Lesson 2-1 (p 80-83)

Objective: To read & write integers
To graph Integers on a number line

Introduction to Integers

The Examples:

What does an integer look like?

{...-3, -2, -1, 0, +1, +2, +3...}

Zero is not positive or negative.

Write an Integer for each Situation:

1. *falling 6 feet*
   A: -6 ft
2. *a profit of $12*
   A: +$12 or $12
3. *22° F below 0*
   A: -22° F

Explanation:

An integer is any positive or negative whole number

Which integers are less than zero?

- negative

Which integers greater than zero?

- positive

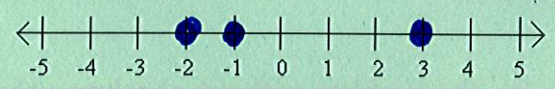
**Don't forget labels !!

Fact: The + sign is optional. If you do not see the + sign in front of a number, it is understood to be positive.

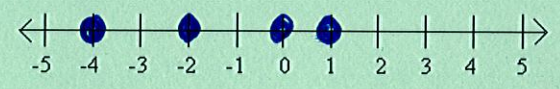
Graphing Integers

The Examples:

4. Graph the set of integers {-1, 3, -2}

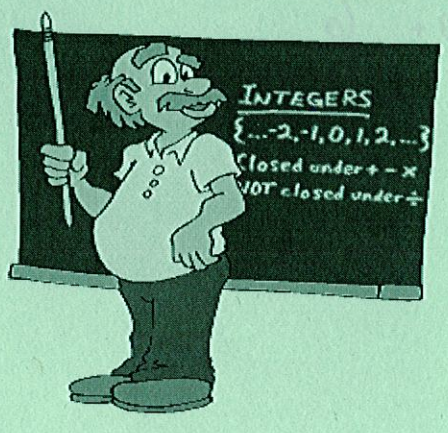


5. Graph the set of integers {-2, 1, -4, 0}



Explanation:

To graph an integer, you will need a number line. Draw a point (dot) at the location of each integer.



Objective: To find the absolute value of a number Date: _____
To evaluate expressions

Absolute Value

The Examples:

6. Evaluate the expression | -4 |

On the number line, the graph of -4 is 4 units from 0.

|4| = 4

So, | -4 | = 4

7. | 11 | = 11 → Positive

|2| = 2

|-7| = 7

* no bars used in answer

Explanation:

Absolute value of a number is its DISTANCE from Zero on the number line.

* Distance is always positive.

Two vertical bars are used to represent absolute value.

The symbol for the absolute value of -4 is | |.

The numbers 4 and -4 are the same distance from 0. So, 4 and −4 have the same absolute value.

8. Evaluate the Expression:

| -4 | - | 3 | = 4 - 3

= 1

Remember | - 4 | = 4, | 3 | = 3

Subtract.

9. $9 + |-6| \div 1^2$

$9 + 6 \div 1^2$

$9 + 6 \div 1$

$9 + 6$

15

*Rewrite the problem without absolute value

*Follow PEMDAS!!! First do exponents

*Then divide

* Finally add

Lesson 2-2 (p 84-87)

Objective: To Compare Integers

Comparing Integers

The Examples:

Replace each ○ with < or > to make a true sentence.

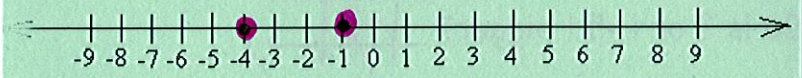
1. $5 ○ $8

2. -$2 ○ $10

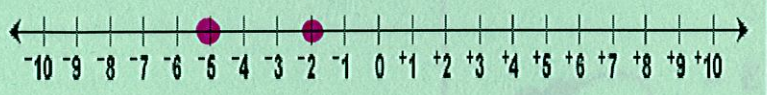
3. $3 ○ +$3

↑ *Trick Question!!!*

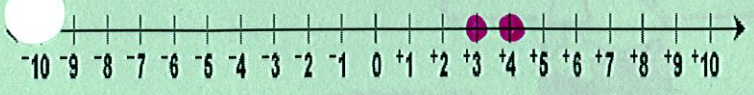
4. -1 ○ -4



5. -2 ○ -5



6. |-4| ○ 3



Explanation:

This symbol < means less than.
This symbol > means greater than
The alligator eats the bigger number!!

**Don't forget that the + sign is optional. If you do not see the + sign in front of a number, it is understood to be positive.

When two numbers are graphed on a number line, the number to the left is always smaller the number to the right. Thus, the number to the right is always greater than the number to the left.

Hint: It helps to first graph the numbers!

**Don't forget that absolute value is *always* positive. So, |-4| = 4

Objective: To order Integers Date: _____

Ordering Integers

The Examples:

Order the integers from least to greatest:

7. 12, -6, 20, -47, -11

A: -47, -11, -6, 12, 20

8. | -13 |, 0, 7, -8, -5, | 2 |

A: -8, -5, 0, |2|, 7, |-13|

Explanation:

Remember: Order integers on the number line from left to right for least to greatest.

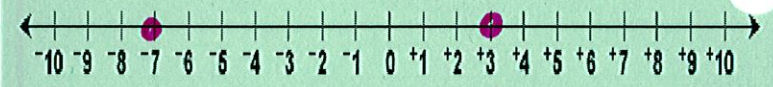
Remember: | -13 | = 13 and | 2 | = 2

Determine whether each sentence is *True* or *False*. If ***False***, change ONE number to make the sentence true.

9. -7 < 3

A: True

Think: Which is bigger -7 ~~than~~ or 3? 3



10. -20 < -22

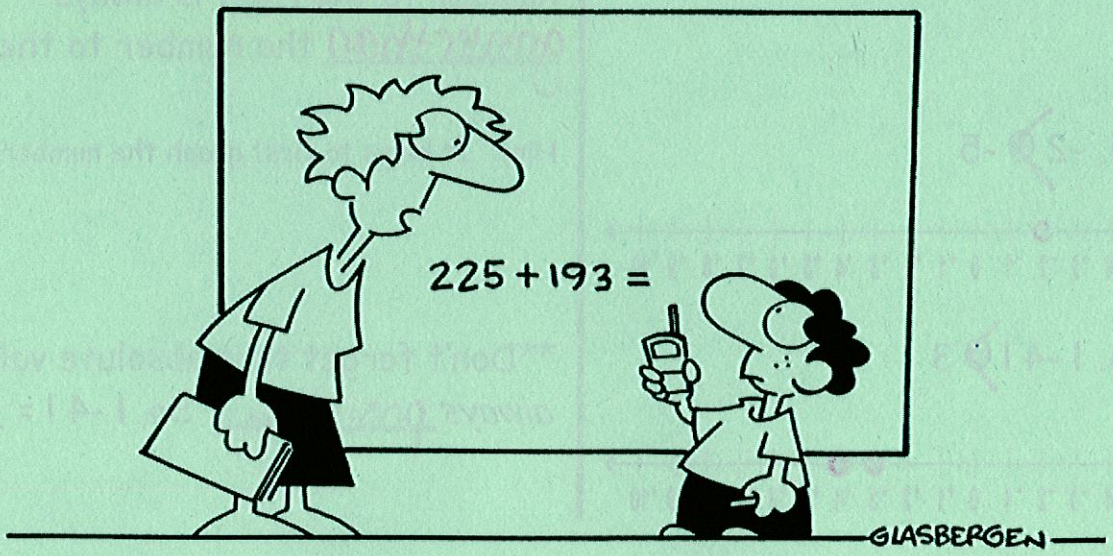
A: False; -20 < +22

11. 3 > | -5 | 3 > |-5|

A: False; 3 > -5

Think: The | -5 | is 5.

So is 3 or | -5 | bigger? |-5|.



"You have to solve this problem by yourself. You can't call tech support."

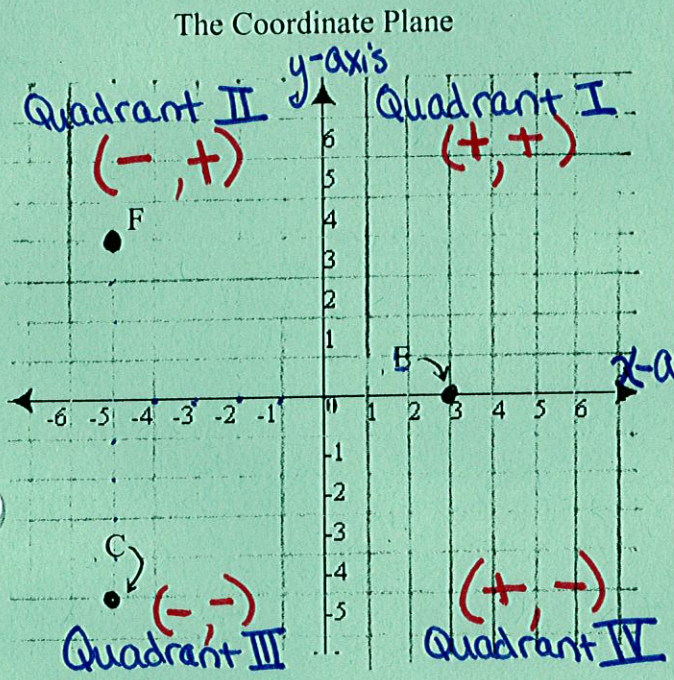
Lesson 2-3 (p 88-92)

Objective: To graph points on a Coordinate Plane

The Coordinate Plane

The Examples:

What does the coordinate plane look like?



What does an ordered pair look like?:

- (2 , 1)
- (-5, -2)
- (-3, 4)

Name the ordered pair for the points on the graph above. Then identify the quadrant in which the point lies.

1. F (-5 , 4) Quad II
2. C (-5, -5) Quad III
3. E (3, 0) x-axis

Explanation:

A Coordinate plane is a plane in which a horizontal number line and a vertical number line intersect at their zero points.

- The x-axis is the horizontal number line, (latitude)
- The y-axis is the vertical number line. (longitude)

There are four quadrants on a coordinate plane represented by Roman numerals (I, II, III, and IV) that are positioned counter clock-wise starting at the top right.

An ordered pair is a pair of numbers, separated by a comma, used to locate a point on the coordinate plane. The first number is the x-coordinate. The second number is the y-coordinate. (x , y)

The origin is the point at which the x-axis and y-axis intersect in the coordinate plane.

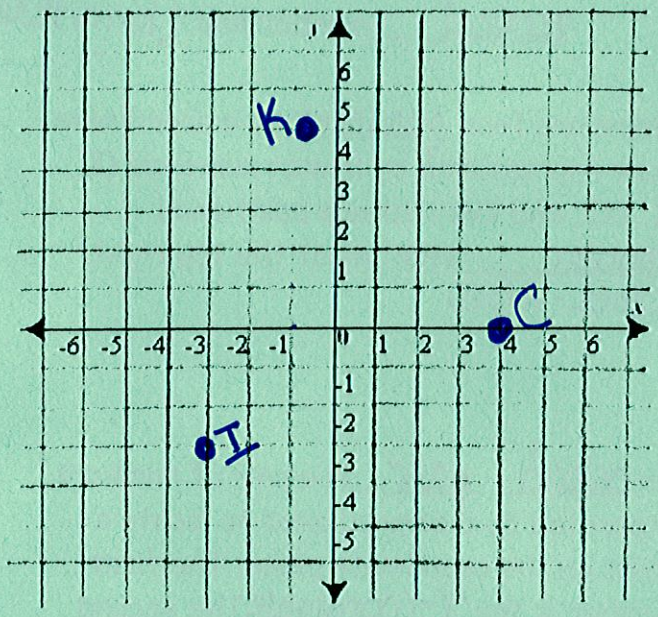
* The ordered pair for the origin is: (0 , 0)

The Coordinate Plane (cont...)

The Examples:

Graph and label each point on the coordinate plane below:

3. K (-1,5)
4. I (-3, -3)
5. C (4, 0)



check:

Graph S (3,-2)

Lesson 2-4 (p95-99)

Objective: To add Integers

Adding Integers

The Examples:

1. $5 + 3 = 8$
2. $-5 + -3 = -8$
3. $6 + -2 = 4$ $-2+6=4$
4. $-6 + 2 = -4$ $2+-6=-4$

Explanation:

What pattern do you notice?

* If the signs are the same, add the numbers, keep the sign
* Different sign, subtract Take the sign of the number farther from zero

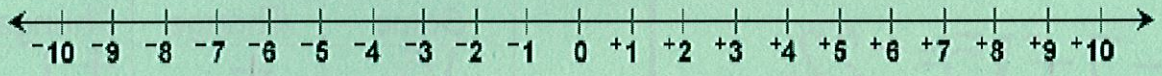
Sounds like a song to me!

(Verse 1)

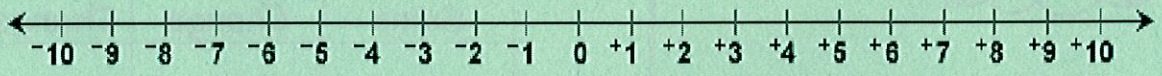
Same Sign add and keep
Different sign subtract
Take the sign of the farther number
Then it'll be exact

Let's try some more: Hint: Use a number line to help in the beginning!

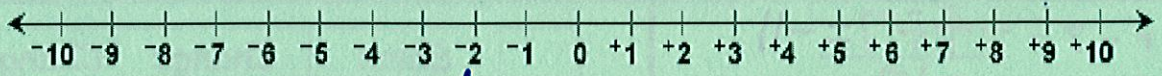
5. 2 + 3 = 5



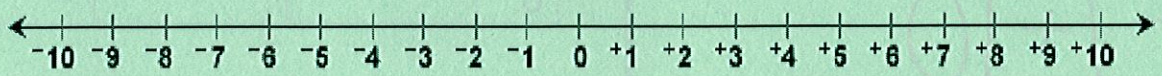
6. -3 + (-8) = -11



7. -7 + 13 = +6



8. 6 + (-7) = -1



Lesson 2-5 (p 103-106)

Objective: To Subtract Integers

Subtracting Integers

As easy as adding integers!

♪ Sing the song and you will know too!! ♫

(Verse 2)

Change the minus to a plus
Change the sign of next
Then all you do is add them up
As if it if it were a plus"

Let's try some Examples:

1. 5 + -2 = +3

2. -3 + -2 = -5

3. 15 + (+7) = 22

(3.5) -7 + -15 = -22

4. -18 + (+40) = 22

Explanation:

Hint: Use a chart!!

Same	Change	Change

Same	Change	Change

Same	Change	Change
15	+	+7

Same	Change	Change

Evaluate each expression if r = -4, s = 10, and t = -7

5. r - 7 = -4 + -7 = -11

6. t - s = -17

-7 + -10

	Same	Change	Change
5.			
6.			

Lesson 2-4 & 2-5 (p 95-106)

Objective: To add & subtract chains of Integers

Chains of Integers

The Examples:

Compute:

$12 + (+5) + 5 + (-17) + 6 + 5$

$-23 + 27$

The sum of the negatives — The sum of the positives

4

Final Answer

Explanation:

1. Remember, we like to ADD.

So, what do we do with the subtraction signs? (Hint: Think of the song)

*Change the minus to a plus
*Change the sign of next

2. Now that there are "+" signs between *ALL* numbers, we need to circle and add the negatives.

3. Add the positive numbers.
4. Add the two sums for a final answer!

Let's try some more ☺

$-6 + 7 + 6 + (-7) + (+5) + 13$

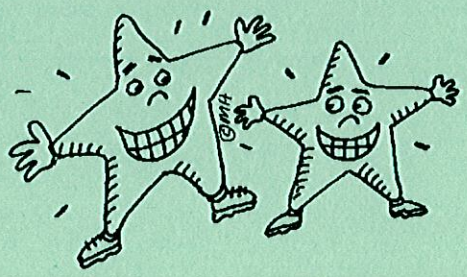
$-26 + 18$

-8

$5 + (+17) + 5 + (-17) + 8 + 9$

$-22 + 39$

17



(Hint: Don't forget the song!)

Adding Rules

Same sign add and keep

Different sign subtract

Take the sign of the farther number

Then It'll be exact!

Subtracting Rules

Change the minus to a plus

Change the sign of next

Then all you do is add them up

As if it were a plus! (Ole)

Lesson 2-6 (p107-111)

Objective: To multiply Integers

Multiplying Integers

The Examples:

$2 \times 5 = 10$

$-2 \times -5 = 10$

$-2 \times 5 = -10$

$2 \times -5 = -10$

$-1 \times -2 \times -3 = -6$

$-1 \times -2 \times -3 \times -4 = 24$

$4 \times -1 \times 5 \times -2 = 40$

Explanation:

REMEMBER: There are three different ways to represent multiplication of two numbers. 3×2 $3 \cdot 2$ $3(2)$

Rule:

Count the negatives.

* Even number of negatives = + answer
* Odd number of negatives = − answer

Multiply:

1. $-4(6)$ -24
2. $-2(-8)$ 16
3. $-2(-5)(-3)$ -30
4. $-(5)^2$ -25

The Difference $2^4 = 2 \cdot 2 \cdot 2 \cdot 2$

$-(7)^2$ ... $-7 \cdot 7$ ... -49

$(-7)^2$ ... $-7 \cdot -7$ ... 49

Evaluate each expression if g = -5, h = -3, and k = 4

5. $7gk$

① Show substitution

② Solve using tornadoes

$7 \times -5 \times 4$

-140

6. $-2h^2$

$-2 \times (-3)^2$ .... -3×-3

-2×9 ....

-18

Lesson 2-8 (p114-118)

Objective: To divide Integers

Dividing Integers

The Examples:

The rule is the same as multiplying integers. Let's review. →

Explanation:

REMEMBER: There are three different ways to represent division of two numbers. $\frac{6}{3}$ $6 \div 3$ $3\overline{)6}$

Rule:

Count the negatives.

* Even number of negatives = + answer
* Odd number of negatives = − answer

Divide:

1. $-15 \div 3$ -5
2. $-49 \div (-7)$ 7
3. $\frac{36}{-4}$ -9
4. $\frac{0}{-9}$ 0 ☺

Evaluate each expression if m = -32, n = 2, and p = -8

5. $\frac{-p}{n}$ $\frac{+ + 8}{2}$ (4)

6. $p \div n^2$ $-8 \div 2^2$

$-8 \div 4 =$

(-2)

7. $\frac{18-n}{p}$

$\frac{18-2}{-8} = \frac{16}{-8} = (-2)$