Solving Two-Step Equations

Name: _____	Date: _____	Score: _____ / 18

Quick Review and Helpful Hints

A *two-step equation* takes two inverse operations to solve. First undo the addition or subtraction (move the constant), then undo the multiplication or division (free the variable). Always do the same thing to both sides.

▷ **Example:** Solve $2x + 3 = 11$. **Work:** Subtract 3 from both sides: $2x = 8$. Divide both sides by 2: $x = 4$. ★ **Answer:** $x = 4$

Undo $+3$, then undo $\times 2$.

Practice Problems

Solve each equation.

1. $2x + 3 = 11$ _____

2. $3x - 5 = 16$ _____

3. $4x + 1 = 13$ _____

4. $5x - 2 = 18$ _____

5. $\frac{x}{2} + 1 = 5$ _____

6. $\frac{x}{3} - 2 = 1$ _____

7. $6x + 4 = 22$ _____

8. $2x - 7 = -1$ _____

9. $3x + 9 = 0$ _____

10. $7x - 3 = 18$ _____

11. $\frac{x}{4} + 3 = 5$ _____

12. $10 - 2x = 4$ _____

13. $-3x + 5 = 14$ _____

14. $8x + 5 = 29$ _____

Word Problems

15. A taxi charges $\$2$ plus $\$3$ per mile. A ride costs $\$14$. How many miles was it? _____

16. You start with $\$5$ and add $\$4$ each week. After how many weeks do you have $\$25$? _____

17. Three more than four times a number is 19. Find the number. _____

18. A gym costs $\$20$ to join plus $\$10$ per month. The total is $\$60$. How many months? _____

Answer Keys

1. $x = 4$	**7.** $x = 3$	**13.** $x = -3$
2. $x = 7$	**8.** $x = 3$	**14.** $x = 3$
3. $x = 3$	**9.** $x = -3$	**15.** 4 miles
4. $x = 4$	**10.** $x = 3$	**16.** 5 weeks
5. $x = 8$	**11.** $x = 8$	**17.** 4
6. $x = 9$	**12.** $x = 3$	**18.** 4 months

Step-by-Step Explanations

1. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract 3: $2x = 8$. Divide by 2: $x = 4$. So the final answer is $x = 4$.

2. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Add 5: $3x = 21$. Divide by 3: $x = 7$. So the final answer is $x = 7$.

3. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract 1: $4x = 12$. Divide by 4: $x = 3$. So the final answer is $x = 3$.

4. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Add 2: $5x = 20$. Divide by 5: $x = 4$. So the final answer is $x = 4$.

5. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract 1: $\frac{x}{2} = 4$. Multiply by 2: $x = 8$. So the final answer is $x = 8$.

6. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Add 2: $\frac{x}{3} = 3$. Multiply by 3: $x = 9$. So the final answer is $x = 9$.

7. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract 4: $6x = 18$. Divide by 6: $x = 3$. So the final answer is $x = 3$.

8. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Add 7: $2x = 6$. Divide by 2: $x = 3$. So the final answer is $x = 3$.

9. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract 9: $3x = -9$. Divide by 3: $x = -3$. So the final answer is $x = -3$.

10. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Add 3: $7x = 21$. Divide by 7: $x = 3$. So the final answer is $x = 3$.

11. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract 3: $\frac{x}{4} = 2$. Multiply by 4: $x = 8$. So the final answer is $x = 8$.

12. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract 10: $-2x = -6$. Divide by -2: $x = 3$. So the final answer is $x = 3$.

13. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract 5: $-3x = 9$. Divide by -3: $x = -3$. So the final answer is $x = -3$.

14. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Subtract 5: $8x = 24$. Divide by 8: $x = 3$. So the final answer is $x = 3$.

15. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Set up $3m + 2 = 14$. Subtract 2: $3m = 12$, so $m = 4$ miles. So the final answer is 4 miles.

16. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Set up $4w + 5 = 25$. Subtract 5: $4w = 20$, so $w = 5$ weeks. So the final answer is 5 weeks.

17. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Set up $4x + 3 = 19$. Subtract 3: $4x = 16$, so $x = 4$. So the final answer is 4.

18. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Set up $10m + 20 = 60$. Subtract 20: $10m = 40$, so $m = 4$ months. So the final answer is 4 months.

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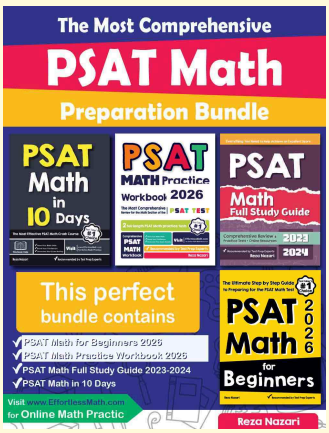

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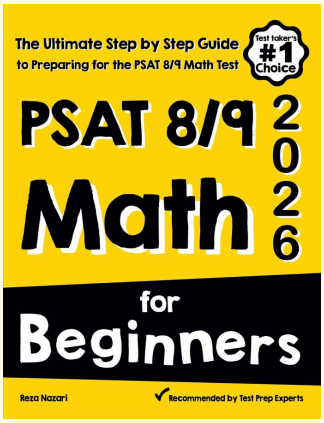

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