

## Highest Common Factor (HCF)

How to find the HCF of two numbers

For each number, start dividing by prime numbers, starting with 2, and list all the numbers you use

To find the HCF, get all the numbers that appear in each list and multiply them together. The answer is the HCF

### Example

Find the HCF of 240 and 150

Draw a tree for each number

240	Primes
$240/2 = 120$	2
$120/2 = 60$	2
$60/2 = 30$	2
$30/3 = 10$	3
$10/5 = 2$	5
$2/2 = 1$	

150	Primes
$150/2 = 75$	2
$75/3 = 25$	3
$25/5 = 5$	5
$5/5 = 1$	5

$$240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5$$

$$150 = 2 \times 3 \times 5 \times 5$$

Both lists have a single 2 in common, a single 3 and a single 5 so the HCF is  $2 \times 3 \times 5 = 30$

Why not try a few now?

Find the HCF of

1. 120 and 40
2. 120 and 80
3. 120 and 150
4. 240 and 75

Answers on the next page. Don't cheat!!

## Answers

1. 120 and 40

$$120 = 2 \times 2 \times 2 \times 3 \times 5$$

$$40 = 2 \times 2 \times 2 \times 5$$

Numbers in common are 2, 2, 2 & 5 so  $HCF = 2 \times 2 \times 2 \times 5 = 40$

2. 120 and 80

$$120 = 2 \times 2 \times 2 \times 3 \times 5$$

$$80 = 2 \times 2 \times 2 \times 2 \times 5$$

Numbers in common are 2, 2, 2 & 5 so  $HCF = 2 \times 2 \times 2 \times 5 = 40$

3. 150 and 120

$$150 = 2 \times 3 \times 5 \times 5$$

$$120 = 2 \times 2 \times 2 \times 3 \times 5$$

Numbers in common are 2, 3 & 5 so  $HCF = 2 \times 3 \times 5 = 30$

4. 240 and 75

$$240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5$$

$$75 = 3 \times 5 \times 5$$

Numbers in common are 3 & 5 so  $HCF = 3 \times 5 = 15$