Grade 9 Math, Explained

Unit 10 · Highest Common Factor and Lowest Common Multiple

HARDER PRACTICE QUESTIONS

Full marks 22

Write your answers on separate paper. Show your working. Factorize every expression completely first.

1 Three expressions [4]

Find the HCF and the LCM of $x^2 - 4$, $x^3 - 8$ and $x^4 + 4x^2 + 16$. What do you notice about the HCF, and about the LCM?

2 Work backwards [3]

The HCF of two expressions is $x + 3$ and their LCM is $(x + 3)(x - 3)(x^2 - 3x + 9)$. One of them is $x^2 - 9$. Find the other, and write it without brackets.

3 Common factors and numbers first [3]

Find the HCF and the LCM of $2x^4 - 16x$ and $4x^3 + 8x^2 + 16x$.

4 A factor two of them share [3]

Find the HCF and the LCM of $a^2 - b^2$, $a^3 + b^3$ and $a^2 + 2ab + b^2$.

5 Spot the error [2]

Find the mistake and correct it.

Zeenat found the HCF of x, x^2 and x^3 to be x, and then wrote: "so their LCM is $\frac{x \times x^2 \times x^3}{x} = x^5$."

6 In a real setting [3]

A floor 4.2 m long and 3.6 m wide is to be covered with square tiles, all the same size, with no tile cut. What is the largest tile that can be used, and how many are needed? Would 20 cm tiles also fit without cutting? How many then?

7 Who is wrong? [2]

Give a reason.

Lochan says the HCF of $x^2 - 9$ and $x^3 - 27$ is $x - 3$. Kopila puts $x = 6$: the expressions are 27 and 189, whose HCF is 27, not $6 - 3 = 3$. So she says Lochan is wrong. Who is right?

8 Make your own [2]

Make up two different pairs of expressions, each with HCF $x + 1$ and LCM $(x + 1)(x - 1)(x^2 - x + 1)$.