4-9: Learning Goals

- Let's use equations to think about situations.

4-9-1: Which Would You Choose?

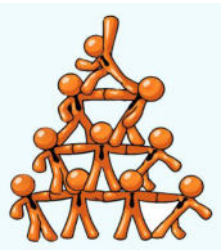
If you were babysitting, would you rather

- Charge $5 for the first hour and $8 for each additional hour?

Or

- Charge $15 for the first hour and $6 for each additional hour?

Explain your reasoning.



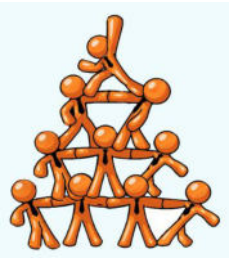
4-9-2: Water Tanks

The amount of water in two tanks every 5 minutes is shown in the table.

time (minutes)	tank 1 (liters)	tank 2 (liters)
0	25	1000
5	175	900
10	325	800
15	475	700
20	625	600
25	775	500
30	925	400
35	1075	300
40	1225	200
45	1375	100
50	1525	0

1. Describe what is happening in each tank. Either draw a picture, say it verbally, or write a few sentences.

2. Use the table to estimate when the tanks will have the same amount of water.



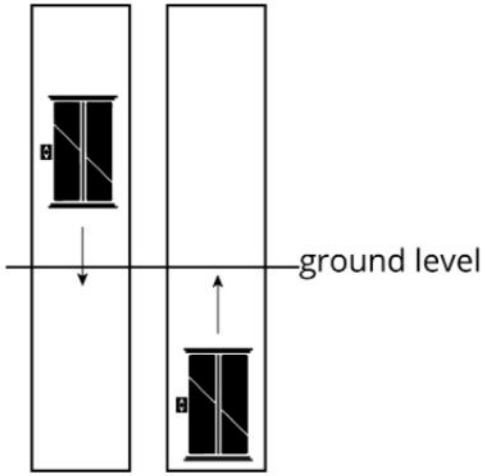
3. The amount of water (in liters) in tank 1 after t minutes is $30t + 25$. The amount of water (in liters) in tank 2 after t minutes is $-20t + 1000$. Find the time when the amount of water will be equal.

4-9-3: Elevators

A building has two elevators that both go above and below ground.

At a certain time of day, the travel time it takes elevator A to reach height h in meters is $0.8h + 16$ seconds.

The travel time it takes elevator B to reach height h in meters is $-0.8h + 12$ seconds.



1. What is the height of each elevator at this time?

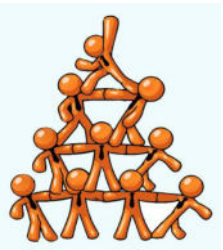
2. How long would it take each elevator to reach ground level at this time?

3. If the two elevators travel toward one another, at what height do they pass each other? How long would it take?

4. If you are on an underground parking level 14 meters below ground, which elevator would reach you first?

4-9: Lesson Synthesis

Think of another situations where two quantities are changing and they want to know when the quantities are equal.



4-9: Learning Targets

- I can use an expression to find when two things, like height, are the same in a real-world situation.

4-9-4: Printers and Ink

To own and operate a home printer, it costs \$100 for the printer and an additional \$0.05 per page for ink. To print out pages at an office store, it costs \$0.25 per page. Let p represent number of pages.

1. What does the equation $100 + 0.05p = 0.25p$ represent?

2. The solution to that equation is $p = 500$. What does the solution mean?