

End of year Maths Expectations for Year 6

This booklet contains:

- National Curriculum objectives for year 6 • children in maths;
- Important number facts that children need to know by the of year 6;
- Hints and tips for helping your child at home.

Mathematics at Grayshott

Place Value

- Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.
- Round any whole number to a required degree of accuracy.
- Use negative numbers in context, and calculate intervals across 0.
- Solve number and practical problems that involve all of the above. •

Addition, subtraction, multiplication and division:

- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret • remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.
- Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, • interpreting remainders according to the context.
- Perform mental calculations, including with mixed operations and large numbers.
- Identify common factors, common multiples and prime numbers.
- Use their knowledge of the order of operations to carry out calculations involving the 4 operations. ٠
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Solve problems involving addition, subtraction, multiplication and division.
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy,

Number - fractions

- Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. •
- Compare and order fractions, including fractions >1. ٠
- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
- Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\overline{4} \times \overline{2} = \overline{8}$].
- Divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]. •
- Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for

example, $\overline{8}$].

- Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 ٠ giving answers up to 3 decimal places.
- Multiply one-digit numbers with up to 2 decimal places by whole numbers.
- Use written division methods in cases where the answer has up to 2 decimal places.
- Solve problems which require answers to be rounded to specified degrees of accuracy
- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Ration and Proportion

- Solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts.
- Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison.
- Solve problems involving similar shapes where the scale factor is known or can be found. •
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Year 6- Maths



Learning the important number facts:

The following games can be played at home with minimal resources to keep those important number facts fresh in your child's

mind!



Ping Pong

This is a great game for learning number bonds or number facts, for example,

5x table. Start off by saying 'ping' and your child replies with 'pong.' keep repeating this in order to build up a rhythm and then replace the 'ping' with a number to multiply by 5, e.g. 6. Once you say 6, your child should reply with 30 because 6 x 5 is 30. Then start again with ping, before replacing it with another number.

If this is the answer.....

.....what is the question? Give children a number and say 'This is my answer, what is the question?' For example, you could say 'my answer is 0.1' Your child will need to think of potential questions e.g. $1 \div 10 = 0.1$

Interactive Games

www.topmarks.co.uk - This website has a whole range of games for your child to play which are suitable for both tablet and desktop computers.



Around the house

• Talk about numbers in sport. How many points does your team need to avoid relegation? How many goals/ tries/conversions/points/runs has your team scored this season?

• **Cooking.** Measure ingredients and set the timer together. Talk about fractions in cooking, for example ask them how many quarter cups make a cup.

• Talk about proportions when you make a cup of tea or squash as them how much milk or how much water they're using.

• Talk about the shape and size of objects. Use the

internet to find interesting facts like tallest and shortest people, or biggest and smallest buildings etc.

• Talk about time. For example get them to work out what time you need to leave the house to get to school on time.

• Look for maths on TV, newspapers, magazines and talk about it together.

• Use newspapers. Talk to your child about percentages in special offers, the probability in the weather reports, the length of TV shows and compare the salaries in the jobs section.

• Solve maths problems at home. For example 'we have 3 pizzas cut into quarters, if we eat 10 quarters, how many will be left?'

• Talk about shape, size and quantity. Use the internet to find interesting size facts like most and least populated cities, highest mountains or deepest valleys etc.

Taken from www.familymathstoolkit.org.uk

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Year 6- Number Facts

In order to meet age related expectations, your child will need to know the following number facts:

Measure

Multiplication and Division To be able to find related facts from knowing the 12 x

- Formula for area of a quadrilateral = length x width
- Formula for area of a triangle = $\frac{1}{2}$ base x height
- Formula for finding the volume of a cube = length x width x height
- 90 minutes = 1 ½ hours

1km = 0.621371 miles

Fractions

All year 5 number facts.

- $^{1}/_{8} = 12.5\% = 0.125$
- $^{1}/_{3} = 33.3\% = 0.333$

12 multiplication and division facts. For example..... 12 x 5 = 60 60 ÷ 5 = 12 $1.2 \times 5 = 6 \quad 6 \div 5 = 1.2$

5 x 7 = 35 5 x 0.7 = 3.5

5 x 0.07 = 0.35

- Recognise all square numbers to 12 x 12.
- Recognise all prime numbers to 19
- 10,000 ÷ 2 = 5000
- $10,000 \div 4 = 2500$
- 10,000 ÷5 = 2000
- 10.000 ÷ 10 = 1000

 $10.000 \div 100 = 100$

Place Value

- To know complements to 360.
- Know complements to 180
- Recognise multiples of 90.
- Know that the angles in a triangle total 180 degrees
- Know that the angles in a quadrilateral total 360 degrees
- Know that the angles of a straight line total 180 degrees
- $360 \div 4 = 90$ and $\frac{1}{4}$ of 360 = 90
- $360 \div 2 = 180$ and $\frac{1}{2}$ of 360 = 180
- ³/₄ of 360 = 270

Algebra

- Use simple formulae.
- Generate and describe linear number sequences.
- Express missing number problems algebraically.
- Find pairs of numbers that satisfy an equation with 2 unknowns.
- Enumerate possibilities of combinations of 2 variables.

Measurement

- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate.
- Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places.
- Convert between miles and kilometres.
- Recognise that shapes with the same areas can have different perimeters and vice versa.
- Recognise when it is possible to use formulae for area and volume of shapes. ٠
- Calculate the area of parallelograms and triangles.
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³].

Geometry - properties of shapes

- Draw 2-D shapes using given dimensions and angles.
- Recognise, describe and build simple 3-D shapes, including making nets.
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any trian-٠ gles, quadrilaterals, and regular polygons.
- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Geometry - position and direction

- Describe positions on the full coordinate grid (all 4 quadrants).
- Draw and translate simple shapes on the coordinate plane, and reflect them in the axes •

Statistics

- Interpret and construct pie charts and line graphs and use these to solve problem.
- ٠ Calculate and interpret the mean as an average.

