



Knowledge Organiser: Factors, Multiples and Primes

What you need to know:

Multiples and factors

Multiples: The result of multiplying a number by an integer. It is the times table of a number.

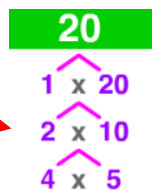
Multiples of 4: 4, 8, 12, 16, 20 ...

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

Multiples are the list of times tables.

Factors: A number that divides exactly into another number without a remainder. It is often helpful to write them in pairs.

Write them in pairs first so you don't miss any!



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

Prime numbers

Prime: This is a number that has exactly 2 factors; 1 and itself.

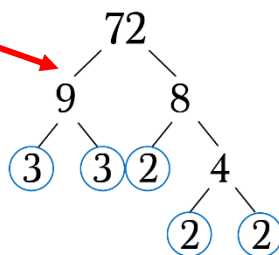
2 is the only even prime. The first 10 prime numbers are:

2, 3, 5, 7, 11, 13, 17, 19, 23, 29

These are not the only prime numbers.

Prime factorisation: This is when we split a number into its prime factors using a factor tree. We circle the prime factors.

We need to find pairs of numbers that multiply to give the number above.



If a number is repeated we write it as a power.

$$72 = 2^3 \times 3^2$$

Key Terms:

Prime number: A prime is a number that has only two factors which are 1 and itself.

Multiple: A number in the given numbers times table.

Factor: A number that fits into another number exactly.

LCM: The smallest number that is in the times tables of the given numbers.

HCF: The biggest number that divides exactly into two or more numbers.

You need to be able to:

- Identify factors and multiples.
- Identify a prime number.
- Complete a prime factor tree and write the number in index notation.
- Calculate HCF and LCM of two values using an appropriate method.

Hegarty maths clip numbers

Factors and Multiples: 27 and 33

Prime Numbers and HCF and

LCM: 28 – 32, 34 – 36



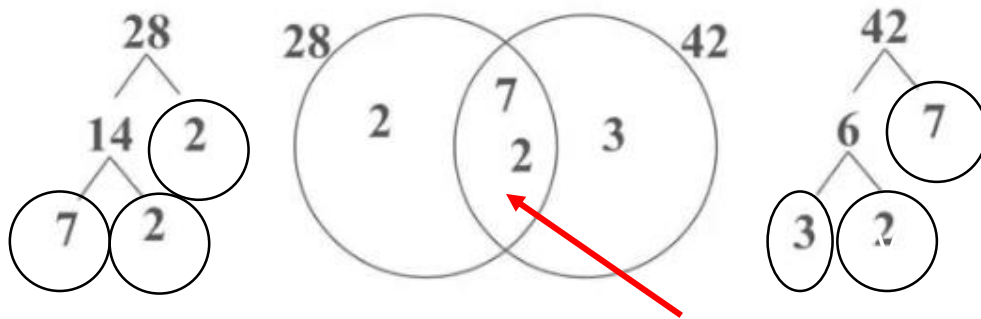


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What you need to know:

HCF

This is where we find the biggest number that divides exactly into two or more numbers.



The prime numbers (the circled numbers go in the venn diagram.

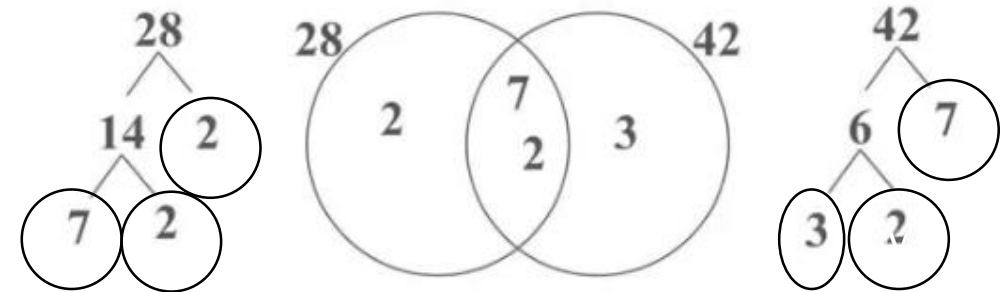
To calculate the HCF we multiply all of the numbers in the intersection.

The HCF of 28 and 42 = $7 \times 2 = 14$

Remember numbers that appear in both prime factor tree's go in the middle of the venn diagram.

LCM

This is where we find the smallest number that appears in the given numbers times tables.



There are 2 different ways of calculating the LCM:

Method 1:

Multiply all of the numbers in the venn diagram = $2 \times 7 \times 2 \times 3 = 84$

Method 2:

Multiply the large number outside the venn diagram by the small numbers in the opposite circle:

$28 \times 3 = 84$ or $42 \times 2 = 84$

All 3 calculations give you the same answer so you could do all 3 to check your answer is correct.

The LCM of 28 and 42 = 84