

solving multi-step equations

batteries

7

1

9

warm-up

1. Goes in the "Thursday" box on your homework packet.
2. WRITE THE QUESTION.
3. Please have last night's HW out.

calculator

1

1

2

objective: you will learn how to solve equations using multiple steps.

(we are putting the pieces from the past two lessons together.)

Write an equation for the following sentence:

6 less than twice a number is 12.

What is the number?

9

agenda

- Warm-Up
- HW Check
- Notes
- HW: Practice

$$2x - 6 = 12$$

homework Passes

- given in exchange for supplies/ as prizes.
- Please write your name and period on the supplies

2nd — kleenex

3rd — hand sanitizer

4th — package of 4 glue sticks/2
bottles of glue

5th — 1 package of colored pencils
or markers

7th — package of expo markers

homework check!

1. $b = 0$

2. $k = 48$

3. $k = 8$

4. $n = -51$

5. $z = -12$

6. $-4.6 = m$

7. $x = -17.3$

8. $r = 7$

9. $16 = n$

10. A. Divided instead of multiplied
B. 45

11. $x = \text{a number}$
 $x - 13 = -5$
 $x = 8$

12. $x = \text{a number}$
 $x - -23 = 35$
 $x = 12$

13. $5n = 45$
 $n = 9$

14. $12 = -3x$
 $-4 = x$

15. $\frac{x}{3} = -8$
 $x = -24$

16. $\frac{4}{3}x = 4.82$
 $x = 3.615$

17. $63 + x = 90$
 $x = 27^\circ$

18. $125 + x = 180$
 $x = 55^\circ$

19. B

$0.10m = 2.30$

20. A) $m = 23$
You could talk for 23 minutes
b) $0.10(18) = 1.80$
The cost would be \$1.80

21. $x = \text{cost of boat}$
 $0.025x = 462.50$
 $x = 18,500$
The boat cost \$18,500.

Algebra I - Unit 1: Topic 2 – Solving Single Step Equations using Multiplication & Division

Practice - Solving Single Step Equations

pp 76-87

Name: _____ Date: _____ Per _____

Solve the following equations.

1. $-12 + b = -12$

2. $\frac{k}{6} = 8$

3. $k - (-13) = 21$
 $k + 13 = 21$

4. $13 + n = -38$

5. $-\frac{2}{3}z = 8$

6. $-4.1 = m + (-0.5)$

7. $-3x = 52$

8. $-28 = -4r$

9. $14 = \frac{7}{8}n$

10. 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?

Define a variable, write an equation, solve and check each answer.

11. Thirteen subtracted from a number is -5. Find the number.

14. 12 is the product of a number and -3.

12. The difference of a number and -23 is 35. Find the number.

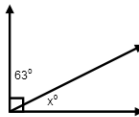
15. The quotient of a number and 3 is negative 8.

13. Five times a number is 45.

16. Four-thirds of a number is 4.82.

Algebra I - Unit 1: Topic 2 – Solving Single Step Equations using Addition & Subtraction
For Problem 17 & 18, write and solve an equation for x , then check each problem.

17.



$$\begin{array}{r} 63 + x + 90 \\ - 63 \quad \quad - 63 \\ \hline x = 27^\circ \end{array}$$

18. $\angle A$ and $\angle B$ are supplementary. $\angle A$ has a measure of 125° and $\angle B$ has a measure of x° . Find x .

$$\begin{array}{r} 180 \\ 125 + x = 180 \end{array}$$

19. 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?

20. In 1995, the long-distance company Sprint introduced Sprint Sense, a plan in which long-distance calls placed on weekends cost only \$0.10 per minute.

a. How long could you talk for \$2.30?

$$\frac{2.30}{.10} = 23 \text{ min}$$

b. What would be the cost of an 18-minute call?

$$.10(18) = \$1.80$$

21. 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?

$$9. \text{ original price} = \text{commission (or sales tax)}$$

$$\begin{array}{r} .025 b = 462.50 \\ \underline{.025} \quad \quad .025 \\ b = \$18,500 \end{array}$$

page 10

10-11

page 11

Algebra I - Unit 1: Topic 2 - Solving Multi-Step Equations
Student Notes - Solving Multi-Step Equations

pp 92-95

P	
E	
MD	
AS	

Solve the following equations. Check each answer.

1. $6 = 4 - 2x$

2. $-4 + 7x = 3$

Algebra I - Unit 1: Topic 2 - Solving Multi-Step Equations

3. $1.5 = 1.2y - 5.7$

5. $15 - \frac{d}{3} = 2$

7. $\frac{c}{7} + 2 = 2$

4. $0.6x + 11 = 5$

6. $\frac{x-7}{4} = -2$

8. $5 = \frac{4-x}{3}$

Solve the following equations. Check each answer.

9. 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.

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

11. The sum of two consecutive integers is 47. Find the integers.

12. The sum of two consecutive odd integers is 36. Find the integers.

Solving Multi-Step Equations

Please excuse my dear aunt Sally	P	Parentthesis OR distribute
	E	exponents
	MD	MULT & Division
	AS	Add & Subtract

go from
left
to right

To solve a multi-step equation:

- USE **PENDAS**
backwards

→ try +/−
FIRST

solving multi-step equations

Solve the following equation. Check each problem.

1. $6 = 4 - 2x$

Model



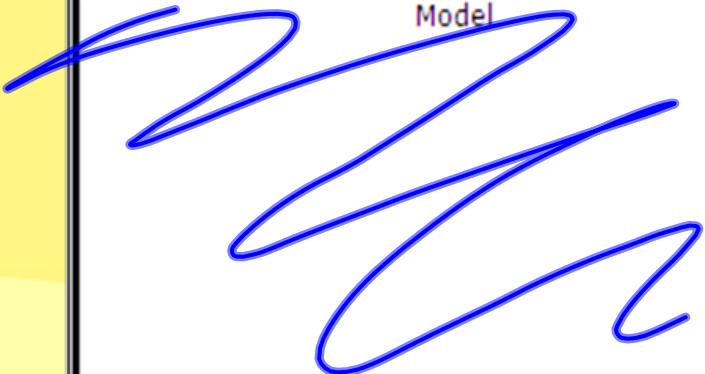
Algebraic

$$\begin{array}{r} 6 = 4 - 2x \\ -4 \quad -4 \\ \hline 2 = -2x \\ \frac{2}{-2} \quad \frac{-2x}{-2} \\ -1 = x \end{array}$$

$$\boxed{-1 = x}$$

your turn!

Solve the following equation. Check each problem.

2. $-4 + 7x = 3$	
Model	Algebraic
	$\begin{array}{rcl} -4 + 7x & = & 3 \\ +4 & & +4 \\ \hline 7x & = & 7 \\ \frac{7x}{7} & = & \frac{7}{7} \end{array}$

$$x = 1$$

solving multi-step equations - top half p11

3. $1.5 = 1.2y - 5.7$

5. $15 = \frac{a}{3} - 2$

$$\begin{array}{r|l} +2 & +2 \\ \hline 3 \cdot 17 = \frac{a}{3} \cdot 3 & \end{array}$$

$$51 = a$$

7. $\frac{n}{7} + 2 = 2$

$$\begin{array}{r|l} -2 & -2 \\ \hline 7 \cdot \frac{n}{7} = 0 & \end{array}$$

$$n = 0$$

4. $0.6g + 11 = 5$

6. $\frac{x-7}{4} = -2 \cdot 4$

$$\begin{array}{r} x-7 = -8 \\ +7 \quad +7 \\ \hline x = -1 \end{array}$$

8. $3 \cdot 5 = \frac{4-x}{3} \cdot 3$

$$\begin{array}{r|l} 15 = 4-x & \\ -4 & -4 \\ \hline 11 = -x & \\ -1 & -1 \\ \hline -11 = x & \end{array}$$

word problems - page 11!

- Tips:
- 1) Highlight important info.
 - 2) Draw a picture.
 - 3) Write let statements and an equation.
 - 4) Solve!

9. 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. → x

$$\begin{array}{r}
 25 = 4 + \frac{1}{5}x \\
 -4 \quad -4 \\
 \hline
 21 = \frac{1}{5}x \\
 21 \cdot 5 = \frac{1}{5}x \cdot 5 \\
 105 = x \\
 \text{in}^2
 \end{array}$$

11. The sum of two consecutive integers is 47. Find the integers.

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

↑ Add #s
Total amount

$$\begin{array}{r}
 82 + 86 + 91 + 96 + x = 450 \\
 355 + x = 450 \\
 x = 95
 \end{array}$$

12. The sum of two consecutive odd integers is 36. Find the integers

QUIZ REVIEW

We now know all these vocab words:

Expression
Variable
Constant
Algebraic Expression
Numerical Expression
Complementary angles
Supplementary angles
Equation
Evaluate
Term
Coefficient
Like Terms
Distributive Property
Zero Pair
VCR Method
Inverse Operation
Reciprocal

Evaluate if $a = -2$ and $b = 4$

$$\frac{8a^2}{b}$$

Write an algebraic expression for the following:

- the cost of a cable television plan has a \$50 flat fee and charges \$1.50 per channel
- 5 subtracted from the quotient of a number square and triple another number

Review solving all types of equations!!

Algebra I - Unit 1: Topic 2 – Solving Multi-Step Equations

Practice - Solving Multi-Step Equations

Name _____

Date _____

pp 92-95

Per _____

Solve each equation. Check your answers.

1. $5x + 3 = 23$

2. $19 = 3x - 5$

3. $4n + 6n = 30$

4. $7 = \frac{c}{-3} + 5$

5. $4 = 3n - 14$

6. $\frac{3}{4}x - 7 = 8$

7. $-3p - 8 + 4p = 17$

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

9. $\frac{3+x}{7} = -5$

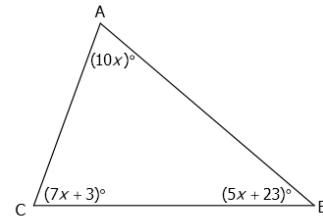
10. $\frac{-3n+6}{-6} = -9$

11. The sum of two consecutive even integers is 26. Find the two integers.

OMIT

12. The average height of an emu is 60 inches. This 70 less than 5 times the average height of a kakapo. Write an equation and solve for the average height of a kakapo.

Algebra I - Unit 1: Topic 2 – Solving Multi-Step Equations

Solve each equation. Check your answers.13. Use the diagram to set up an equation to solve for x . Then find the measures of all three angles.

14. 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?

