

NOTES

Name _____

Date _____

6.3D add, subtract, multiply, and divide integers fluently

INTEGERS NOTES

Adding Integers Notes

When adding integers, look at the signs for each number and follow these rules:

LIKE signs – Add the numbers and take the sign

$52 + 12 = 64$ (Both numbers are positive, so the answer is positive)

$-9 + (-21) = -30$ (Both numbers are negative, so the answer is negative)

DIFFERENT signs – Subtract the numbers and take the sign of the integer with the largest absolute value.

$-80 + 15 = -65$ (Signs are different, so subtract and the answer is negative because 80 is greater than 15)

$14 + (-10) = 4$ (Signs are different, so subtract and the answer is positive because 14 is greater than 10)



Sum Song:

Same sign, add and keep
Different signs, subtract
Take the sign of the bigger number
Then it'll be exact



Use these memory tricks!

Adding Army:

$+$ The "good" guys combine and make a "bigger, better" army. Add the two sides together to calculate the new size of the "good" guys' army	$+$	$+$	$-$ The "bad" guys combine and make a "bigger, badder" army. Add the two sides together to calculate the new size of the "bad" guys' army	$-$	$-$	$+$ Since there are more "good" guys, they win the battle. But, their army isn't as large. Subtract the two sides to calculate the new size of the "good" guys' army good guys – bad guys	$+$	$+$	$-$ Since there are more "bad" guys, they win the battle. But, their army isn't as large. Subtract the two sides to calculate the new size of the "bad" guys' army bad guys – good guys
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Try It!

$-10 + (-3) = -13$

$-8 + (-18) = -26$

$22 + 15 = 37$

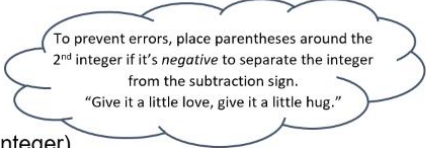
$-4 + 9 = 5$

$6 + (-9) = -3$

$15 + (-25) = -10$

Subtracting Integers

Subtracting an integer from another integer is the same as adding the opposite of the second integer to the first integer.



$1^{\text{st}} \text{ integer} - 2^{\text{nd}} \text{ integer} =$

$1^{\text{st}} \text{ integer} + (\text{opposite of } 2^{\text{nd}} \text{ integer})$

K A O S $-4 - (-2) =$ $-4 + (+2) = -2$	K A O S $10 - (-12) =$ $10 + (+12) = +22$	K A O S $-18 - 12 =$ $-18 + (-12) = -20$
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- K:** Keep the first integer the same
- A:** Addition sign replaces subtraction sign
- O:** Opposite of second integer
- S:** Sum is found by using the addition of integers rules

Try It!

K A O S
 $-9 - 17 = -26$
 $-9 + -17$

K A O S
 $31 - (-9) = 40$
 $31 + 9$

K A O S
 $13 - 18 = -5$
 $13 + -18$

Name _____

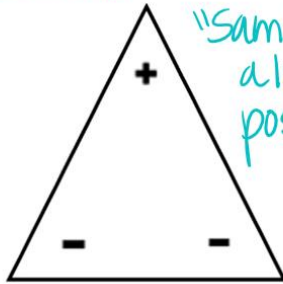
Date _____

Multiplying and Dividing Integers

When multiplying or dividing integers, look at the signs for each number and follow these rules:

LIKE signs – Multiply or divide the numbers and **make the product or quotient positive.**

DIFFERENT signs – Multiply or divide the numbers and **make the product or quotient negative.**



"Same signs,
always
positive"

+	-	-
-	+	-
-	-	+

"different signs,
always
negative"

Now, you have a guide. Example: The first row means "Positive times (or divided by) a negative equals a negative."

You can read the rows, diagonals, and columns (up, down, backwards or forwards)!

Try It!

$$5(-1) = \underline{-5}$$

$$54 \div (-9) = \underline{-6}$$

$$(-9)(-6) = \underline{54}$$

$$-52 \div (-4) = \underline{13}$$

$$11(4) = \underline{44}$$

$$-39 \div 3 = \underline{-13}$$

William has a balance of \$771 in his checking account. He makes a deposit of \$250 on Monday and a withdrawal of \$1,028 on Thursday. What is William's account balance after the withdrawal on Thursday?

$$\begin{array}{r} \$771 + \$250 - \$1,028 \\ 1,021 \text{ K} + \text{A} -1,028 \text{ O} = \text{S} \end{array} \quad \boxed{-\$7.00}$$

Larry scuba dives during his summer vacation. After he reaches a depth of 125 feet below sea level, he ascends at a rate of 13 feet per minute. After 9 minutes, how far is Larry from the surface?

minutes $\frac{1}{13} = \frac{9}{x}$ $x = 117$ feet after 9 minutes

$$-125 + 117 = \boxed{-8 \text{ feet below sea level}}$$

At 5 A.M. the temperature in Bloomington, Minnesota is -25°F . By 11 A.M. the temperature has risen nine degrees. What is the temperature at 11 A.M.?

$$-25 + 9 = \boxed{-16^{\circ}\text{F}}$$

The record high January temperature in Austin, Texas is 90°F . The record low January temperature is -8°F . What is the difference between the high and the low temperatures?



You are playing a game. You start at 0. Then you score -8 points on each of 4 turns. What is your score after those 4 turns?

$$0 + (-8 \times 4) = \boxed{-32}$$

A submarine travels 330 feet below sea level. If the submarine ascends 125 feet, what integer expresses the submarine's new position?

$$-330 + 125 = \boxed{-205 \text{ feet below sea level}}$$

Key Vocabulary Terms:

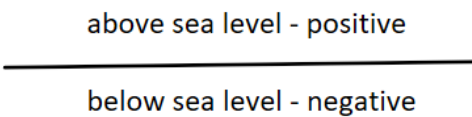
absolute value - The distance of a number from zero on a number line; shown by $| \quad |$.

Example: $|-5| = 5$

checking account An account at a financial institution that allows for withdrawals and deposits.

withdraw - Taking money out of a bank account (negative, debit)

deposit - Putting money into a bank account (positive, credit)

sea level - at zero feet 

descends - drops, goes down. Expressed as a negative

ascends - rises, goes up. Expressed as a positive