Unit 2: Solving Equations

Lesson 3: Literal Equations

Objectives:

- Students can investigate a problem that involves Literal equations and create an equation in one variable to solve it.
- Students can investigate a problem that involves consecutive integers and create an equation in one variable to solve it.

Agenda:

- Warm up
- Quiz
- Class Discovery: Literal Equations
- Practice:

Vocabulary:

• Literal equations, Consecutive integers, Odd and Even integers.

Focus Questions:

- 1. How can I solve Literal equations in real-life problems?
- 2. How can we express consecutive, even, odd integers?

For your entertainment:

http://www.regentsprep.org/regents/math/algebra/AE4/litPrac.htm http://www.quia.com/cz/43436.html?AP_rand=1776803402

Homework: HW2-3

Literal Equations: A literal equation is an equation where variables represent known values. Literal equations allow use to represent things like distance, time, interest, and slope as variables in an equation.

WARM UP: SOLVING EQUATIONS

Strange things can sometimes happen when solving linear (and other) equations. Sometimes we get no solutions at all, in which case the equation is known as **inconsistent**. Other times, any value of x will solve the equation, in which case it is known as an **identity**.

Exercise #3: Try to solve the following equation. State whether the equation is an identity or inconsistent. Explain.

$$6x-2(x+4)=3(x+2)+x-5$$

Exercise #5: Which of the following equations are identities, which are inconsistent, and which are neither?

(a)
$$8x-2(x+3)=5(x-1)+x$$

(b)
$$\frac{4x+2}{2}+8=2x+9$$

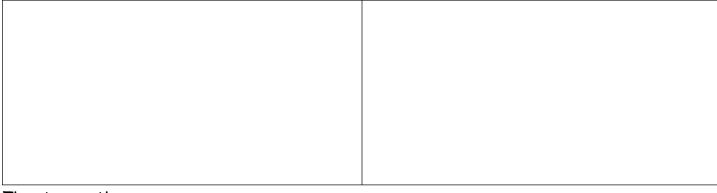
(c)
$$2x+8-(x-7)=2(2x-3)$$

(d)
$$2x+1+2(x-1)=\frac{16x-4}{4}$$

Solving Equations with variables in.

https://www.youtube.com/watch?v=gqSfw2gmMsghttps:

Write down the examples and solutions: (At least 2)



Time to practice:

1] Solve for h in terms of v

$$v = \frac{1}{3}h$$



Solve for p in terms of A, r and t.

$$2]A = 2P + rt$$

$$3] 2A = 3P - 2rt$$

Literal equations: Continue

1. Solve for p:

$$\frac{1}{3}(p-4) = n$$

2. Solve for r:

$$V = \pi r^2 h$$

$$V = \pi r^2 h$$

$$V = \frac{1}{3}Bh$$

5. Solve for r in terms of A, P and t.
$$A = P + rt$$

6. Solve for (v) in terms of K and m
$$K = \frac{1}{2}mv^2$$

7.solve for y in terms of x:
$$2y - 5x = 10$$

8. Solve for y in terms of x
$$x = \frac{1}{2}y + 6$$

Students were asked to write a formula for the length of a rectangle by using the formula for its perimeter, $p = 2\ell + 2w$. Three of their responses are shown below.

$$I. \ \ell = \frac{1}{2}p - w$$

II.
$$\ell = \frac{1}{2}(p - 2w)$$

III.
$$\ell = \frac{p-2w}{2}$$

Which responses are correct?

- 1) I and II, only
- 2) II and III, only
- 3) I and III, only
- 4) I, II, and III

Name : _____

Date:

Algebra 1- Homework 2-3

1) Solve for x:
$$7 = \frac{3}{4}x + 19$$

$$_{2)} 4(x+3) = 3(3x-6)$$

- 3) Boyle's Law involves the pressure and volume of gas in a container. It can be represented by the formula $P_1V_1 = P_2V_2$. When the formula is solved for P_2 , the result is
- 1) $P_1V_1V_2$
- $\frac{V_2}{P_1 V_1}$
- $3) \quad \frac{P_1 V_1}{V_2}$
- $4) \quad \frac{P_1 V_2}{V_1}$
- 4) Michael borrows money from his uncle, who is charging him simple interest using the formula I = Prt. To figure out what the interest rate, r, is, Michael rearranges the formula to find r. His new formula is r equals
- 1) $\frac{I-P}{t}$
- 2) $\frac{P-I}{t}$
- 3) $\frac{I}{Pt}$
- 4) $\frac{Pt}{I}$
- 5) The equation for the volume of a cylinder is $V = \pi r^2 h$. The positive value of r, in terms of h and V, is
- $r = \sqrt{\frac{V}{\pi h}}$
- 2) $r = \sqrt{V\pi h}$
- 3) $r = 2V\pi h$
- 4) $r = \frac{V}{2\pi}$

- The formula for electrical power, P, is $P = I^2 R$, where I is current and R is resistance. The formula for Iin terms of P and R is
- $I = \left(\frac{P}{R}\right)^2$
- $I = \sqrt{\frac{P}{R}}$
- 3) $I = (P R)^2$ 4) $I = \sqrt{P R}$
- 7) The formula for blood flow rate is given by $F = \frac{p_1 p_2}{r}$, where F is the flow rate, p_1 the initial pressure, p_2 the final pressure, and r the resistance created by blood vessel size. Which formula can not be derived from the given formula?
- 1) $p_1 = Fr + p_2$
- 2) $p_2 = p_1 Fr$
- $3) \quad r = F(p_2 p_1)$
- $4) \quad r = \frac{p_1 p_2}{F}$

8) Solve for y.

7) 0.2x + 0.3y = 0.5

8) $\frac{1}{4}y + 3 = -5x$

9) 3x + 2y = -6

10) 3y = 2x + 15