

Example 1: Model With a Balance Scale

The city in Canada with the highest average wind speed is St. John's, Newfoundland. The city with the lowest average wind speed is Kelowna, British Columbia. The relationship between the wind speeds can be modelled using the equation $s = 4k + 3$, where s represents the wind speed in St. John's and k represents the wind speed in Kelowna. If the average wind speed in St. John's is 23 km/h, what is the average wind speed in Kelowna?

$$s = 4k + 3$$

$$\begin{array}{r} 23 = 4k + 3 \\ -3 \quad \underline{-3} \end{array}$$

$$\frac{20}{4} = \frac{4k}{4}$$

$$5 = k$$

The average wind speed in Kelowna is 5 km/hr.

Example 2: Model With Algebra Tiles

A cow sleeps 7 h a day. This amount of sleep is 1 h less than twice the amount an elephant sleeps a day. How long does an elephant sleep?

$$7 = 2e - 1$$

$$+1$$

$$\frac{8}{2} = \frac{2e}{2}$$

$$4 = e$$

$$= \frac{1}{2} = \frac{2}{4}$$

An elephant sleeps 4 hr. a day.

$$7 = 2e - 1$$

$$7 = 2(4) - 1$$

$$7 = 8 - 1$$

$$\checkmark 7 = 7 \checkmark$$

Example 3: Apply the Opposite Operations

Cali borrowed \$19 from her brother. The next day, she paid back \$3. To pay off the rest of the debt, she will give him \$4/week. How many weeks will it take her to pay off the debt?

$$\begin{array}{r} 19 = 19 + 4w \\ -3 \quad \underline{-3} \end{array}$$

$$\frac{16}{4} = \frac{4w}{4}$$

$$4 = w$$

It takes 4 week for her to pay back her brother.

