

Name: \_\_\_\_\_ Algebra 9 Unit 2 Lesson 5

## Linear Equation Word Problems

DO NOW ~ Thursday 11/14

Solve the following equation. Show all of your work.

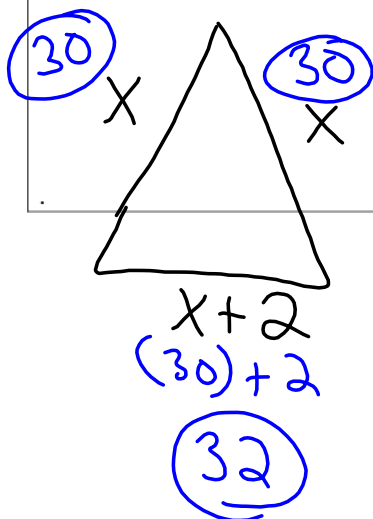
$$\begin{array}{r}
 -4 + 6r - r = -19 \\
 5r - 4 = -19 \\
 \underline{+4} \quad \underline{+4} \\
 5r = -15 \\
 \underline{\div 5} \quad \underline{\div 5} \\
 r = -3
 \end{array}$$



## Classwork

increased by

| Addition                                                                                                                                                                 | Subtraction                                           | Multiplication                                                                                                                                                                                                                                                                                                | Division              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Sum<br>Added to<br>Add<br>More Than                                                                                                                                      | Take Away<br>Subtract from<br>Difference<br>Less Than | Times<br>Of<br>Product<br>multiply                                                                                                                                                                                                                                                                            | Divide by<br>Quotient |
| <p>The <u>sum</u> of a number and five is 17. What is the number?</p> $  \begin{array}{r}  x + 5 = 17 \\  \underline{-5} \quad \underline{-5} \\  x = 12  \end{array}  $ |                                                       | <p>The <u>sum</u> of 3 less than 5 times a number and the number <u>increased by</u> 9 is 24. What is the number?</p> $  \begin{array}{r}  5x - 3 + 1x + 9 = 24 \\  6x + 6 = 24 \\  \underline{-6} \quad \underline{-6} \\  6x = 18 \\  \underline{\div 6} \quad \underline{\div 6} \\  x = 3  \end{array}  $ |                       |

Find the lengths of 3 sides of a triangle are represented by  $x$ ,  $x$ ,  $x+2$ . Find the lengths of the sides of the triangle if the perimeter of the triangle is 92 centimeters

$$\begin{array}{r}
 1x + 1x + 1x + 2 = 92 \\
 3x + 2 = 92 \\
 \underline{-2} \quad \underline{-2} \\
 3x = 90 \\
 \underline{\div 3} \quad \underline{\div 3} \\
 x = 30
 \end{array}$$

## DO NOW ~ Friday 11/15

7 less than six times a number is 19. Find the number using an equation.

$$\begin{array}{r} 6x - 7 = 19 \\ +7 \quad +7 \\ \hline 6x = 26 \\ \div 6 \quad \div 6 \\ \hline x = \frac{13}{3} \end{array}$$

$$x = \frac{13}{3}$$

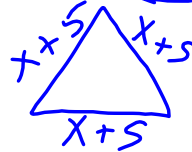


## Classwork

The sum of three times a number and 2 less than 4 times that same number is 15. Find the number.

$$\begin{array}{r} 3x + 4x - 2 = 15 \\ 7x - 2 = 15 \\ +2 \quad +2 \\ \hline 7x = 17 \\ \div 7 \quad \div 7 \\ \hline x = \frac{17}{7} \end{array}$$

The length of one side of an equilateral triangle is represented by  $x + 5$ . The perimeter of the triangle is 45 meters. Find  $x$ .



$$\begin{array}{r} x + 5 + x + 5 + x + 5 = 45 \\ 3x + 15 = 45 \\ -15 \quad -15 \\ \hline 3x = 30 \\ \div 3 \quad \div 3 \\ \hline x = 10 \end{array}$$

Integers:  $-2, -1, 0, 1, 2$

Consecutive Integers:

Consecutive Odd Integers:

Consecutive Even Integers:

I'm thinking of three consecutive odd integers. When I add the larger two the result is nine less than three times the smallest of them. What are the three consecutive odd integers?

Two consecutive integers have a sum that is eleven less than three times the smaller integer.

Let  $x$ : 1<sup>st</sup> con. Int.  $\textcircled{12}$   
Let  $x+1$ : 2<sup>nd</sup> con. Int.  $\textcircled{13}$

$$\begin{array}{r} x + x + 1 = 3x - 11 \\ 2x + 1 = 3x - 11 \\ -2x \quad -2x \\ \hline 1 = 1x - 11 \\ +11 \quad +11 \\ \hline 12 = 1x \end{array}$$

$$\begin{array}{r} 12 = x \\ \div 1 \quad \div 1 \\ \hline 12 = x \end{array}$$

DO NOW ~ Monday 11/18

Five less than three times a number is equal to 19.

$$3x - 5 = 19$$



Classwork

2, 4, 6, 8

The sum of two consecutive integers is 21. Find the two integers.

Let  $x = 1^{st} \#$  (10)

Let  $x+1 = 2^{nd} \#$  (11)

$$\begin{array}{r} x + x + 1 = 21 \\ 2x + 1 = 21 \\ \underline{-1} \phantom{=} \\ 2x = 20 \\ \underline{\div 2} \phantom{=} \\ x = 10 \end{array}$$

~~The sum of four consecutive integers is 18. What are the four integers?~~

Three consecutive even integers have the property that when the difference between the first and twice the second is found, the result is eight more than the third. Find the three consecutive even integers.

Let  $x = 1^{st} \#$  (8)

Let  $x+2 = 2^{nd} \#$  (6)

Let  $x+4 = 3^{rd} \#$  (4)

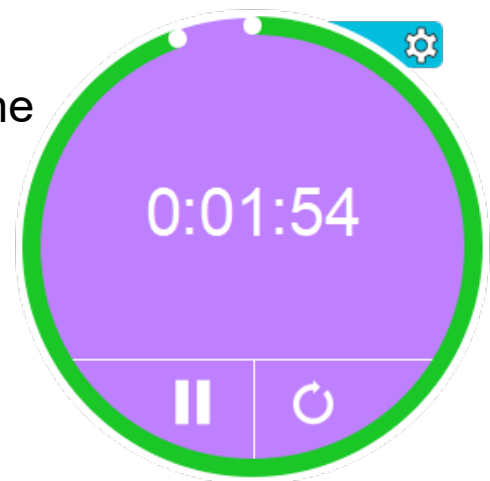
$$\begin{array}{r} x - 2(x+2) = 8 + x+4 \\ x - 2x - 4 = 8 + x + 4 \\ -1x - 4 = 12 + 1x \\ \underline{+1x} \phantom{=} \\ -4 = 16 \end{array}$$

When 9 is subtracted from 5 times a number, the result is 31.

$$\begin{array}{r} 5x - 9 = 31 \\ \underline{+9} \phantom{=} \\ 5x = 40 \\ \underline{\div 5} \phantom{=} \\ x = 8 \end{array}$$

To earn your full participation point for the Do Now be sure to have completed all of the following by the time is up:

- 1) Be in your seat
- 2) Take out your calculator or grab one
- 3) Have last night's homework out
- 4) Complete the do now



## DO NOW ~ Tuesday 11/19

The sum of 100 and a number is equal to 3 times that number. Find the number.

$$\begin{array}{r}
 + \quad \quad \quad \overset{X}{\phantom{00}} \\
 100 + 1x = 3x \\
 \hline
 100 = 2x \quad \text{SO } X = 50
 \end{array}$$

~~2~~  
~~2~~  
~~2~~  
2



## Classwork

If 8 times a number is decreased by 20, the result is the same as 3 times the number increased by 80.

$$\begin{array}{r}
 8x - 20 = 3x + 80 \\
 -3x \quad \quad -3x \\
 \hline
 5x - 20 = 80 \\
 +20 \quad \quad +20 \\
 \hline
 5x = 100 \\
 \div 5 \quad \quad \div 5 \\
 \hline
 x = 20
 \end{array}$$

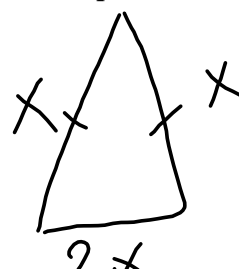
~~2~~  
~~2~~  
~~2~~  
2

If 7 is subtracted from a number, the result is 46. Find the number.

$$\begin{array}{r}
 X - 7 = 46 \\
 +7 \quad \quad +7 \\
 \hline
 X = 53
 \end{array}$$

Two sides of a triangle are equal in length. The length of the third side exceeds the length of the other two sides by 3 centimeters. The perimeter of the triangle is 93 centimeters. Find the lengths of all three sides of the triangle.

The base of an isosceles triangle is 3 times the length of the two congruent legs. The perimeter of the triangle is 100 yards. Find the length of the base of the triangle.



$$\begin{array}{r}
 x + x + 3x = 100 \\
 \hline
 5x = 100 \\
 \div 5 \quad \quad \div 5 \\
 \hline
 x = 20
 \end{array}$$

3x  
3(20)  
60 yards

**Mrs. Ferreri's Station ~ Consecutive Integer Word Problems*****Solve Algebraically.***

Find two consecutive integers such that ten more than twice the smaller is seven less than three times the larger.

Find two consecutive even integers such that their sum is equal to the difference of three times the larger and two times the smaller.

Find three consecutive integers such that three times the largest increased by two is equal to five times the smallest increased by three times the middle integer.

Three consecutive even integers have the property that when the difference between the first and twice the second is found, the result is eight more than the third. Find the three consecutive even integers.

***Continue onto next page.***

Find four consecutive odd integers whose sum is 456.

5. Find three consecutive integers such that the sum of the first and third is 40.

7. Find two consecutive odd integers such that 4 times the larger is 29 more than 3 times the smaller.

Find 3 consecutive odd integers such that 3 times the middle number is 153.

**Computer Station ~ Delta Math**

*Log onto Delta Math and complete the, "Translating words into expressions" assignment.*

**Mrs. Kennedy's Station ~ Perimeter Problems**

*Translate the following words into equations and solve.*

The lengths of the sides of a triangle are represented by  $2x - 1$ ,  $x$ , and  $x + 5$ . The perimeter is 84 inches. Find the length of the longest side of the triangle.

The perimeter of a rectangle is 40 feet. The length is 2 feet more than 5 times the width. Find the dimensions of the rectangle.

The sum of the sides of the triangle is 36 feet. The three sides are  $x$ ,  $2x$  and  $3x$ . Find the length of the longest side.

The base of an isosceles triangle is one less than double the length of the other two sides. Find the base if the perimeter equals 119 meters.

*Continue onto the next page.*

The length of a rectangle is 3 times its width. The perimeter of the rectangle is 72 centimeters. Find the dimensions of the rectangle.

The length of a rectangle is 5 meters more than its width. The perimeter is 66 meters. Find the dimensions of the rectangle.

A large, square pizza box has a perimeter of sixty-four inches. How long is each of the four sides?

The third side of a triangle is triple the first side, and the second side is double the first side. All three sides combined make 42 inches. How long is the shortest side?

**Independent Station ~ Equations Maze**

*Start with "Station 1" and solve the equation. Find your answer and go to the next station. You may use this space to show your work or a white board.*

**Homework ~ Thursday 11/14**

Ten less than a number is 42. Find the number.

Which equation can be used to solve the problem below?

If four times a number is increased by 15, the result is three less than six times the number.

A.  $4(x + 15) = 6x - 3$       B.  $4x + 15 = 6(x - 3)$

C.  $4x + 15 = 6x - 3$       D.  $4x + 15 = 3 - 6x$

**Solve. Show all of your work.**

$$4 - 6r = -(8r - 6)$$

**Solve. Show all of your work.**

$$6(3b - 2) = 5b - 12$$

**Homework ~ Monday 11/18**

The length of a rectangle is twice its width. The perimeter is 36 meters. Find the dimensions (length and width) of the rectangle.

The perimeter of a rectangle is 40 feet. The length is 2 feet more than 5 times the width. Find the dimensions of the rectangle.

**Solve. Show all of your work.**

$$3(4x - 2) = -11 + 7x$$

**Solve. Show all of your work.**

$$-8v - 8 = 5v + 2(-7v - 2)$$

**Homework ~ Tuesday 11/19**

Find three consecutive odd integers such that the sum of the smaller two is three times the largest increased by seven.

Three times the sum of a number and four is equal to five times the number, decreased by two. If  $x$  represents the number, which equation is a correct translation of the statement?

A.  $3(x + 4) = 5x - 2$

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

C.  $3x + 4 = 5x - 2$

D.  $3x + 4 = 5(x - 2)$

**Solve. Show all of your work.**

$$3(4x - 2) = -11 + 7x$$

**Solve. Show all of your work.**

$$-8v - 8 = 5v + 2(-7v - 2)$$