



I B PATEL ENGLISH SCHOOL (PRIMARY SECTION)

CLASS - 7

SUBJECT - MATHS

CHAPTER - 1

INTEGERS

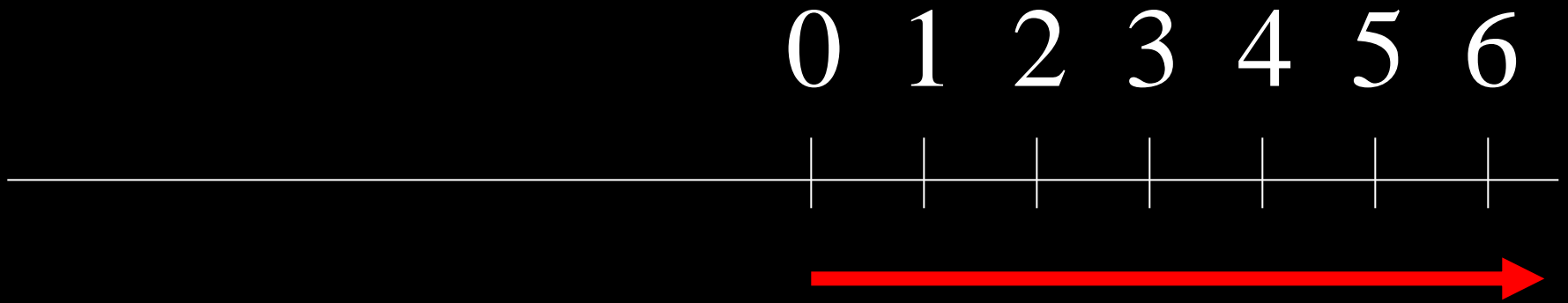
WHAT YOU WILL LEARN

- Some definitions related to integers.
- Rules for adding and subtracting integers.
- A method for proving that a rule is true.

Are you ready??

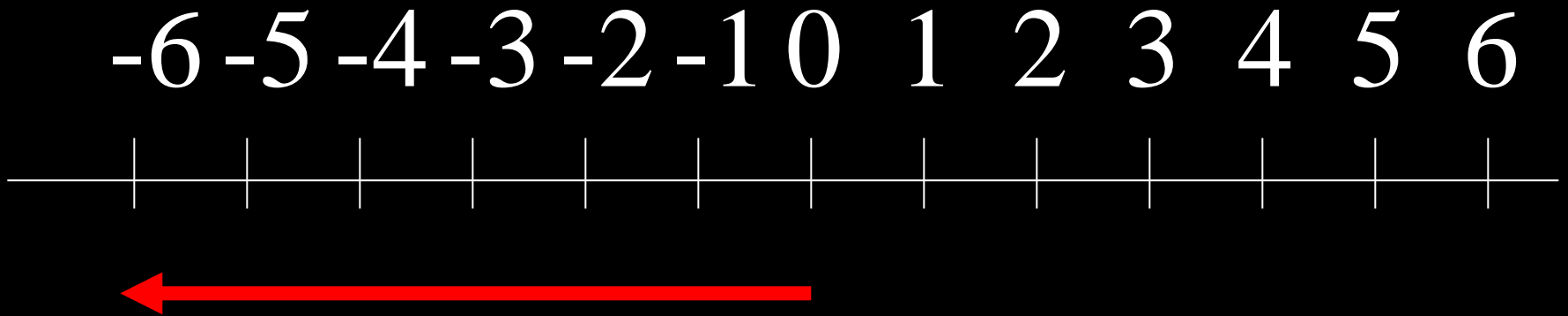
DEFINITION

- Positive number – a number greater than zero.



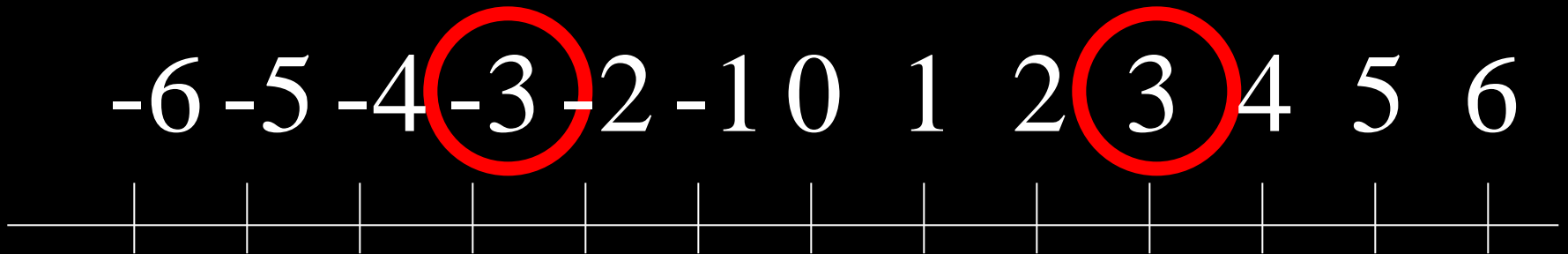
DEFINITION

- Negative number – a number less than zero.



DEFINITION

- ▶ Opposite Numbers – numbers that are the same distance from zero in the opposite direction



DEFINITION

- ▶ Integers – Integers are all the whole numbers and all of their opposites on the negative number line including zero.

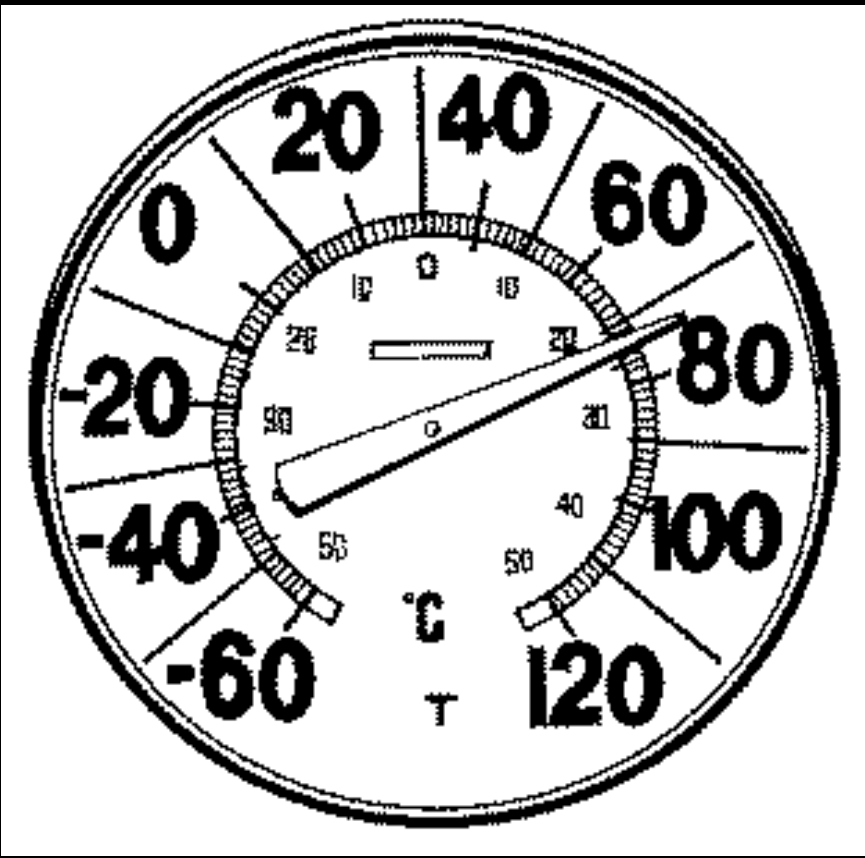
7 opposite -7

DEFINITION

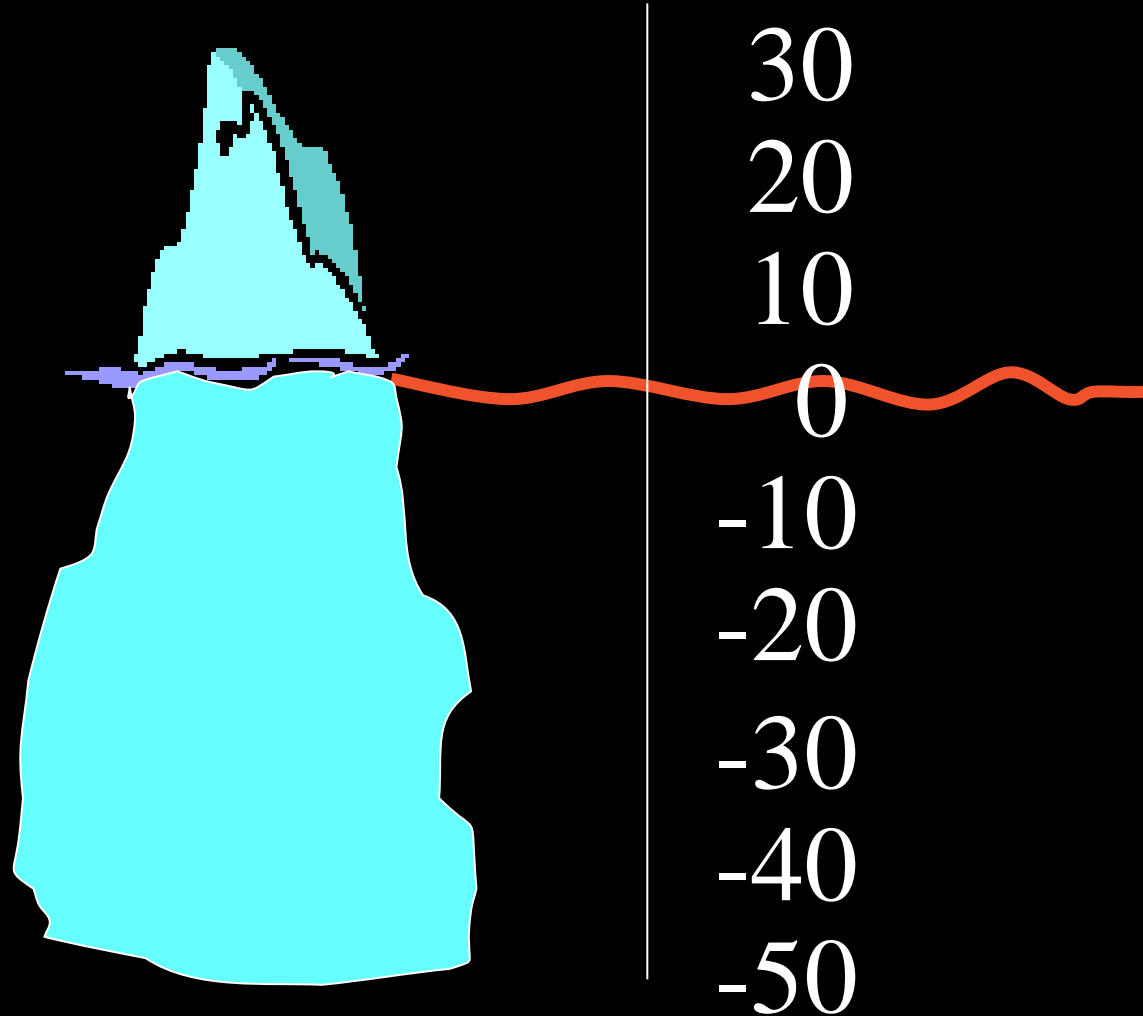
- Absolute Value – The size of a number with or without the negative sign.

The absolute value of **9** or of **-9** is **9**.

NEGATIVE NUMBERS ARE USED TO MEASURE TEMPERATURE



NEGATIVE NUMBERS ARE USED TO MEASURE UNDER SEA LEVEL



NEGATIVE NUMBERS ARE USED TO SHOW DEBT

Let's say your parents bought a car but had to get a loan from the bank for \$5,000. When counting all their money they add in $-\$5,000$ to show they still owe the bank.

HINT

- ▶ If you don't see a negative or positive sign in front of a number it is positive.

$$+9$$

INTEGER ADDITION RULES

- ▶ Rule #1 – If the signs are the same, pretend the signs aren't there. Add the numbers and then put the sign of the addends in front of your answer.

$$9 + 5 = 14$$

$$-9 + -5 = -14$$

SOLVE THE PROBLEMS

$$\bullet -3 + -5 = -8$$

$$\bullet 4 + 7 = 11$$

$$\bullet (+3) + (+4) = 7$$

$$\bullet -6 + -7 = -13$$

$$\bullet 5 + 9 = 14$$

$$\bullet -9 + -9 = -18$$



Solve the problems on
Part A of your worksheet
now. Click to the next slide
when done.

Check Your Answers

1. $8 + 13 = 21$

2. $-22 + -11 = -33$

3. $55 + 17 = 72$

4. $-14 + -35 = -49$

INTEGER ADDITION RULES

- ▶ Rule #2 – If the signs are different pretend the signs aren't there. Subtract the smaller from the larger one and put the sign of the one with the larger absolute value in front of your answer.

Larger abs. value $-9 + +5 =$

$$9 - 5 = 4 \quad \text{Answer} = -4$$

SOLVE THESE PROBLEMS

- $3 + -5 =$ $5 - 3 = 2$ -2
- $-4 + 7 =$ $7 - 4 = 3$ 3
- $(+3) + (-4) =$ $4 - 3 = 1$ -1
- $-6 + 7 =$ $7 - 6 = 1$ 1
- $5 + -9 =$ $9 - 5 = 4$ -4
- $-9 + 9 =$ $9 - 9 = 0$ 0



Solve the problems on
Part B of your worksheet
now. Click to the next slide
when done.

Check Your Answers

1. $-12 + 22 = 10$

2. $-20 + 5 = -15$

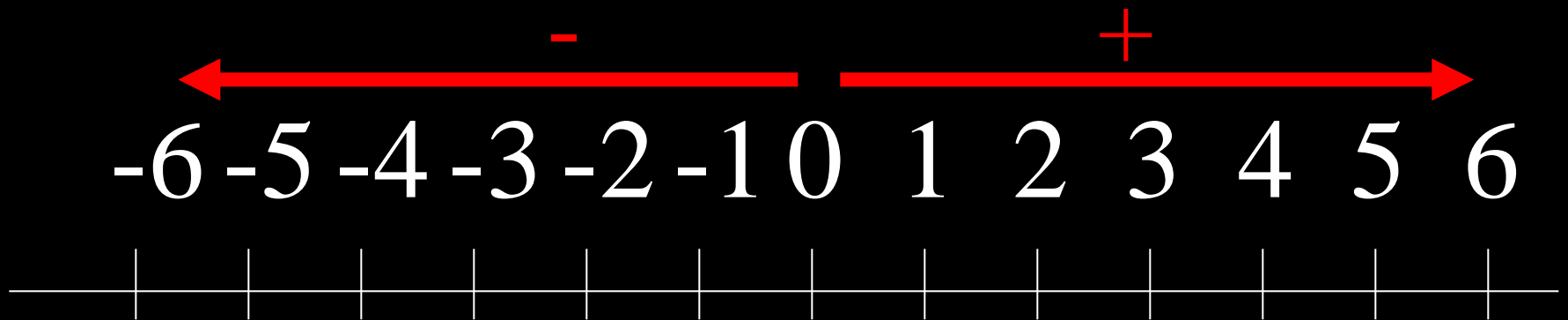
3. $14 + (-7) = 7$

4. $-70 + 15 = -55$

ONE WAY TO ADD INTEGERS IS WITH A NUMBER LINE

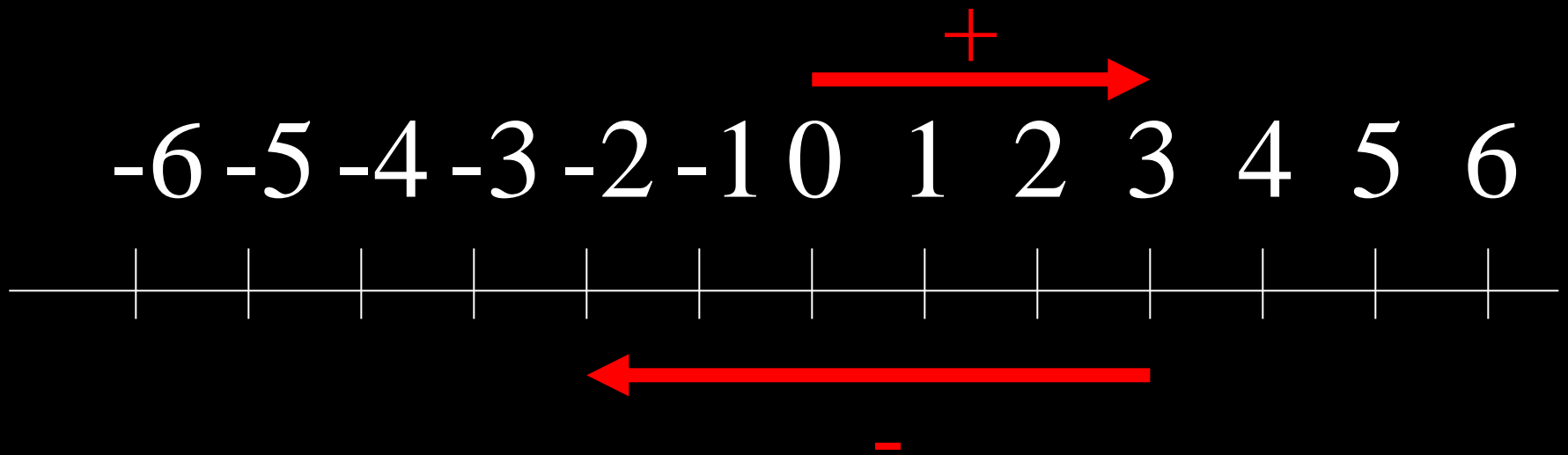
When the number is positive, count
to the right.

When the number is negative, count
to the left.



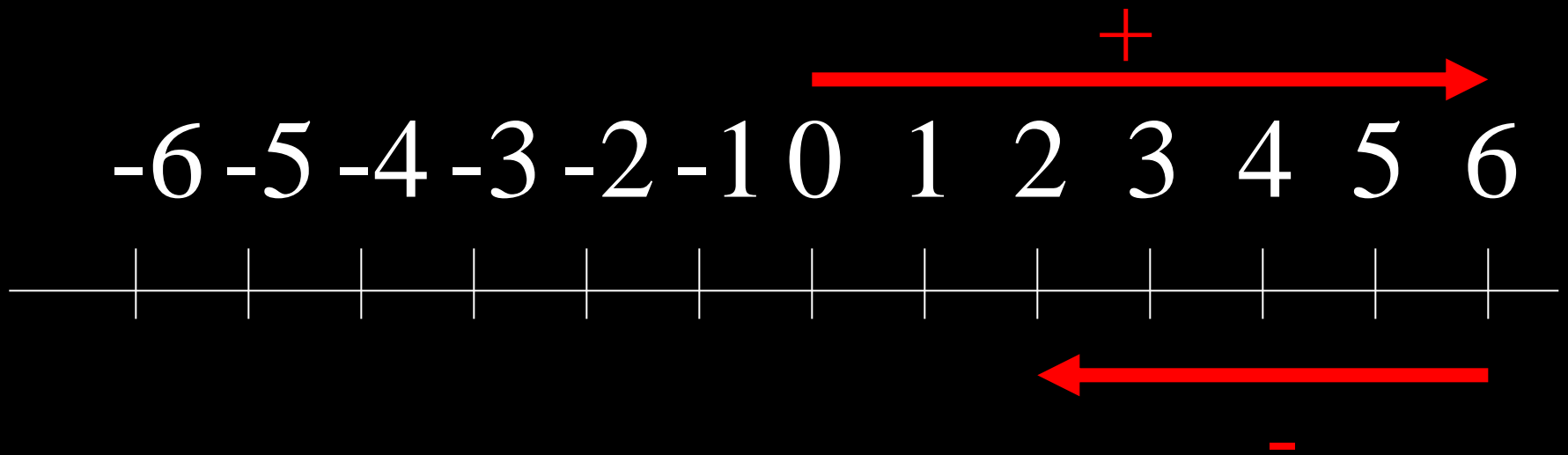
ONE WAY TO ADD INTEGERS IS WITH A NUMBER LINE

$$+3 + -5 = -2$$



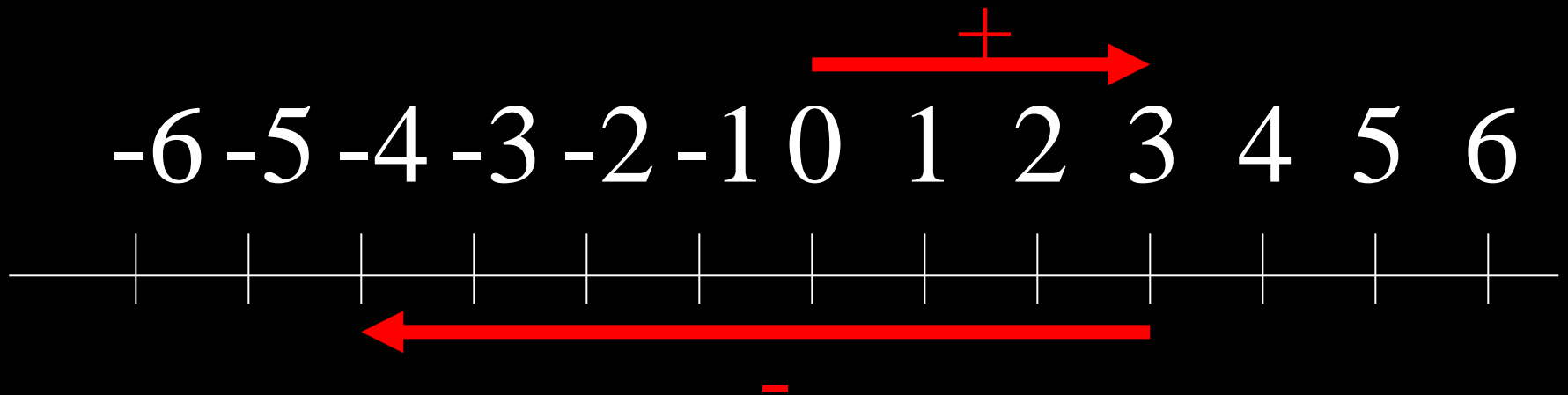
ONE WAY TO ADD INTEGERS IS WITH A NUMBER LINE

$$+6 + -4 = +2$$



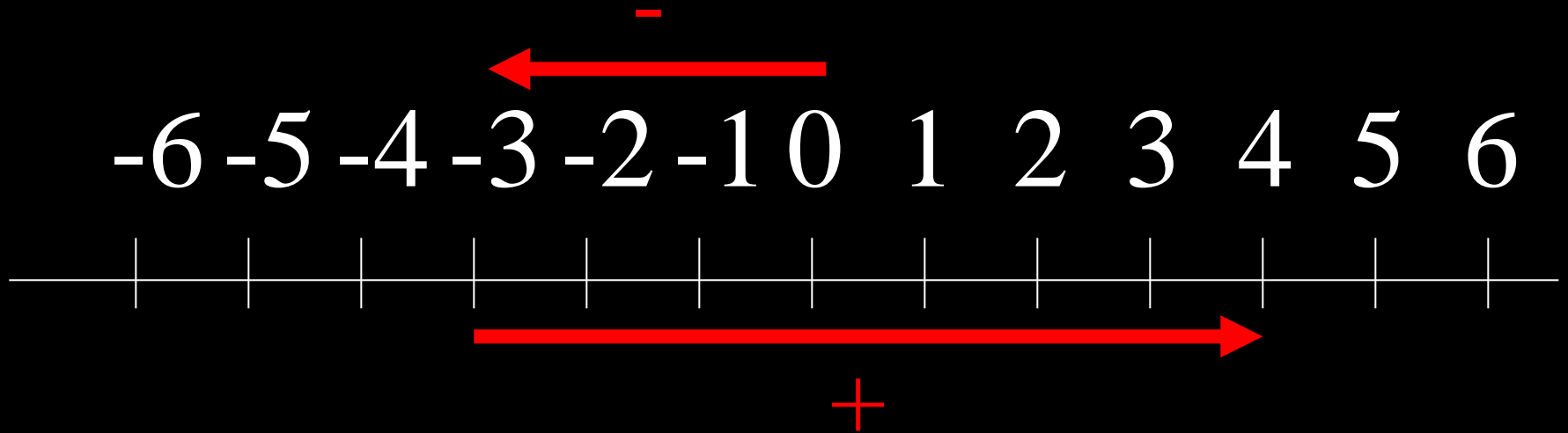
ONE WAY TO ADD INTEGERS IS WITH A NUMBER LINE

$$+3 + -7 = -4$$



ONE WAY TO ADD INTEGERS IS WITH A NUMBER LINE

$$-3 + +7 = +4$$



Integer Subtraction Rule

Subtracting a negative number is the same as adding a positive. Change the signs and add.

$$2 - (-7)$$

is the same as

$$2 + (+7)$$

$$2 + 7 = 9!$$

Here are some more examples.

$$12 - (-8)$$

$$-3 - (-11)$$

$$12 + (+8)$$

$$-3 + (+11)$$

$$12 + 8 = 20$$

$$-3 + 11 = 8$$



Solve the problems on
Part C of your worksheet
now. Click to the next slide
when done.

Check Your Answers

$$1. \quad 8 - (-12) = 8 + 12 = 20$$

$$2. \quad 22 - (-30) = 22 + 30 = 52$$

$$3. \quad -17 - (-3) = -17 + 3 = -14$$

$$4. \quad -52 - 5 = -52 + (-5) = -57$$

How do we know that

“Subtracting a negative number
is the same as adding a positive”
is true?

We can use the same
method we use to check our
answers when we subtract.

Suppose you subtract $a - b$
and it equals c :

$$a - b = c$$

$$5 - 2 = 3$$

To check if your answer is
correct, add b and c :

$$a = b + c$$

$$5 = 2 + 3$$


Here are some examples:

$$a - b = c \quad a = b + c$$

$$9 - 5 = 4 \quad 9 = 5 + 4$$

$$a - b = c \quad a = b + c$$

$$20 - 3 = 17 \quad 20 = 3 + 17$$



If the method for checking subtraction works, it should also work for subtracting negative numbers.

If $a - b = c$, and....

$2 - (-5)$ is the same as

$2 + (+5)$, which equals 7,

Then let's check with the negative numbers to see if it's true...

$$a - b = c$$

$$a = b + c$$

$$2 - (-5) = 7$$

$$2 = -5 + 7$$

It works!

$$a - b = c$$

$$a = b + c$$

$$-11 - (-3) = -8$$

$$-11 = -3 + -8$$

YES!



Solve the problems on
Part D of your worksheet
now. Click to the next slide
when done.

Check Your Answers

1. Solve: $3 - 10 = 7$

Check: $3 = 10 + (-7)$

2. Solve: $17 + (-12) = 29$

Check: $17 = -12 + 29$

Continued on next slide


Check Your Answers

1. Solve: $20 + (-5) = 25$

Check: $20 = -5 + 25$

1. Solve: $-7 + (-2) = -5$

Check: $-7 = -2 + -5$



You have learned lots of things
About adding and subtracting
Integers. Let's review!

INTEGER ADDITION RULES

- ▶ Rule #1 – If the signs are the same, pretend the signs aren't there. Add the numbers and then put the sign of the addends in front of your answer.

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INTEGER ADDITION RULES

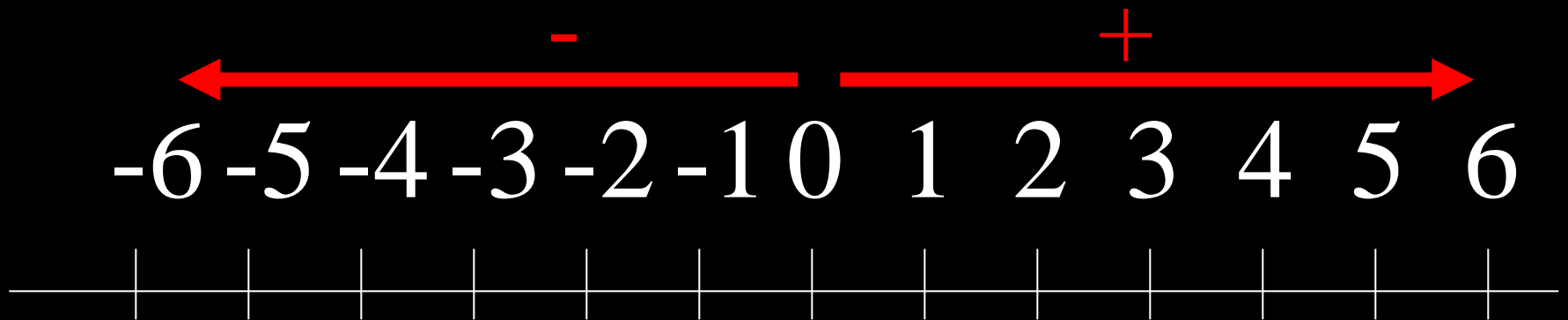
- Rule #2 – If the signs are different pretend the signs aren't there. Subtract the smaller from the larger one and put the sign of the one with the larger absolute value in front of your answer.

Larger abs. value $-9 + +5 =$
 $9 - 5 = 4$ Answer $= -4$

ONE WAY TO ADD INTEGERS IS WITH A NUMBER LINE

When the number is positive, count to the right.

When the number is negative, count to the left.



Integer Subtraction Rule

Subtracting a negative number is the same as adding a positive. Change the signs and add.

$$2 - (-7)$$

is the same as

$$2 + (+7)$$

$$2 + 7 = 9!$$

How do we know that

“Subtracting a negative number
is the same as adding a positive”
is true?

We can use the same
method we use to check our
answers when we subtract.

$$a - b = c$$

$$a = b + c$$

$$2 - (-5) = 7$$

$$2 = -5 + 7$$

It works!

$$a - b = c$$

$$a = b + c$$

$$-11 - (-3) = -8$$

$$-11 = -3 + -8$$

YES!

Discuss with a partner ways that you know that that is problem is solved correctly.

$$6 - (-9) = 15$$

Aren't integers
interesting?

