

# Unit 1 - Algebraic Expressions and Integers Test

1. Write down the place value of the digit 8 in the following numbers.

a. 148,004.123

b. 10,758.004

c. 1,200.008

2. Write the number in expanded form.

7,000,003

3. Write an algebraic expression for each verbal phrase.

a. The product of  $x$  and 6 decreased by 100.

b. The quotient of 15 and  $x$  increased by 7

4. Write each as a verbal expression.

a.  $20 - 9$

b.  $\frac{x}{2}$

5. Find the value of numerical expression. Follow the order of operations.

$$[(49 \div 7^2) + 7 * 2]^2 - (216 \div 6^2 - 1) =$$

# Unit 1 - Algebraic Expressions and Integers Test

## 6. Solve the following problem

Maria has **\$1,000** and she invested in stock. In one day, her money was doubled. The next day she loss of **\$150** and later got a profit of **\$500**. Write an expression for this and determine her present amount.

## 7. Evaluate expression for the given values of the variable.

$$\frac{x + y}{2} + (x - y) - \frac{x - y}{2} =$$

$x = 15$        $y = 1$

## 8. Complete the chart.

Number	Absolute Value	Different Number with Same Absolute Value
-25		
10		
-134		

## 9. Compare the following integers. Write $<$ , $=$ or $>$ .

a.  $|-30|$  \_\_\_  $-30$

b.  $|-45|$  \_\_\_  $|45|$

c.  $|-15|$  \_\_\_  $-(-15)$

# Unit 1 - Algebraic Expressions and Integers Test

10. Evaluate the expression for the given replacement values.

$$x + y + z =$$
$$x = -100 \quad y = -20 \quad z = 30$$

Solve each expression below.

11.  $(-122) - (-24) - 13 =$

12.  $90 - (-100) - (-80) =$

13. Estimate the answer using cluster estimation.

$$220 + 199 + 212 + 206 =$$

14. Write a rule for number pattern, and find the next number.

1, 3.5, 6, 8.5, ... ..

# Unit 1 - Algebraic Expressions and Integers Test

15. Find the rule for the following pattern.

6, 9, 12, 15, 18, 21, 24 ... ..

$n$	1	2	3	4	5	6	7
	6	9	12	15	18	21	24

Solve each expression below using order of operations.

16.  $|-65| - [196 \div (-14)]^2 * 3 - 56 =$

17.  $(-63) + [225 \div (-15)] * (-5) - 15 =$

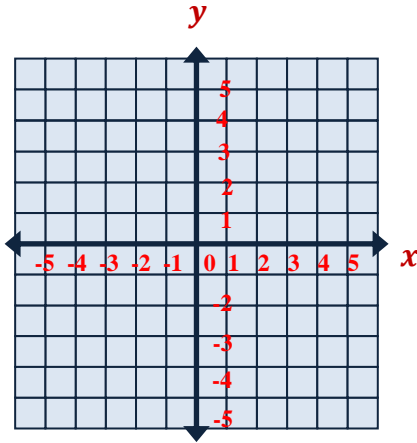
18. Evaluate the expression for the given replacement values.

$$\begin{aligned}x - y * z + 2x \div z &= \\x = -11 \quad y = -40 \quad z = 2\end{aligned}$$

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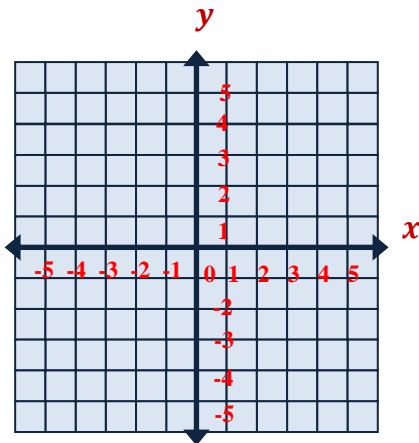
19. Graph each point on a coordinate plane and find the line segment lengths.

$D(-6, 3)$  and  $K(0, 3)$



20. Graph each point on a coordinate plane and find the area of the figure.

$T(-4, 3)$   $S(3, 3)$   $F(-4, -2)$



# Unit 1 - Algebraic Expressions and Integers Test

## ANSWERS

1. Write down the place value of the digit 8 in the following numbers.

a. 148,004.123

b. 10,758.004

c. 1,200.008

One-thousands

Ones

One-thousandths

2. Write the number in expanded form.

7,000,003

Value of 7 =  $7 * 1,000,000 = 7,000,000$

Value of 3 =  $3 * 1 = 3$

$7,000,003 = 7,000,000 + 3$

3. Write an algebraic expression for each verbal phrase.

a. The product of  $x$  and 6 decreased by 100.

b. The quotient of 15 and  $x$  increased by 7

$6x - 100$

$\frac{15}{x} + 7$

4. Write each as a verbal expression.

a.  $20 - 9$

b.  $\frac{x}{2}$

the difference of 20 and 9

half of  $x$

5. Find the value of numerical expression. Follow the order of operations.

$[(49 \div 7^2) + 7 * 2]^2 - (216 \div 6^2 - 1) =$

$[(49 \div 7^2) + 7 * 2]^2 - (216 \div 6^2 - 1) =$

$[(49 \div 49) + 7 * 2]^2 - (216 \div 36 - 1) =$

$= [1 + 14]^2 - (6 - 1) =$

$= 15^2 - 5 =$

$= 225 - 5 = 220$

# Unit 1 - Algebraic Expressions and Integers Test

## 6. Solve the following problem

Maria has \$1,000 and she invested in stock. In one day, her money was doubled. The next day she lost \$150 and later got a profit of \$500. Write an expression for this and determine her present amount.

$$\begin{aligned} & 1,000 * 2 - 150 + 500 = \\ & = 2,000 - 150 - 500 = \\ & = 1,850 - 500 = \\ & = 1,350 \end{aligned}$$

## 7. Evaluate expression for the given values of the variable.

$$\frac{x+y}{2} + (x-y) - \frac{x-y}{2} =$$

$x = 15$        $y = 1$

$$\begin{aligned} & \frac{x+y}{2} + (x-y) - \frac{x-y}{2} = \\ & = \frac{15+1}{2} + (15-1) - \frac{15-1}{2} = \\ & = \frac{16}{2} + 14 - \frac{14}{2} = \\ & = 8 + 14 - 7 = \\ & = 22 - 7 = \\ & = 15 \end{aligned}$$

## 8. Complete the chart.

Number	Absolute Value	Different Number with Same Absolute Value
-25	25	+25
10	10	-10
-134	134	+134

## 9. Compare the following integers. Write $<$ , $=$ or $>$ .

a.  $|-30| \underline{\quad} -30$

$|-30| \underline{>} -30$

b.  $|-45| \underline{\quad} |45|$

$|-45| \underline{=} |45|$

c.  $|-15| \underline{\quad} -(-15)$

$|-15| \underline{=} -(-15)$

# Unit 1 - Algebraic Expressions and Integers Test

10. Evaluate the expression for the given replacement values.

$$\begin{aligned}
 x + y + z &= \\
 x = -100 \quad y = -20 \quad z = 30 \\
 x + y + z &= \\
 -100 + (-20) + 30 &= \\
 = -120 + 30 &= \\
 = -90 &
 \end{aligned}$$

Solve each expression below.

11.  $(-122) - (-24) - 13 =$

$$\begin{aligned}
 (-122) - (-24) - 13 &= \\
 = (-122) + 24 - 13 &= \\
 = (-98) - 13 &= \\
 = (-98) + (-13) &= \\
 = -111 &
 \end{aligned}$$

12.  $90 - (-100) - (-80) =$

$$\begin{aligned}
 90 - (-100) - (-80) &= \\
 = 90 + 100 - (-80) &= \\
 = 190 - (-80) &= \\
 = 190 + 80 &= \\
 = 270 &
 \end{aligned}$$

13. Estimate the answer using cluster estimation.

$$220 + 199 + 212 + 206 =$$

$$220 + 199 + 212 + 206 =$$

Notice that they all cluster around **200**.

$$200 + 200 + 200 + 200 = 4 * 200 = \mathbf{800}$$

Real answer:

$$220 + 199 + 212 + 206 = \mathbf{837}$$

14. Write a rule for number pattern, and find the next number.

1, 3.5, 6, 8.5, ... ..

Start with **1**, each number is obtained by adding **2.5** to the previous number.

$$1 + 2.5 = 3.5$$

$$3.5 + 2.5 = 6$$

$$6 + 2.5 = 8.5$$

$$8.5 + 2.5 = 11$$

The next number is **11**



# Unit 1 - Algebraic Expressions and Integers Test

15. Find the rule for the following pattern.

6, 9, 12, 15, 18, 21, 24 ... ..

$n$	1	2	3	4	5	6	7
$3n$	3	6	9	12	15	18	21
$3n + 3$	6	9	12	15	18	21	24

The difference between successive values is always 3,  
The rule is of the form  $3n + 3$

Solve each expression below using order of operations.

$$\begin{aligned}
 16. \quad & |-65| - [196 \div (-14)]^2 * 3 - 56 = & & & |-65| - [196 \div (-14)]^2 * 3 - 56 = \\
 & = 65 - [-14]^2 * 3 - 56 = & & & = 65 - 196 * 3 - 56 = \\
 & = 65 - 588 - 56 = & & & = 65 - 588 - 56 = \\
 & = 65 + (-588) - 56 = & & & = 65 + (-588) - 56 = \\
 & = -523 - 56 = & & & = -523 - 56 = \\
 & = -523 + (-56) = & & & = -523 + (-56) = \\
 & = -579 & & & = -579
 \end{aligned}$$

$$\begin{aligned}
 17. \quad & (-63) + [225 \div (-15)] * (-5) - 15 = & & & (-63) + [225 \div (-15)] * (-5) - 15 = \\
 & = (-63) + [-15] * (-5) - 15 = & & & = (-63) + [-15] * (-5) - 15 = \\
 & = (-63) + 75 - 15 = & & & = (-63) + 75 - 15 = \\
 & = 12 - 15 = & & & = 12 - 15 = \\
 & = 12 + (-15) = & & & = 12 + (-15) = \\
 & = -3 & & & = -3
 \end{aligned}$$

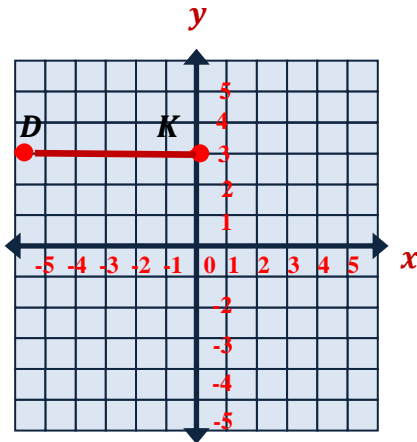
18. Evaluate the expression for the given replacement values.

$$\begin{aligned}
 & x - y * z + 2x \div z = \\
 & x = -11 \quad y = -40 \quad z = 2 \\
 & x - y * z + 2x \div z = \\
 = & -11 - (-40) * 2 + 2 * (-11) \div 2 = \\
 = & -11 - (-80) + (-22) \div 2 = \\
 = & -11 - (-80) + (-11) = \\
 = & -11 + 80 + (-11) = \\
 = & 69 + (-11) = \\
 = & 58
 \end{aligned}$$

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19. Graph each point on a coordinate plane and find the line segment lengths.

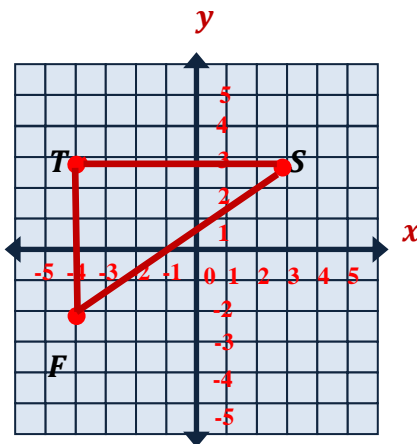
$D(-6, 3)$  and  $K(0, 3)$



$\overline{DK}$  is horizontal  
 $\overline{DK} = |\text{difference of } x - \text{coordinates}|$   
 $\overline{DK} = |-6 - 0| = |-6| = 6$   
 $\overline{DK} = 6 \text{ units}$

20. Graph each point on a coordinate plane and find the area of the figure.

$T(-4, 3)$   $S(3, 3)$   $F(-4, -2)$



$\overline{TS}$  is horizontal  
 $\overline{TS} = |\text{difference of } x - \text{coordinates}|$   
 $\overline{TS} = |3 - (-4)| = |3 + 4| = 7$   
 $\overline{TS} = 7 \text{ units}$   
 $\overline{TF}$  is vertical  
 $\overline{TF} = |\text{difference of } y - \text{coordinates}| =$   
 $\overline{TF} = |-2 - 3| = |-5| = 5$   
 $\overline{TF} = 5 \text{ units}$

TRIANGLE  
 $A = \frac{1}{2} \overline{TS} * \overline{TF}$   
 $A = \frac{1}{2} 7 \text{ units} * 5 \text{ units}$   
 $A = 17.5 \text{ units}^2$