Factors, HCF, LCM

Vocabulary

Prime: a number which has only 2 factors (1 and itself). *E.g. 2, 3, 5, 7, 11*

Factor: a factor is any number you can divide by and still get an integer (whole number) answer. *E.g. 1,2 and 4 are factors of 4.*

Common: found in more than one list.

HCF (Highest Common Factor): the highest factor for the numbers

LCM (Lowest Common Multiple): the lowest multiple for the numbers

---

Factors   Mathswatch Video: N10

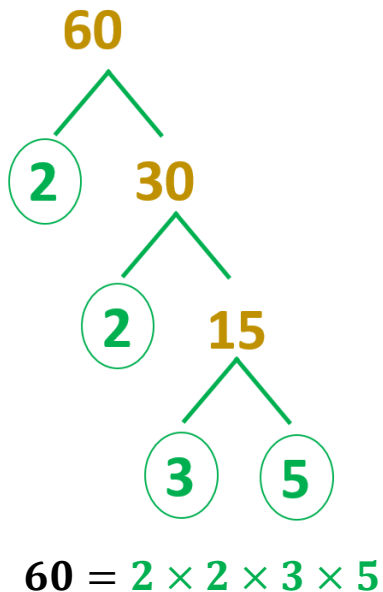**Factors of 10**: 1, 2, 5, 10 ← These are the numbers that you can divide 10

Factors of 20: 1, 2, 4, 5, 10, 20

HCF: the highest common factor of 10 and 20 is 10

Multiples: Mathswatch Video: N11

Multiples of 5: 5, 10, 15, 20, 25 etc.

Multiples of 20: 20, 40, 60, 80, 100 etc.

LCM: the lowest common multiple of 5 and 20 is 20

Prime Factor Trees   Mathswatch Video: N30b

Break down your number using a factor tree. Use pairs of factors, making sure each pair of factors can be multiplied together to find the number above it.

$$60 = 2 \times 2 \times 3 \times 5$$

Step 1: Put your number at the top and then break it down into a **pair of factors**.
Check it is a pair, e.g. 2 x 30 = 60

Step 2: If you get a **prime**, circle it and leave it.

Step 3: If you get a **non-prime**, break it down again.

Step 4: Keep going until all of your numbers are **prime** (circled).

Step 5: Write the number as a product of its prime factors, e.g. 60 = 2x2x2x5

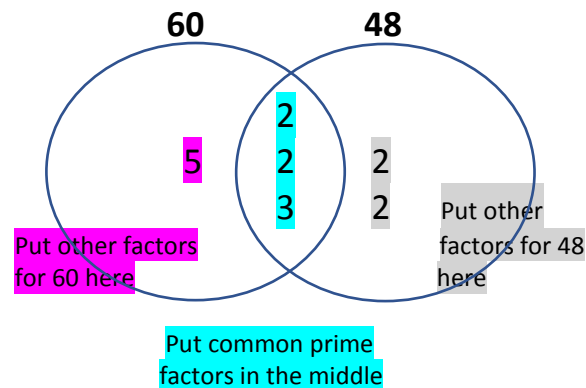## Venn Diagram HCF and LCM   Mathswatch Video: N31a/b

E.g. find the LCM and HCF of **60** and **48**.

Step 1: Use a **prime factor tree** to write out the numbers as **products of their prime factors**. (Use trees like on the left-hand side of this sheet).

60 = 2 x 2 x 3 x 5
48 = 2 x 2 x 2 x 2 x 3

Put other factors for 60 here

Put common prime factors in the middle

Put other factors for 48 here

Step 2: Add the common factors to the middle

Step 3: Add the other factors to each side of the Venn diagram

HCF = prime factors in the middle multiplied together.
E.g. 2 x 2 x 3 = 12

LCM = all prime factors in the Venn diagram multiplied together.
E.g. 5 x 2 x 2 x 3 x 2 x 2 = 240