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) $\dfrac{4x+2}{2}+8=2x+9$

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

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

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**:	2. Solve for **r** :
$\frac{1}{3}(p-4) = n$	$V = \pi r^2 h$

3. Solve for h: $V = \pi r^2 h$	4. Solve for B: $V = \frac{1}{3}Bh$
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 $x = \frac{1}{2}y + 6$

3 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) $P_1V_1V_2$

2) $\frac{V_2}{P_1V_1}$

3) $\frac{P_1V_1}{V_2}$

4) $\frac{P_1V_2}{V_1}$

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

1) $r = \sqrt{\frac{V}{\pi h}}$

2) $r = \sqrt{V\pi h}$

3) $r = 2V\pi h$

4) $r = \frac{V}{2\pi}$

6) The formula for electrical power, P, is $P = I^2R$, where I is current and R is resistance. The formula for I in terms of P and R is

1) $I = \left(\frac{P}{R}\right)^2$

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) $r = F(p_2 - p_1)$

4) $r = \frac{p_1 - p_2}{F}$

8) Solve for y.

7) $0.2x + 0.3y = 0.5$

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

9) $3x + 2y = -6$

10) $3y = 2x + 15$