

9-13-17

Aim: SWBAT apply integer rules for addition and subtraction.

HW: Packet Pages 15 - 16

Do Now: Packet page 13 # 1 - 8

Homework - Adding & Subtracting Integers

Remember to: Get rid of Double Signs FIRST, and then Box your Terms. Next, choose your rule (Same Signs or Different Signs) and follow it.

Same signs \Rightarrow Add + Keep

Different signs \Rightarrow Subtract + Think

$$1) \boxed{-4+12} \begin{array}{r} 12 \\ -4 \\ \hline 8 \end{array}$$

$$2) 8\overset{-}{-}10 \begin{array}{r} 10 \\ -8 \\ \hline -2 \end{array}$$

$$3) -7\overset{-}{-}11 \begin{array}{r} 11 \\ +7 \\ \hline -18 \end{array}$$

$$4) 25\overset{-}{+}4 \begin{array}{r} 25 \\ -4 \\ \hline 21 \end{array}$$

$$5) -19\overset{-}{+}3 \begin{array}{r} 19 \\ +3 \\ \hline -22 \end{array}$$

$$6) -17\overset{+}{-}5 \begin{array}{r} 17 \\ -5 \\ \hline -12 \end{array}$$

$$7) -25\overset{-}{+}12 \begin{array}{r} 25 \\ +12 \\ \hline -37 \end{array}$$

$$8) \boxed{-31+31} \begin{array}{r} 31 \\ -31 \\ \hline 0 \end{array}$$

$$9) 5\overset{-}{+}(-21) \begin{array}{r} 21 \\ -5 \\ \hline -16 \end{array}$$

$$10) -3\overset{-}{+}17 \begin{array}{r} 17 \\ +3 \\ \hline -20 \end{array}$$

$$11) -20\overset{+}{-}2 \begin{array}{r} 20 \\ -2 \\ \hline -18 \end{array}$$

$$12) 0\overset{-}{+}15 \begin{array}{r} 15 \\ -0 \\ \hline -15 \end{array}$$

$$13) -8+9\overset{-}{-}2 \begin{array}{r} -8+9-2 \\ \hline -1 \end{array}$$

$$14) -3+12\overset{-}{+}4 \begin{array}{r} -3+12-4 \\ \hline 5 \end{array}$$

$$15) 16\overset{-}{+}9\overset{-}{+}7 \begin{array}{r} 16-9-7 \\ \hline 0 \end{array}$$

Complete the statement using always, sometimes, or never.

Always = Always True, Sometimes = Sometimes True, Never = Never True

Look at the examples above to help you!!!

16) The sum of two positive integers is NEVER zero.

17) The sum of zero and a positive integer is NEVER zero.

18) The sum of zero and a negative integer is NEVER zero.

19) The sum of a positive integer and a negative integer is SOMETIMES zero.

AIM: SWBAT continue to add and subtract integers.

"Do Now - Properties of Addition & Multiplication"

State the name of the property that is shown.

1) $(2 + 7) + 10 = 2 + (7 + 10)$

Associative, +

2) $7x + 7y = 7(x + y)$

Distributive

3) $5x \cdot 1 = 5x$

Identity, •

4) $(5 + 8) + 12 = (8 + 5) + 12$

Commutative, +

5) $700 + 0 = 700$

Identity, +

6) $5(2x + 3) = 10x + 15$

Distributive

7) $(75 + 4) + 0 = (75 + 4)$

Identity, +

8) $8y \cdot 0 = 0$

Multiplicative, 0

Notes.

Additive Inverse Property - For every number, a , $a + -a = 0$

Additive inverse \Rightarrow Opposite

State the additive inverse of each of the following.

1) -2 2 2) 14 -14 3) $-4x$ 4x 4) $-18mn$ 18mn 5) -24 24

ADDING & SUBTRACTING INTEGERS

I) Get rid of DOUBLE SIGNS first!

- + - becomes a NEGATIVE
- - - becomes a POSITIVE

II) BOX YOUR TERMS!

** The sign IN FRONT of the number goes with the number **

III) Choose and follow your rule:

- When **COMBINING INTEGERS** with the **SAME** signs
 \Rightarrow **ADD** and **KEEP**
- When **COMBINING INTEGERS** with **DIFFERENT** signs
 \Rightarrow **SUBTRACT** and **THINK**

More Examples for Reference:

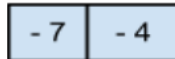
Ex: $7 - 4$



(Diff signs → Subt/Think)

$$\underline{3}$$

$-7 - 4$



(Same signs → Add/Keep)

$$\underline{-11}$$

BEWARE OF DOUBLE NEGATIVES!!!! Remember (-) means opposite so $-(-4) = +4$

DOUBLE NEGATIVES → ADD

Example: $8 - -4$



$$8 + 4$$

$$\underline{12}$$

DOUBLE (Diff) SIGNS → SUBTRACT

Example: $8 + -4$



$$8 - 4$$

$$\underline{4}$$

In Class Examples: Compute: Beware of Double Signs!

Same signs → Add and Keep

Different signs → Subtract + Think

1) $7 + (-13)$

7	-13
---	-----

 $\underline{-6}$

2) $-8 - 5$

-8	-5
----	----

 $\underline{-13}$

3) $-17 - 9$

-17	-9
-----	----

 $\underline{-26}$

4) $9 - 2$

9	-2
---	----

 $\underline{7}$

5) $27 - 19$

27	-19
----	-----

 $\underline{8}$

6) $5 - 8$

5	-8
---	----

 $\underline{-3}$

7) $0 + 14$

0	+14
---	-----

 $\underline{14}$

8) $-21 - (-14)$

-21	+14
-----	-----

 $\underline{-7}$

9) $-5x - 3x$

-5x	-3x
-----	-----

 $\underline{-8x}$

10) $-6a - (-8a)$

-6a	+8a
-----	-----

 $\underline{2a}$

11) $7y - 13y$

7y	-13y
----	------

 $\underline{-6y}$

12) $-13z - (-18z)$

-13z	+18z
------	------

 $\underline{-13z + 18z}$

13) $-18x + 18x$

-18x	+18x
------	------

 $\underline{0}$

14) $-70x + 18x$

-70x	+18x
------	------

 $\underline{-88x}$

15) $-573y + 600y$

-573y	+600y
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 $\underline{27y}$

16) $9x - 6x - 12x$

9x	-6x	-12x
----	-----	------

 $\underline{3x}$

Class Work (Finish for Homework)

- 1) What is the additive inverse of 19? _____
- 2) What is the opposite of -24? _____
- 3) How many numbers have an absolute value of 12? _____ List them. _____
- 4) The counting numbers are _____.
- 5) The whole numbers are ALL the _____ and _____.
- 6) The integers are ALL the _____ and their _____.

For 7-12 state whether each of the following is TRUE or FALSE.

- 7) One-half is **not** an integer. _____
- 8) If x is a positive integer, then $x > 0$ _____
- 9) If x is a negative integer, then $x < 0$ _____
- 10) A whole number is an integer. _____
- 11) An integer is a whole number. _____
- 12) Zero is a positive integer. _____

Simplify each expression.

REMEMBER - BOX OFF YOUR TERMS AND FOLLOW THE RULES.

BEWARE OF DOUBLE NEGATIVES!

Same signs \Rightarrow _____

Different signs \Rightarrow _____

13) $-21 + 7$

14) $-29 + -15$

15) $-20 + 8 + 22 + -10$

16) $5 + (-7)$

17) $65 - 72$

18) $-85 - -42$

19) $-32 - 74$

20) $15 - 21$

21) $-39 + 25 + 65$

22) $-38 + -19 + -3$

23) $24 - -19 + 12$

24) $-11 + 10 - 7 + 9$

25) $5x + -21x$

26) $-3x + -17x$

27) $-3x + 12x - 14x$

28) $-18y - 37y$

29) $11y - -27y$

30) $-2y - 3y + 6x - 9x$

* 31) $-52a + 17b + 13a - 5b$

32) $47x + -15x + 6x - 10x$

33) $-50x - 10x - 18y + 100y$

$$\boxed{-52a} + \boxed{17b} + \boxed{13a} + \boxed{-5b}$$

$$-39a + 22b$$

$$\begin{array}{r} 52 \\ -13 \\ \hline \end{array}$$