Name: _____ Per:___

Day	Tentative Dates	Assignment (Due the next class meeting)
		Complete First Day Assignments according to Teacher
		1.2 Notes: Solving Linear Equations HW: 1.2 Worksheet, get syllabus signed, pay lab fee $3
		1.3 Notes: Solving Equations with Variables on Both Sides HW: 1.3 Worksheet
		1.4 Notes: Solving Literal Equations HW: 1.4 Worksheet
		1.5 Notes: Solving Inequalities HW: 1.5 Worksheet
		1.6 Notes: Solving Compound Inequalities HW: 1.6 Worksheet
		Ch 1 Practice Test Study! Test next class! Any late/missing HW is due next class!
		Ch 1 Test HW: None! 😊

NOTE: You should be prepared for daily quizzes.
Every student is expected to do every assignment for the entire unit.

Students who complete every assignment this semester will earn a 2% bonus for their semester grade.

HW reminders:

- If you cannot solve a problem, get help **before** the assignment is due.
- Missing the notes or a worksheet? Go to www.washoeschools.net/DRHSmath
- Need help? Check out Earl's website: www.mathguy.us

1.2 Notes: Solving Linear Equations

Learning Objectives

- **Solve an equation with variables on one side, including combining like terms and simple distribution.**

Key Vocabulary

Solving an equation:

Linear Equation:

Combining Like Terms:

Distributive Property:

Addition Property of Equality:

Subtraction Property of Equality:

Multiplication Property of Equality:

Division Property of Equality:

Examples 1 – 3: Solve for the variable in each equation.

1) $6x - 8 = 12$

2) $-3 = -2.1x + 3.3$

3) $\frac{8}{11}n + 5 = -7$

You try 4 – 6! Solve for the variable in each equation.

4) $\frac{4}{3}a - 1 = 1$

5) $-4 = -6h - 4$

6) $-4.4b - 3 = 17$

Combining Like Terms:

Example 7: What is the value of a in the equation shown? $5a - 7a + 9 = 20$

You try #8! Solve for g in the equation shown: $25 - 5g + 8g = 7$

The Distributive Property:

Example 9: Solve the equation for the variable: $2(7-5h)=20$.

Now solve the same equation with a different strategy! $2(7-5h)=20$

Example 10: What is the value of *x* in the equation shown? $\frac{2(x+4)}{3}-8=32$

Solve this same equation by using a different method. $\frac{2(x+4)}{3}-8=32$

Associative Property (of addition or multiplication):
Terms can be grouped together differently with addition or multiplication. Note: the order of the numbers is not changed.

Sample: $(3+5)+2=3+(5+2)$

Sample: $(3\cdot 5)2=3(5\cdot 2)$

Commutative Property (of addition or multiplication):
Terms that are added (or multiplied) can b written in any order.

Sample: $3+2=2+3$

Sample: $3\cdot 2=2\cdot 3$

Example 11: The equation below is solved step-by-step. Write the property that describes each step.

Solution	Property used
$\frac{4(3x+2)+5x}{7}=-9$	Given equation
$4(3x+2)+5x=-63$	
$12x+8+5x=-63$	
$12x+5x+8=-63$	
$17x=-71$	
$x=-\frac{71}{17}$	

Example 12: Solve for the variable: $-\frac{1}{6}(5y + 20) = -3$

Example 13: Three friends split the cost of ordering pizza, and they each pay $13. Which of the following equations models this situation, if p is the cost of the pizza?

A) $p = \frac{13}{3}$
B) $3p = 13$
C) $\frac{13}{p} = 3$
D) $\frac{p}{3} = 13$

You try #14: Trevor hires a landscaping company in order to xeriscape his yard. The company charges $800 per day, plus $120 per hour for labor. The job takes the company 3 days to complete, and the total charge was $4560. Which equation below correctly models this situation, if h is the number of hours of labor needed to complete the job?

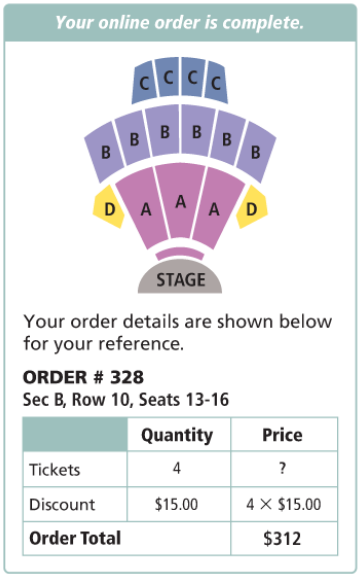
A) $120h + 800 = 4560$
B) $120h + 2400 = 4560$
C) $800h + 120 = 4560$
D) $800h + 360 = 4560$

Example 15: Four friends use an online code to get discounts on concert tickets. They spent $312 for the four tickets.

Part A: Which of the following equations models this situation for the cost T of the tickets, without the discount?

Option 1: $4T + 15 = 312$
Option 2: $4T - 15 = 312$
Option 3: 4T + 60 = 312
Option 4: 4T – 60 = 312

Part B: What was the price of one ticket, T, without the discount?



1.3 Notes: Solving Equations with Variables on Both Sides

Learning Objectives

- **Solve an equation with variables on both sides, including combining like terms and simple distribution of a negative.**
- **Recognize an equation with infinite or no solution.**

Warm-up:

1) Solve for *x*: $15 - 2(x - 4) = 31$

2) Solve for *x*: $\frac{1}{4}(2x - 3) = 8$

Solving Equations with the Same Variable on Both Sides

Examples 1 – 4: Solve for the variable.

1) $5n - 8 = -6n + 30$

2) **You try!** $50 - 2a = 34 + 16a$

3) $20g + 31 - 24g = 16 - g$

4) **You try!** $13 + 7b = 4b + 6 - 12b$

Example 5: Solve for *b*:

$$5b - 3(2b + 1.8) = -6b + 9$$

Example 6: **You try!** Solve for *w*:

$$6 - 3(2 - 4w) + 8w = 12w - 1$$

Example 7: Solve for *x*:

$$-\frac{3}{4}(3x - 5) = \frac{5}{4}(2x + 19)$$

Example 8: **You try!** Solve for the variable:

$$\frac{1}{5}(2 - 7k) = -2(4k + 3)$$

Example 9: Solve for *y*: $\frac{3}{7}(5y - 21) = 2(3 - 4y) - 5$

Exploration: Solve for *x*: $4x + 6 = 2(2x + 3)$

What do you think this means?

Vocabulary terms:

Identity:

No Solution:

Example 10: Solve for h: $5(7 + 2g) = 3g + 18 + 7g$

Example 11: Which of the following equations has no solution? Choose all that apply.

A) $6x - 7 = 4x + 10 - 17 + 2x$

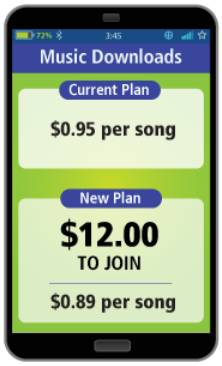
B) $3x - 2(5x + 4) = -7x + 1$

C) $8x + 5 = 8x + 2$

D) $3x - 9 = 3(x - 3)$

Example 12: Sarah has a gift card worth \$60 that loses \$3 each month that it isn't used. Max has a gift card worth \$50 that loses \$2 each month that it isn't used. After how many months will they be worth the same amount?

Example 13: Cameron pays \$0.95 per song with his current music service. A new music service charges \$0.89 per song plus a joining fee of \$12. At how many songs will both services charge the same amount?



1.4 Notes: Literal Equations and Formulas

Learning Objectives

- **Solve for the requested variable in a literal equation, especially solving for y in Ax + By = C**

Warm-up:

1) Solve for x: $1 - \frac{2}{3}(x - 5) = 2$

2) Solve for x: $5(2x + 3) + 7x = 6x + 10 - 4x$

3) Explain the difference between an equation with no solution and an equation that is an identity. How do you know which is which?

Literal Equation:

For Examples 1 – 6, solve for the requested variable.

1) $A = bh$; solve for h

2) $5x + 2y = 40$; solve for y

3) $V = \frac{1}{3}lwh$; solve for w.

You try!

4) $V = \frac{1}{3}Bh$; solve for B.

5) $SA = 6lw$; solve for l.

6) $3x + 2y = 12$; solve for y.

Example 7: Janet wants to calculate the time it takes to earn a certain amount of interest on a principle amount in an investment with simple interest. If the formula for simple interest is $I = prt$, then what formula could she use to solve for time *t*?

Example 8: Rob is an electrical engineer who works with lots of wires. He needs to calculate the length of the wire *L* (in meters) using the electrical resistance *R* of the wires (in ohms), the resistivity ρ (in ohm meters), and the area of the wire *A* (in square cm). The formula for electrical resistance is $R = \frac{\rho L}{A}$. What equation can he use to solve for the length of the wire?

Example 9: In a half hour, Sarah is meeting her friends at the lake, which is 6 mi from her house. At what average speed must she ride her bike to get there on time, if $d = rt$, where *d* is distance, *r* is rate, and *t* is time in hours?

Example 10: The formula for the area of a trapezoid is $A = \frac{1}{2}h(b_1 + b_2)$. Solve the equation for the height *h*. Then find the height of the trapezoid if its area *A* is 50 square cm, and the bases b_1 and b_2 are 6 cm and 12 cm.

Example 11: According to Teo's bread recipe, he should bake the bread at 190℃ for 30 minutes. His oven measures temperatures in °F. To what temperature in °F should he set his oven? Note: use $C = \frac{5}{9}(F - 32)$ where *C* is degrees in Celsius and *F* is degrees in Fahrenheit.

Example 12: Given the equation: $A = \frac{1}{2}h(b_1 + b_2)$. Which of the following shows the correct solution for b_1? Choose all that apply.

A) $\frac{2A}{h} - b_2$
B) $\frac{2A - hb_2}{h}$
C) $\frac{A}{2h} + b_2$
D) $\frac{A - b_2}{2h}$

1.5 Notes: Solving Inequalities in One Variable

Learning Objectives

- **Solve and graph inequalities in one variable.**
- **Switch an inequality sign when it is appropriate (when multiplying or dividing by a negative)**
- **Recognize an inequality with infinite or no solutions.**

Warm-up:

1) Solve for a: $\frac{2}{3}(a-4)=\frac{4}{5}(2+3a)$

2) Solve for b, in terms of a: $3ab-2=8$

Exploration: Consider each inequality below. Find as many values for x as possible that would make each statement true.

A) $x<-3$

B) $x\geq 2.4$

Examples 1 – 3: Solve each inequality for the variable. Then graph the solution set.

1) $3a-5>7$

2) $4\geq 2x+1$

3) $\frac{2}{3}b<-4$

You Try! #4 – 6: Solve each inequality for the variable. Then graph the solution set.

4) $\frac{1}{4}a-1>-3$

5) $4\geq 4x-12$

6) $6b+2<-4$

Example 7: Grace's mom told her she could spend up to $25 at the movie theater. Her ticket cost $11.00. Which inequality below correctly models this situation, if Grace spends *d* dollars? This graph the solution set.

A) $d + 11 < 25$
B) $d - 11 \leq 25$
C) $d + 11 \leq 25$
E) $d - 11 < 25$

Multiplying or Dividing Both Sides of an Inequality by a Negative

Examples 8 – 11: Solve for the variable. Graph the solution on the provided number line.

8) $-5n + 3 > 13$

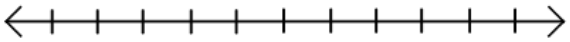
9) $4x + 8 \leq 7x + 3$

You try #10 – 11!

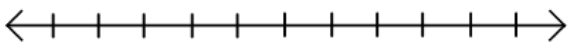
10) $7b + 11 \geq 9b + 3$

11) $-\frac{d}{2} + 3 < 9$

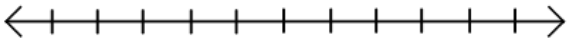
Example 12: Solve for *x* and graph the solution on the number line provided: $-5x + 3(2x + 8) - 12 < 22$



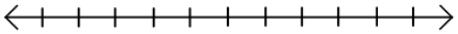
You try! 13) Solve for the variable and graph the solution on the number line. $3 - 2(5a - 1) < 7a + 10$



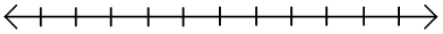
Example 14: Solve for x and graph the solution on the number line provided: $\frac{5x-3}{6} \leq 4$



Example 15: Solve for b and graph the solution on the number line provided: $4(2b+8) < 4(2b-3)$

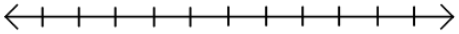


Example 16: Solve for h and graph the solution on the number line provided: $4(h-1) \geq 2(2h-2)$



Infinitely Many Solutions versus No Solution

You try! Example 17: Solve for h and graph the solution on the number line provided: $3(2h+6) > 2(3h+9)$



Example 18: Derek wants to order some roses online. For what number of roses is it less expensive to order from Florist A? Florist B?

Florist A:
$4.75 per blue rose
plus $40
delivery charge.

Florist B:
$5.15 per red rose
plus $25
delivery charge.

1.6 Notes: Solving Compound Inequalities

Learning Objectives

- **Solve and graph compound inequalities.**

Warm-up:

Sarah said the solution for the equation below is $x > 3$. Describe her mistake in words. What is the correct solution?

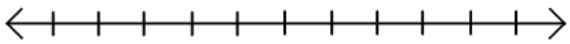
$-5(x - 2) > -5$
$-5x + 10 > -5$
$-5x > -15$
$x > 3$

Compound Inequalities:

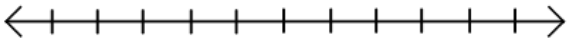
"And" **"Or"**

Explore:

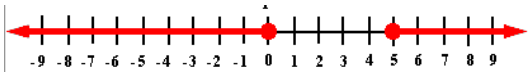
Part A) Write down all numbers that you can think of that are less than 4 and greater than -2. Then express this solution as a compound inequality and a graph on a number line.

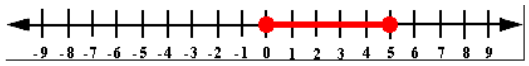


Part B) Write down all numbers that you can think of that are less than -2 or greater than 4. Then express this solution as a compound inequality and a graph on a number line.

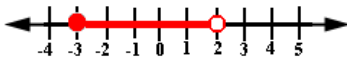


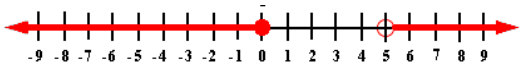
Examples 1 – 4: For each graph below, write a compound inequality.

1) 

2) 

You try!

3) 

4) 

Examples 5 – 6: Translate the verbal phrase into an inequality. Then graph the inequality.

5) All real numbers that are less than or equal to 11.5 *and* greater than or equal to -3.

6) All real numbers that are greater than 4 *or* less than or equal to –2.

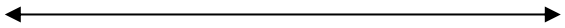
You try! Examples 7 – 8: Translate the verbal phrase into an inequality. Then graph the inequality.

7) All real numbers that are greater than 7 *or* less than or equal to 5.1.

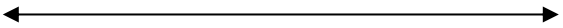
8) All real numbers that are less than or equal to 9 *and* greater than or equal to -2.

Examples 9 – 14: Solve and graph each compound inequality.

9) $-1 \leq 9 + 2n < 17$

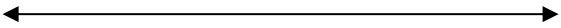


10) $2x + 4 < 10$ or $\frac{x}{2} - 3 \geq 3$



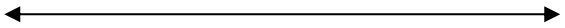
You try #11 and 12!

11) $-36 < 3p - 6 < -15$



12) $2n + 7 \geq 27$ or $3 + 3n \leq 30$

13) $-1 + 5n > -26$ and $7n - 2 \leq 12$



14) $6 + 7m < 6m - 5$ *or* $3m - 7 < 5 + 6m$