

A. Solve $2x + 3 = 15$

$$\begin{aligned} 2x + 3 - 3 &= 15 - 3 \\ \hline 2x &= 12 \\ \hline \frac{2x}{2} &= \frac{12}{2} \\ \hline x &= 6 \end{aligned}$$

Undo the addition by subtracting 3 from each side

Simplify

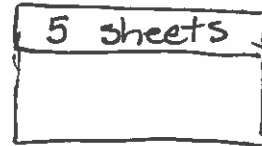
Undo the multiplication by dividing each side by 2

Simplify

B. You are making a bulleting board to advertise community service opportunities in your town. You plan to use a half sheet of construction paper for each ad. You need 5 sheets of construction paper for a title banner. You have 18 sheets of construction paper. How many ads can you make?

Know: 5 sheets per banner
Have 18 sheets
need $\frac{1}{2}$ sheet per ad

Sketch:



Define the variable: Let $x =$ # banners / ads

Write an equation:

$$\frac{1}{2}x + 5 = 18$$

Undo add/subtraction:

$$\frac{1}{2}x + 5 - 5 = 18 - 5$$

Simplify:

$$\frac{1}{2}x = 13$$

Undo mult./division:

$$2 \cdot \frac{1}{2}x = 13 \cdot 2$$

Simplify:

$$x = 26$$

C. Solving With Two Terms in the Numerator:

$$\frac{r-8}{-3} = -2$$

$$\underline{-3\left(\frac{r-8}{-3}\right) = -2(-3)}$$

Multiply each side by the denominator

$$\underline{r-8 = 6}$$

Simplify

$$\underline{r-8+8 = 6+8}$$

Undo add/subtraction

$$\underline{r = 14}$$

Simplify

Lesson 2-2
TRY THESE ON YOUR OWN
PRACTICE:

Solving Two-Step Equations

1. $5x + 12 = -13$

2. $6 = \frac{m}{7} - 3$

3. $\frac{y-1}{4} = -2$

4. $-x - 4 = 9$

5. The junior class is selling granola boars to raise money. They purchased 1250 granola bars and paid a delivery fee of \$25. The total cost, including the delivery fee, was \$800. What was the cost of each granola bar?

Using Deductive Reasoning:

When you use deductive reasoning, you must state and steps and your reason for each step using properties, definitions, or rules.

D. What is the solution of $-t + 8 = 3$? Justify each step.

STEPS	REASONS
$-t + 8 = 3$	<u>Given (always the first reason)</u>
$-t + 8 - 8 = 3 - 8$	<u>Subtraction Property of Equality</u>
$-t = -5$	<u>Substitution</u>
$-1t = -5$	<u>Multiplicative Identity</u>
$\frac{-1t}{-1} = \frac{-5}{-1}$	<u>Division Property of Equality</u>
$t = 5$	<u>Substitution</u>

E. What properties of equality would you use to solve each equation?

STEPS	REASONS
$-8 = \frac{s}{4} + 3$	<u>Given</u>
$\frac{s}{4} + 3 = -8$	<u>Symmetric Property of Equality</u>
$\frac{s}{4} + 3 - 3 = -8 - 3$	<u>Subtraction Property of Equality</u>
$\frac{s}{4} = -11$	<u>Substitution</u>
$4 \cdot \frac{s}{4} = -11 \cdot 4$	<u>Multiplication Property of Equality</u>
$s = -44$	<u>Substitution</u>

PRACTICE: Try these on your own.

6. What properties of equality would you use to solve each equation?

STEPS	REASONS
$2x - 9 = 7$	

7. E. What properties of equality would you use to solve each equation?

STEPS	REASONS
$\frac{x}{3} - 8 = 4$	