

Name: _____

Analysing Linear Relationships

Answer each open response question as the instructions specify. Be sure to “justify”, “show your work”, etc... Please use a ruler for questions requiring graphs. When your work is complete, please hand it in.

**For questions 1 and 2, please provide a list of steps in addition to your solution. (You may use point form)

The New Line

A line has

- the same slope as the line represented by $4x - 3y + 15 = 0$ and
- the same y -intercept as the line represented by $2x + y + 6 = 0$.

Determine an equation of this line.

Show your work.

Know Your Lines

Consider the equations of the two lines below.

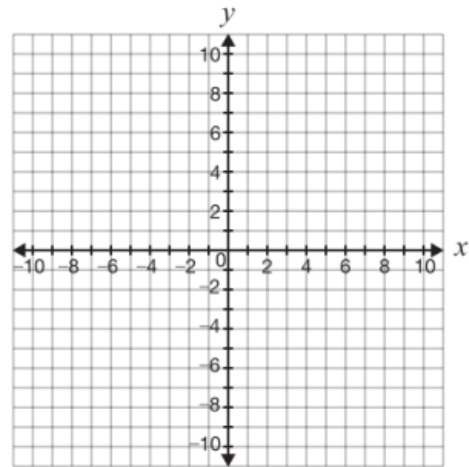
Line A: $y = -\frac{3}{2}x - 7$

Line B: $y = \frac{2}{3}x - 4$

Compare Line A and Line B. You may use the grid if you wish.

Justify your answers.

Complete the table below.



Characteristic	Comparison of Line A and Line B, with justification
Direction from left to right	
Steepness	
Parallel, perpendicular or neither	

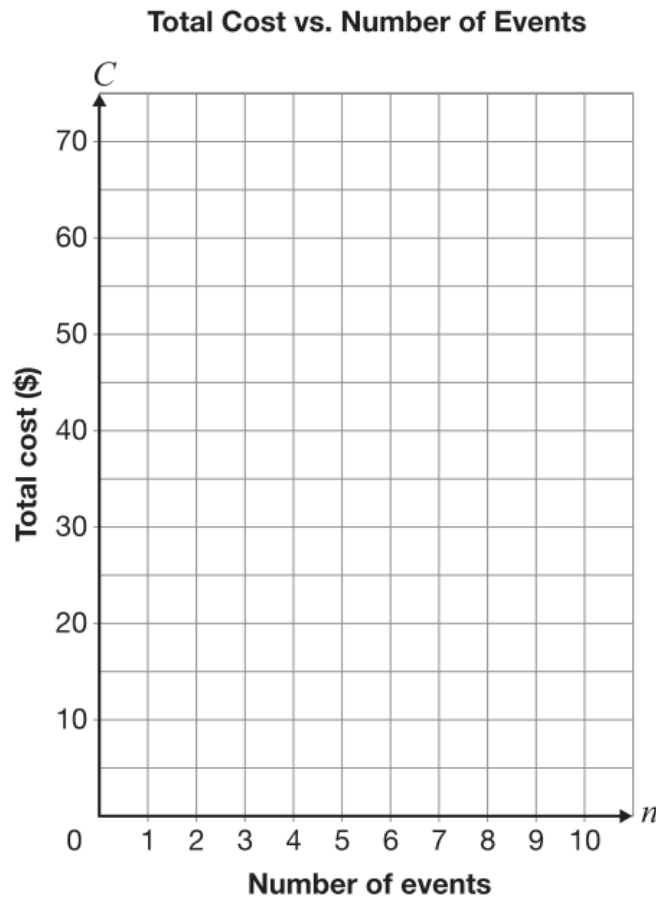
Event-full

At Lowell High School, the cost to attend special events depends on whether or not a student has purchased a \$10 discount card.

Option A: The student buys a discount card. The cost is \$5 per event.

Option B: The student does not buy a discount card. The cost is \$7.50 per event.

Graph the relationship between total cost and number of events for each option on the grid.



Determine the conditions under which a student at Lowell High School should choose each option. Justify your answer.

Reduce, Reuse and Recycle

A high school is starting a recycling program.

The relationship between the total cost of the program, C , and the number of recycling bins, n , is represented by the equation $C = 48n + 75$.

The school must install a minimum of 12 recycling bins and has a maximum of \$1000 to spend on the program.

What are the possible values of C and n in this situation?

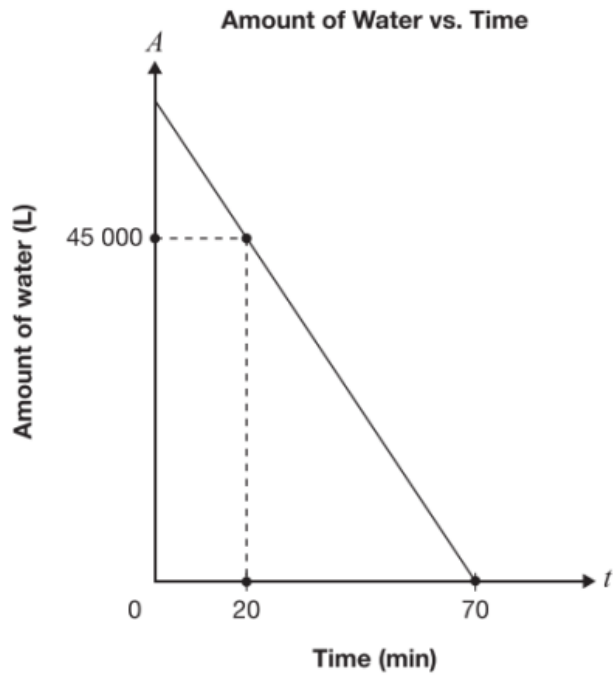
Justify your answer.

The possible values of n are _____.

The possible values of C are _____.

Water in a Pool

The graph below represents the relationship between the amount of water, A , in a pool as it drains and time, t .



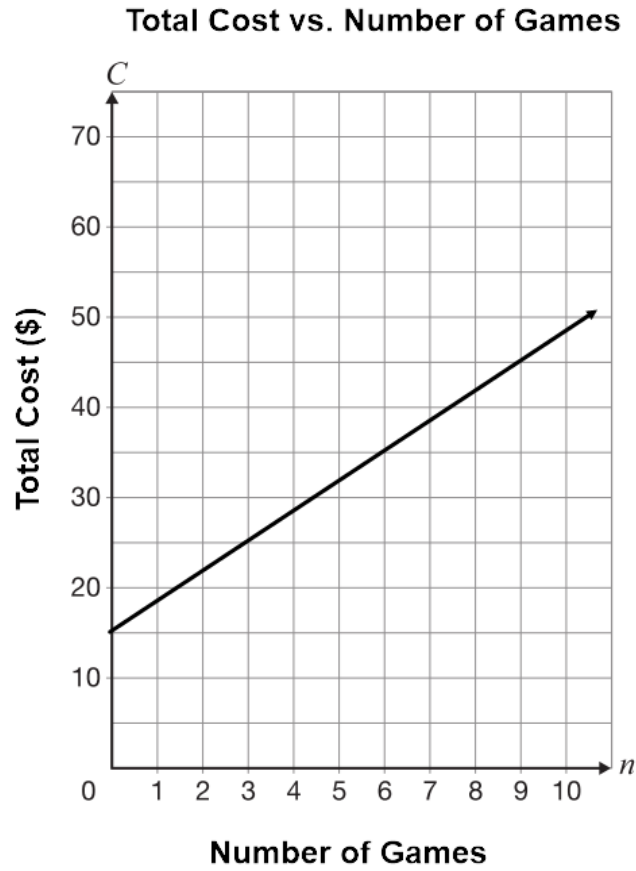
Determine the initial amount of water in the pool and the rate of change of this relation.

Show your work.

Game On!

The line graph below shows the cost of games at the fair last year. This year 6 rides costs the same and there is a higher price per game.

Determine a possible equation to describe the cost of games this year.

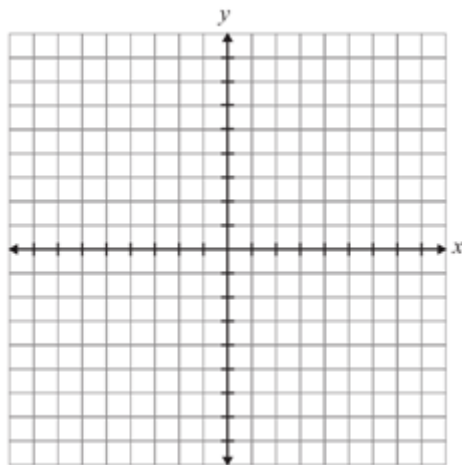


Is It a Line?

Determine whether each of the relations in the chart below is linear or non-linear.

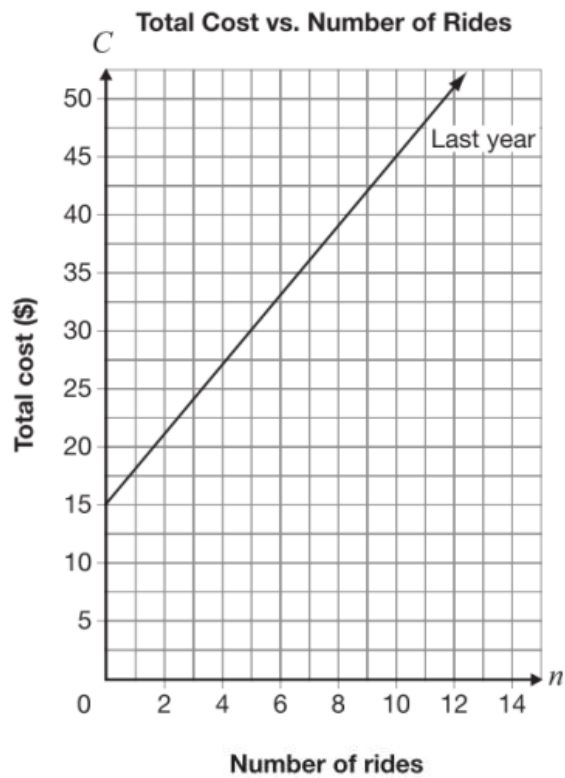
Justify your answers. You may use the grid if you wish.

$-2x + 6y = 18$	$y = 4x^2 + 3$
Circle one: Linear Non-linear	Circle one: Linear Non-linear
Justification	Justification



Roll with It!

The total cost at an amusement park is made up of an admission fee and a cost per ride. Information about the total cost for n rides last year is shown below.



This year, the cost per ride is reduced from last year, but the total cost for 10 rides is the same.

Determine a possible equation for the total cost, C , for this year. Include an admission fee and a cost per ride.

Justify your answer.