

Playing with Numbers

Mathematics · Class 6 · 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

- The prime factorisation of 180 is _____.
 (A) $2^2 \times 3 \times 5^2$ (B) $2^3 \times 3 \times 5$
 (C) $2 \times 3^3 \times 5$ (D) $2^2 \times 3^2 \times 5$
- Which of these numbers is divisible by 8?
 (A) 5,136 (B) 3,428
 (C) 7,214 (D) 9,342
- The HCF of two co-prime numbers is _____.
 (A) 0 (B) Their sum
 (C) Their product (D) 1
- The LCM of 16, 24 and 36 is _____.
 (A) 72 (B) 108
 (C) 144 (D) 288
- How many prime numbers are there between 1 and 20?
 (A) 6 (B) 7
 (C) 8 (D) 9
- A number is divisible by 6 if it is divisible by _____.
 (A) Both 2 and 3 (B) 3 only
 (C) 2 only (D) Either 2 or 3
- The smallest number that is a common multiple of 9 and 12 is _____.
 (A) 3 (B) 36
 (C) 72 (D) 108
- Which of these pairs is **not** co-prime?
 (A) 8 and 15 (B) 25 and 36
 (C) 9 and 16 (D) 14 and 21

9. Three lights flash at intervals of 20, 30 and 45 seconds. If they flash together now, after how many seconds will they next flash together?
- (A) 180 s (B) 120 s
(C) 90 s (D) 360 s
10. For the number 47,3□8 to be divisible by 3, the smallest possible value of □ is ____.
- (A) 0 (B) 1
(C) 2 (D) 4
11. In the table below, which row is **incorrect**?

Row	Test for divisibility by	Rule
(A)	4	Last two digits form a multiple of 4
(B)	5	Ends in 0 or 5
(C)	9	Last digit is 9
(D)	10	Ends in 0

Table 11.1 — Divisibility tests

- (A) Row (A) (B) Row (B)
(C) Row (C) (D) Row (D)
12. Two tankers hold 850 litres and 680 litres of diesel. What is the capacity of the largest container that can measure both amounts an exact number of times?
- (A) 85 litres (B) 170 litres
(C) 340 litres (D) 170 kilolitres
13. What is the smallest number which, when divided by 6, 8 or 15, leaves a remainder of 2 each time?
- (A) 62 (B) 120
(C) 122 (D) 182
14. The HCF of two numbers is 12 and their LCM is 240. If one number is 48, the other is ____.
- (A) 48 (B) 60
(C) 72 (D) 80
15. Which of the following numbers is divisible by **both** 3 and 11?
- (A) 5,203 (B) 2,431
(C) 3,146 (D) 1,452

Achievers Section

Q16–Q18 · 3 marks each

16. Consider the following statements.
- (i) The HCF of two numbers is always a factor of their LCM.
(ii) If a number is divisible by 9, it is divisible by 3.
(iii) The product of any two consecutive whole numbers is always odd.
- Which of the statements is/are correct?
- (A) (i) and (ii) only (B) (ii) and (iii) only
(C) (i) and (iii) only (D) All three

17. The floor of a room is 6 m 30 cm long and 4 m 20 cm wide. What is the side of the largest square tile that can pave the floor exactly, with no tile cut?
- (A) 210 cm (B) 70 cm
(C) 105 cm (D) 30 cm
18. A number leaves a remainder of 3 when divided by 5 and a remainder of 3 when divided by 7. What is the smallest such number greater than 3?
- (A) 33 (B) 38
(C) 35 (D) 73

Answer Key

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

Solutions

1. Answer: (D) $2^2 \times 3^2 \times 5$

Divide by primes: $180 \div 2 = 90$, $90 \div 2 = 45$, $45 \div 3 = 15$, $15 \div 3 = 5$, and 5 is prime.

So $180 = 2 \times 2 \times 3 \times 3 \times 5 = \mathbf{2^2 \times 3^2 \times 5}$.

2. Answer: (A) 5,136

A number is divisible by 8 if the number formed by its last three digits is.

For 5,136 the last three digits give 136, and $136 \div 8 = 17$ exactly. So **5,136** is divisible by 8.

3. Answer: (D) 1

Co-prime numbers share no common factor other than **1**, so their HCF is 1. For example, 9 and 16 are co-prime.

4. Answer: (C) 144

$16 = 2^4$, $24 = 2^3 \times 3$, $36 = 2^2 \times 3^2$.

Take the highest power of each prime: $2^4 \times 3^2 = 16 \times 9 = \mathbf{144}$.

5. Answer: (C) 8

The primes below 20 are 2, 3, 5, 7, 11, 13, 17 and 19 — that is **8** numbers. Note that 1 is neither prime nor composite.

6. Answer: (A) Both 2 and 3

Since $6 = 2 \times 3$ and 2 and 3 are co-prime, a number is divisible by 6 exactly when it is divisible by **both 2 and 3**.

7. Answer: (B) 36

$9 = 3^2$ and $12 = 2^2 \times 3$.

LCM = $2^2 \times 3^2 = \mathbf{36}$.

8. Answer: (D) 14 and 21

$14 = 2 \times 7$ and $21 = 3 \times 7$ share the factor 7, so their HCF is 7, not 1 — **14 and 21** are not co-prime. Each of the other pairs has HCF 1.

9. Answer: (A) 180 s

They flash together again after the LCM of the intervals.

$20 = 2^2 \times 5$, $30 = 2 \times 3 \times 5$, $45 = 3^2 \times 5$.

LCM = $2^2 \times 3^2 \times 5 = \mathbf{180 \text{ seconds}}$ (3 minutes).

10. Answer: (C) 2

The digit sum must be a multiple of 3.

$4 + 7 + 3 + \square + 8 = 22 + \square$.

The next multiple of 3 above 22 is 24, so $\square = \mathbf{2}$. (With $\square = 0$ the sum is 22, which is not a multiple of 3.)

11. Answer: (C) Row (C)

The test for 9 is that the **sum of the digits** must be a multiple of 9, not that the last digit is 9. For example, 189 is divisible by 9 although it ends in 9, while 19 is not. The other three rules are correct.

12. Answer: (B) 170 litres

We need the HCF of 850 and 680.

$850 = 2 \times 5^2 \times 17$ and $680 = 2^3 \times 5 \times 17$.

HCF = $2 \times 5 \times 17 = \mathbf{170 \text{ litres}}$. (It measures the first 5 times and the second 4 times.)

13. Answer: (C) 122

First find the LCM: $6 = 2 \times 3$, $8 = 2^3$, $15 = 3 \times 5$, so LCM = $2^3 \times 3 \times 5 = 120$.

Required number = $120 + 2 = \mathbf{122}$.

Check: $122 \div 6$ leaves 2, $122 \div 8$ leaves 2, $122 \div 15$ leaves 2. ✓

14. Answer: (B) 60

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

$12 \times 240 = 48 \times \text{other}$

$2,880 = 48 \times \text{other}$, so the other number = $2,880 \div 48 = \mathbf{60}$.

15. Answer: (D) 1,452

Test 1,452 for 3: digit sum $1 + 4 + 5 + 2 = 12$, a multiple of 3. ✓

Test it for 11: $(2 + 4) - (5 + 1) = 6 - 6 = 0$, a multiple of 11. ✓

So **1,452** works, and indeed $1,452 = 33 \times 44$.

16. Answer: (A) (i) and (ii) only

Statement (i) is true — every common factor divides every common multiple. Statement (ii) is true, because 9 is itself a multiple of 3. Statement (iii) is false; of any two consecutive numbers one is even, so the product is always *even* — for example $3 \times 4 = 12$. Hence **(i) and (ii)**.

17. Answer: (A) 210 cm

Work in centimetres: the floor is 630 cm by 420 cm.

The largest square tile is the HCF of 630 and 420.

$630 = 2 \times 3^2 \times 5 \times 7$ and $420 = 2^2 \times 3 \times 5 \times 7$.

HCF = $2 \times 3 \times 5 \times 7 = \mathbf{210 \text{ cm}}$. (The floor is then 3 tiles by 2 tiles.)

18. Answer: (B) 38

The number is 'a common multiple of 5 and 7, plus 3'.

LCM of 5 and 7 = 35.

Smallest such number greater than 3 = $35 + 3 = \mathbf{38}$.

Check: $38 \div 5$ leaves 3 and $38 \div 7$ leaves 3. ✓