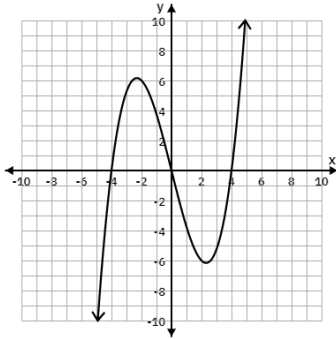# STATION A

1. Determine if the relations below are **linear** or **non-linear**. Justify your answer.
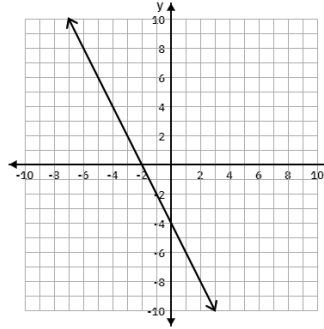
a) $y = 3x - 1$

b) $y = 2^x$

c) $y = \frac{1}{x} + 4$
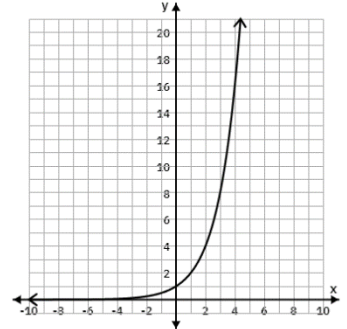
d)

e)

f)

2. Determine if the following tables of values represent linear relations. **Show your thinking/justification!**

a)

x	y
-2	17
0	21
2	25
4	29
6	33

b)

x	y
-5	50
-4	49
-3	47
-2	44
-1	40

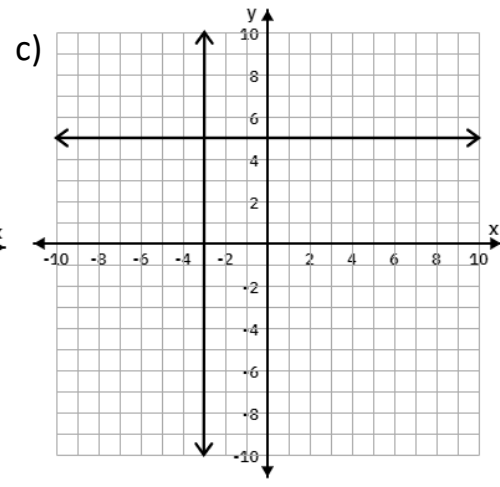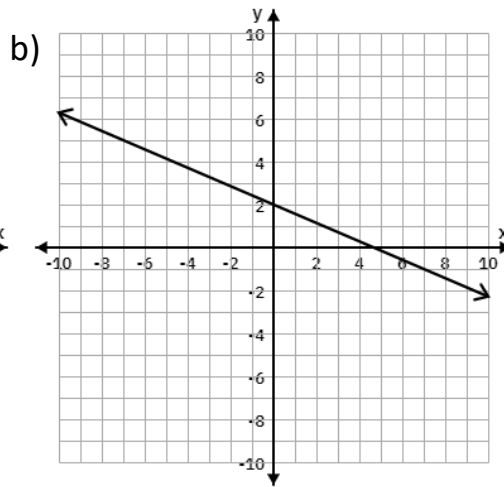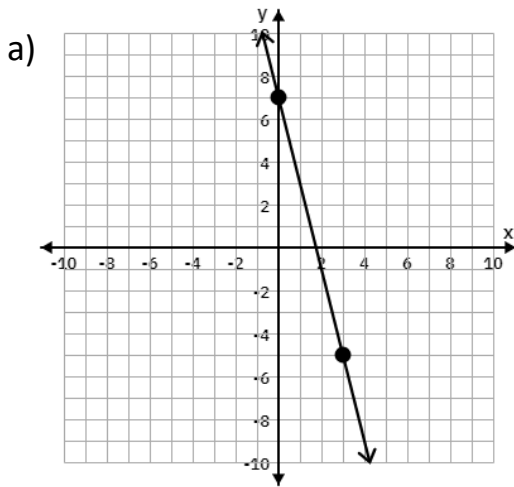c)

x	y
0	1
3	7
4	9
6	13
7	15

3. Determine the equations of the table in questions 2a and 2c.

STATION B

1. Determine the slope of the following lines (find the equations of both lines for c).

a)

b)

c)

2. Determine the equations of each of the lines in question 2.

3. Determine the slope of the line that passes through the following pairs of points.
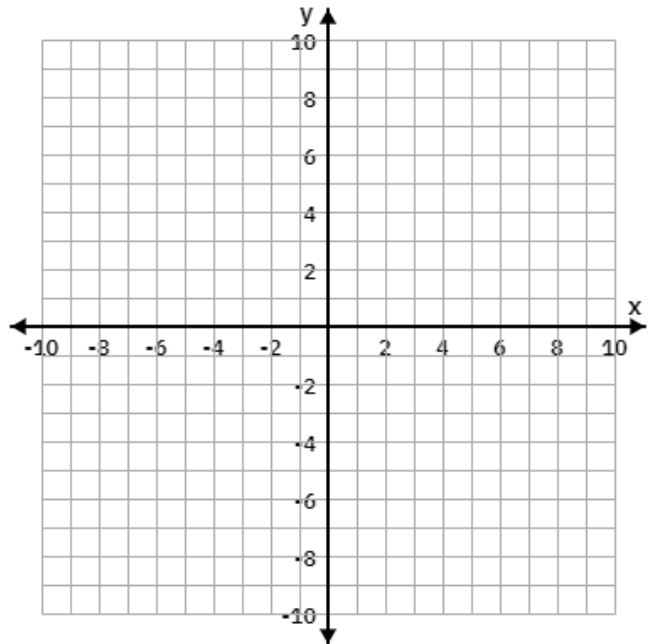
a) $(-3, 7)$ and $(2, 17)$

b) $(18, 5)$ and $(-5, 5)$

c) $(-6, 7)$ and $(1, 3)$

d) $(2, 3)$ and $(2, -5)$

STATION C

1. Sketch a line that has a slope of $\frac{4}{7}$ and goes through the point $(1, -3)$.

2. A line segment $\overline{AB}$ starts at the point $A(3,4)$. If the slope is $-\frac{2}{3}$, what is a possible coordinate for the point B?

3. An accessibility ramp needs to have a slope of **at most** $\frac{1}{10}$ to pass inspection in Ontario. A store is planning to install a new ramp that goes up 0.5 meters in height over a distance of 4.6 meters. Would this ramp pass inspection?

STATION D

1. Organize the following lines from **least** steep, to **most** steep.

$$y = -5x + 1, \quad y = x + 5, \quad y = -3x - 2, \quad y = -\frac{3}{5}x, \quad y = 4x - 5$$

2. Describe how each of the following lines has been transformed compared to the parent function $y = x$.

a) $y = x + 5$

b) $y = x - 2$

3. For each of the following lines, write an equation of a line that is **parallel.**

a) $y = 2x - 5$

b) $y = \frac{3}{7}x$

c) $y = -9x - 1$

4. For each of the following lines, write an equation of a line that is **perpendicular.**

a) $y = 5x - 1$

b) $y = -\frac{1}{7}x$

c) $y = \frac{2}{3}x + 2$

STATION E

1. For the following lines, identify the slope, the y-intercept and use these to graph the line.
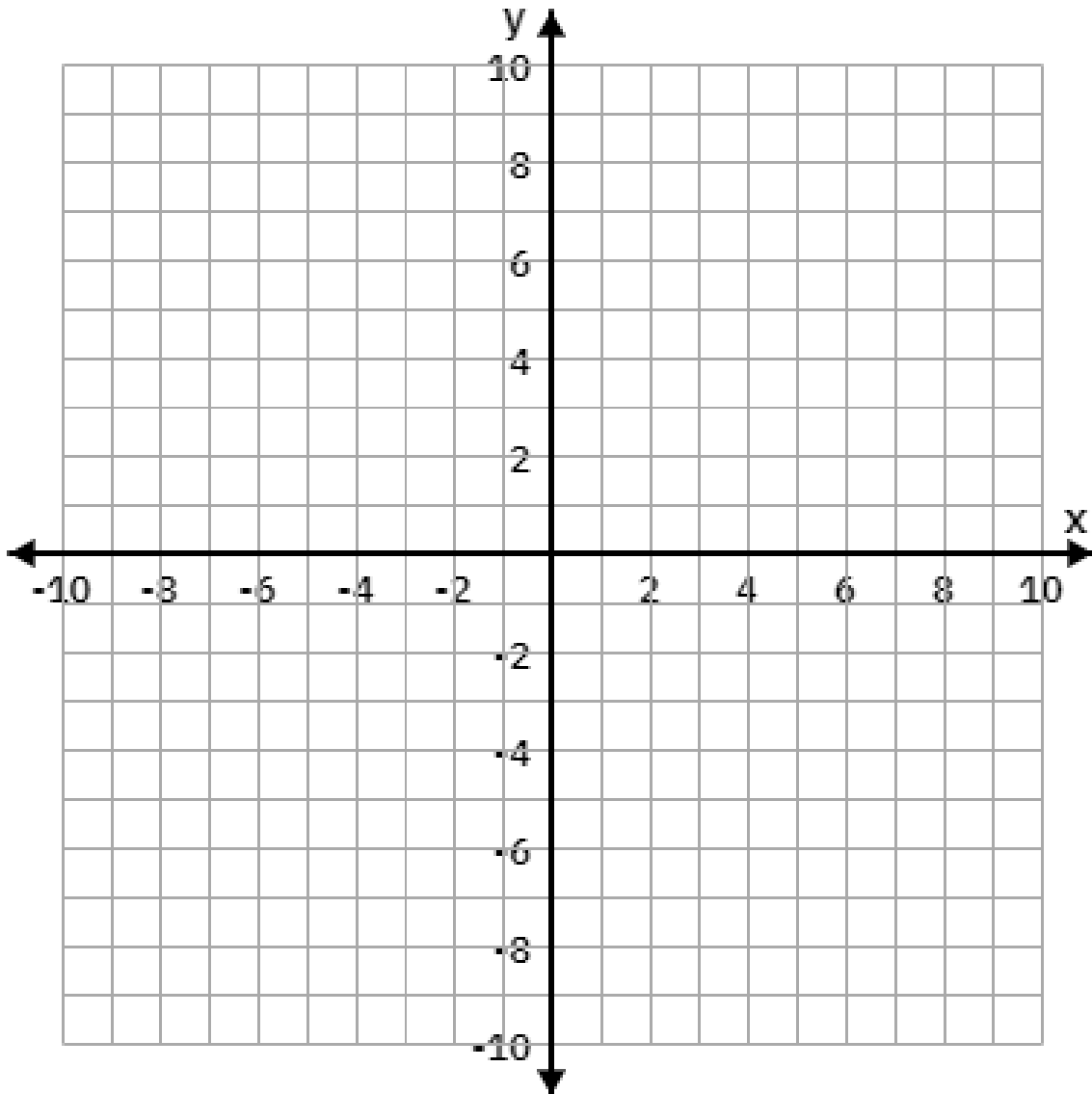
a) $y = 2x + 5$ Slope: _____ y-intercept: _____

b) $y = -\frac{3}{2}x$ Slope: _____ y-intercept: _____

c) $5x + 7y + 14 = 0$ Slope: _____ y-intercept: _____

d) $y = 6$ Slope: _____ y-intercept: _____

e) $x = -2$ Slope: _____ y-intercept: _____

STATION F

1. Determine the equation of the line that has the following properties:

a) Has a slope of -3 and a y-intercept of 2.

b) Is horizontal and goes through the point $(1,4)$.

c) Has a slope of 6 and passes through the point $(-3, -8)$.

d) Is vertical and goes through the point $(8, -2)$.

2. Determine the equations of the line that passes through the following points.

a) $(3, 13)$ and $(5, 25)$

b) $(7, -3)$ and $(14, -11)$

c) $(2,2)$ and $(-2,3)$

STATION G

1. Determine the equation of a line that satisfies the following properties:

a) Is parallel to the line $y = 2x - 5$ and crosses through the point $(4, -2)$

b) Is perpendicular to the line $y = \frac{3}{2}x - 4$ and crosses through the origin.

2. Hikaru paid a gym \$29 in December when they only went 6 times. In January they made a New Years resolution to go more often and had to pay \$77 for attending 18 times.

a) Determine an equation that represents this situation. **Define your variables!**

b) What might the slope and y-intercept represent in this situation?

c) How much would it cost if Hikaru went to the gym 30 times in one month?

d) How many times did Hikaru go to the gym if they paid \$57?

STATION H

1. Determine the equation of a line that satisfies the following properties:

a) Is parallel to the line $5x - 3y + 2 = 0$ and has the same y-intercept as $7x = 2y + 8$

b) Has the same y-intercept as the line that crosses through the points $(7,1)$ and $(2, -4)$ and is perpendicular to the line $2x - 5y - 3 = 0$.

2. Graph the region that represents the following inequalities. Show your work!

a) $y < 2x - 3$

b) $y \geq -\frac{2}{3}x + 1$