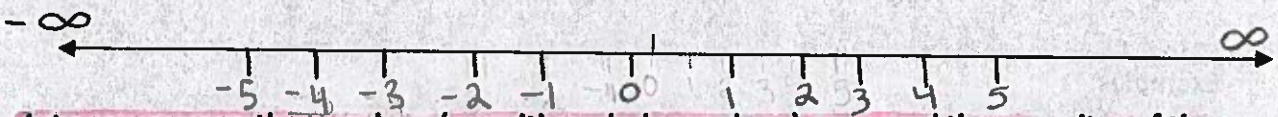
M9

# 1.3 Integers

- Plot 0 on the horizontal number line.
- Plot 5 smallest positive integers on the horizontal number line.
- Plot 5 largest negative integers on the horizontal number line.

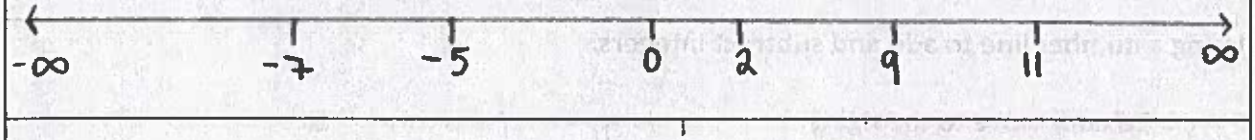



**Integers are counting numbers (= positive whole numbers), zero, and the opposites of the counting numbers.**

- The proper mathematical name for counting numbers is natural numbers.

- To order integers from least to greatest is to write them in **ascending = increasing order.**

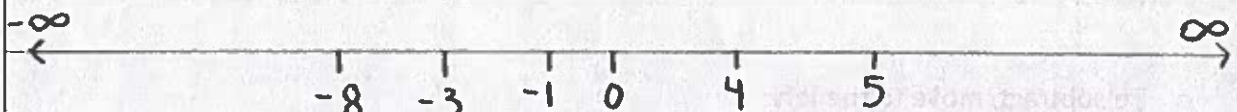
| 9 | −5 | 0 | −7 | 2 | 11 |
|---|---|---|---|---|---|




−7, −5, 0, 2, 9, 11

- To order integers from greatest to least is to write them in **descending = decreasing order.**

| 4 | 5 | −3 | −8 | −1 | 0 |
|---|---|---|---|---|---|




5, 4, 0, -1, -3, -8

**Recall:** The more to the left a number is on the number line, the smaller it is.
The more to the right a number is on the number line, the greater it is.

**Recall:**

- **Adding a negative number is the same as subtracting a positive number.**

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

- **Subtracting a negative number is the same as adding a positive number.**

$$13 - (-5) = 13 + 5$$

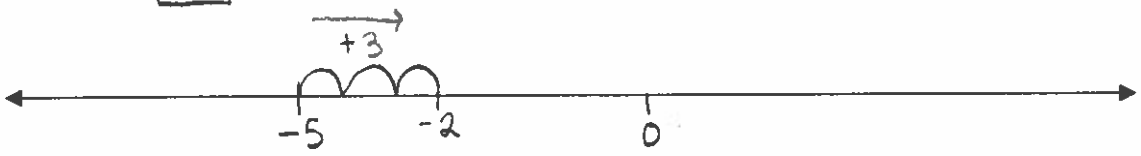
**Examples:**

- $10 - (-7) + 1 = 18$
- $-8 - (-24) = 16$
- $-4 + (-3) = -4 - 3 = -7$
- $12 + (-8) + 9 = 13$

**Using a number line to add and subtract integers.**

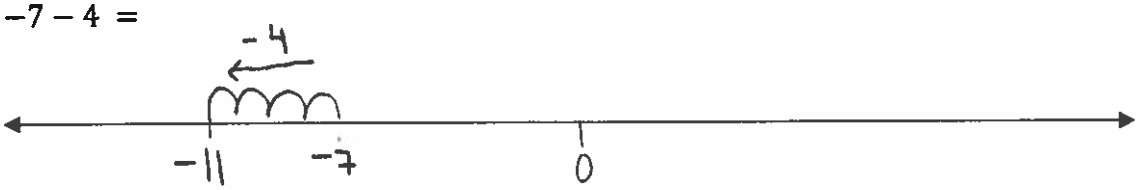
- To add, move to the right.

$-5 + 3 = -2$




- To subtract, move to the left.

$-7 - 4 =$



**Task:** Give at least 5 real-life examples when we use negative numbers.

- Tempature below 0°c
- Money (debt, Stocks / loss of $)
- Depth / elevation / below Sea-level
- Coordinates (west/South) (left, down)
- Depreciation in value - value goes down over time

**Multiplication Rules:**

| |
|---|
| $(+)(+) = \oplus$ |
| $(-)(-) = \oplus$ |
| $(+)(-) = \ominus$ |
| $(-)(+) = \ominus$ |

Same rules apply to division.

**Examples:**

1. $(-3)(5) = \boxed{-15}$
2. $(6)(-7) = \boxed{-42}$
3. $(-10)(-5) = \boxed{50}$
4. $(3)(-8)(-2) = \boxed{48}$
5. $(-3)(-2)(-5) = \boxed{-30}$