

Solving Linear Equations

Unit: Linear Equations - Student Practice Worksheet

Overview: Kabir solved $2x + 3 = 11$ by writing $x = 11 + 3 - 2$, and got a number that made no sense when he checked it. Zara looked at his working and said he'd moved a number across the equals sign without changing its job. One flipped sign later, the equation actually balanced.

Practice Questions (30 Total)

Section A - Easy

Q1. Balance: teal $x+5$ equals maroon 12. Find x .

$$\boxed{x + 5} = \boxed{12}$$

- ☐ A. $x = 7$
- ☐ B. $x = 17$
- ☐ C. $x = 5$
- ☐ D. $x = 60$

Q2. What is the core rule for solving an equation?

- ☐ A. Only change the left side
- ☐ B. Do the same operation to both sides
- ☐ C. Only change the right side
- ☐ D. Ignore the equals sign entirely

Q3. Solve $x - 4 = 9$.

- ☐ A. $x = 5$
- ☐ B. $x = 13$
- ☐ C. $x = 36$
- ☐ D. $x = -5$

Q4. Three equal x -blocks total 21. Find x .



three equal x-blocks = 21

- ☐ A. $x = 24$
- ☐ B. $x = 63$
- ☐ C. $x = 7$
- ☐ D. $x = 18$

Q5. How should you verify a solution?

- ☐ A. Guess a new value
- ☐ B. Skip verification entirely
- ☐ C. Only check the left side
- ☐ D. Substitute it into the original equation

Q6. Solve $x/4 = 6$.

- ☐ A. $x = 1.5$
- ☐ B. $x = 10$
- ☐ C. $x = 2$
- ☐ D. $x = 24$

Q7. Two x-blocks plus 3 equals 11. Find x. $2x + 3 = 11$

- ☐ A. $x = 4$
- ☐ B. $x = 7$
- ☐ C. $x = 14$
- ☐ D. $x = 8$

Q8. Solve $4x = -20$.

- ☐ A. $x = 5$
- ☐ B. $x = -5$
- ☐ C. $x = -80$
- ☐ D. $x = 16$

Q9. Solve $5x - 2 = 18$.

- ☐ A. $x = 3.2$
- ☐ B. $x = 16$
- ☐ C. $x = 4$
- ☐ D. $x = 20$

Q10. $x + 8 = 3$. Solve, and say why the inverse of adding 8 is subtracting 8.

- ☐ A. $x = -5$
- ☐ B. $x = 11$
- ☐ C. $x = 5$
- ☐ D. $x = -11$

Section B - Medium

Q11. $3x - 5$ equals $2x + 7$. Collect like terms and find x .

$$3x - 5 = 2x + 7$$

- ☐ A. $x = 12$
- ☐ B. $x = 2$
- ☐ C. $x = -12$
- ☐ D. $x = 5$

Q12. A number, when 7 is added to twice it, gives 25. Find the number.

- ☐ A. 18
- ☐ B. 16
- ☐ C. 9
- ☐ D. 11

Q13. Solve $5x + 2 = 3x + 10$.

- ☐ A. $x = 6$
- ☐ B. $x = 4$
- ☐ C. $x = -4$
- ☐ D. $x = 8$

Q14. The $2(x+3)$ box equals 16. Expand, then find x .

$$2(x + 3) = 16$$

- ☐ **A.** $x = 8$
- ☐ **B.** $x = 13$
- ☐ **C.** $x = 11$
- ☐ **D.** $x = 5$

Q15. A number, when 9 is subtracted from three times it, gives 21. Find the number.

- ☐ **A.** 4
- ☐ **B.** 10
- ☐ **C.** 6
- ☐ **D.** 12

Q16. Solve $x/3 + 2 = 7$.

- ☐ **A.** $x = 27$
- ☐ **B.** $x = 5$
- ☐ **C.** $x = 15$
- ☐ **D.** $x = 21$

Q17. $6x - 4$ equals $4x + 10$. Find x .

$$6x - 4 = 4x + 10$$

- ☐ **A.** $x = 7$
- ☐ **B.** $x = 3$
- ☐ **C.** $x = -7$
- ☐ **D.** $x = 14$

Q18. Solve $2(x - 4) = 3(x - 6)$.

- ☐ **A.** $x = 2$
- ☐ **B.** $x = 10$
- ☐ **C.** $x = -10$

☐ D. $x = 14$

Q19. The sum of a number and its double is 27. Find the number.

☐ A. 13.5

☐ B. 18

☐ C. 27

☐ D. 9

Q20. $4x - 3(x - 2) = 10$. Expand the brackets, then solve, naming each step.

☐ A. $x = 4$

☐ B. $x = -4$

☐ C. $x = 16$

☐ D. $x = 2$

Section C - Challenge

Q21. $(2x+1)/3$ equals $(x-1)/2$. Cross-multiply and find x .

$$(2x+1)/3 = (x-1)/2$$

☐ A. $x = -5$

☐ B. $x = 5$

☐ C. $x = -1$

☐ D. $x = 1$

Q22. A father's age is 3 times his son's age. In 12 years, the father will be twice the son's age. Find the son's current age.

☐ A. 18 years

☐ B. 12 years

☐ C. 24 years

☐ D. 36 years

Q23. Solve $3(2x - 1) - 2(x + 3) = 3x - 5$.

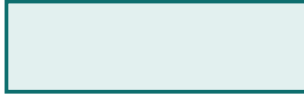
☐ A. $x = -4$

☐ B. $x = 2$

☐ C. $x = 14$

☐ D. $x = 4$

Q24. Rectangle perimeter 60, length 6 more than width. Find width.



perimeter 60, $L = W + 6$

☐ A. 18 cm

☐ B. 15 cm

☐ C. 12 cm

☐ D. 9 cm

Q25. A number is increased by 25% and the result is 60. Find the original number, using an equation.

☐ A. 45

☐ B. 75

☐ C. 36

☐ D. 48

Q26. Solve for x : $0.5x + 3 = 0.2x + 9$.

☐ A. $x = 10$

☐ B. $x = 30$

☐ C. $x = 20$

☐ D. $x = 6$

Q27. Two bars differ by 8; $3 \times \text{smaller} = 2 \times \text{larger}$. Find the smaller.



differ by 8

☐ A. 16

☐ B. 8

☐ C. 24

☐ D. 12

Q28. A sum of Rs. 720 is divided between two people so that one gets Rs. 120 more than the other. Find the smaller share.

- ☐ **A.** Rs. 360
- ☐ **B.** Rs. 300
- ☐ **C.** Rs. 420
- ☐ **D.** Rs. 240

Q29. A number x satisfies: twice the number minus 5 equals half the number plus 10. Find x .

- ☐ **A.** 5
- ☐ **B.** 10
- ☐ **C.** 20
- ☐ **D.** 15

Q30. Three consecutive integers sum to 72. Write the equation in x and find the smallest.

- ☐ **A.** 23
- ☐ **B.** 24
- ☐ **C.** 22
- ☐ **D.** 25

Answer Key

Q1: (A) (a) $x = 7$. $12 - 5 = 7$.

Q2: (B) (b) Do the same operation to both sides. This keeps the equation balanced throughout.

Q3: (B) (b) $x = 13$. $9 + 4 = 13$.

Q4: (C) (c) $x = 7$. $21 \div 3 = 7$.

Q5: (D) (d) Substitute it into the original equation. Both sides must come out equal to confirm the solution.

Q6: (D) (d) $x = 24$. $6 \times 4 = 24$.

Q7: (A) (a) $x = 4$. $2x = 8$, $x = 4$.

Q8: (B) (b) $x = -5$. $-20 \div 4 = -5$.

Q9: (C) (c) $x = 4$. $5x = 20$, $x = 4$.

Q10: (A) (a) $x = -5$. $3 - 8 = -5$.

Q11: (A) (a) $x = 12$. Subtract $2x$ from both sides: $x - 5 = 7$, so $x = 12$.

Q12: (C) (c) 9. $2x + 7 = 25$, so $2x = 18$, $x = 9$.

Q13: (B) (b) $x = 4$. $2x = 8$, $x = 4$.

Q14: (D) (d) $x = 5$. Expand: $2x + 6 = 16$, so $2x = 10$, $x = 5$.

Q15: (B) (b) 10. $3x - 9 = 21$, so $3x = 30$, $x = 10$.

Q16: (C) (c) $x = 15$. $x/3 = 5$, so $x = 15$.

Q17: (A) (a) $x = 7$. $2x = 14$, $x = 7$.

Q18: (B) (b) $x = 10$. Expand: $2x - 8 = 3x - 18$, so $10 = x$.

Q19: (D) (d) 9. $x + 2x = 27$, so $3x = 27$, $x = 9$.

Q20: (A) (a) $x = 4$. Expand: $4x - 3x + 6 = 10$, so $x = 4$.

Q21: (A) (a) $x = -5$. Cross-multiply: $2(2x + 1) = 3(x - 1)$, so $4x + 2 = 3x - 3$, giving $x = -5$.

Q22: (B) (b) 12 years. Let son = x , father = $3x$. In 12 years: $3x + 12 = 2(x + 12)$, so $3x + 12 = 2x + 24$, giving $x = 12$.

Q23: (D) (d) $x = 4$. Expand the left side: $6x - 3 - 2x - 6 = 4x - 9$. Setting $4x - 9 = 3x - 5$ gives $x = 4$.

Q24: (C) (c) 12 cm. Let width = x , length = $x + 6$. Perimeter = $2(x + x + 6) = 60$, so $2(2x + 6) = 60$, $4x + 12 = 60$, $4x = 48$, $x = 12$.

Q25: (D) (d) 48. $1.25x = 60$, so $x = 60/1.25 = 48$.

Q26: (C) (c) $x = 20$. $0.3x = 6$, so $x = 20$.

Q27: (A) (a) 16. Let smaller = x , larger = $x + 8$. $3x = 2(x + 8)$, so $3x = 2x + 16$, giving $x = 16$.

Q28: (B) (b) Rs. 300. Let smaller = x , larger = $x + 120$. $x + (x + 120) = 720$, so $2x = 600$, $x = 300$.

Q29: (B) (b) 10. $2x - 5 = 0.5x + 10$, so $1.5x = 15$, $x = 10$.

Q30: (A) (a) 23. $x + (x + 1) + (x + 2) = 72$, so $3x + 3 = 72$, $3x = 69$, $x = 23$.

You've got this! Keep learning and shining! - Ruchi Math Coaching