

Adding Integers

Tiles

You can use coloured tiles to model integers.

- A black tile models -1 
- A white tile models $+1$ 

A black and a white tile combine to model 0

They form a "zero pair"... $(+1) + (-1) = 0$

$$\square + \blacksquare = 0$$

To add... $(-4) + (-2)$

Model -4 with 4 black tiles
and -2 with 2 black tiles

$$\blacksquare \blacksquare \blacksquare \blacksquare + \blacksquare \blacksquare = -6$$

To add... $(+5) + (-2)$

Model with 5 white tiles
and 2 black tiles

$$\begin{array}{cccccc} \square & \square & \square & \square & \square & \\ \blacksquare & \blacksquare & & & & \end{array} = +3$$

Number Line - Adding Integers

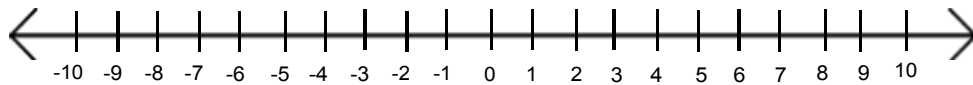
You can use a number line to add integers

1. Find the first integer on the number line
2. To add a positive integer - move to the right
To add a negative integer - move to the left

ie: $(-4) + (+2)$

Start at -4 (indicate with a dot on the number line)

Move 2 units (hops to the right)

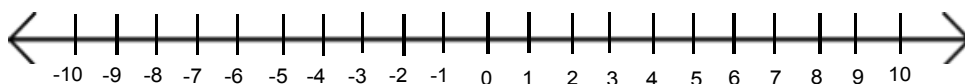


$$-4 + 2 = -2$$

To add... $(+5) + (-4)$

Start at +5 (dot)

Move (hop) 4 units left



$$(+5) + (-4) = +1$$

Examples...

a) $(+1) + (+3)$

+ = 4

b) $(-2) + (-3)$

+ = -5

c) $(-4) + (+3)$

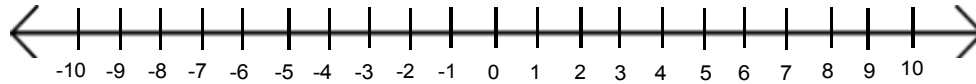
= -1

d) $(+4) + (-2)$

= 2

Examples: Number Line

1. $(+2) + (-2)$



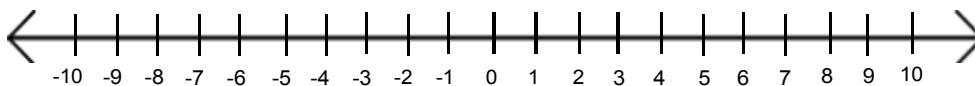
2. $(+11) + (-5)$



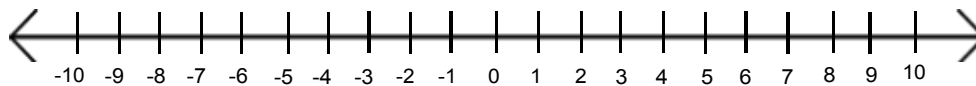
3. $(+4) + (+6)$



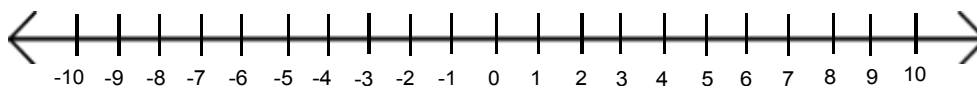
4. $(-2) + (-8)$



5. $(-12) + (+7)$



6. $(+7) + (-15)$



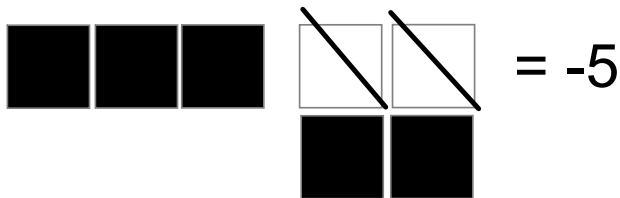
Subtracting Integers

Tiles:

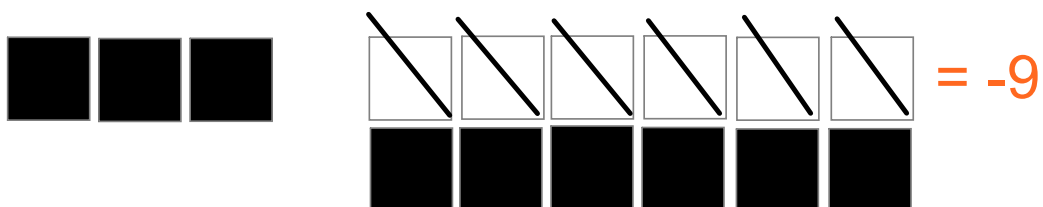
- To subtract, you take away tiles
- If there are not enough tiles to remove, add zero pairs

To subtract $(-3) - (+2)$, model (-3) with 3 black tiles.
To take away $(+2)$, 2 white tiles are needed.

Add two zero pairs of tiles to provide 2 white tiles



$$(-3) - (+6)$$



Subtracting Integers Using Number Lines

To subtract an integer on a number line, move in the opposite direction of adding the same integer

To subtract a positive integer - move left

To subtract a negative integer - move right

Example 1: $(+5) - (-4)$

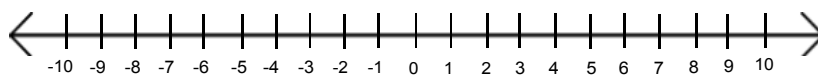
Start at +5 (dot)

Move 4 units (hops) to the right



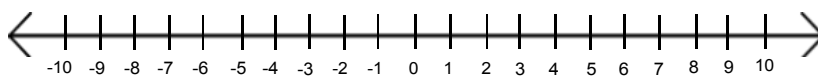
$$(+5) - (-4) = (+9)$$

Example 2: $(+6) - (+2)$



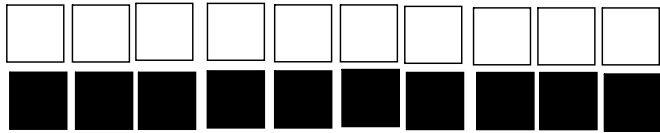
$$(+6) - (+2) = 4$$

Example 3: $(+5) - (-1)$

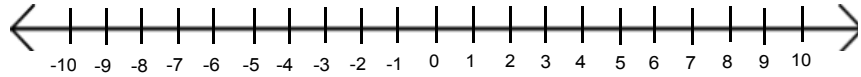


$$(+5) - (-1) = (+6)$$

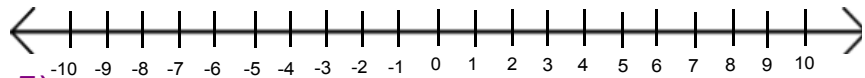
Tile Examples
Number Line Examples



1. $(+2) - (-7)$



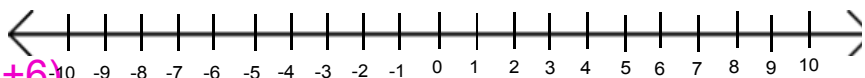
2. $(-3) - (-4)$



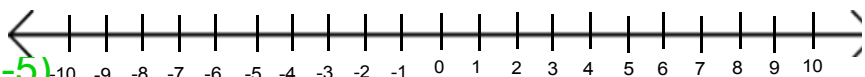
3. $(-5) - (-5)$



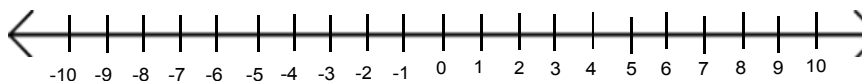
4. $(+10) - (-4)$



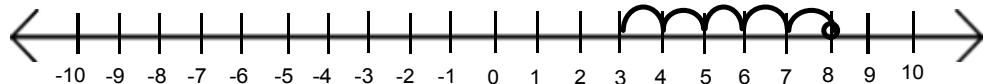
5. $(-5) - (+6)$



6. $(-3) - (-5)$



Temperature Change



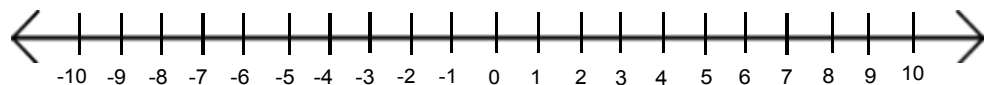
From 8°C to 3°C

How many loops? (5 to the left)

5° decrease



From 8°C to -3°C



From -8°C to 3°C

Worksheets E-55, E-56, 39, 40, E-59, E-61, E-62, 48, 49

Quiz

