Solving Multi-Step Equations

Agenda

Warm-Up
Notes p.11
HW: Practice #1-11 ODDS

Reminders

MathBook & Calculator Form DUE TMR!!!

Essential Question

How do I use inverse operations to solve multi-step equations?

Warm-Up

Complete the warm-up on the half sheet of paper. Please have out your HW packet ready to check!

Name: _____ **Period:** _____

Warm-Up – Simplifying Like Terms

State whether the pair of terms are like terms or not like terms.

1. 4xy and -3xy
2. $2s^2$ and 5s
3. -10a and -10b

If possible, simplify each expression by combining like terms.

4. $4x + x - 3$
5. $13x^2 + 4 - 10x^2$
6. $12x^2 + 6x^4$

Questions, Comments, Concerns?

Algebra I - Unit 1: Writing Inequalities

Practice - Writing Inequalities

Name_____ Date_____Per_____

Write each statement in algebraic form.

1. The difference of a number and four is greater than forty-two.

2. Three-fourths of a number is at most -18.

3. A number divided by 7 is at least negative three.

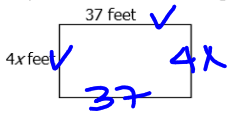
4. Negative four times a number is less than 204.

5. The quotient of twice a number and 7 is more than 21

6. The product of a number and twelve is 36.

7. The perimeter of the rectangle below is at least 814 feet.

add all sides



$4x + 37 + 4x + 37 \geq 814$

$8x + 74 \geq 814$

8. The mayor of Ali's town chose 160 students from her school to attend a city debate. This is no more than $\frac{1}{4}$ of the students in Ali's school. Which inequality represents the least number of students, n, who could attend Ali's school?

A $160 \geq \frac{1}{4}n$

B $160 \leq \frac{1}{4}n$

C $160 < \frac{1}{4}n$

D $160 > \frac{1}{4}n$

9. Claudia can spend up to $1500 on paper for her business this year. Paper costs $32 per box. Which inequality represents the number of boxes of paper p she can buy this year?

A $32p \leq 1500$

B $32 + p \geq 1500$

C $32p \geq 1500$

D $32 + p \leq 1500$

Solving Multi-Step Equations

Name: _____ **Period:** _____

Warm-Up – Simplifying Like Terms

same letter & exponent

State whether the pair of terms are like terms or not like terms.

1. 4xy and -3xy

Like

2. $2s^2$ and 5s

$2 \cdot s \cdot s$

Not like

3. -10a and -10b

Not like

If possible, simplify each expression by combining like terms.

4. $4x + x - 3$

$5x - 3$

5. $13x^2 + 4 - 10x^2$

$3x^2 + 4$

6. $12x^2 + 6x^4$

done

Solving Multi-Step Equations

Essential Question How do I use inverse operations to solve multi-step equations?

Inverse Operations:

operations that "undo" each other

+ Add ↔ − subtract

× multiplication ↔ ÷ divide

Zero Pair:

when you have the same quantity but different signs, they cancel each other out.

GOAL: isolate variable

Solving Multi-Step Equations

Essential Question How do I use inverse operations to solve multi-step equations?

Solve each equation and check your answer. Be sure to show all your work.

1. $-4.6 = \square + (-2.5)$

$-4.6 = \square - 2.5$

$+2.5 \quad +2.5$

$-2.1 = j$

2. $-\frac{x}{8} = 3.9$

$8 \cdot \frac{-x}{8} = 3.9 \cdot 8$

$-x = 31.2$

$-1 \quad -1$

$x = -31.2$

3. $\frac{-7}{4} = -2.4$

$-7 = -8$

$+7 \quad +7$

$x = -1$

4. $+2 = 2$

$-2 \quad -2$

$\square = 0.7$

$n = 0$

Solving Multi-Step Equations

Essential Question How do I use inverse operations to solve multi-step equations?

Solve each equation and check your answer. Be sure to show all your work.

5. Kristen solved the equation below:

Step 1: $-2(4x + 3) = 6x - 12$

Step 2: $-8x - 6 = 6x - 12$

Step 3: $-14x = -6$

Step 4: $x = \frac{6}{14} = \frac{3}{7}$

What would Step 2 look like in Kristen's process?

Solving Multi-Step Equations

Essential Question How do I use inverse operations to solve multi-step equations?

Consecutive Integers: back-to-back, in a row

Type	Words	Symbols	Example
Consecutive Integers (whole #)	#s in a row	$x, x+1, x+2$	6, 7, 8
Consecutive Even Integers	even #s in a row	$x, x+2, x+4$	32, 34, 36
Consecutive Odd Integers	odd #s in a row	$x, x+2, x+4$	1, 3, 5

Solving Multi-Step Equations

Essential Question How do I use inverse operations to solve multi-step equations?

Define a variable, write an equation, solve and check each problem. Write your answer in a complete sentence.

6. The sum of three consecutive odd integers is -51. Write and solve an equation that represents this situation and find the integers.

1st + 2nd + 3rd = -51

$x + (x+2) + (x+4) = -51$

$3x + 6 = -51$

$-6 \quad -6$

$\frac{3x}{3} = \frac{-57}{3}$

$x = -19$

7, 9, 11

-19, -17, -15

Solving Multi-Step Equations

Essential Question How do I use inverse operations to solve multi-step equations?

Define a variable, write an equation, solve and check each problem. Write your answer in a complete sentence.

7. The ages of three brothers are consecutive integers with the sum of 96. How old are the brothers?

$x + (x+1) + (x+2) = 96$

$3x + 3 = 96$

$-3 \quad -3$

$3x = 93$

$\frac{3x}{3} = \frac{93}{3}$

$x = 31$

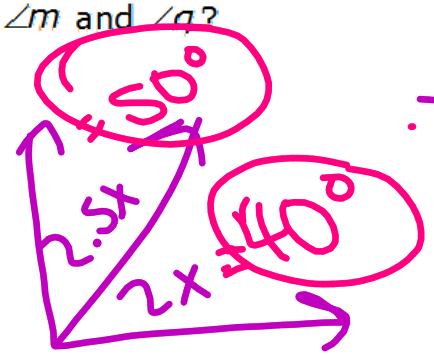
31, 32, 33

Solving Multi-Step Equations

Essential Question How do I use inverse operations to solve multi-step equations?

Define a variable, write an equation, solve and check each problem. Write your answer in a complete sentence.

8. $\angle m$ and $\angle q$ are complementary. $\angle m$ measures $2.5x°$ and $\angle q$ is $2x°$. What are the measures of $\angle m$ and $\angle q$?



$2x + 2.5x = 90$

$4.5x = 90$

$\frac{4.5x}{4.5} = \frac{90}{4.5}$

$x = 20$

Solving Multi-Step Equations

Essential Question How do I use inverse operations to solve multi-step equations?

Define a variable, write an equation, solve and check each problem. Write your answer in a complete sentence.

9. Ashlyn's scores on her last 4 Algebra tests were 82, 86, 91 and 96. What does Ashlyn need to make on her fifth test if she needs to make a 90 average?

$$\frac{82+86+91+96+\text{fifth test}}{5} = 90$$

$$5 \cdot \frac{355+x}{5} = 90 \cdot 5$$

$$355+x = 450$$

$$-355 \quad -355$$

$$x = 95$$

Solving Multi-Step Equations

Essential Question How do I use inverse operations to solve multi-step equations?

Define a variable, write an equation, solve and check each problem. Write your answer in a complete sentence.

10. Julie went shopping at Target and pays 8% sales tax on her total bill. If she paid $6.06 in sales tax, what was her bill before tax?

.08

$$\frac{.08x}{.08} = \frac{6.06}{.08}$$

$$x = \$75.75$$

odds

Quiz tomorrow!!!!

Algebra 1 - Unit 1: Topic 1 – Solving Multi Step Equations

Practice – Solving Multi Step Equations

Name _____ Date _____ Pd. _____

Solve each equation and check your answer. Be sure to show all work.

1. $\frac{2}{5}x - 1 = 5$

2. $12 = -7f - 9$

3. $\frac{-3n + 6}{-6} = -9$

4. $0.4m - 0.7 = 0.22$

Define a variable, write an equation, solve and check each problem. Write your answer in a complete sentence.

5. The area of a small triangle is 25 square inches. This is four square inches more than a fifth of a larger triangle's area. Find the area of the larger triangle.

6. $\angle A$ and $\angle B$ are supplementary. $\angle A$ has a measure of $3x°$ and $\angle B$ has a measure of $2x°$. Find the measure of $\angle B$.

7. A student wrote a list of three consecutive even integers. If the sum of the integers is 54, what is the middle integer?

Algebra I - Unit 1: Topic 1 – One and Two Step Equations

8. For the equation $\frac{x}{3} = 15$ a student found the value of x to be 5.

   a. Explain the error.

   b. What is the correct answer?

9. Steve is training for a marathon. He has run the following distances so far this week: 5 miles, 8.5 miles, 3.5 miles and 9 miles. He is going to run one more day this week. If Steve would like to average 7 miles for his training runs this week, how many miles should he run during his last run of the week?

10. A boat salesperson earns a 2.5% commission on the sale of each boat. If he earned $462.50 in commission on the sale of a boat, how much did the boat sell for?

11. Which situation is best represented by $x - 32 = 8$?

   A. Daniel has 32 baseball cards. Joseph has 8 less baseball cards than Daniel. How many baseball cards does Joseph have?

   B. Logan withdrew $32 from her bank account. After her withdrawal, her balance was $8. How much was originally in her account?

   C. Room A contains 32 desks. Room B has 8 fewer desks. How many desks are in room B?

   D. Janelle bought a bag of 32 glue sticks for a project. She used 8 glue sticks. How many glue sticks does she have left?

Solving Multi-Step Equations

Essential Question How do I use inverse operations to solve multi-step equations?

Your assignment is the ODDS (#1, 3, 5, 7, 9, 11)! Try the evens for more practice!

1. x = 15
2. -3 = f
3. n = -16
4. m = 2.3
5. If the area of the larger triangle is x, your equation will be
   $25 = 4 + (1/5)x$
6. $3x + 2x = 90$, solve for x!
7. If the first integer is x, then your equation is $x + (x+2) + (x+4) = 54$. Solve and find the middle integer!
8. The answer should be 45...how did he get 5?
9. $\frac{5 + 8.5 + 3.5 + 9 + x}{5} = 7.5$

   So he needs to run 9 miles
10. .025x=462.50
11. B