# One-Step Equations

| Name: _____ | Date: _____ | Score: _____ / 18 |
|---|---|---|

## Quick Review and Helpful Hints

To solve a one-step equation, undo the operation attached to the variable using its *inverse*: add to undo subtraction, subtract to undo addition, multiply to undo division, divide to undo multiplication. Whatever you do to one side, do to the *other* side to keep the equation balanced.

▷ **Example:** Solve $x + 7 = 12$. **Work:** The $7$ is added to $x$, so undo it by subtracting $7$ from both sides: $x + 7 - 7 = 12 - 7$. ★ **Answer:** $x = 5$

Keep both sides balanced.

## Practice Problems

*Solve each equation for the variable.*

**1.** $x + 5 = 9$ _____

**2.** $x - 3 = 8$ _____

**3.** $4x = 20$ _____

**4.** $\frac{x}{2} = 6$ _____

**5.** $x + 10 = 4$ _____

**6.** $3x = 18$ _____

**7.** $x - 7 = -2$ _____

**8.** $\frac{x}{5} = 3$ _____

**9.** $6x = -24$ _____

**10.** $x + 2 = 2$ _____

**11.** $x - 9 = 0$ _____

**12.** $7x = 49$ _____

**13.** $\frac{x}{3} = -4$ _____

**14.** $2x = -10$ _____

## Word Problems

**15.** After spending $\$8$, you have $\$15$ left. How much did you start with?

_____

**16.** Five equal boxes weigh $35$ pounds in all. How much does each box weigh?

_____

**17.** A number tripled equals $21$. What is the number?

_____

**18.** After adding $6$ to a number, the result is $2$. What is the number?

_____



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# Answer Keys

| | | |
|---|---|---|
| **1.** $x = 4$ | **7.** $x = 5$ | **13.** $x = -12$ |
| **2.** $x = 11$ | **8.** $x = 15$ | **14.** $x = -5$ |
| **3.** $x = 5$ | **9.** $x = -4$ | **15.** $\$23$ |
| **4.** $x = 12$ | **10.** $x = 0$ | **16.** 7 lb |
| **5.** $x = -6$ | **11.** $x = 9$ | **17.** $7$ |
| **6.** $x = 6$ | **12.** $x = 7$ | **18.** $-4$ |

## 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 The $5$ is added to $x$, so undo it by subtracting $5$ from both sides: $x = 9 - 5 = 4$. 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 The $3$ is subtracted, so undo it by adding $3$ to both sides: $x = 8 + 3 = 11$. So the final answer is $x = 11$.

**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 $x$ is multiplied by $4$, so divide both sides by $4$: $x = 20 \div 4 = 5$. So the final answer is $x = 5$.

**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 $x$ is divided by $2$, so multiply both sides by $2$: $x = 6 \times 2 = 12$. So the final answer is $x = 12$.

**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 $10$ from both sides: $x = 4 - 10 = -6$. So the final answer is $x = -6$.

**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 Divide both sides by $3$: $x = 18 \div 3 = 6$. So the final answer is $x = 6$.

**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 Add $7$ to both sides: $x = -2 + 7 = 5$. So the final answer is $x = 5$.

**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 Multiply both sides by $5$: $x = 3 \times 5 = 15$. So the final answer is $x = 15$.

**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 Divide both sides by $6$: $x = -24 \div 6 = -4$. So the final answer is $x = -4$.

**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 Subtract $2$ from both sides: $x = 2 - 2 = 0$. So the final answer is $x = 0$.

**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 Add $9$ to both sides: $x = 0 + 9 = 9$. So the final answer is $x = 9$.

**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 Divide both sides by $7$: $x = 49 \div 7 = 7$. So the final answer is $x = 7$.

**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 Multiply both sides by $3$: $x = -4 \times 3 = -12$. So the final answer is $x = -12$.

**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 Divide both sides by $2$: $x = -10 \div 2 = -5$. So the final answer is $x = -5$.

**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 Let $x$ be the starting amount. Spending $\$8$ leaves $\$15$: $x - 8 = 15$. Add $8$: $x = \$23$. So the final answer is $\$23$.

**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 Five equal boxes weigh $35$: $5x = 35$. Divide by $5$: $x = 7$ lb each. So the final answer is $7$ lb.

**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 Tripled means $3x = 21$. Divide by $3$: $x = 7$. So the final answer is $7$.

**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 Adding $6$ gives $2$: $x + 6 = 2$. Subtract $6$: $x = -4$. So the final answer is $-4$.

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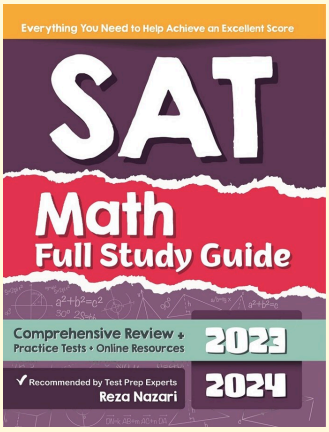


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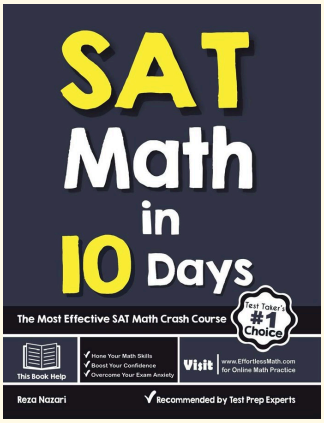


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