

YEAR 7 MATHS - HIGHER – SPRING 2

1) Fractions and Decimals

Adding & subtracting decimals

If fractions do not have the same denominator, change them into *equivalent fractions* which do have the same denominator before adding or subtracting.

(a) $\frac{1}{6} + \frac{1}{3} = \frac{1}{6} + \frac{2}{6} = \frac{3}{6} = \frac{1}{2}$

(b) $\frac{7}{8} - \frac{3}{4} = \frac{7}{8} - \frac{6}{8} = \frac{1}{8}$

(c) $\frac{2}{5} + \frac{3}{7} = \frac{14}{35} + \frac{15}{35} = \frac{29}{35}$

cancel final answer if you can

Calculating with Decimals

(a) $7.8 - 3.64$

$$\begin{array}{r} 7.80 \\ -3.64 \\ \hline 4.16 \end{array}$$

(b) 4.2×0.6

$$\begin{array}{r} 4.2 \\ \times 0.6 \\ \hline 2.52 \end{array}$$

(c) $10.56 \div 8$

$$\begin{array}{r} 1.32 \\ 8 \overline{) 10.56} \\ \underline{8} \\ 25 \\ \underline{24} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

line up the decimal points

The answer has the same number of figures after the point as there are in the numbers being multiplied

3) Properties of number

Prime numbers

A *prime* number is divisible by only two different numbers: by itself and by one. The first six prime numbers are 2, 3, 5, 7, 11, 13. Note that one is *not* a prime number.

Factors

- The number 12 can be written as two numbers multiplied together in three different ways

1×12 2×6 3×4

The numbers 1, 12, 2, 6, 3, 4 are all the *factors* of 12.

Multiples

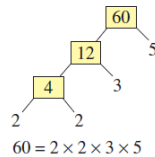
The *multiples* of 5 divide by 5 with no remainder.

The first four multiples of 5 are 5, 10, 15, 20.

The first four multiples of 6 are 6, 12, 18, 24.

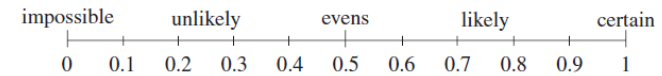
"The multiples of 5 are the numbers in the 5 times table"

Non-prime numbers can all be expressed as the product of prime factors. These are found using a tree diagram:



We sometimes need the Highest Common Factor (HCF) of two numbers. Start by listing all the factors of both numbers, then choose the biggest number which is present in both lists. The Lowest Common Multiple (LCM) can usually be found by listing the first 6 multiples of both numbers, and finding the smallest one present in both lists.

2) Probability



Expected probabilities are calculated by **thinking** about the question. For example, the chance of a '5' on a normal dice is 1/6.

$$\text{Expected probability} = \frac{\text{the number of ways the event can happen}}{\text{the number of possible outcomes}}$$

Experimental probabilities are found by carrying out **experiments**. For example, actually throwing a dice 100 times and observing '5' coming-up 16 times.

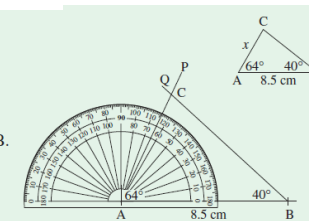
$$\text{Experimental probability} = \frac{\text{number of trials in which a success occurs}}{\text{Total number of trials made}}$$

4) Constructions

Triangles with two angles and one side

Draw the triangle ABC full size and measure the length *x*.

- Draw a base line *longer than 8.5 cm*
- Put the centre of the protractor on A and measure an angle 64° . Draw line AP.
- Similarly draw line BQ at an angle 40° to AB.
- The triangle is formed. Measure $x = 5.6$ cm.



Triangles with three sides given

Draw triangle XYZ and measure $\angle XZY$.

Start by drawing the 7cm line. Then use a compass to draw arcs 8cm from X and 5cm from Y.

