A PARENTS' GUIDE TO MATHS IN THE CURRICULUM

Year 6

I can solve addition and subtraction with increasingly difficult numbers.

To include money, decimals and measures with different numbers of digits and decimal places.

```
  2 3 . 3 6 1
    9 . 0 8 0
  5 9 . 7 7 0
    1 . 3 0 0  +
  ¹ ¹   ¹ ¹ ¹
  ---------------
  9 3 . 5 1 1
```

Tenths, hundredths and thousandths should be correctly aligned vertically, including in the answer.

Empty spaces can be filled with a zero to act as a place holder and show empty spaces for place value.

Use the compact column method to add including money, decimals and measures including decimals with a different number of places.

Pupils should use should apply their knowledge of a range of different mental recall, informal and formal written methods when selecting a strategy to use. Opportunities to discuss which method was chosen and why should also be planned for.

$$
\begin{array}{r}
81,059 \\
3,668 \\
15,301 \\
20,551+ \\
\hline
120,579
\end{array}
$$

Use the column method of subtraction for more complex numbers including money, decimals and measures with different number of digits and decimal places.

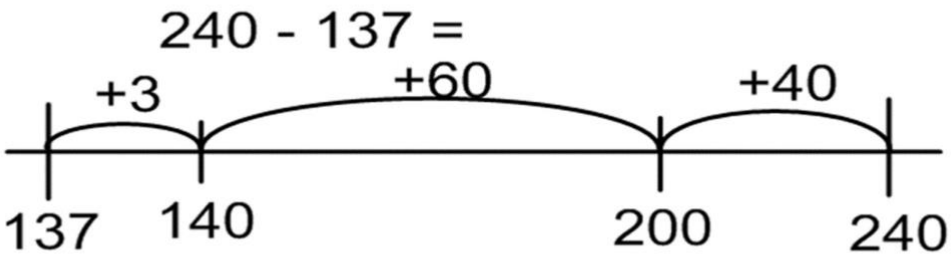
$$
\begin{array}{r}
\overset{2}{\cancel{1}}\overset{13}{\cancel{3}}\overset{11}{\cancel{4}}\overset{1}{\cancel{2}}3 \\
-\ 1\ 2\ 6\ 7\ 8 \\
\hline
7\ 4\ 5 \\
\hline
\end{array}
$$

I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
Try solving addition and subtraction problems when out and about, for example in the shops.
Try adding a few items together (e.g., £1.23, £3.56 and £2.99) and finding how much change is needed from £20.
I can perform mental calculations, including with mixed operations and large numbers.
Try playing games which give opportunities to add, subtract, multiply and divide in everyday contexts. For example, darts, bingo and when handling money in Monopoly!

Giving children real life opportunities to handle and manage money can really give them incentives to calculate! Try giving them their own bank account and budget of money to manage.

Try using partitioning (breaking numbers down into hundreds, tens and units) and
knowledge of number bonds to add numbers in your head.
E.g. 145 + 155.
100 + 100 = 200
40 + 50 = 90
5 + 5 = 10
200 + 90 + 10 = 300

Try counting on a number line in your head to subtract mentally and find the difference between two numbers.



I can multiply multi-digit numbers up to 4 digits by a 2 digit whole number using the formal written method of long multiplication.

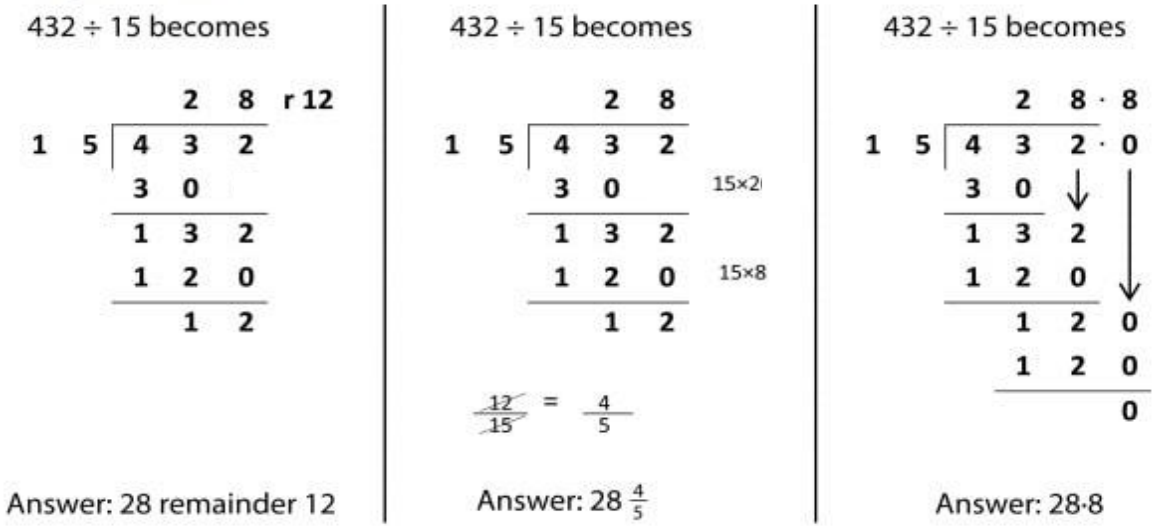
$$
\begin{array}{rl}
{}^{1}\cancel{1}\ {}^{2}\cancel{2}\,{}^{2}\cancel{3}\ 4 & \\
\quad 1\ \ 6\times & \\
\hline
7,\ \ 4\ 0\ 4 & (1{,}234 \times 6) \\
1\ 2,\ \ 3\ 4\ 0 + & (1{,}234 \times 10) \\
\hline
1\ 9,\ \ 7\ \ 0\ 4 &
\end{array}
$$

Remember to include the zero when multiplying by the tens to hold the position as there are no ones / units.

I can divide numbers up to 4 digits by a 2 digit whole number using the formal
written method of long division. Write answers as a remainder, fraction and decimal.

Challenge children to practice their long division skills. They should practice writing the answer as a remainder, fraction and a decimal (where appropriate).

Long division

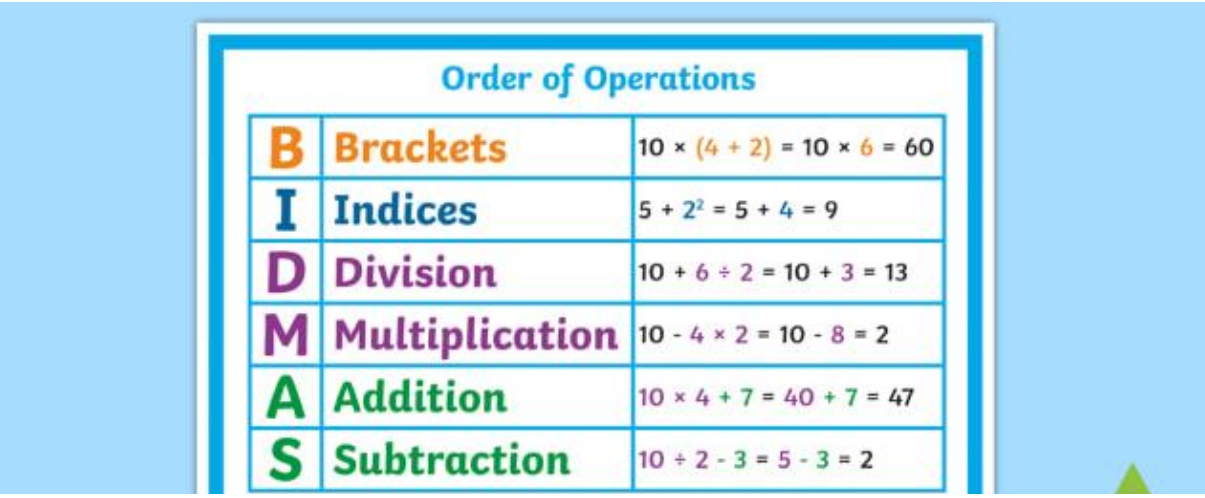


X	15
1	15
2	30
3	45
4	60
5	75
6	90
7	105
8	120

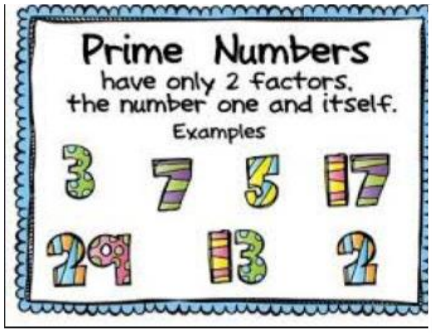
Writing out a table (which we call a coin card) up to the number of lots of that we need to go to, helps children to work out the division.

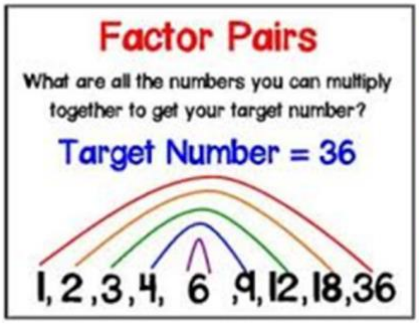
I can use my knowledge of the order of operations to carry out calculations involving the four operations.

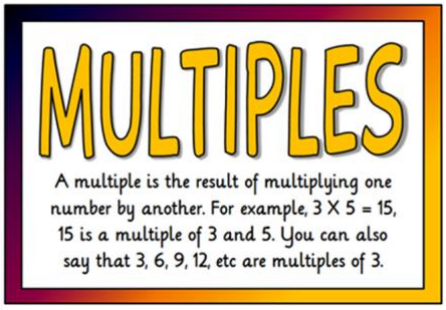
Remind children of the order of operations, BIDMAS. Create simple calculations and place brackets around different parts to remind them that brackets should be done before anything else.



I can identify common factors, common multiples and prime numbers.







Children need to know the prime numbers up to 19 off by heart. (2, 3, 5, 7, 11, 13, 17, 19).
Try using times tables to work out if the numbers up to 100 are prime. Here are all the prime numbers under 100:
, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97
Try solving problems such as: 36 has two factors which are prime numbers. What are they? Answer: 2 AND 3

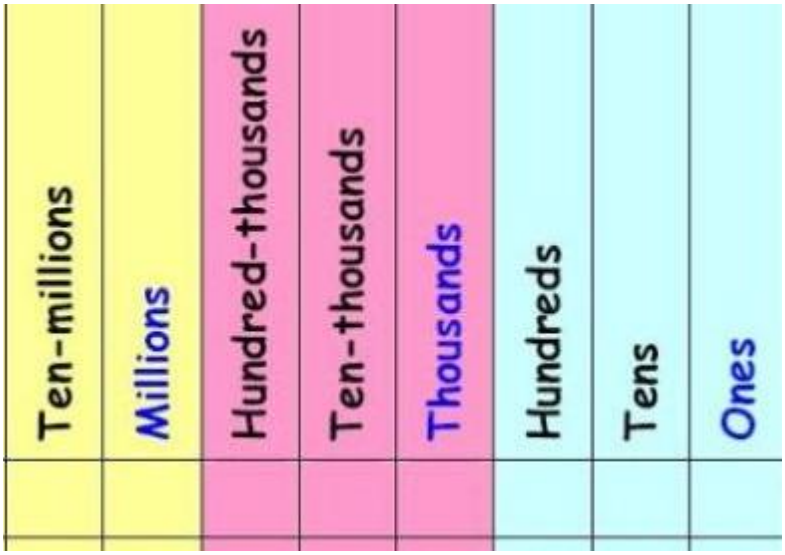
Number, place value, approximation and estimation/rounding

I can read, write, order and compare numbers up to10,000,000

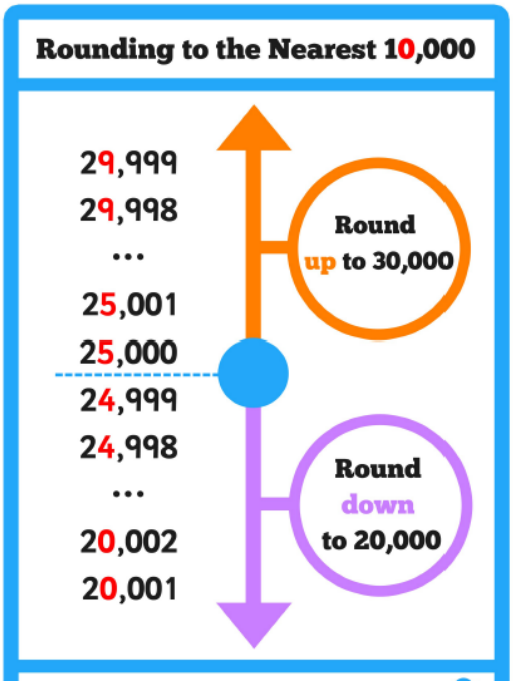
E.g. 3,986,452 is three million, nine hundred and eighty six thousand, four hundred and fifty two Find large numbers in the everyday environment and ask children to say the number in words. E.g. House prices, football match attendances, charity money raised – Children in Need, Red Nose Day.

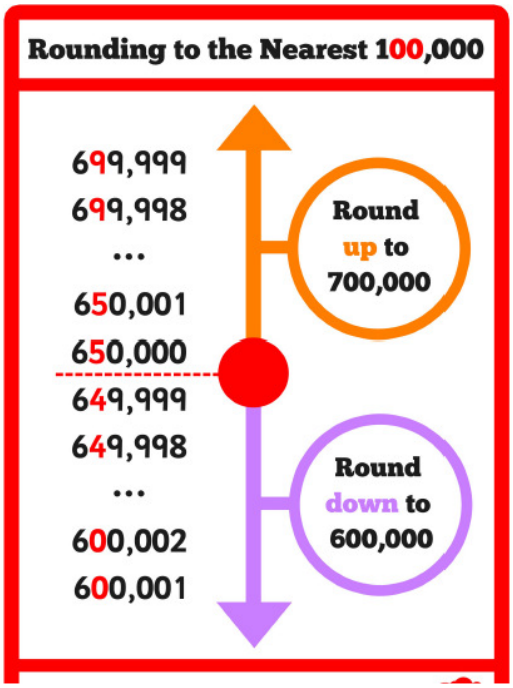
I can determine the value of each digit in numbers up to 10,000,000

When looking at large numbers, discuss what each digit is worth. For example, in 4,520,316, what is the 2 worth? 20,000.



I can round any whole number to a required degree of accuracy.





Use the rhyme:

Find the place and look next door.

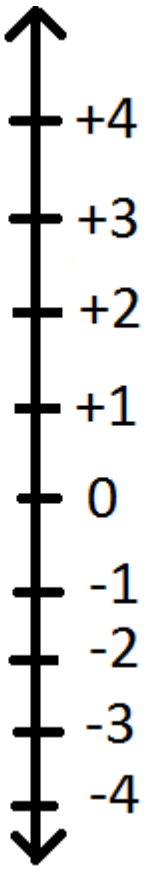
5 or more, raise the score.

4 or less, let it rest.

Remember the rules of rounding:
1,2,3,4 – round it down.
5,6,7,8,9 – round it up.

I can use negative numbers in context, and calculate intervals across zero

Look for examples in everyday contexts. For example: temperature rises and falls. Ask the differences between two temperatures (one positive and one negative).



Fractions, decimals and percentages
I can add and subtract fractions with different denominators, using their understanding of equivalent fractions.

Encourage children to practice their addition and subtraction of fractions. Remind children that a common denominator (bottom number) is needed to add or subtract. The denominator should not be added – just the numerator (top number).

Adding fractions with different denominators

A common denominator must be found when adding fractions that have different denominators. This is the most important (and probably the hardest) step in adding or subtracting fractions. A common denominator can always be found by multiplying the denominators.

6 is a common multiple of 2 and 3.

$\frac{1}{2} + \frac{1}{3}$

Change fraction #1 to an equivalent fraction with a denominator of 6 – multiply top and bottom by 3.

$\frac{1 \times 3}{2 \times 3} = \frac{3}{6}$

Change fraction #2 to an equivalent fraction with the same denominator of 6 – multiply top and bottom by 2.

$\frac{1 \times 2}{3 \times 2} = \frac{2}{6}$

Now add the fractions:

3/6 + 2/6 = 5/6

Subtracting unlike fractions with different denominators

As with addition, the most important step in subtracting unlike fractions (fractions with different denominators) is finding a common denominator.

A common denominator can always be found by multiplying the denominator although this denominator will not always be the *lowest* common denominator.

21 is a common multiple of 7 and 3.

$\frac{5}{7} - \frac{2}{3}$

Change fraction #1 to an equivalent fraction with a denominator of 21 – multiply top and bottom by 3.

$\frac{5 \times 3}{7 \times 3} = \frac{15}{21}$

Change fraction #2 to an equivalent fraction with the same denominator of 21 – multiply top and bottom by 7.

$\frac{2 \times 7}{3 \times 7} = \frac{14}{21}$

Now subtract the fractions:

15/21 – 14/21 = 1/21

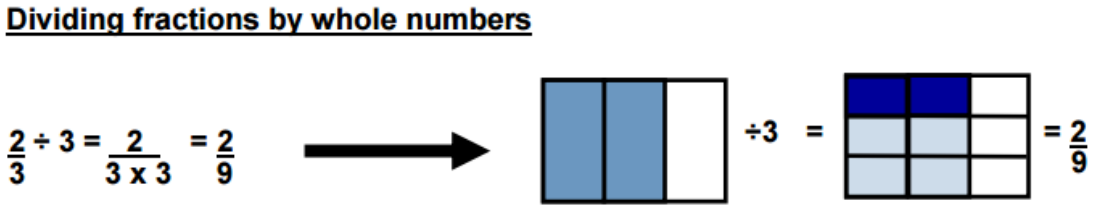
I can multiply simple pairs of proper fractions, writing the answer in the simplest form.

Multiplying fractions by fractions

$\frac{2}{3} \times \frac{3}{4} = \frac{2 \times 3}{3 \times 4} = \frac{6}{12}$

Children should then use their times table knowledge to simplify the fractions. E.g. 6/12 can be simplified to ½.

I can divide proper fractions by whole numbers.



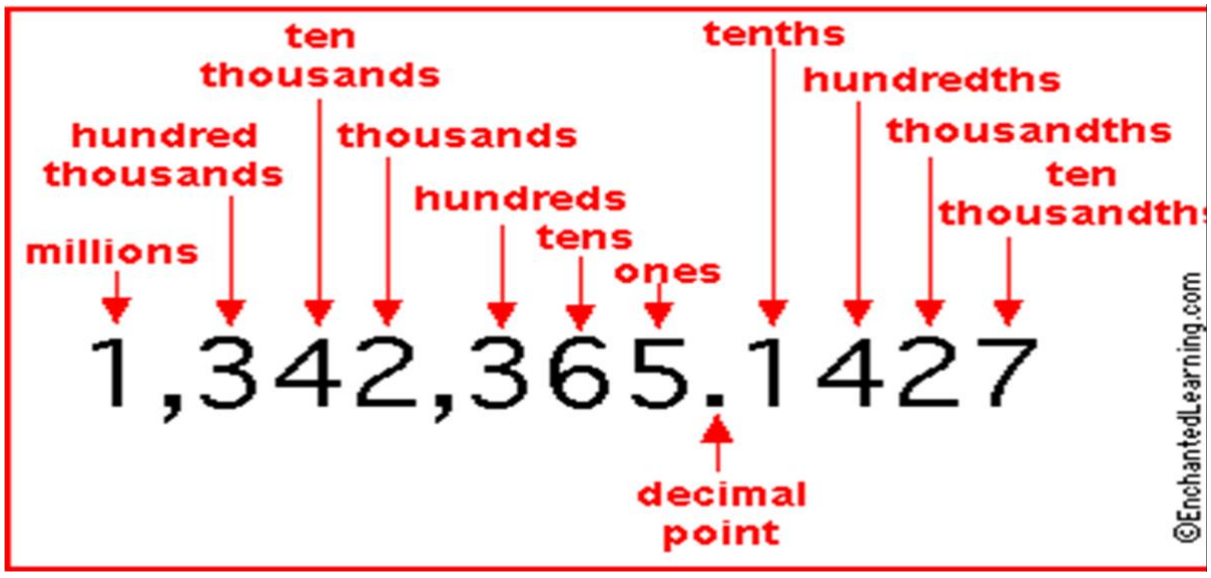
I can identify the value of each digit including numbers to 3 decimal places

E.g. 546, 789

Ask your child the value of certain digits such as the 6 is worth 6000 (six thousand).

E.g. 4.678

What is the value of the in the number? The 7 is worth (7 tenths).



I can multiply and divide numbers by 10, 100 and 1000 giving answers up to 3 decimal places.

Together, practice the skill of multiplying and dividing by 10, 100 and 100. Use a place value grid (like the one below) if needed.

Multiplying and Dividing by 10, 100 and 1000

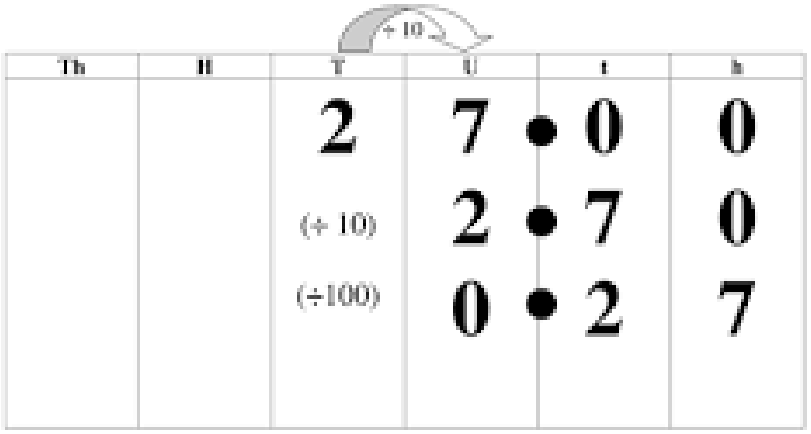
10 000	1000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

Multiplying

X 10	digits move LEFT **1** space
X 100	digits move LEFT **2** spaces
X 1000	digits move LEFT **3** spaces

Dividing

÷ 10	digits move RIGHT **1** space
÷ 100	digits move RIGHT **2** spaces
÷ 1000	digits move RIGHT **3** spaces



To divide by 10, move the digits one space to the right
To divide by 100, move the digits two spaces to the right

I can multiply 1-digit numbers with up to 2 decimal places by whole numbers.

I can use written division methods in cases where the answer has up to 2 decimal places.

$$\begin{array}{r} {}^{2}\cancel{2}\,.\,4 \\ \times \quad 5 \\ \hline 1\,2\,.\,0 \end{array}$$

$$8\overline{)4.2} = 8\overline{)4.200} \quad \begin{array}{r} 0.525 \\ -40 \\ \hline 20 \\ -16 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

I can recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Know the basic fraction, decimal and percentage equivalences:

Decimal	Percentage	Fraction
0.5	50%	$\frac{1}{2}$
0.25	25%	$\frac{1}{4}$
0.75	75%	$\frac{3}{4}$
0.2	20%	$\frac{1}{5}$
0.1	10%	$\frac{1}{10}$
$0.\dot{3}$	$33.\dot{3}\%$	$\frac{1}{3}$

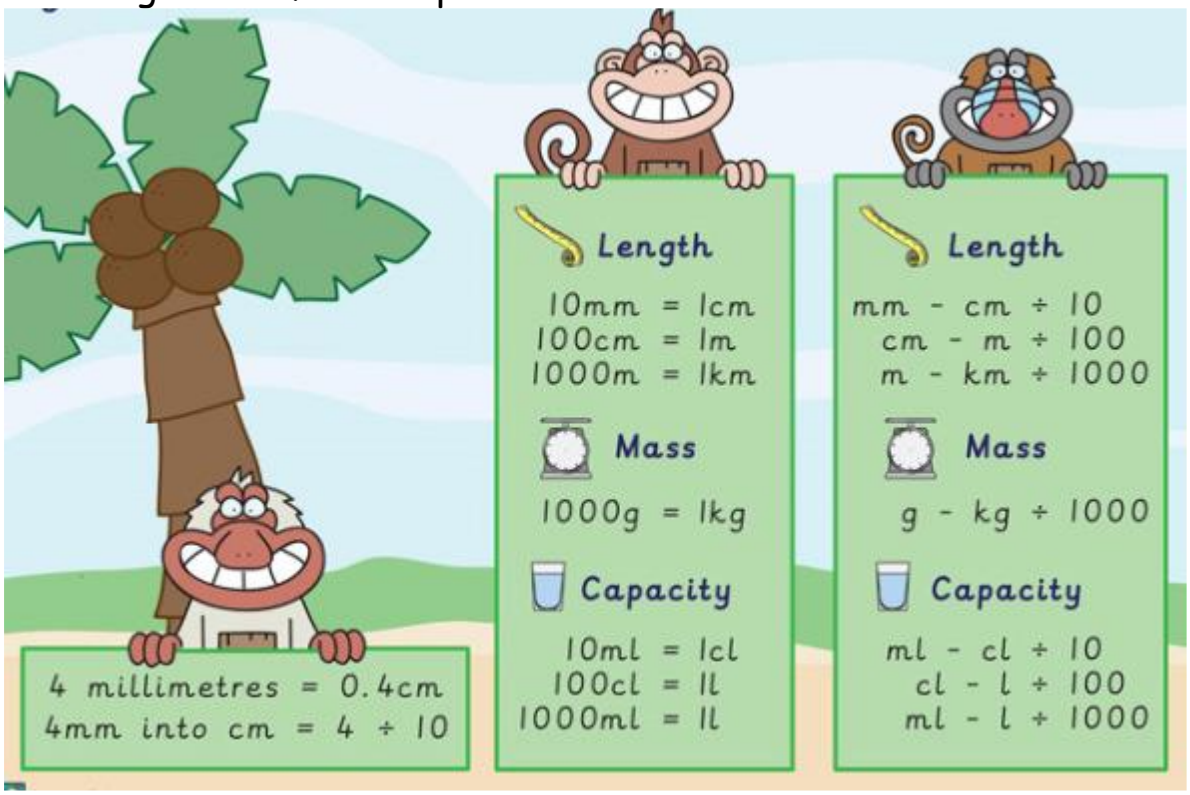
Measurement

I can use, read, write and convert between standard units of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation of up to 3 decimal places.

Use measures in everyday, practical contexts at home. For example, in art and craft activities, baking, DIY tasks and sports activities. Know the conversions between different units and swap between them.

For example:

How long is this football pitch in metres? What about cm?



How much flour do we need in grams and kilograms?

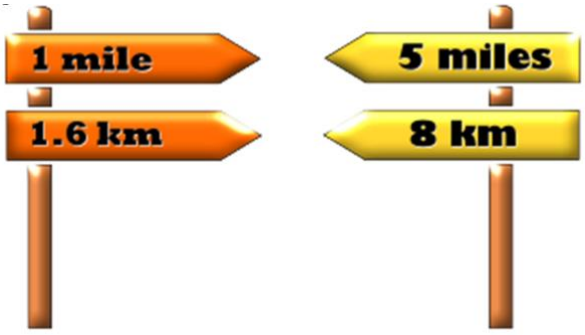
How many millilitres in various drinks?

I can convert between miles and kilometres

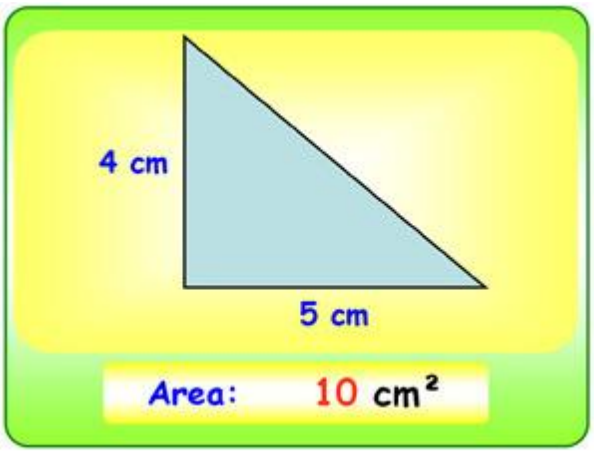
A good chance to practice this skill is on car journeys. Change the distances on road signs from miles to kilometres.

1 kilometre = 5/8 mile

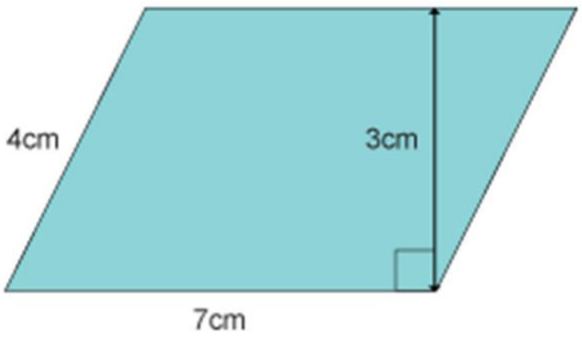
To convert from miles to kilometres multiply the number of miles by 1.6. (e.g. 5 x 1.6 = 8)



I can calculate the area of parallelograms and triangles
A triangle area is found by multiplying the base by the height and dividing the answer by 2.

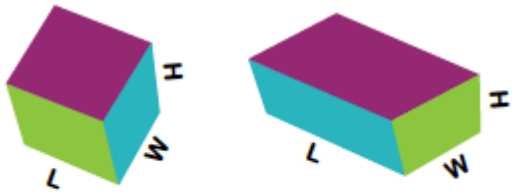


The area of a parallelogram is found by multiplying the base by the height – don't get tricked by the length of the side as it's not needed!



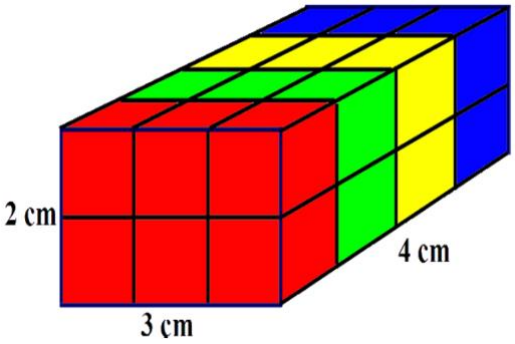
Give children various base and heights for them to practice their area skills.

I can calculate, estimate and compare volume of cubes and cuboids, using standard units.
Children can look at various 3D cuboid shapes (cereal boxes and other food packaging) to compare the various volume. Which do they think will hold more?
To calculate volume, measure the length, width and height and multiply together.



Volume of a cube / cuboid
= length x height x width

V = L x H x W



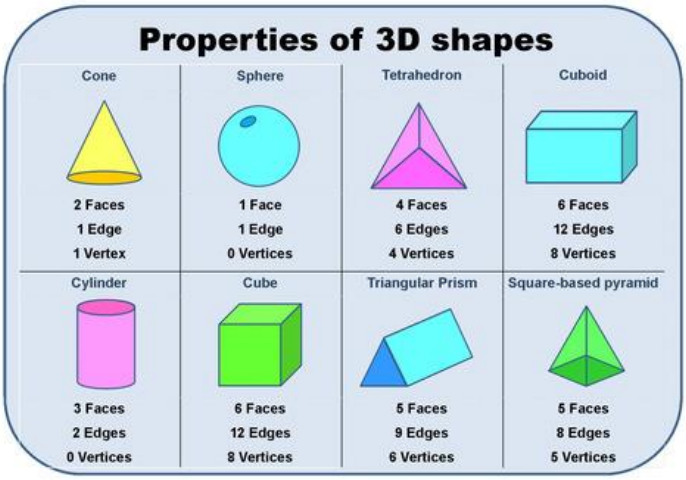
This shape would be $24cm^3$

<u>Geometry –properties of shapes</u>

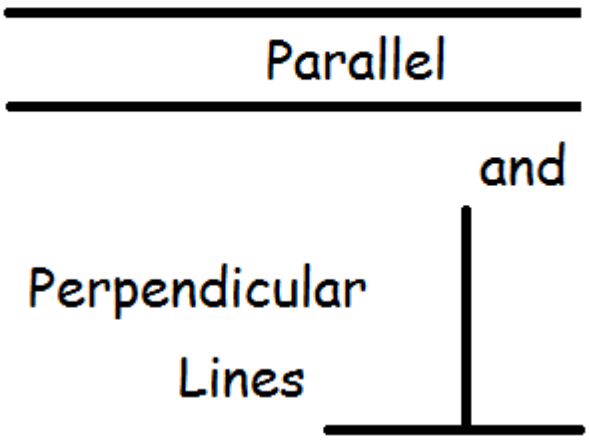
I can compare and classify geometric shapes based on the properties and sizes.

I can describe simple 3D shapes.

Children could separate a variety of shapes depending on their different properties (how many faces the shapes have, how many vertices (corner) or edges).



Children also need to recall the terms: parallel and perpendicular. Ask children where they can spot parallel and perpendicular lines around the house. This can also be discussed when talking about the properties of shapes.

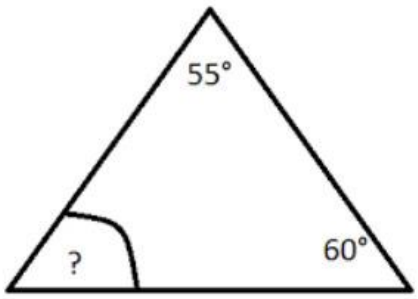


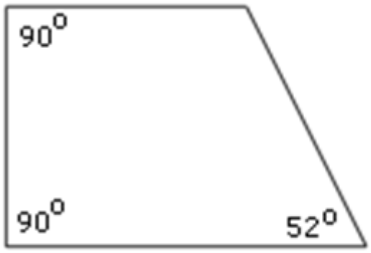
Meet at 90 ◦

I recognise and build simple 3D shapes, including making nets
Children can enjoy taking packaging apart and looking at the net of a 3D shape. Can they rebuild the shape?
Another activity children enjoy is making 3D shapes with straws and Blutak or even spaghetti and marshmallows at the corners!

I can find unknown angles in any triangles, quadrilaterals and regular polygons

Learn and practice key facts:
- Angles of a triangle add up to 180°
- Angles of a quadrilateral add up to 360°
- Angles of regular polygons will all be the same.

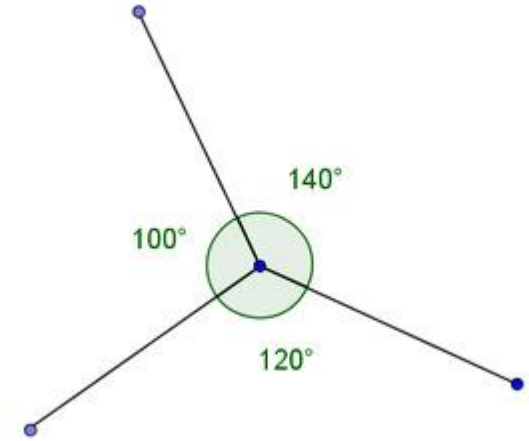




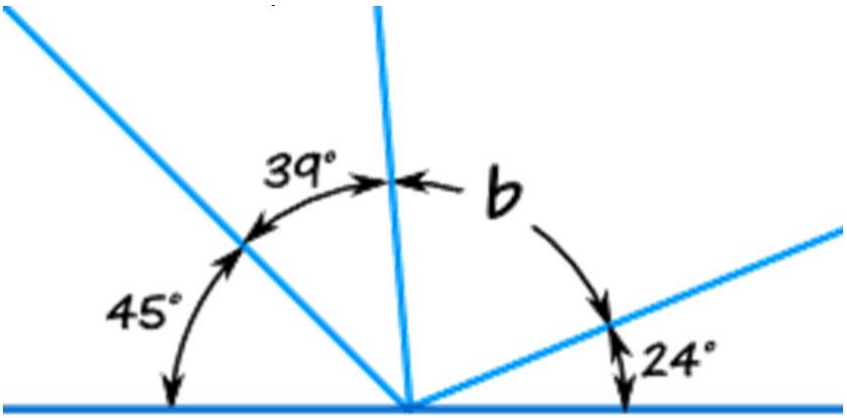
I recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Again, recall key facts:

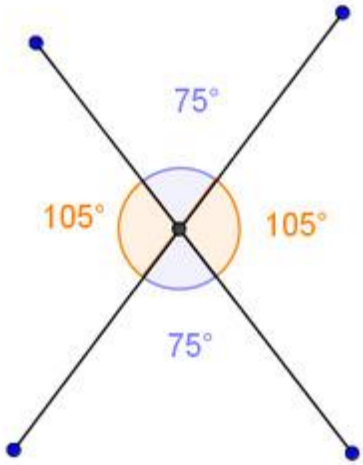
• Angles that meet at a point add up to 360°.



• Angles on a straight line add up to 180°.

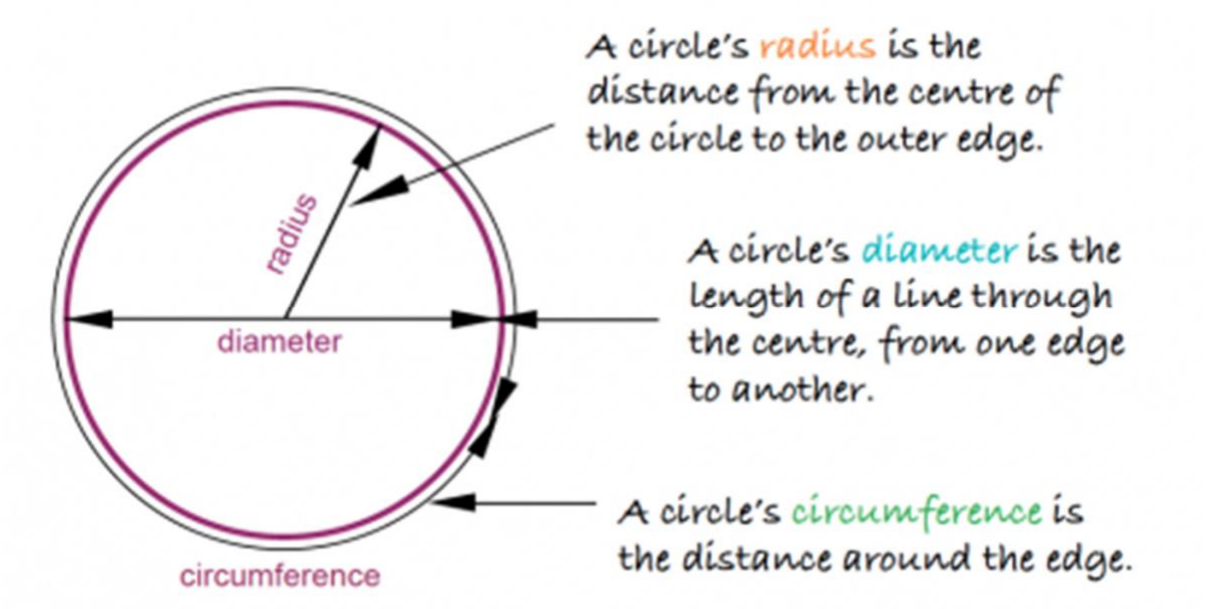


• Angles vertically opposite are the same.



Give children examples with numbers missing for them to calculate and practice their skills.

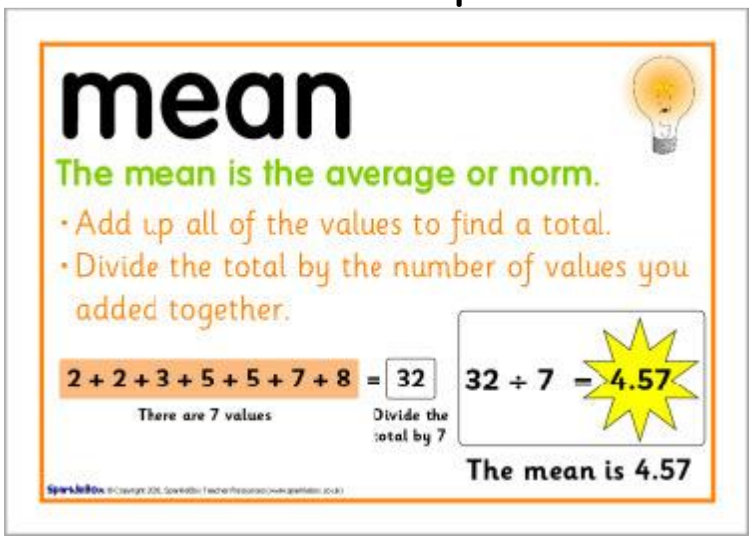
I can illustrate and name parts of circles, including radius, diameter and circumference.



Remind children that the diameter of the circle is twice the radius.

Statistics

I can calculate and interpret the mean as an average.



You could ask your children to calculate their mean pocket money over a certain number of weeks. Run timed relay races in the garden with family and work out everyone's mean scores for the races.

Key facts to practise and know in Y6

• TIMES TABLES. Although children should have learned all of the times
tables, they still need to regularly practise all of the times tables up to 12 x
12. If they don't use them….they lose them!

• Prime numbers
• Square numbers
• Cube numbers
• Common factors
• Prime factors
• Common multiples
• BIDMAS
• Parallel and perpendicular
• Area of various shapes
• Volume
• Averages – mean

To see the whole of your child's Year 6 curriculum, use the following link:

The National Curriculum for Mathematics

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf

Websites that are useful:

http://resources.woodlands-junior.kent.sch.uk/maths/

http://www.kidsmathgamesonline.com/

http://www.bbc.co.uk/skillswise/maths

http://www.bbc.co.uk/education/subjects/z826n39