9-12-17

Aim: SWBAT add and subtract integers.

HW: Packet Page 12

Do Now: Let's go over answer keys

AIM: SWBAT identify properties of addition and multiplication and use the properties to add integers.

<p align="center">"DO NOW"</p>

Write the opposite of each integer.

1)   3 __-3__   2)   -5 __5__   3)   -7 __7__   4)   9 __-9__

Find the absolute value.

5) |-12|__12__   6) |-4|__4__   7) |9|__9__   8) - | 18| __-18__

Compare using < or >.

9)   8 __>__ -6   10)   -7 __<__ -4   11)   -9 __<__ 5   12)   -7 __<__ -3

Order from least to greatest.

13)   -1, -6, 0, -3, -5 __-6, -5, -3, -1, 0__   14) -18, -20, -15, -17 __-20, -18, -17, -15__

State ALL the sets of numbers each belongs to.

15) –20 __Real, Rational, Integer__

16) $-\frac{1}{2}$ __Real, Rational__

17) $0.\overline{5}$ __Real, Rational__

18) π __Real, Irrational__

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HOMEWORK – Properties & Introduction to Adding Integers

State the name of the property that is shown.

1) $(x + 9) + 1 = x + (9 + 1)$ 1) _Associative, +_

2) $1 \bullet x = x$ 2) _Identity, •_

3) $(2 + 3) + 5 = 2 + (3 + 5)$ 3) _Associative, +_

✱ 4) $(12 + 9) + 15 = (9 + 12) + 15$ 4) _Commutative, +_

5) $(2 + 7) \bullet 0 = 0$ 5) _Multiplicative, O_

6) $12 \bullet (7 \bullet 15) = (12 \bullet 7) \bullet 15$ 6) _Associative, •_

7) $0 + (9 + 1) = 9 + 1$ 7) _Identity, +_

8) $3(4x + 9) = 12x + 27$ 8) _Distributive_

9) $r \bullet 1 = r$ 9) _Identity, •_

10) $(8 \bullet 6) \bullet 9 = 8 \bullet (6 \bullet 9)$ 10) _Associative, •_

11) $106 \bullet 0 = 0$ 11) _Multiplicative, O_

12) $4(a + b) = 4a + 4b$ 12) _Distributive_

13) $-y + y = 0$ 13) _Inverse, +_

✱ 14) $(2 + y) + 8 = 8 + (2 + y)$ 14) _Commutative, +_

15) $c \bullet \frac{1}{c} = 1$ 15) _Inverse, •_

✱ 16) $(8 \bullet 6) + 9 = (6 \bullet 8) + 9$ 16) _Commutative, •_

17) $-11 + 32 =$ _____   18) $8 + -8 =$ _____   19) $-78 - 15 =$ _____   20) $-25 + 20 =$ _____

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Pg. 3

$(-4)))$

AIM: SWBAT add and subtract integers.

<p align="center">"Do Now"</p>

1) What is the IDENTITY ELEMENT for Addition?____**O**____ For Multiplication?____**1**____

2) What is the additive inverse of $\frac{1}{4}$? ____**$-\frac{1}{4}$**____ Multiplicative inverse? ____**$\frac{4}{1} \rightarrow 4$**____

opposite   *reciprocal*

Simplify the following:

3) $-8 + 2 =$ _____   4) $-2 + 4 =$ _____   5) $5 - 10 =$ _____

6) $-3 - 9 =$ _____   7) $2 - 7 =$ _____   8) $-10 + 12 =$ _____

<p align="center">**ADDING & SUBTRACTING INTEGERS**</p>

I) Get rid of DOUBLE SIGNS first!
- $+ \; -$ becomes a NEGATIVE (so 7 + -3 becomes 7 – 3)
- $- \; -$ becomes a POSITIVE (so 6 - -3 becomes 6 + 3)

II) BOX YOUR TERMS! **ISOLATE**
    ** The sign IN FRONT of the number goes with the number **

III) When **COMBINING INTEGERS** with the **SAME** signs
    ⇒ **ADD** the numbers and **KEEP** the same sign.
    ⇒ **ADD** and **KEEP**

Examples:

A) $12 + 4$ 16 *Basic Addition – adding two positive numbers*	B) $-12 + -4$ $-12 - 4$ (get rid of double signs) $\boxed{-12} \;\; \boxed{- 4}$ (box terms) -16 (Same Signs → Add & Keep)
C) $25 - (-16)$ $25 + 16$ (get rid of double signs) 41 *Basic Addition – adding two positive numbers*	D) $-25 + -16$ $-25 - 16$ (get rid of double signs) $\boxed{-25} \;\; \boxed{- 16}$ (box terms) -41 (Same Signs → Add & Keep)

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IV) When **COMBINING INTEGERS** with **DIFFERENT** signs
⇒ **IGNORE** the signs and **SUBTRACT** numbers. Keep the sign of whatever you have more of
Subtract the absolute values. Keep the sign of the number with the largest absolute value.
⇒ **SUBTRACT** and **THINK**

(handwritten) Big − small (get rid of double signs)

A) 12 + −8
    12 − 8   (get rid of double signs)
    12 −8   (box terms)
    4   (Different Signs → Subt. & Think)   *(handwritten: 12 − 8)*

There are more positives, so the answer is positive

B) −37 + 16
    −37 + 16   (box terms)   *(handwritten: −37 −16)*
    −21   (Different Signs → Subt. & Think)

37 has the higher absolute value, so the answer is negative

In-Class Examples:

Same Signs ⇒ *Add and Keep*   **Different Signs** ⇒ *Subt. and Think*

1) 12 + 20
    32

2) −12 + −20
    −12 −20
    −32

3) −12 + 20
    8   *(handwritten: 20 −12)*

4) 12 + −20
    12 −20
    −8

5) −25 + 25
    0

6) −25 + −25
    −25 −25
    −50

7) −10 + 5
    −5

8) −15 + 7
    −8

9) −14 + −15
    −29

10) 14 + (−8)

11) −7 + −18

12) −12 + 5

13) −3 + 2 + 4

14) −5 + −7 + −3
     −15

15) 7 + −2 + −8
     −3

Absolute value bars are evaluated like parenthesis. Do whatever is inside the bars first, and then find the absolute value.

16) |−4| + |5| 17) |0 + −2| 18) |6| + |−6| 19) |−4 + 0|

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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 ⇒ _____   Different signs ⇒ _____

1) –4 + 12   2) 8 + –10   3) –7 + –11   4) 25 + –4

5) –19 + –3   6) –17 – (–5)   7) –25 + –12   8) –31 + 31

9) 5 + (–21)   10) –3 + –17   11) -20 - (-2)   12) 0 + –15

13) –8 + 9 + –2   14) –3 + 12 + –4   15) 16 + –9 + –7

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 _____ zero.

17) The sum of zero and a positive integer is _____ zero.

18) The sum of zero and a negative integer is _____ zero.

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

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