

Fractions, Decimals and Exponents

Mathematics · Class 7 · 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

- $2^5 \times 2^3 =$ ____
 (A) 2^2 (B) 2^{15}
 (C) 4^8 (D) 2^8
- $(3^2)^4 =$ ____
 (A) 3^8 (B) 3^6
 (C) 9^4 (D) 3^{16}
- The value of 5^0 is _____.
 (A) 0 (B) 1
 (C) 5 (D) Not defined
- The standard form of 3,20,00,000 is _____.
 (A) 3.2×10^6 (B) 32×10^6
 (C) 3.2×10^7 (D) 0.32×10^8
- $\frac{2}{5}$ of $3\frac{1}{3} =$ ____
 (A) $\frac{6}{5}$ (B) $\frac{2}{3}$
 (C) $\frac{10}{3}$ (D) $\frac{4}{3}$
- $0.25 \div 0.05 =$ ____
 (A) 5 (B) 0.5
 (C) 50 (D) 0.05

7. The reciprocal of $1\frac{2}{3}$ is _____.

(A) $\frac{5}{3}$

(B) $\frac{3}{5}$

(C) $\frac{2}{3}$

(D) $1\frac{3}{2}$

8. $10^6 \div 10^4 =$ _____

(A) 10

(B) 10^{10}

(C) 100

(D) 10^{24}

Section B — Everyday Mathematics and Reasoning

Q9–Q15 · 1 mark each

9. The distance from the earth to the sun is about 15,00,00,000 km. Written in standard form this is _____.

(A) 1.5×10^9 km

(B) 15×10^7 km

(C) 1.5×10^7 km

(D) 1.5×10^8 km

10. A rope is $12\frac{1}{2}$ m long. Pieces of $\frac{5}{8}$ m are cut from it. How many pieces are obtained?

(A) 16

(B) 18

(C) 20

(D) 25

11. A tank of capacity 400 litres is $\frac{3}{8}$ full. How many more litres are needed to fill it completely?

(A) 250 litres

(B) 200 litres

(C) 150 litres

(D) 300 litres

12. Riya spends $\frac{1}{3}$ of her salary on rent and $\frac{1}{4}$ of it on food. She is left with ₹20,000. What is her salary?

(A) ₹36,000

(B) ₹48,000

(C) ₹40,000

(D) ₹60,000

13. The mass of a grain of sand is about 0.00005 g. In standard form this is _____.

(A) 0.5×10^{-4} g

(B) 5×10^5 g

(C) 5×10^{-5} g

(D) 50×10^{-6} g

14. The product of two numbers is $12\frac{2}{5}$. If one number is $3\frac{1}{10}$, the other is _____.

(A) 5

(B) $4\frac{1}{5}$

(C) $3\frac{4}{5}$

(D) 4

15. Express 1,024 as a power of 2.

(A) 2^{10}

(B) 2^9

(C) 2^8

(D) 2^{12}

16. Consider the following statements.

- (i) $a^n \times b^n = (ab)^n$ for all non-zero a and b .
- (ii) (-1) raised to any even power equals 1.
- (iii) $2^3 + 2^3 = 2^6$.

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. Find the value of $\frac{(2^5 \times 3^3)}{(2^3 \times 3^2)}$.

- (A) 6
- (B) 12
- (C) 18
- (D) 24

18. A cistern can be filled in 6 hours by one pipe and emptied in 9 hours by another. If both are opened together, how long will it take to fill the empty cistern?

- (A) 15 hours
- (B) 18 hours
- (C) 3 hours
- (D) 12 hours

Answer Key

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

Solutions

1. Answer: (D) 2^8

When multiplying powers with the same base, add the exponents.

$$2^5 \times 2^3 = 2^{5+3} = 2^8 = 256.$$

2. Answer: (A) 3^8

For a power of a power, multiply the exponents.

$$(3^2)^4 = 3^{2 \times 4} = 3^8.$$

3. Answer: (B) 1

Any non-zero number raised to the power 0 equals **1**, since $a^n \div a^n = a^0$ and any non-zero number divided by itself is 1.

4. Answer: (C) 3.2×10^7

3,20,00,000 = 32000000, which has 8 digits, so the decimal point moves 7 places: **3.2×10^7** . In standard form the first factor must lie between 1 and 10, which rules out the other options.

5. Answer: (D) $\frac{4}{3}$

$$3\frac{1}{3} = \frac{10}{3}.$$

$$\frac{2}{5} \times \frac{10}{3} = \frac{20}{15} = \frac{4}{3}, \text{ which is } 1\frac{1}{3}.$$

6. Answer: (A) 5

Multiply both numbers by 100 to clear the decimals.

$$25 \div 5 = 5.$$

7. Answer: (B) $\frac{3}{5}$

$$1\frac{2}{3} = \frac{5}{3}.$$

Turning it upside down gives $\frac{3}{5}$.

8. Answer: (C) 100

When dividing powers with the same base, subtract the exponents.

$$10^6 \div 10^4 = 10^2 = \mathbf{100}.$$

9. Answer: (D) 1.5×10^8 km

15,00,00,000 = 150000000, which has 9 digits. The decimal point moves 8 places to give 1.5, so the number is **1.5×10^8 km**.

10. Answer: (C) 20

$$12\frac{1}{2} = \frac{25}{2} \text{ m.}$$

$$\text{Number of pieces} = \frac{25}{2} \div \frac{5}{8} = \frac{25}{2} \times \frac{8}{5} = \frac{200}{10} = \mathbf{20} \text{ pieces.}$$

11. Answer: (A) 250 litres

Water already in the tank = $\frac{3}{8}$ of 400 = 150 litres.

Water needed = $400 - 150 = \mathbf{250 \text{ litres}}$. (Alternatively, the empty part is $\frac{5}{8}$ of 400 = 250 litres.)

12. Answer: (B) ₹48,000

$$\text{Fraction spent} = \frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12}.$$

$$\text{Fraction left} = \frac{12}{12} - \frac{7}{12} = \frac{5}{12}.$$

So $\frac{5}{12}$ of the salary is ₹20,000.

$\frac{1}{12}$ of the salary = ₹4,000, giving salary = $4,000 \times 12 = \text{₹48,000}$.

13. Answer: (C) 5×10^{-5} g

The decimal point must move 5 places to the right to give 5, so the exponent is -5 .

$0.00005 = 5 \times 10^{-5}$ g. The last two options have the same value but are not in standard form.

14. Answer: (D) 4

$$12\frac{2}{5} = \frac{62}{5} \text{ and } 3\frac{1}{10} = \frac{31}{10}.$$

$$\text{Other number} = \frac{62}{5} \div \frac{31}{10} = \frac{62}{5} \times \frac{10}{31} = \frac{620}{155} = 4.$$

15. Answer: (A) 2^{10}

Doubling from 2: 2, 4, 8, 16, 32, 64, 128, 256, 512, 1,024 — that is 10 doublings.

So $1,024 = 2^{10}$.

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

Statement (i) is true, for example $2^2 \times 3^2 = 4 \times 9 = 36 = 6^2$. Statement (ii) is true. Statement (iii) is false; $2^3 + 2^3 = 8 + 8 = 16 = 2^4$, not $2^6 = 64$ — exponents are added when powers are *multiplied*, not added. Hence **(i) and (ii)**.

17. Answer: (B) 12

Subtract exponents for each base separately.

$$2^5 \div 2^3 = 2^2 = 4.$$

$$3^3 \div 3^2 = 3^1 = 3.$$

$$\text{Product} = 4 \times 3 = \mathbf{12}.$$

18. Answer: (B) 18 hours

In one hour the filling pipe fills $\frac{1}{6}$ of the cistern and the emptying pipe removes $\frac{1}{9}$.

$$\text{Net filled in one hour} = \frac{1}{6} - \frac{1}{9} = \frac{3}{18} - \frac{2}{18} = \frac{1}{18}.$$

So the whole cistern takes **18 hours**.