



# 1.3 – HCF and LCM

Student name: \_\_\_\_\_ Score: \_\_\_\_\_

1. Find the highest common factor (HCF) in each list.

(a) 24 56 72

8

..... [1]

(b)  $x^3y^4$   $x^2y^5$   $x^4y^2$

$x^2y^2$

..... [2]

2. Find the lowest common multiple (LCM) of 20 and 24.

120

..... [2]

3. Find the highest common factor (HCF) of  $8x^3y^4$  and  $12x^4y$ .

$4x^3y$

..... [2]

4.  $a = 3^4 \times 5^2$   $b = 2^2 \times 3^3 \times 5^2$

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

Leaving your answer as the product of prime factors, find

(i) the highest common factor (HCF) of  $a$ ,  $b$  and  $c$ ,

$3^2 \times 5^2$

..... [1]

(ii) the lowest common multiple (LCM) of  $a$ ,  $b$  and  $c$ .

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

..... [2]

5. (a) 3023 is a prime number.

Write down the factors of 3023.

1 and 3023

..... [1]

(b)  $p$  and  $q$  are prime numbers.

(i) Write down the highest common factor (HCF) of  $p$  and  $q$ .

1

..... [1]

(ii) Write down an expression, in terms of  $p$  and  $q$ , for the lowest common multiple (LCM) of  $p$  and  $q$ .

$pq$

..... [1]

6.  $a = 2^5 \times 3^2 \times 7^3$   $b = 2^3 \times 3^4 \times 5$

Leaving your answer as the product of prime factors, find

(a)  $b^2$ ,

$2^6 \times 3^8 \times 5^2$

..... [1]

(b) the highest common factor (HCF) of  $a$  and  $b$ ,

$2^3 \times 3^2$

..... [1]

(c) the lowest common multiple (LCM) of  $a$  and  $b$ .

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

..... [2]



7. Find the highest common factor (HCF) of 60 and 90.

.....30..... [1]

8. Write 36 as a product of prime factors.

..... $2 \times 2 \times 3 \times 3$  or  $2^2 \times 3^2$ ..... [2]

9. Find the highest common factor (HCF) of 96 and 60.

.....12..... [1]

10. Find the highest common factor (HCF) of  $8p^4q^8$  and  $4p^3q^{10}$ .

..... $4p^3q^8$ ..... [2]

11. Write 90 as the product of its prime factors.

..... $2 \times 3 \times 3 \times 5$  or  $2 \times 3^2 \times 5$ ..... [2]

12. (a) Express 175 as the product of its prime factors.

..... $5 \times 5 \times 7$  or  $5^2 \times 7$ ..... [2]

(b) Kurt has two timers.

One is set to ring every 175 minutes.

The other is set to ring every 70 minutes.

Both timers ring together at 09 15.

Find the time when the timers next ring together.

.....15.05..... [3]

13. Written as the product of their prime factors,

$$7056 = 2^4 \times 3^2 \times 7^2 \quad \text{and} \quad 8232 = 2^3 \times 3 \times 7^3.$$

Giving your answers as the product of prime factors, find

(a) the highest common factor (HCF) of 7056 and 8232,

..... $2^3 \times 3 \times 7^2$ ..... [1]

(b) the lowest common multiple (LCM) of 7056 and 8232,

..... $2^4 \times 3^2 \times 7^3$ ..... [1]

(c)  $\sqrt{7056}$ .

..... $2^2 \times 3 \times 7$ ..... [1]

14. Find the highest common factor (HCF) of 30, 48 and 66.

.....6..... [1]

15. Find the lowest common multiple (LCM) of 12 and 15.

.....60..... [2]



16. Written as the product of its prime factors,  $540 = 2^2 \times 3^3 \times 5$ .

(a) Write 360 as a product of its prime factors.

$2^3 \times 3^2 \times 5$  ..... [2]

(b) Find the highest common factor (HCF) of 540 and 360.

$180$  or  $2^2 \times 3^2 \times 5$  ..... [1]

(c)  $540n$  is a cube number.

Find the smallest possible value of  $n$ .

$50$  or  $2 \times 5^2$  ..... [1]