**Getting Ready for ALGEBRA 1 Name:**

**Part I: Working with Variables and Order of Operations *Help Links Highlighted in Yellow***

**Know how to simplify and evaluate algebraic expressions following the order of operations.**

**Simplify** [**Click here for help with Questions 1 - 3!**](https://www.mathsisfun.com/operation-order-pemdas.html)

1) $9+6×2÷3-4$

2) $\left(40÷10\right)÷\left(1×4\right)$

3) $\frac{2\left(12 - 6\right)}{2 × 5 - 4}$

**Evaluate when** $x=3, y=4$**, and z = 5** [**Click here for help with Questions 4 and 5!**](http://www.montereyinstitute.org/courses/DevelopmentalMath/COURSE_TEXT2_RESOURCE/U09_L1_T1_text_final.html)

4) $2\left[x+4\left(y+z\right)\right]$

5) $\left[\left(5y+6z\right)-6x\right]÷y$

**Part 2: Translating Words into Math**

**Know how to translate English phrases and sentences into mathematical expressions, or equations. Know how to use variables to represent a mathematical situation.**

**Translate each into a mathematical expression or sentence:**

6) the difference between three times a number and one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7) six times the sum of a number and four \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8) The product of seven and the sum of twice a number and five is eight.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9) The sum of one-third of a number and twice another number is fifteen. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Write a variable expression to illustrate each situation.**

10) You have ten dollars more than your friend. Your friend has $m$ dollars. In terms of $m$,

how much money do you have?

11) Your friend is three inches taller than you.

1. If you are $y$ inches tall, how tall is your friend?

 b) If your friend is $f$ inches tall, how tall are you?

**Part 3: Number Line, Opposites and Absolute Value**

**Know how to compare, translate, and evaluate expressions and statements containing inequalities and/or absolute value.**

**Insert an inequality symbol to make a true statement.**

 [**Click here for help with Questions 12 - 17!**](https://flexbooks.ck12.org/cbook/ck-12-interactive-middle-school-math-6-for-ccss/section/5.5/related/lesson/absolute-value-of-integers-msm7/)

 12) 0 -5

 13) $\left|7-8\right|$ -1

 14) $ -\frac{2}{5}$ $\left(\frac{4}{5}-1\right)$

**Translate into an inequality statement.**

15) Negative four is greater than negative twelve.

16) Twenty is greater than four more than a number.

17) Eight is greater than the absolute value of the product of negative four and $x$.

**Evaluate when** $x=1.5, y= -2$**, and** $z= -0.5$

18) $x+ \left|-y\right|$

19) $\left|2y\right| - \left|x\right|+ \left|z\right|$

20) $\left(10.5-x\right) - \left[\left|z\right|-y\right]$

**Part 4: Addition and Subtraction**

**Know how to simplify expressions involving addition of integers and variables.**

**Simplify**

21) $-4+\left(-10\right)+8+(-12)$

22) $100+\left(-55\right)+\left(-90\right)+30$

23) $-8.2+12.4+\left(-2.8\right)+0.6$

**Simplify**

24) $-8+7c+11+(-3c)$

25) $2y+\left(-9\right)+\left(-y\right)+(-11)$

 26) $4m+[8+\left(-5\right)+\left(-7m\right)]$

**Know how to simplify expressions involving subtraction (or addition AND subtraction) of integers and variables. Know how to evaluate addition and subtraction expressions.**

**Simplify.**

27) $132-(72-61)$

28) $-11-43+1-9+30$

29) $-6-19+4-8+20$

**Simplify**

30) $10-\left(p+8\right)+2p$

31) $-\left(4-n\right)-(n-6)$

32) $-\left(10-x\right)-(x-12)$

**Evaluate when** $a= -3, b=6, $**and** $c= -4$

34) $2a+4b-(-1)$

35) $-10-a+2c$

 36) $\left|b-c\right|-a$

**Part 5: The Distributive Property**

**Know how to distribute and simplify**

**Distribute and simplify** [**Click here for help with Questions 37 – 40!**](https://www.youtube.com/watch?v=v-6MShC82ow)

 37) $5\left(m+3\right)+4m$

 38) $6y-3(4-y+3z)$

 39) $9\left(a+b\right)-(3a+2b)$

 40) $-\left(5x+3y+6\right)+5(2y-1)$

**Part 6: Multiplying and Dividing**

**Know how to find the product of integers and variables.**

**Simplify**

41) $(-2)(4m)(3)(-n)$

42) $(-2)(-6n)(-1)(-p)$

43) $(-4+7x)(-2)$

 44) $-3\left(7a+b\right)-2(10b-a)$

**Know how to use reciprocals to change division to multiplication.**

 **Change each expression from division into multiplication and simplify**

 45) $6 ÷ \frac{2}{3}$

 46) $\frac{-3}{3/n}$

 47) $4y ÷ \frac{2y}{3}$

**Know how to perform operation with fractions.**

 **Simplify**

 48) $7a\left(\frac{1}{a}\right)$

 49) $\frac{1}{3}\left(9a-27\right)$

50) $\frac{1}{4}\left(-4x+20y\right)- \frac{1}{2}(2x-6y)$

**Part 7: Solving Equations Using Inverse Operations**

**Know how to solve a variety of equations, simplifying first where needed.**

**Solve using inverse operations** [**Click here for help with Questions 51 – 59!**](https://www.ck12.org/algebra/two-step-equations-with-addition-and-multiplication/lesson/Solve-Equations-Using-Inverse-Properties-of-Addition-and-Multiplication-MSM8/)

51) $x+11=20$

52) $6-x=12-4$

53) $-22x=88$

54) $\frac{1}{3}x= -12$

55) $-8x-11=13$

56) $\frac{x-5}{4}=8$

57) $8= -\frac{2}{3}(x+6)$

58) $3\left(x-5\right)+2\left(x+3\right)=56$

59) $4x- \left[x+\left(6-2x\right)\right]=44$

**Know how to solve equations containing variables on both sides of the equation. Know how to recognize whether an equation is an identity or has no solution.**

 **Solve using inverse operations.** [**Click here for help with Questions 60 – 64!**](https://www.youtube.com/watch?v=oLQmsajh-eQ)

60) $7x=3x+20$

61) $2\left(6x+9\right)=3(4x+6)$

62) $\frac{3x+5}{3}=x+1$

63) $3x-6= \frac{1}{3}(9x-18)$

64) $4\left(-8x+5\right)= -9x-26$