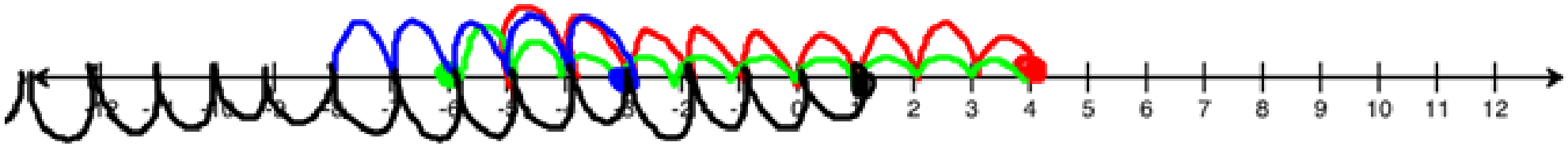
Get out your homework from yesterday and have it ready to check!
Warm Up on the problems below.

Classwork - Subtracting Integers

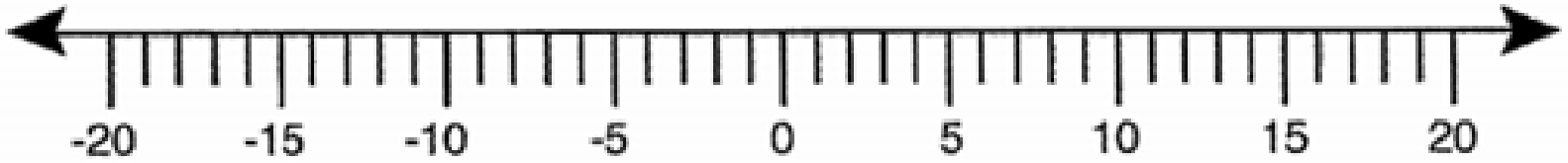
Warm Up! Solve the following addition problems using a number line.

a) 4 + (-9) = -5 b) -6 + 10 = 4 c) -3 + (-5) = -8 d) 1 + (-15) = -14

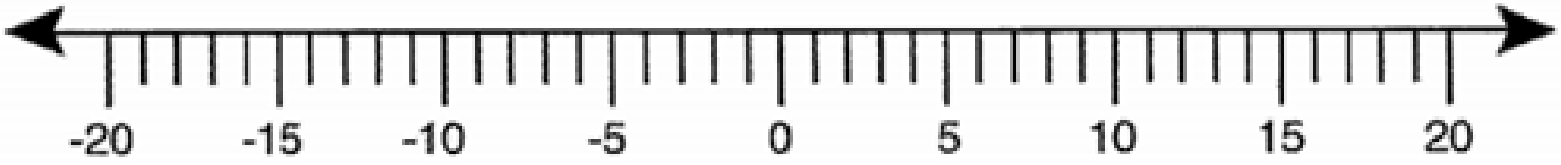


Find the sums of the addition problems below using a number line.

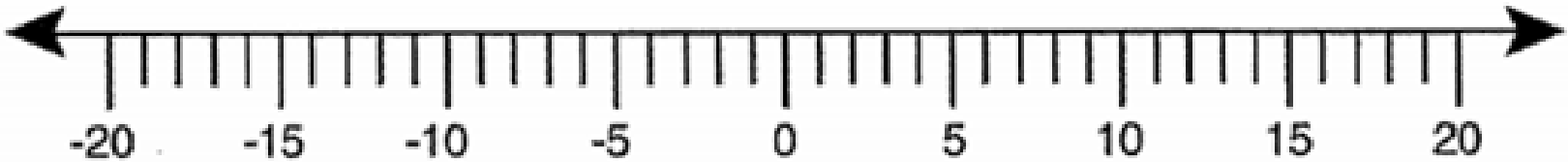
1) $-6 + (-3) =$ -9 2) $10 + (-8) =$ 2 3) $-9 + 5 =$ -4 4) $-2 + (-11) =$ -13



5) $14 + (-7) =$ 7 6) $-4 + 13 =$ 9 7) $17 + (-12) =$ 5 8) $-7 + (-12) =$ -19



9) $-13 + 5 =$ -8 10) $-6 + 15 =$ 9 11) $18 + (-14) =$ 4 12) $-5 + 8 =$ 3

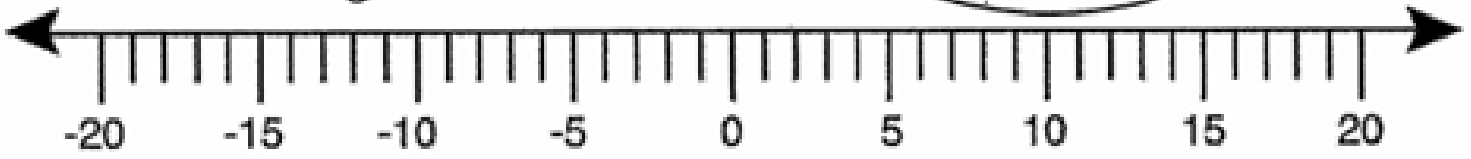


Write an addition equation and solve for each problem. Explain what the sum means in the context of the situation.

13) The temperature at midnight on a winter day was -15°F. By 8:00 a.m., the temperature rises 8°F from the temperature recorded at midnight. What was the temperature at 8:00?

$-15+8$

$-7°F$



14) An architectural drawing of a house shows that a basement floor is 12 feet below ground level. The drawing shows that the roof is 42 feet above the basement floor. What is the height of the house's roof?

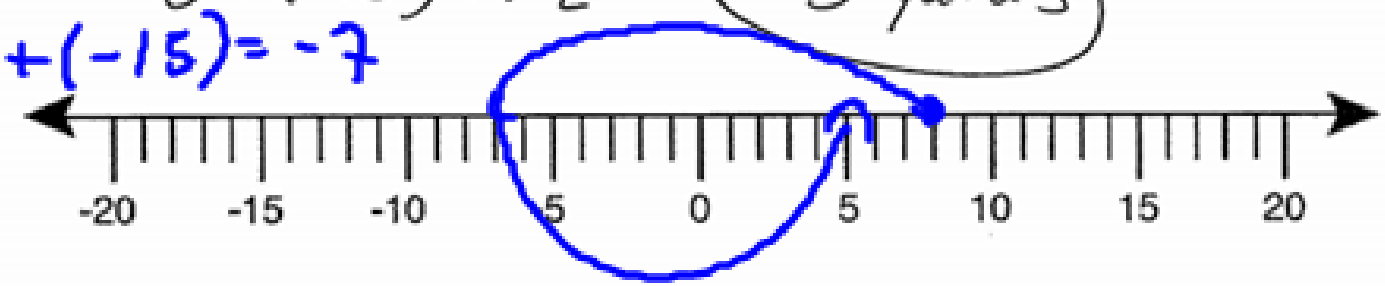
$-12+42$

30 feet

15) A football team gained 8 yards on a first down, lost 15 yards on the second down, and gained 12 yards on the third down. What was the total change of yardage for the team?

$8 + (-15) + 12 = 5$ yards

$8 + (-15) = -7$



16) A submarine was traveling at 550 feet below sea level. It then dove downward 375 feet. What is the submarine's new position?

$-550 + (-375) = -925$ -925 ft

925 feet below sea level

Think about the way you would describe to someone how to move on a number line when working with integers. When answering the questions below, use words that you need to make sure to use are "left" and "right." "Over" is NOT descriptive enough.

Moving on a Number Line

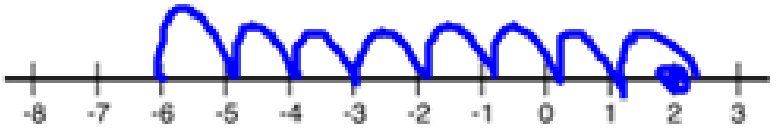
Negative Integers	Positive Integers
left	right

1) Describe where you would start and how you would move on a number line to model this problem.

A) $2 - 5 = -3$

B) $-3 - 6 = -9$

C) $2 - 8 = -6$



D) $-1 - 7 = -8$

There are many times that subtracting a number is going to cause you to travel to the left.
-The examples above show this.

<u>There are times that you will need to really think about what is occurring in the problem BEFORE you move left or right.</u>

2) We have talked about opposite before. What are the opposites of the following numbers?

i) Opposite of 5 — −5

ii) Opposite of 12 — −12

iii) Opposite of 18 — −18

What sign do you put in front of a number when you are taking the opposite of it?

Negative sign (Subtraction sign)

E) What are the opposites of the following numbers?

i) Opposite of -8 — 8

ii) Opposite of -10 — 10

iii) Opposite of -40 — 40

How could you write the opposite of −7 using numbers and signs?

−(−7)

Subtracting a Negative Number

Using words, what do the numbers below represent?

– (-6) = opposite of -6

– (-4) = opposite of -4

– (-3) = +3

Can you make this expressions simpler?

-5 – (-8)

-5 – (-8)

I see – (-8), which means opposite of -8

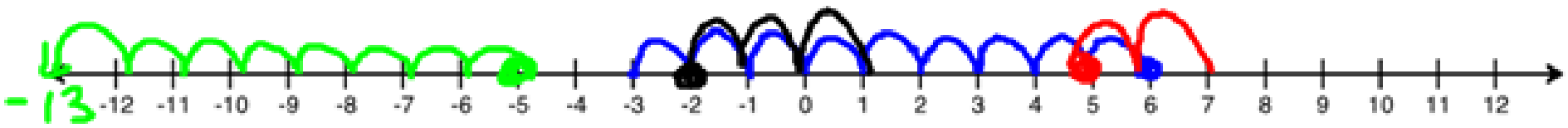
I can simplify this problem by taking – (-8) and turning it into a +8

*Use number line or chips to answer this question

-5 + 8 = 3

3) Answer the following problems. If they need to be simplified, do that before answering the question.

A) 6 – 9 = -3 B) 5 – (-2) = 7 C) -5 – 8 = -13 D) -2 – (-3) = 1



4) Answer the subtraction problems below. In these problems, you may have to:

i) Keep the problem the same (use number line or chips) to solve the problem.

ii) Simplify the subtraction problem → use number line or chips to solve the problem.

A) 2 – 7 = -5 B) 3 – (-4) = 7 C) -6 – 2 = -8 D) -4 – (-1) = -3

3 + 4

E) -6 – 3 = -9 F) -2 – (-6) = 4 G) 5 – 8 = -3 G) 2 – (-4) = 6