

HARDER HCF & LCM

Task 1 – Use the prime factorisation of the following numbers to answer the questions below.

$$A = 2^5 \times 3^2 \times 5^3$$

$$B = 2^3 \times 3 \times 5$$

$$C = 2 \times 3^3 \times 7^2$$

$$D = 2^4 \times 3^2 \times 5 \times 7$$

$$E = 2^3 \times 3 \times 5^2 \times 11$$

$$F = 3^3 \times 5 \times 7 \times 13$$

- 1) Work out the HCF of A and B.
- 2) Work out the HCF of B and D.
- 3) Work out the HCF of D and E. Give your answer as a product of prime factors.
- 4) Work out the HCF of A and E.
- 5) Work out the HCF of B, C and D.
- 6) Work out the LCM of A and C. Give your answer as a product of prime factors.
- 7) Work out the LCM of B and F.
- 8) Work out the LCM of D and E.
- 9) Work out the LCM of A and E.
- 10) Work out the LCM of A, B and D. Give your answer as a product of prime factors.

Task 2

11) Let,

$$A = 2^6 \times 3^3 \times 7^2$$

$$B = 2^3 \times 3^2 \times 11$$

- a. Work out the HCF of A and B.
- b. Work out the LCM of A and B.

12) Given that

$$C = 3^2 \times 5 \times 7$$

$$D = 3^3 \times 5^2 \times 7^2$$

- a. Work out the HCF of C and D.
- b. Find the LCM of C and D, giving your answer in index form.

13) Given that

$$E = 2^4 \times 3^2 \times 5^3$$

$$F = 2^3 \times 3 \times 7$$

- a. Work out the HCF of E and F.
- b. Work out the LCM of E and F.

14) Let $G = 3 \times 5^2 \times 11^2$ and $H = 15 \times 11 \times 7^2$.

- a. Work out the HCF of G and H.
- b. Write the product $G \times H$ as a product of prime factors in simplest form.

15) Given $A = 2^4 \times 3^a \times 7^b$, write $35A$ as a product of prime factors, in terms of a and b .

16) Given $B = 2^x \times 3^y \times 5^2$, write $270B$ as a product of prime factors in terms of x and y .