

TWO-STEP EQUATIONS WITH RATIONAL NUMBERS

INTEGER OPERATIONS

- Adding: If the two values have the same sign, then _____ and use the same sign.

Ex: $6 + 5 =$ $-6 + (-5) =$

- Adding: If the signs are _____, then _____ and take the sign of the number with the greatest absolute value.

Ex: $6 + (-5) =$ $-6 + 5 =$

- Subtracting: Rewrite the problem to add the _____. Then, follow the rules for adding integers.

Ex: $6 - 7 =$ $-9 - 11 =$ $-3 - (-8) =$

- Multiplying and Dividing: If the signs are the same, then the answer is _____. If the signs are different, then the answer is _____.

Ex: $6 \cdot 5 =$ $-6 \cdot (-5) =$ $6 \cdot (-5) =$

Quickly review the rules for integer operations to apply them to solving equations.

$-6 + (-19) =$ _____ $-5 - 32 =$ _____ $14 + (-27) =$ _____ $-11 - 8 =$ _____

$-8 \cdot (-9) =$ _____ $-14 \cdot 3 =$ _____ $\frac{-24}{4} =$ _____ $\frac{-35}{-7} =$ _____

#1: Use inverse operations to undo addition and subtraction

#2: Use inverse operations to undo multiplication and division

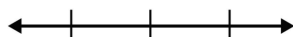
#3: Solve by keeping the equation balanced

#4: Check your solution

Solve the following two-step equations. Check and graph your solution on the number line.

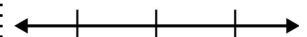
1. $-4k + 9 = 32$

CHECK & GRAPH:



2. $\frac{x}{2} - 14 = -20$

CHECK & GRAPH:



Solve the following two-step equations and show all work.

<p>3.</p> $3x + 8 = -10$ <p>_____</p>	<p>4.</p> $-1.5x - 9 = 15$ <p>_____</p>	<p>5.</p> $\frac{x}{6} + 7 = -11$ <p>_____</p>
<p>6.</p> $-\frac{2}{3}x + 20 = 30$ <p>_____</p>	<p>7.</p> $-2x + 7 = -32$ <p>_____</p>	<p>8.</p> $\frac{x}{-2} - 15 = -35$ <p>_____</p>

Apply your knowledge of solving equations to answer 9-12.

9. Margo solves several equations and then states that all of them have a solution of $x = -7$. However, Kenneth disagrees. Determine who is correct and justify your answer.

A $6x + 13 = 55$

B $-3x - 18 = 39$

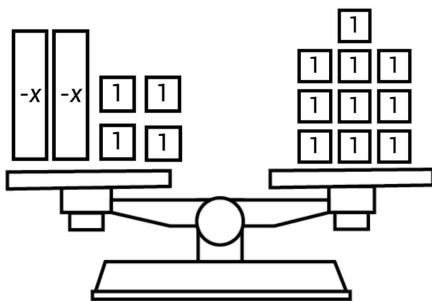
C $2x - 14 = -28$

D $7x + 9 = 58$

10. David's phone bill each month is \$30. He is also charged \$0.10 per GB of data he uses. If his phone bill in July was \$42, how many GB of data did he use in July?

Variable: _____ Equation: _____ Solution: _____

11. Write and solve the equation modeled below.



Equation: _____ Solution: _____

12. The sum of the measures of angle Y and angle Z is 180° . Angle Y measures $(3x + 20)^\circ$ and angle Z measures x° .

a. Write an equation and solve for the value of x .

b. What is the measure of each angle?