A PARENTS' GUIDE TO MATHS IN THE CURRICULUM

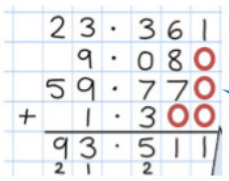
CURRICULUM INNOVATION GROUP

YEAR 6

I can solve addition and subtraction with increasingly difficult numbers

Year 6 Add several numbers of increasing complexity

including money, measure and decimals with different numbers of decimal places

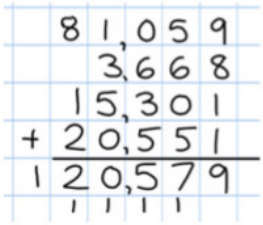


Tenths, hundredths and thousandths should be correctly aligned, with the decimal point aligned vertically, including in the answer.

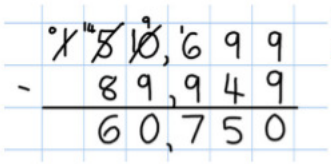
Empty decimal places can be filled to with zero to show the place value of each column

Use compact column method to add in context of money, measures, including decimals with different numbers of decimal places.

Pupils should apply their knowledge of a range of mental strategies, mental recall skills, informal and formal written methods when selecting the **appropriate method** to work out addition problems. Opportunities to discuss the appropriateness of methods need to be planned for.

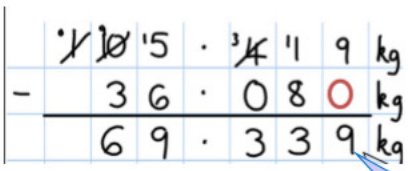


Year 6 Subtracting with increasingly large and more complex numbers and decimal values.



including money, measure and decimals with different numbers of decimal places

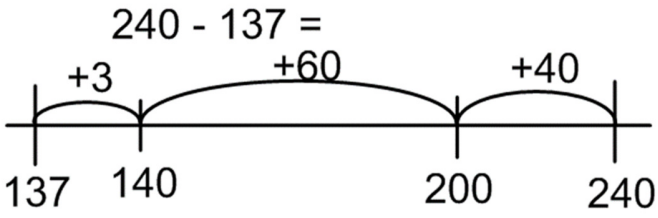
Use the compact column method to subtract more complex integers



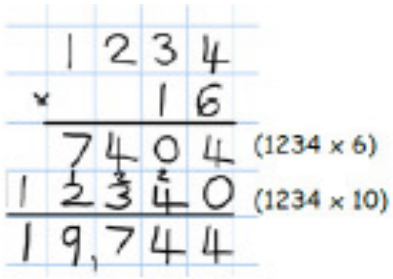
Use compact column method to subtract in context of money, measures, including decimals with different numbers of decimal places.

Pupils should apply their knowledge of a range of mental strategies, mental recall skills, informal and formal written methods when selecting the **appropriate method** to work out subtraction problems. Opportunities to discuss the appropriateness of methods need to be planned for.

Empty decimal places can be filled to with zero to show the place value of each column

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 (eg, £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. Eg. 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.



Remember to include the zero when multiplying the tens to hold the place value!

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, a fraction and a decimal (where appropriate)

Long division

432 ÷ 15 becomes

$$\begin{array}{r} 28\ r\ 12 \\ 15\overline{)\,432} \\ -\,300 \\ \hline 132 \\ -\,120 \\ \hline 12 \end{array}$$

Answer: 28 remainder 12

432 ÷ 15 becomes

$$\begin{array}{r} 28 \\ 15\overline{)\,432} \\ -\,300 \quad (15\times20) \\ \hline 132 \\ -\,120 \quad (15\times8) \\ \hline 12 \end{array}$$

$\frac{12}{15} = \frac{4}{5}$

Answer: $28\frac{4}{5}$

432 ÷ 15 becomes

$$\begin{array}{r} 28{\cdot}8 \\ 15\overline{)\,432{\cdot}0} \\ -\,30\downarrow \\ \hline 132\downarrow \\ -\,120 \\ \hline 120 \\ -\,120 \\ \hline 0 \end{array}$$

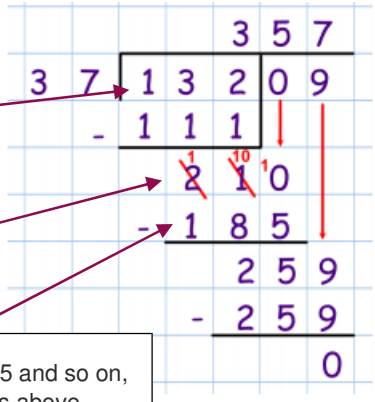
Answer: 28·8

Long Division

First part of the number divisible by 37. 132 ÷ 37 = 111

132-111 = 21. Then drop down the next digit to the end of the remainder.

Next, 210 ÷37 = 185. 210-185 = 25 and so on, continuing the steps as in the notes above.



To help with this children can use quick tricks (also known as coin multiplication).

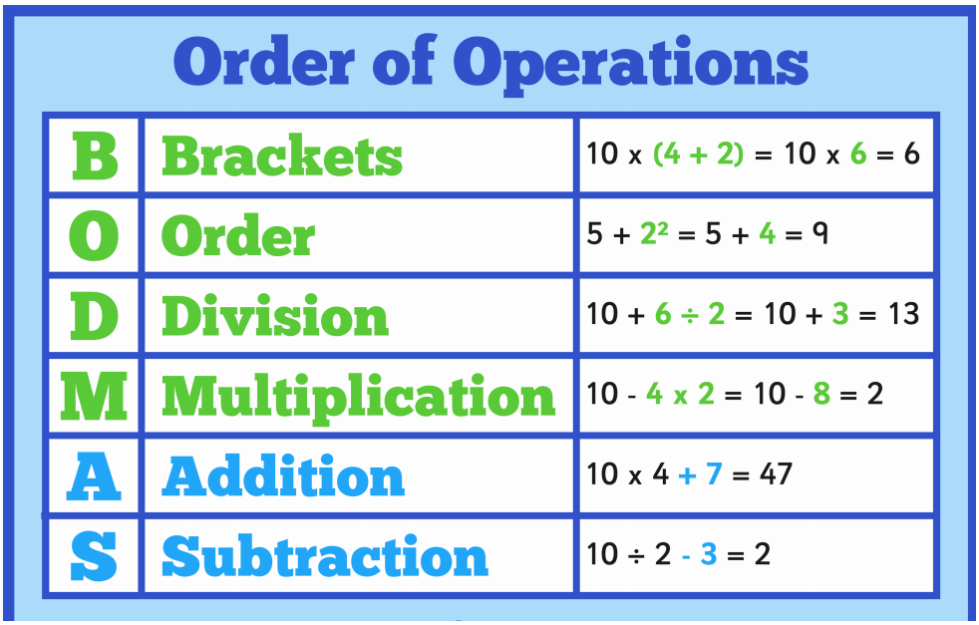
1x 37 =37 10x37 =370

2x 37= 74 20x37=740

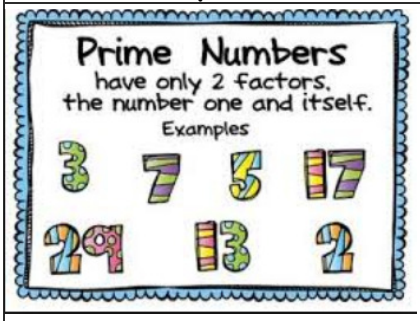
5x 37 = 185

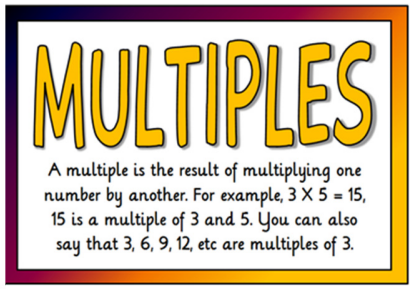
I can use my knowledge of the order of operations to carry out calculations involving the four operations.

Remind children about the order of operations in a question. Create simple sums and place brackets in various areas to practice their recall of BODMAS.



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: **2, 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

Eg. 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. Eg. House prices, football match attendances, charity money raised – Children in Need, Red Nose Day.

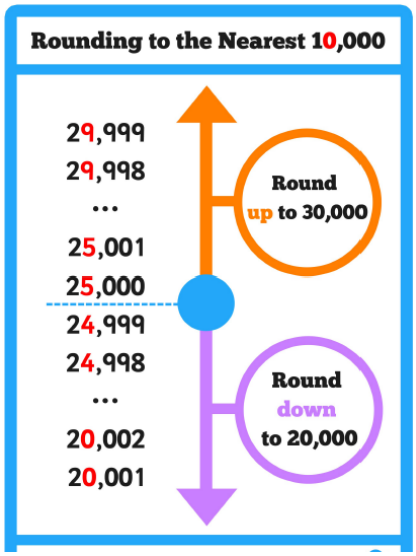
I can determine the value of each digit in numbers up to 10,000,000

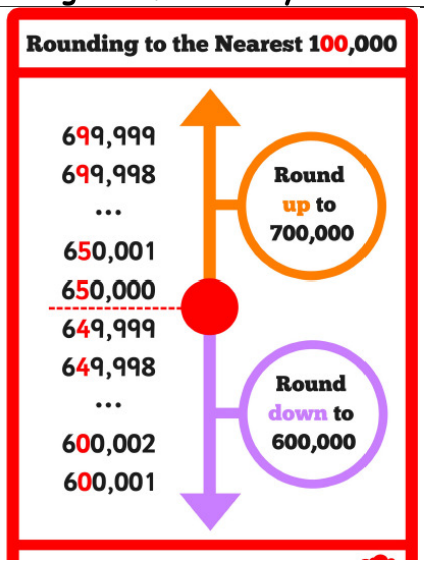
When looking at large numbers, discuss what each digit is worth.

For example, in 4,520,316, what is the 2 worth? 20,000.

Ten-millions	Millions	Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Ones

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

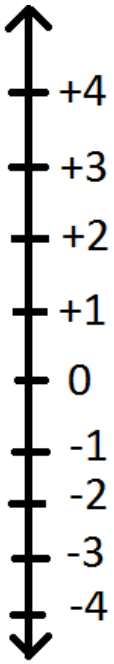




Remember the rules of rounding:
1,2,3,4 – round it down.
5,6,7,8,9 – round it up. (Children can use rhymes to help.)

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

$\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$

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

$\frac{15}{21} - \frac{14}{21} = \frac{1}{21}$

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

Multiplying fractions by fractions

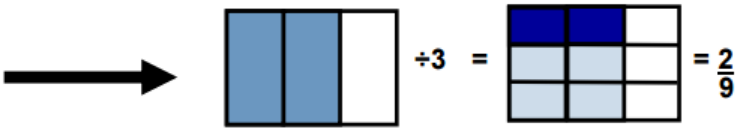
$\frac{2}{3} \times \frac{3}{4} = \frac{2 \times 3}{3 \times 4} = \frac{6}{12}$

Children should then use their times table knowledge to simplfy the fractions. Eg. 6/12 can be simplified to $\frac{1}{2}$.

I can divide proper fractions by whole numbers

Dividing fractions by whole numbers

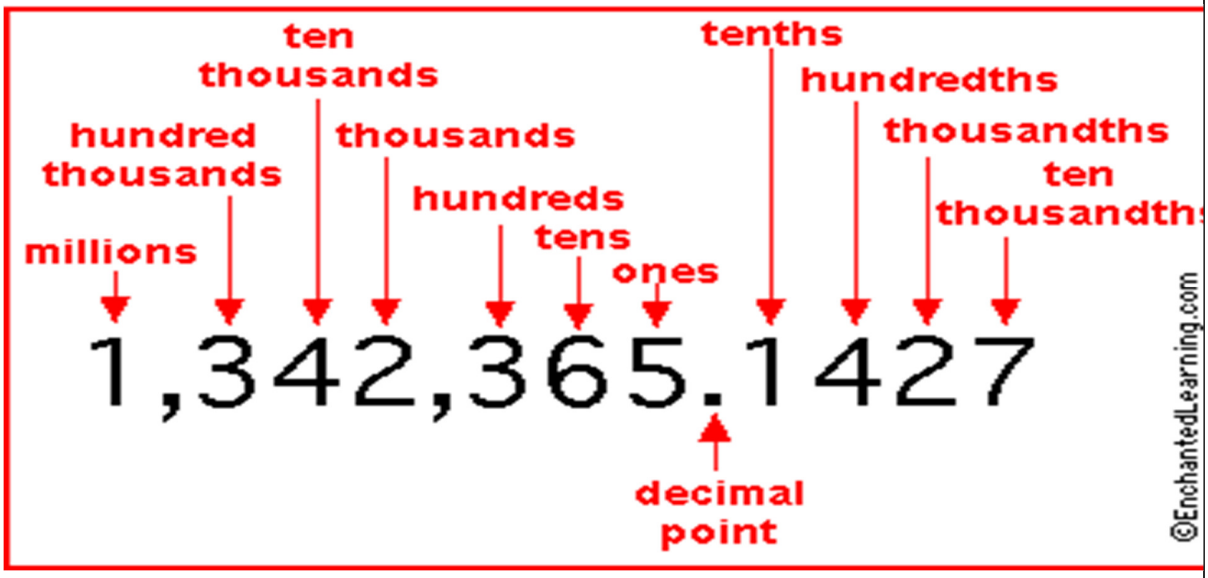
$\frac{2}{3} \div 3 = \frac{2}{3 \times 3} = \frac{2}{9}$



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

Eg. 546, 789 Ask your child the value of certain digits such as the 6 is worth 6000 (six thousand)

Eg. 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

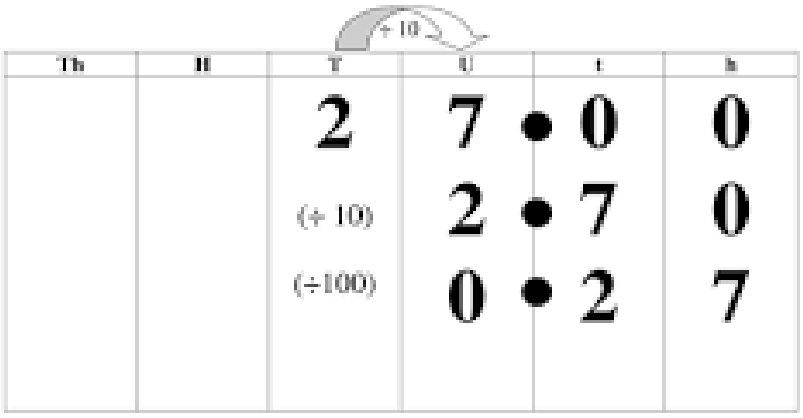
10 000	1000	100	10	1 •	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
				•			

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

$$\begin{array}{r} 2.4 \\ \times \quad 5 \\ \hline 12.0 \\ {\scriptstyle 2} \end{array}$$

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

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

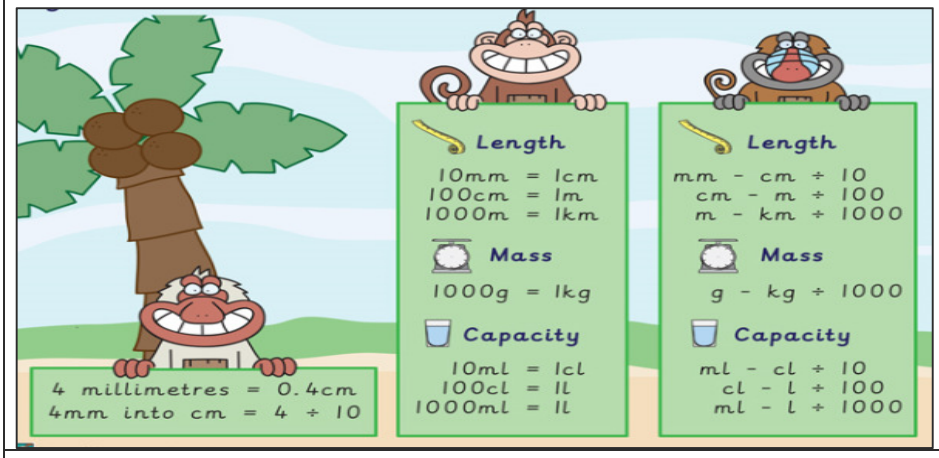
Know the basic fraction, decimal and percentage equivalences:

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

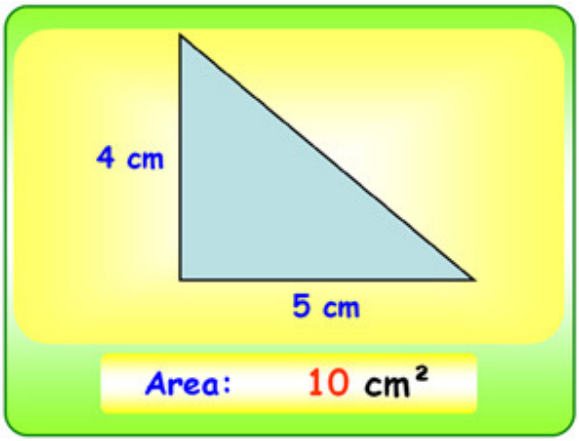
A good chance to practice this skill is on car journeys. Change the distances on road signs from miles to kilometres.

1 kilometre = 5/8 mile

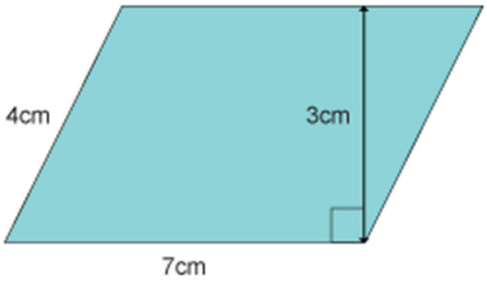
To convert from miles to kilometres multiply the amount of miles by 1.6. (eg. 5 x 1.6 = 8)

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



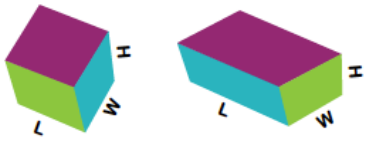
The area of a parallelogram is found by multiplying the base by the height – don't get tricked by the length of the side as it's not needed!



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

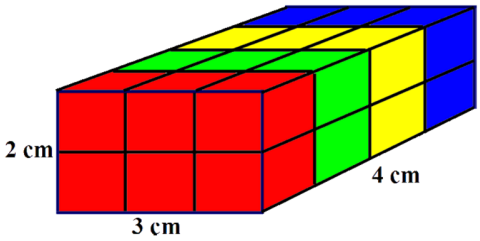
I can calculate, estimate and compare volume of cubes and cuboids, using standard units

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

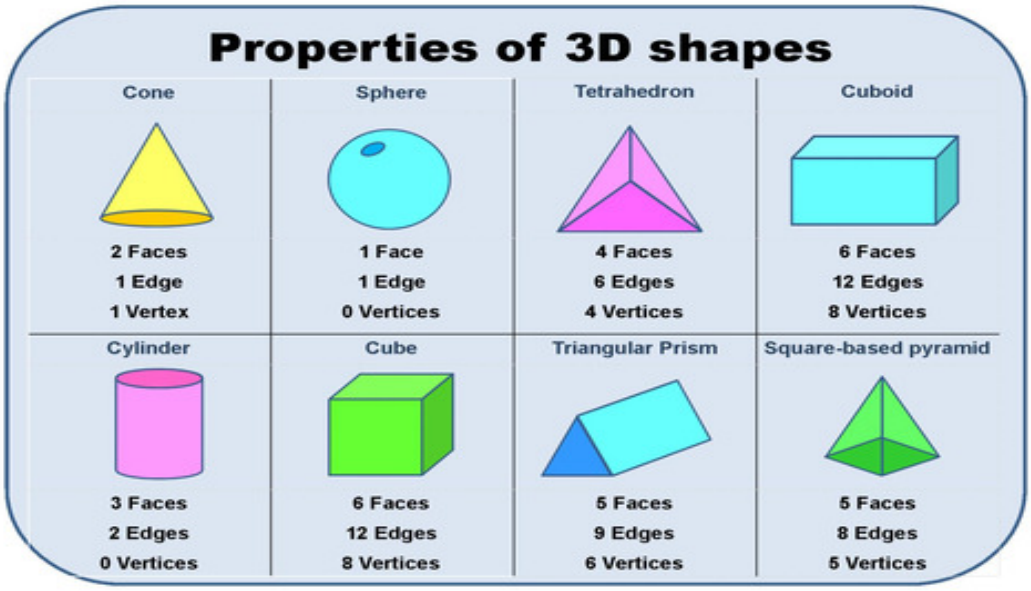


This shape would be 24cm³

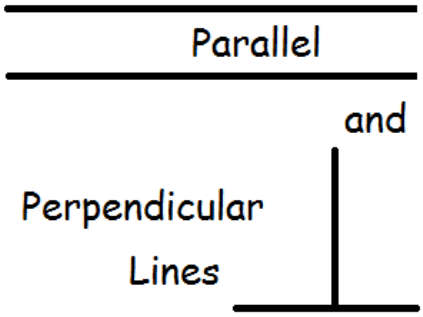
Geometry –properties of shapes

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 ° angles)

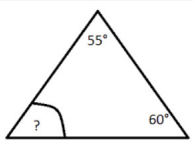
I recognise and build simple 3D shapes, including making nets

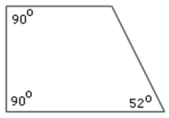
Children can enjoy taking packaging apart and looking at the net of a 3D shape. Can they rebuild the shape?
Another activity children enjoy is making 3D shapes with straws and blu tak or even spaghetti and marshmallows at the corners!

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.

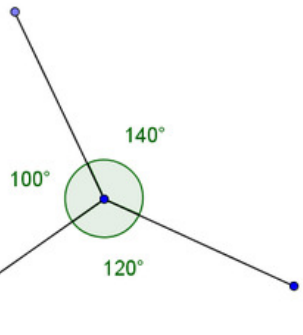




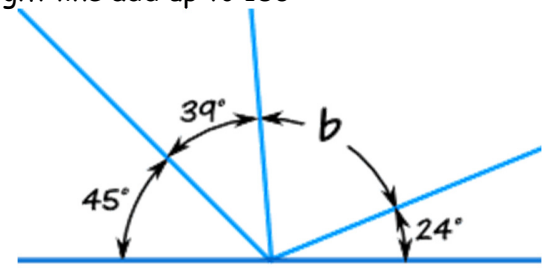
I recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Again recall key facts:

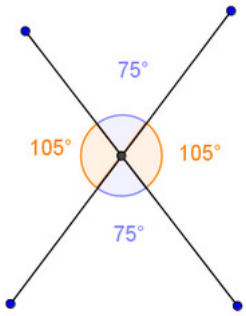
- Angles that meet at a point add up to 360°



- Angles on a straight line add up to 180°

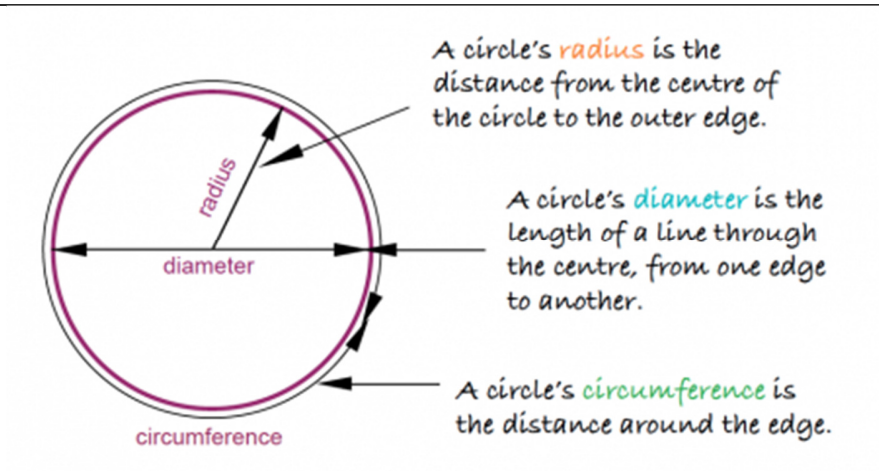


- Angles vertically opposite are the same



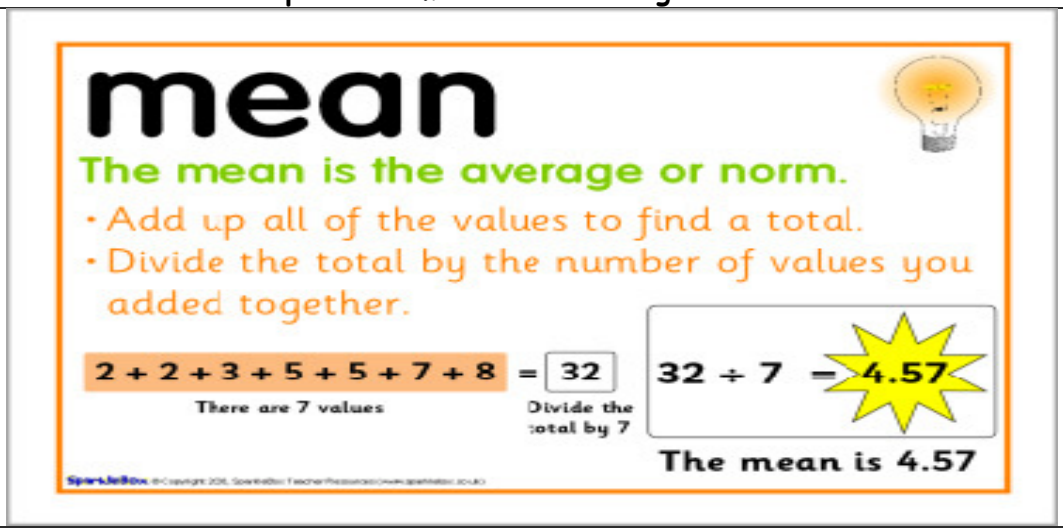
Give children examples with numbers missing for them to calculate and practice their skills.

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



Remind children that diameter of a 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
- BODMAS
- 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