

Factors, Multiples, HCF and LCM

Mathematics · Class 5 · Topic-wise Practice Worksheet

TIME 45 minutes	QUESTIONS 18	TOTAL MARKS 24	MAX. SCORE ___ / 24
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Name: _____ Class/Sec: _____ Date: _____

INSTRUCTIONS

- There are **18 questions** in this worksheet. All questions are compulsory.
- Each question has four options (A), (B), (C) and (D). Exactly **one** option is correct.
- Questions 1–15 carry **1 mark** each. Questions 16–18 (Achievers Section) carry **3 marks** each.
- There is no negative marking. Use of a calculator is **not** allowed.
- Rough work may be done in the space at the side of each page.

Section A — Mathematical Reasoning

Q1–Q8 · 1 mark each

- How many factors does 36 have?
(A) 6 (B) 8
(C) 9 (D) 12
- The prime factorisation of 84 is _____.
(A) $2 \times 2 \times 3 \times 7$ (B) $2 \times 3 \times 14$
(C) 4×21 (D) 2×42
- Which of these numbers is divisible by 11?
(A) 4,829 (B) 3,487
(C) 5,346 (D) 6,721
- The HCF of 24, 36 and 60 is _____.
(A) 4 (B) 6
(C) 12 (D) 18
- The LCM of 8 and 12 is _____.
(A) 4 (B) 24
(C) 48 (D) 96
- Two numbers are said to be **co-prime** if their HCF is _____.
(A) 0 (B) Their product
(C) 2 (D) 1
- Which of these is a prime number?
(A) 51 (B) 57
(C) 61 (D) 91
- For any two numbers, $\text{HCF} \times \text{LCM}$ equals _____.
(A) Their product (B) Their difference
(C) Their sum (D) Their quotient

9. Three bells ring at intervals of 6, 8 and 12 minutes. If they ring together at 9:00 a.m., at what time will they next ring together?
- (A) 9:12 a.m. (B) 9:48 a.m.
(C) 9:36 a.m. (D) 9:24 a.m.
10. Two ropes of lengths 48 m and 72 m are cut into pieces of equal length, as long as possible, with nothing wasted. How long is each piece?
- (A) 24 m (B) 12 m
(C) 8 m (D) 144 m
11. In the table below, which row is **incorrect**?

Row	Statement
(A)	1 is neither prime nor composite
(B)	2 is the only even prime number
(C)	The HCF of two numbers is never greater than either of them
(D)	The LCM of two numbers is always smaller than both of them

Table 11.1

- (A) Row (A) (B) Row (B)
(C) Row (C) (D) Row (D)
12. What is the smallest number that is exactly divisible by 15, 20 and 25?
- (A) 100 (B) 150
(C) 300 (D) 600
13. A gardener has 60 roses and 84 marigolds. He makes identical bouquets using all the flowers, with no flower left over. What is the greatest number of bouquets he can make?
- (A) 6 (B) 12
(C) 20 (D) 24
14. For the number 3,4□,6 to be divisible by 9, the missing digit □ must be ____.
- (A) 2 (B) 4
(C) 5 (D) 8
15. The HCF of two numbers is 8 and their LCM is 96. If one number is 24, the other is ____.
- (A) 16 (B) 32
(C) 48 (D) 64

Achievers Section

Q16–Q18 · 3 marks each

16. Consider the following statements.
- (i) Every prime number greater than 2 is odd.
(ii) If a number is divisible by 4 and by 6, it must be divisible by 24.
(iii) The HCF of two co-prime numbers is 1.
- Which of the statements is/are correct?
- (A) (i) and (ii) only (B) (i) and (iii) only
(C) (ii) and (iii) only (D) All three

Answer Key

1	C	2	A	3	A	4	C	5	B
6	D	7	C	8	A	9	D	10	A
11	D	12	C	13	B	14	C	15	B
16	B	17	C	18	D				

Solutions

1. Answer: (C) 9

Pair up the factors: 1×36 , 2×18 , 3×12 , 4×9 , 6×6 .

The factors are 1, 2, 3, 4, 6, 9, 12, 18 and 36 — that is **9** factors. (A perfect square always has an odd number of factors.)

2. Answer: (A) $2 \times 2 \times 3 \times 7$

Divide by primes step by step: $84 \div 2 = 42$, $42 \div 2 = 21$, $21 \div 3 = 7$, and 7 is prime.

So $84 = 2 \times 2 \times 3 \times 7$. The other options still contain composite numbers.

3. Answer: (A) 4,829

For 11, take the digits alternately and find the difference of the two sums.

For 4,829: $(9 + 8) - (2 + 4) = 17 - 6 = 11$, which is a multiple of 11. So **4,829** works, and indeed $4,829 \div 11 = 439$.

4. Answer: (C) 12

Prime factorise each:

$$24 = 2^3 \times 3, 36 = 2^2 \times 3^2, 60 = 2^2 \times 3 \times 5.$$

Take the lowest power of each common prime: $2^2 \times 3 = 12$.

5. Answer: (B) 24

Multiples of 8: 8, 16, **24**, 32...

Multiples of 12: 12, **24**, 36...

The smallest number in both lists is **24**.

6. Answer: (D) 1

Co-prime numbers share no factor except 1, so their HCF is **1**. For example, 8 and 9 are co-prime even though neither is itself prime.

7. Answer: (C) 61

Test each: $51 = 3 \times 17$, $57 = 3 \times 19$ and $91 = 7 \times 13$, so those are composite. **61** has no factor other than 1 and itself, so it is prime.

8. Answer: (A) Their product

For any two numbers, $\text{HCF} \times \text{LCM} = \text{their product}$. For example, with 12 and 18: $\text{HCF} = 6$, $\text{LCM} = 36$, and $6 \times 36 = 216 = 12 \times 18$. ✓

9. Answer: (D) 9:24 a.m.

They ring together again after the LCM of 6, 8 and 12 minutes.

$$6 = 2 \times 3, 8 = 2^3, 12 = 2^2 \times 3.$$

$\text{LCM} = 2^3 \times 3 = 24$ minutes, so they next ring together at **9:24 a.m.**

10. Answer: (A) 24 m

The longest equal length is the HCF of 48 and 72.

$$48 = 2^4 \times 3 \text{ and } 72 = 2^3 \times 3^2.$$

$\text{HCF} = 2^3 \times 3 = 24 \text{ m}$. (This gives 2 pieces and 3 pieces.)

11. Answer: (D) Row (D)

The LCM is a **common multiple**, so it is never smaller than either number — it is at least as large as the greater one. The other three statements are all true.

12. Answer: (C) 300

We need the LCM.

$$15 = 3 \times 5, 20 = 2^2 \times 5, 25 = 5^2.$$

$$\text{LCM} = 2^2 \times 3 \times 5^2 = 4 \times 3 \times 25 = 300.$$

13. Answer: (B) 12

The greatest number of identical bouquets is the HCF of 60 and 84.

$$60 = 2^2 \times 3 \times 5 \text{ and } 84 = 2^2 \times 3 \times 7.$$

$\text{HCF} = 2^2 \times 3 = 12$ bouquets, each holding 5 roses and 7 marigolds.

14. Answer: (C) 5

For divisibility by 9 the digit sum must be a multiple of 9.

$$3 + 4 + \square + 6 = 13 + \square.$$

The next multiple of 9 above 13 is 18, so $\square = 18 - 13 = 5$.

Check: 3,456 has digit sum 18 and $3,456 \div 9 = 384$. ✓

15. Answer: (B) 32

HCF $\times$ LCM = product of the two numbers.

$$8 \times 96 = 24 \times \text{other}$$

$$768 = 24 \times \text{other, so the other number} = 768 \div 24 = \mathbf{32}.$$

16. Answer: (B) (i) and (iii) only

Statement (i) is true — any even number above 2 has 2 as a factor, so it cannot be prime. Statement (ii) is false; 4 and 6 share the factor 2, so the correct conclusion is divisibility by their LCM, 12. The number 12 itself is the counter-example. Statement (iii) is true by definition. Hence **(i) and (iii)**.

17. Answer: (C) 185

A number that leaves the same remainder each time is 'a common multiple plus that remainder'.

LCM of 12, 15 and 18: $12 = 2^2 \times 3$, $15 = 3 \times 5$, $18 = 2 \times 3^2$, so $\text{LCM} = 2^2 \times 3^2 \times 5 = 180$.

$$\text{Required number} = 180 + 5 = \mathbf{185}.$$

Check: $185 \div 12$ leaves 5, $185 \div 15$ leaves 5, $185 \div 18$ leaves 5. ✓

18. Answer: (D) 180 seconds

They meet at the start again after the LCM of their lap times.

$$45 = 3^2 \times 5 \text{ and } 60 = 2^2 \times 3 \times 5.$$

$$\text{LCM} = 2^2 \times 3^2 \times 5 = \mathbf{180 \text{ seconds}} \text{ (3 minutes). By then the first runner has done 4 laps and the second 3 laps.}$$