

Once you know HOW to combine Integers, you need to be able to know WHEN to combine Integers. You need to make this decision when deciding how to approach a *word problem* (also known as an *application*).

Example 2

You worked the following hours last week: Monday, 8 hrs; Tuesday, 6 hrs; Wednesday, 0 hrs; Thursday, 5 hrs; Friday, 8 hrs. How many hours in total did you work last week?

$$\begin{aligned} 8 \text{ hrs} + 6 \text{ hrs} + 0 \text{ hrs} + 5 \text{ hrs} + 8 \text{ hrs} \\ = 27 \text{ hrs} \end{aligned}$$

Example 3

A truck entering the Brady Road Landfill gets weighed both on its way in, and again on its way out. The driver is charged a fee based on the difference of the two weights. Phil's truck weighed 3 900 lbs on the way in and 2 450 lbs on the way out. What was the difference in weight of the truck?

$$\begin{aligned} 3900 \text{ lbs} - 2450 \text{ lbs} \\ = 1450 \text{ lbs} \end{aligned}$$

Example 4 – Temperature

The number line could also appear vertically. In such cases the positive direction is up and the negative direction is down. One of the common uses for the vertical number line is temperature. In Canada we use the Celsius scale to measure temperature. Answer each of the following questions using the Celsius temperature scale.

- a) In the morning, the temperature is 4° and during the day it rises 8° . What is the high temperature for that day?
 $4^{\circ}\text{C} + 8^{\circ}\text{C} = 12^{\circ}\text{C}$
- b) The weather forecast for tomorrow says that it should be -5°C in the afternoon, and then the temperature will decrease by 7°C at midnight. What is the predicted temperature at midnight?
 $-5^{\circ}\text{C} - 7^{\circ}\text{C} = -12^{\circ}\text{C}$
- c) In the evening, the temperature is -3° and the next day it increases by 13° . What is the new temperature?
 $-3^{\circ}\text{C} + 13^{\circ}\text{C} = 10^{\circ}\text{C}$
- d) On Tuesday the high temperature was 15° . On Wednesday the high temperature was 8° . What is the *difference* between the high temperature on Tuesday and Wednesday?
 $15^{\circ}\text{C} - 8^{\circ}\text{C} = 7^{\circ}\text{C}$
- e) One morning the temperature was -3° . During the day it increased 14° and at night it decreased 7° . What was the temperature that night?
 $-3^{\circ}\text{C} + 14^{\circ}\text{C} - 7^{\circ}\text{C} = 4^{\circ}\text{C}$
- f) The original temperature was -5°C and the temperature than decreased by 8° . What is the new temperature?
 $-5^{\circ}\text{C} - 8^{\circ}\text{C} = -13^{\circ}\text{C}$

