

Unit 1: Review – Integers & Rationals [NO CALCULATORS]

1. Integer Operations

Recall your number sets:

Counting/Natural Numbers $1, 2, 3, 4, \dots$

Whole Numbers $0, 1, 2, 3, \dots$

Integers $\dots -3, -2, -1, 0, 1, 2, 3, \dots$

Addition of Integers

What happens when we add two positives? *sum, larger, positive*

Ex. $2 + 4 = 6$

$11 + 9 = 20$

$18 + 25 = 43$

What happens when we add two negatives? *sum, smaller, negative*

Ex. $-2 + (-4) = -6$

$(-9) + (-11) = -20$

$-13 + (-8) = -21$

** exact opposite of adding two +'*

What happens when we add a positive and a negative?

Ex. $2 + (-4) = -2$

$(-9) + 11 = 2$

$-13 + 10 = -3$

Tips!

- You can switch the order of any addition question.

Ex. $-2 + (-4) = (-4) + (-2)$

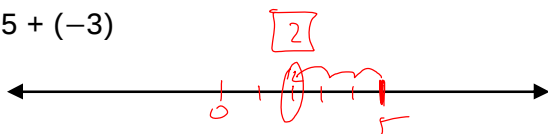
$(-9) + 11 = 11 + (-9)$

$-13 + 10 = 10 + (-13)$

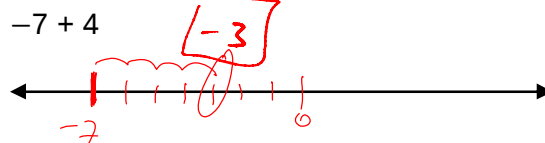
- Think of a number line: Adding a positive means move to the right

Adding a negative means move to the left

Ex. $5 + (-3)$



$-7 + 4$



Subtraction of Integers – Difference

- ❖ The operation that causes more problems!

Ex. $9 - 4 = 5$

$5 - 9 = -4$
 $5 + (-9)$

$-3 - 12 = -15$
 $-3 + (-12)$

$4 - (-5) = 9$
 $4 + (+5)$

Tip!

- Switch subtraction questions into addition questions by adding the opposite.

Ex. $-2 - 4$ $(-9) + (+4)$ $3 - 10$ $5 - (-12)$
 $= -2 + (-4)$ $= -5$ $= 3 + (-10)$ $= 5 + 12$
 $= -6$ $= -7$ $= 17$

Multiple steps? All + or -

Ex. $5 + (-6) - (-2)$ $3 + (+4) + (-2) + (+4)$
 $= -1 + 2$ $= 7 + (-2) + 4$
 $= 1$ $= 5 + 4$
 $= 9$

Multiplying & Dividing Integers

- ❖ Know the rules!

- $\times$ or $\div$ two integers with same signs [ie. both + or both -] the result will be positive +
- $\times$ or $\div$ two integers with opposite signs [ie. one + & one -] the result will be negative -

Ex. $2 \times (-3) = -6$
 $\uparrow$
 $\vdots$
 $\wedge$
 product

$-15 \div (-5) = 3$
 $\uparrow$
 quotient

$-3 \cdot 4 = -12$
 $\uparrow$
 times

$\div \rightarrow \frac{-42}{6} = -7$

$7 \cdot 10 = 70$ $7 \cdot 2 = 14$
 $(-7)(-12) = 84$
 $\uparrow$
 multiplication
 by juxtaposition

Ex. $-3(-1)(-6)$ *odd # of negatives – can we predict the sign of the result?
 $= -18$

Yes $\rightarrow$ negative
* if even # of negatives $\rightarrow$ result +