas cost £3.80. Calculate the cost of an apple and the cost of a banana.

1.
- Enlarge shape A by scale factor ½ about (4,2)
- Calculate a side length, from a side length and acute angle in a right-angled triangle

HIGHER

8.
- Solve by completing the square: $x^2 + 6x - 3 = 0$
- Give the solution on a number line: $3x^2 - 8x + 4 < 0$

7.
- Give the equation of a line perpendicular to $2y = 3x + 1$ that passes through (2,7)
- Use a tangent to estimate the speed at 4 seconds

6.
- Without a calculator, evaluate $\left(\frac{25}{16}\right)^{-1.5}$
- Calculate the nth of 6, 11, 18, 27, 38 …

5.
- Draw a cumulative frequency graph, box plot and histogram from a grouped frequency table

4.
- Calculate the probability that at least one disc is blue, given that the disc is NOT replaced

3.
- A from B is 256° and C from B is 316° and AC is 10 miles. Calculate AB
- ABCD is a quadrilateral. P lies on AC such that AP:PM is 3:7. Prove with vector algebra BPD is a straight line

2.
- Solve $x^2 + x = 30$
- It always costs £5 + £1 per mile but more than £2 + £1.50 per mile. Show this graphically

1.
- Enlarge shape A by scale factor -½ about (4,-2)
- Calculate a side length, from a side length and opposite angle in any triangle

MIXED REVISION

FOUNDATION

9.
- Simplify expressions with algebraic vectors
- Given X is inversely proportional to Y, when X is 6, Y is 24. Calculate X when Y is 16

10.
- Reflect the shape in $y = 0$
- Archie's passcode is 3 digits long and contains 2, 5 and 6 once each. Calculate the probability of guessing the code on the first attempt

HIGHER

9.
- Use algebraic vectors to prove if two vectors are collinear.
- Given X is inversely proportional to Y, when X is 6, Y is 24. Write an equation for X in terms of Y

10.
- Reflect the function in $y = 0$
- Beth's passcode is 3 digits long. Calculate the probability of guessing Beth's code within 2 attempts

KEY TO MATHS AREAS

- Number
- Algebra
- Ratio & Proportion
- Geometry & Shape
- Statistics
- Probability