Year 6: Spring term 1

Topics studied this half term:

- Position and direction
- Algebra
- Measurement: converting units
- Perimeter, area & volume

Within position and direction, your children will be learning to:

- Read, write and solve problems in the four quadrants
- Complete translations and reflections across four quadrants

Within algebra, your children will be learning to:

- Find a rule – one and two step
- Form expressions
- Use formulae
- Form equations
- Solve simple one- and two-step equations
- Find pairs of values
- Enumerate possibilities

Within measurement, your children will be learning to:

- Convert metric measures
- Calculate with metric measures
- Convert between miles and kilometres
- Use imperial measures

Within perimeter, area and volume, your children will be learning to:

- Find shapes that have the same/different area & perimeter
- Calculate the area of a triangle
- Calculate the area of a parallelogram
- Find volume by counting cubes
- Calculate the volume of a cuboid

Tips for good homework habits:

Turn off the TV while your child is doing homework.

Position and direction

HERE'S THE MATHS

Your child is learning to use coordinates to describe the position of shapes in all four quadrants. Numbers to the right of zero and up from zero are positive; numbers to the left of zero and down from zero are negative.

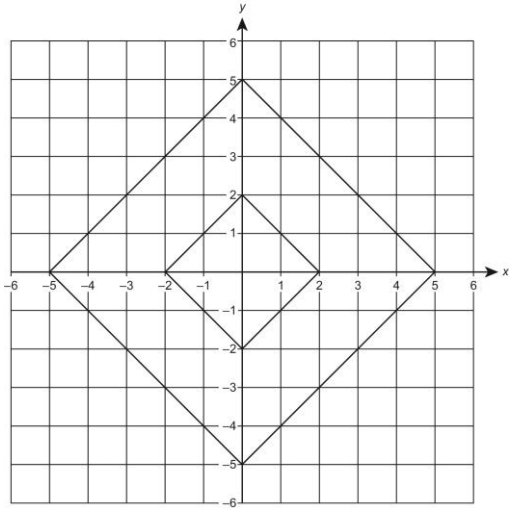
ACTIVITY

What to do

- Take turns to roll the two dice and toss the coins to determine a set of coordinates, e.g. 3 and 2p heads, 5 and 1p tails gives (3, −5)
- Colour that coordinate in. It does not count if thrown again.
- Play for 10 turns each and then add up the scores.
- Scoring system: 0 for outside the outer square, 1 on the line of the outer square, 2 inside the outer square, 3 on the line of the inner square, 4 inside the inner square.
- Player with the higher score wins.

You will need:

- two 1–6 dice
- two different coins, e.g. 2p for the *x*- and 1p for the *y*- coordinates – heads positive, tails negative



QUESTIONS TO ASK

What are the new coordinates of (1, 3) when reflected in the *x*-axis? (*1, −3*)

What are the new coordinates of (1, 3) when reflected in the *y*-axis? (*−1, 3*)

Algebra

HERE'S THE MATHS

Your child is learning to generate and describe linear number sequences. The numbers in sequences are called 'terms'. To find the next term in a sequence, find the difference between the terms. Knowing the first term in a sequence and the difference between the terms allows a formula to be written for the general term, usually known as the 'n^{th} term'. Here are examples:
Sequence is 4, 7, 10 . . . The difference is 3, first term is 4, i.e. $(3 \times 1) + 1$ so n^{th} term is $3n + 1$.
Sequence is 2, 7, 12 . . . The difference is 5, first term is 2, i.e. $(5 \times 1) - 3$ so n^{th} term is $5n - 3$.

ACTIVITY

What to do

- One person rolls the dice to decide the starting number, e.g. 3.
- Roll the dice again to decide the difference between terms, e.g. 5.
- Write the first five terms and calculate the 10^{th} term (e.g. 3, 8, 13, 18, 23 and 48).
- This is your score.
- The other person takes a turn.
- Play for 10 minutes.
- The winner is the person with the higher score.

You will need:

- 1–6 dice (second 1–6 dice for variation)

Variation

- Use the total of two dice to find the difference to give an extended range of sequences.

QUESTIONS TO ASK

How do you find the next number in number sequences?

What is the next number in the following sequences? What is the 10^{th} term? What is the n^{th} term?
2, 5, 8 . . .
6, 10, 14 . . .
4, 14, 24 . . .
5, 11, 17 . . .

Measurement (mass)

HERE'S THE MATHS

Your child is learning to calculate and convert between standard units of mass: 1 tonne (t) = 1000 kg; 1 kg = 1000 g) to solve problems, using decimal notation up to three decimal places: 100 g = 0·1 kg, 10 g = 0·01 kg, 1 g = 0·001 kg.

ACTIVITY

You will need:

- 1–9 digit cards from a pack of playing cards
- pencil, paper and rubber
- coin

What to do

- The first person turns over cards to make the mass of two different shopping bags in kilograms with three decimal places.
- Round each mass to the nearest 100 g and find the total.
- The second person has a turn.
- Toss the coin to score: heads means the person with the bag with the greater mass scores a point, and, tails, the person with the smaller mass.
- The winner is the first person to score 5 points.

Variation

- Instead of rounding the mass, each person keeps a running total of the exact mass of their bags and the first person to reach 20 kg is the winner.

QUESTIONS TO ASK

What is 1 g in kilograms?

What is 7500 kg in tonnes?

What is 6378 g in kilograms?

Can you convert 0·075 kg to grams?

Can you convert 1·009 tonnes to kilograms?

Perimeter and Area

HERE'S THE MATHS

Your child is learning to use a formula to calculate the area of triangles.

Area = $\frac{1}{2}$ bh, where b = base of the triangle and h = height.

ACTIVITY

Base	1 4 cm	2 7 cm	3 10 cm	4 6 cm	5 9 cm	6 12 cm
Height	1 5 cm	2 8 cm	3 11 cm	4 3 cm	5 13 cm	6 2 cm

What to do

- Take turns to roll the dice to choose the length of the base and roll again to decide the height.
- Calculate the area of the triangle in cm^2 using the formula, A = $\frac{1}{2}$ bh

You will need:

- 1–6 dice
- pencil and paper

- Score as follows:

Area ≤ (less than or equal to) 10 cm^2 scores 2 points	Area > (greater than) 10 cm^2 ≤ 25 cm^2 scores 4 points	Area > 25 cm^2 ≤ 60 cm^2 scores 6 points	Area > 60 cm^2 ≤ 78 cm^2 scores 8 points

- Play for 10 minutes.
- The person with the higher score is the winner.

QUESTIONS TO ASK

How do you find the area of a triangle?

If the area of a triangle is 12 cm^2, what are the possible lengths of the base? (*factors of 24*)

What is the area of a triangle of base length 10 cm and height 8 cm?