6.4 Equations of Linear Relations
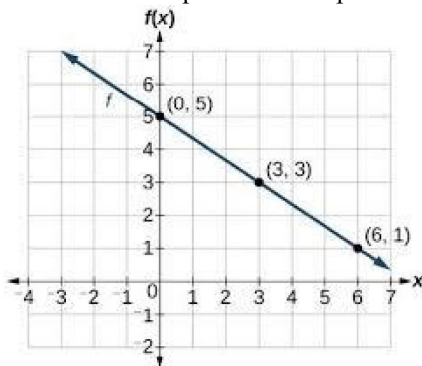
Math 9   **Equations of Linear Relations**

Determine an equation that represents the line shown on each graph.
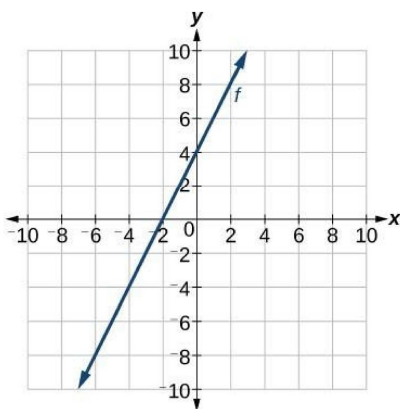
x	y
0	5
1	4 ⅓
2	3 ⅔
3	3
4	2 ⅓
5	1 ⅔
6	1

+3   −2

As x increases by 3 , y decreases by 2.

→ rate of change = $\frac{-2}{3}$

(as x increases by 1, y decreases by $\frac{2}{3}$)
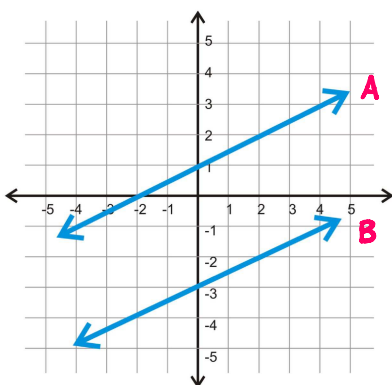
$$y = -\frac{2}{3}x + 5$$

↳ y-intercept

x	y
−4	-4
−3	-2
−2	0
−1	2
0	4
1	6
2	8

+1   +2

As x increases by 1 , y increases by 2.

→ rate of change = $\frac{2}{1} = 2$

$$y = 2x + 4$$

Compare the equations of the two lines below. How are they alike? How are they different?

line A:

x	y
-4	-1
-2	0
0	1
2	2
4	3

+2   +1

line B:

x	y
-2	-4
0	-3
2	-2
4	-1

+2   +1
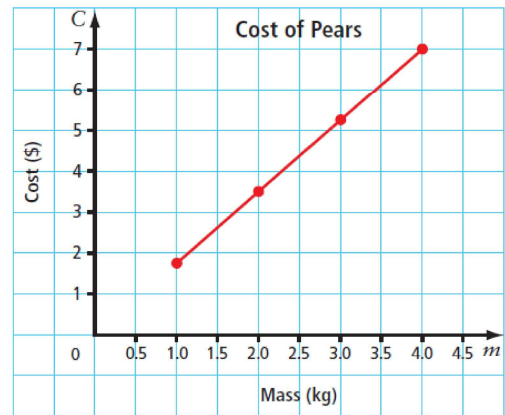
$$y = \frac{1}{2}x + 1 \qquad y = \frac{1}{2}x - 3$$

They have the same rate of change and different constants/fixed terms.

The graph shows the relationship between the cost, C, in dollars and the mass, m, in kilograms of pears.

Set up a table of values from points on the graph.

Mass (kg)	Cost ($)
0	0
1	1.75
2	3.50
3	5.25
4	7

← 3.50 ÷ 2 = 1.75

Cost of Pears

Cost ($) — Mass (kg)

Describe the pattern shown in the graph.

As the mass increases by 1 kg, the cost increases by $1.75.

Determine an equation relating the cost to ~~number of lunches.~~ the mass of pears.

$$C = 1.75\,m$$

Use the equation to determine how much you could buy for $5.

$$5 = 1.75\,m$$
$$\div 1.75 \quad \div 1.75$$
$$m \doteq 2.8571428\ldots$$

You could buy 2.85 kg.

Assignment: handout #7 – 11