

Simple Equations and Algebraic Expressions

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

- The solution of $5x - 8 = 3x + 12$ is $x =$ _____.
 (A) 2 (B) 6
 (C) 10 (D) 20
- The coefficient of xy in $7x^2y - 4xy + 9y$ is _____.
 (A) -4 (B) 7
 (C) 4 (D) 9
- Add: $(3a - 5b) + (7b - 2a)$
 (A) $5a + 2b$ (B) $5a - 12b$
 (C) $a - 12b$ (D) $a + 2b$
- Subtract $4x - 3$ from $9x + 2$.
 (A) $5x + 5$ (B) $5x - 1$
 (C) $13x - 1$ (D) $5x - 5$
- The degree of the polynomial $5x^3y^2 - 2xy + 7$ is _____.
 (A) 3 (B) 4
 (C) 5 (D) 7
- If $x = -3$, the value of $2x^2 - 5x$ is _____.
 (A) 3 (B) -33
 (C) -3 (D) 33
- 'Seven more than three times a number x ' is written as _____.
 (A) $3x + 7$ (B) $3x - 7$
 (C) $7x + 3$ (D) $7 - 3x$

8. The solution of $\frac{x}{4} - 3 = 2$ is $x =$ _____.

- (A) 5
(C) 20

- (B) 12
(D) 44

Section B — Everyday Mathematics and Reasoning

Q9–Q15 · 1 mark each

9. The sum of three consecutive integers is 78. What is the largest of them?

- (A) 25
(C) 27

- (B) 26
(D) 28

10. A father is 4 times as old as his son. In 12 years he will be twice as old. What is the son's present age?

- (A) 8 years
(C) 10 years

- (B) 6 years
(D) 12 years

11. The length of a rectangle is 5 cm more than its breadth. If the perimeter is 50 cm, what is the breadth?

- (A) 20 cm
(C) 15 cm

- (B) 12 cm
(D) 10 cm

12. The table shows the matchsticks used to build a row of triangles. Which rule gives the number of matchsticks for n triangles?

Number of triangles	1	2	3	4
Matchsticks	3	5	7	9

Table 12.1

- (A) $2n + 1$
(C) $n + 2$

- (B) $3n$
(D) $2n - 1$

13. The cost of a pen is ₹ x and a notebook costs ₹5 more than twice the pen. The total cost of 3 pens and 2 notebooks is _____.

- (A) $5x + 10$
(C) $7x + 5$

- (B) $7x + 10$
(D) $6x + 10$

14. One-fifth of a number, increased by 8, gives 20. What is the number?

- (A) 40
(C) 60

- (B) 50
(D) 140

15. Simplify: $4(2x - 3) - 3(x - 5)$

- (A) $5x - 3$
(C) $11x + 3$

- (B) $5x - 27$
(D) $5x + 3$

Achievers Section

Q16–Q18 · 3 marks each

16. Consider the following statements.

- (i) $5x$ and $5x^2$ are like terms.
(ii) An equation remains balanced if both sides are multiplied by the same non-zero number.
(iii) The equation $3x + 4 = 3x + 9$ has no solution.

Which of the statements is/are correct?

- (A) (i) and (ii) only
(C) (i) and (iii) only

- (B) (ii) and (iii) only
(D) All three

17. A two-digit number is subtracted from the number formed by reversing its digits, and the result is 45. What is the difference between the two digits?
- (A) 3 (B) 4
(C) 5 (D) 9
18. A shopkeeper sells pens at ₹15 each and notebooks at ₹40 each. He sold 5 more notebooks than pens and collected ₹640 in all. How many pens did he sell?
- (A) 6 (B) 8
(C) 10 (D) 12

Answer Key

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

Solutions

1. Answer: (C) 10

$$5x - 3x = 12 + 8$$

$$2x = 20, \text{ so } x = \mathbf{10}.$$

$$\text{Check: LHS} = 5(10) - 8 = 42 \text{ and } \text{RHS} = 3(10) + 12 = 42. \checkmark$$

2. Answer: (A) -4

The term containing exactly xy is $-4xy$, so its coefficient, taken with the sign, is **-4**. ($7x^2y$ is a different term, since it has x^2 .)

3. Answer: (D) $a + 2b$

Group the like terms.

$$\text{a terms: } 3a - 2a = a.$$

$$\text{b terms: } -5b + 7b = 2b.$$

$$\text{Sum} = \mathbf{a + 2b}.$$

4. Answer: (A) $5x + 5$

$$(9x + 2) - (4x - 3)$$

$$= 9x + 2 - 4x + 3$$

$$= \mathbf{5x + 5}.$$
 Note that subtracting -3 means adding 3.

5. Answer: (C) 5

The degree of a term is the sum of the exponents of its variables. For $5x^3y^2$ that is $3 + 2 = \mathbf{5}$, and for $-2xy$ it is 2. The highest is 5.

6. Answer: (D) 33

$$x^2 = (-3) \times (-3) = 9, \text{ so } 2x^2 = 18.$$

$$-5x = -5 \times (-3) = +15.$$

$$2x^2 - 5x = 18 + 15 = \mathbf{33}.$$

7. Answer: (A) $3x + 7$

Three times the number is $3x$, and seven more means adding 7, giving **$3x + 7$** .

8. Answer: (C) 20

$$\frac{x}{4} = 2 + 3 = 5$$

$$x = 5 \times 4 = \mathbf{20}.$$

$$\text{Check: } 20 \div 4 - 3 = 5 - 3 = 2. \checkmark$$

9. Answer: (C) 27

Let the integers be x , $x + 1$ and $x + 2$.

$$3x + 3 = 78$$

$$3x = 75, \text{ so } x = 25.$$

The integers are 25, 26 and 27, so the largest is **27**.

10. Answer: (B) 6 years

Let the son's age be x , so the father's is $4x$.

$$\text{In 12 years: } 4x + 12 = 2(x + 12)$$

$$4x + 12 = 2x + 24$$

$$2x = 12, \text{ so } x = \mathbf{6 \text{ years}}.$$

$$\text{Check: ages are 6 and 24; in 12 years, 18 and 36, and } 36 = 2 \times 18. \checkmark$$

11. Answer: (D) 10 cm

Let the breadth be b , so the length is $b + 5$.

$$\text{Perimeter} = 2(b + 5 + b) = 2(2b + 5) = 50$$

$$2b + 5 = 25, \text{ so } 2b = 20 \text{ and } b = \mathbf{10 \text{ cm}}. \text{ (The length is 15 cm.)}$$

12. Answer: (A) $2n + 1$

After the first triangle, each extra one adds only 2 matchsticks because a side is shared.

Testing $2n + 1$: $n = 1$ gives 3 ✓, $n = 2$ gives 5 ✓, $n = 3$ gives 7 ✓, $n = 4$ gives 9 ✓.

So the rule is **$2n + 1$** .

13. Answer: (B) $7x + 10$

Cost of one notebook = $2x + 5$.

Total = $3x + 2(2x + 5) = 3x + 4x + 10 = \mathbf{7x + 10}$.

14. Answer: (C) 60

Let the number be x .

$$\frac{x}{5} + 8 = 20$$

$$\frac{x}{5} = 12, \text{ so } x = 12 \times 5 = \mathbf{60}.$$

15. Answer: (D) $5x + 3$

Expand each bracket.

$$4(2x - 3) = 8x - 12$$

$$-3(x - 5) = -3x + 15$$

Adding: $8x - 3x = 5x$ and $-12 + 15 = 3$.

So the answer is **$5x + 3$** .

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

Statement (i) is false — like terms must have exactly the same variables raised to the same powers, and $x \neq x^2$.

Statement (ii) is true. Statement (iii) is true; subtracting $3x$ from both sides leaves $4 = 9$, which is impossible. Hence **(ii) and (iii)**.

17. Answer: (C) 5

Let the tens digit be a and the units digit be b , so the number is $10a + b$ and the reversed number is $10b + a$.

$$(10b + a) - (10a + b) = 9b - 9a = 9(b - a).$$

$$9(b - a) = 45, \text{ so } b - a = \mathbf{5}.$$

For example, 27 and 72 differ by 45, and $7 - 2 = 5$. ✓

18. Answer: (B) 8

Let the number of pens be x , so notebooks sold = $x + 5$.

$$15x + 40(x + 5) = 640$$

$$15x + 40x + 200 = 640$$

$$55x = 440, \text{ so } x = \mathbf{8} \text{ pens.}$$

Check: 8 pens cost ₹120 and 13 notebooks cost ₹520, giving ₹640. ✓