

## Solving Two-Step Equations Class Work

🦋 **You will be able to...** solve two-step equations & check your solutions, rearrange formulas to highlight a desired variable, and model and solve real world situations with two-step equations

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### ★ Consider This...

Can you determine how many pounds one heart weighs? Each square block weighs one pound. Justify your answer.



How much does one heart weigh in this case? Justify your answer.



## ∞ Solving Two-Step Equations

\* When solving equations that involve more than one step, remember to think of SADMEG! It is important to undo subtraction/addition before undoing multiplication/division, unless these operations appear within grouping symbols (parentheses, brackets, fraction bars, square roots, etc.)



## **SADMEG**

Use SADMEG (*GEMDAS backwards*) when solving equations, since you are un-doing the operations!

*Make sure that the operations are not within grouping symbols first though!*  
*Remember, grouping symbols are parentheses, brackets, fraction bars, square roots, etc.*

### ∞ **Guided Examples:** SOLVING TWO-STEP EQUATIONS

Solve each equation, and check your solution.

A.  $-2x + 3 = 13$

B.  $24 = \frac{y}{2} - 2$

### **Now You Try Some!**

1. Solve each equation, and check your solution.

a.  $3 + -x = 20$

b.  $12 = \frac{z}{3} - 5$

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c.  $4y - 8 = -10$

d.  $-f + 14 = 36$

e.  $(3 + x) / 5 = 20$

f.  $(m - 7) / 2 = 15$

g.  $5(b - 9) = 80$

h.  $-3(4 + x) = 18$

i.  $2 + \frac{q}{5} = -2$

j.  $7 - 3r = 19$

## Solving Problems With the Help of Two-Step Equations

**\*Guided Example:** SOLVING PROBLEMS WITH THE HELP OF TWO-STEP EQUATIONS

*Write an equation to model the situation. Then solve and check.*

A local soup kitchen receives a donation that allows them to triple the amount of canned food they have. Then, an organization donates 250 more cans of food. If the soup kitchen now has 1249 cans of food, how many cans did they have before they received these two donations?

**Understand the relationship:**

**Define a variable:**

**Write an equation:**

**Solve & check:**

 **Now You Try Some!**

2. Model each situation with an equation. Then solve and check each problem. Justify your solution.
  - a. Molly runs 0.04 miles every minute. How long will it take Molly to run to her friend's house that is 2.2 miles away, if Molly starts running when she is 1.5 miles away from her house?

b. As a salesperson, assume you earn 15% commission on all sales you make, plus an additional \$88 per week. If your total paycheck this week was \$208, how much were your sales?

c. A cell phone company charges \$25 per month plus an additional 2 cents for every text message sent. Floria's phone bill was \$35.20 this month. How many text messages did Floria send?

d. In a game of basketball, George scored four points less than triple the amount of points Danny scored. If George scored a total of 56 points, how many points did Danny score?

**\*For Fun:** Create any situation that could be modeled using the equation:  $10 + 2x = 100$ . Then solve, and check your solution.

## 80 Rearranging Formulas

### \*Guided Example: REARRANGING FORMULAS

The formula  $S = (n-2) \cdot 180$  can be used to find the sum ( $S$ ) of the measures of the interior angles of a figure with  $n$  sides. Rearrange the formula so that it can be used directly to determine the number of sides of the figure ( $n$ ).

 **Now You Try Some!**      3. Rearrange each formula to highlight the desired variable.

a. Rearrange the simple interest formula  $I = prt$ , so that it can be used directly to find the rate,  $r$ .

b. Rearrange the formula for perimeter of a rectangle so that it can be used directly to determine the width,  $w$ .

$$P = 2L + 2w$$

c. Rearrange the formula for area of a triangle  $A = \frac{1}{2}bh$  so that it can be used to directly determine the length of the base,  $b$ .

d. Solve for y.  $2y - x = z$

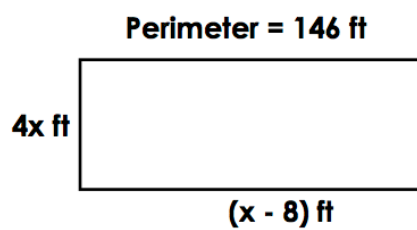
e. Solve for y.  $-y - 3x = 10$

f. Solve for v.  $mv + 2b = w$

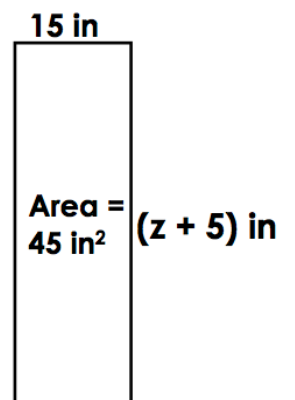
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*Can you combine your skills to write and solve an equation for each situation?!?*

4. Determine the value of x.



5. Determine the value of x.



**Homework Section 1:** p. 84 #3-13 odd, 23-33 odd, and 41-45 odd

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**Homework Section 2:** p. 84 #17, 18, and 47-51 odd  
p. 85-86 #57, 84, and 85

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**Homework Section 3:** p. 85 #67 and 69  
p. 113-115 #3, 4, 8, 12, 13, 15,  
20, 22, 25, 31, 32, and 47



**Exit Slip Day 1:**

Solve the equation, and check your solution.

$$8 + 3x = 14$$

When you are done, please add to the “How Are You Doing?!” self-assessment.

**Exit Slip Day 2:**

1. Write an equation to model the situation. Then solve your equation, and justify your answer.

Jason earns an hourly rate for shoveling snow, plus an additional \$20 per day. If Jason earns \$71 one day of shoveling for three hours, what hourly rate does Jason earn?

2. Write any one question you still have regarding your work today. If you do not have any questions, create a one-step equation OR a problem that could be solved using a one-step equation.

3. When you are done, please add to the “How Are You Doing?!” self-assessment.

**Exit Slip Day 3:**

Solve for y.

$$3y + 2x = 14$$

When you are done, please add to the “How Are You Doing?!” self-assessment, and write any questions you have regarding tomorrow’s quiz.

