

Lesson 13 – HCF and LCM

Starter

- 1) Find the factors of 72
- 2) Find the first 6 multiples of 7
- 3) Write 64 as the product of prime factors
- 4) Write down a square number that is also a factor of 20

Starter Answers

- 1) 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72
- 2) 7, 14, 21, 28, 35, 42
- 3) $64 = 2^6$
- 4) 1 or 4

Highest Common Factor (HCF)

Example 1

Find the highest common factor of 16 and 24

First find the factors of both numbers:

16
1, 16
2, 8
4, 4

24
1, 24
2, 12
3, 8
4, 6

Next, highlight all of the common factors. These are the factors that are in both Lists

The common factors are 1, 2, 4 and 8

The HCF is the highest common factor

So HCF = 8

Example 2

Find the highest common factor of 36 and 64

36
1, 36
2, 18
3, 12
4, 9
6, 6

64
1, 64
2, 32
4, 16
8, 8

Common factors = 1, 2, 4

HCF = 4

Lowest Common Multiple (LCM)

Example 3

Find the lowest common multiple of 6 and 8

First list the multiples of 6 and the multiples of 8:

6, 12, 18, 24, 32, ...

8, 16, 24, 32, 40, ...

Look for the first number that matches in both lists. This is the lowest common multiple.

LCM = 24

Example 4

Find the lowest common multiple of 12 and 15

12, 24, 36, 48, 60, ...

15, 30, 45, 60, ...

LCM = 60

Example 5

A bus to York and a bus to Leeds leave the station at 9am.

A bus to York then leaves every 15 minutes.

A bus to Leeds then leaves every 21 minutes.

What time will it be when the two buses leave the station at the same time?

This is a LCM problem

York: 15, 30, 45, 60, 75, 90, 105, ...

Leeds: 21, 42, 63, 84, 105, ...

They will both leave 105 minutes later. 105 minutes is 1 hour and 45 minutes
Add 1 hour and 45 minutes on to 9am.

Answer = 10:45am