Lesson 6.2 Name: _____

Linear Relations

Show You Know

Ex. 1

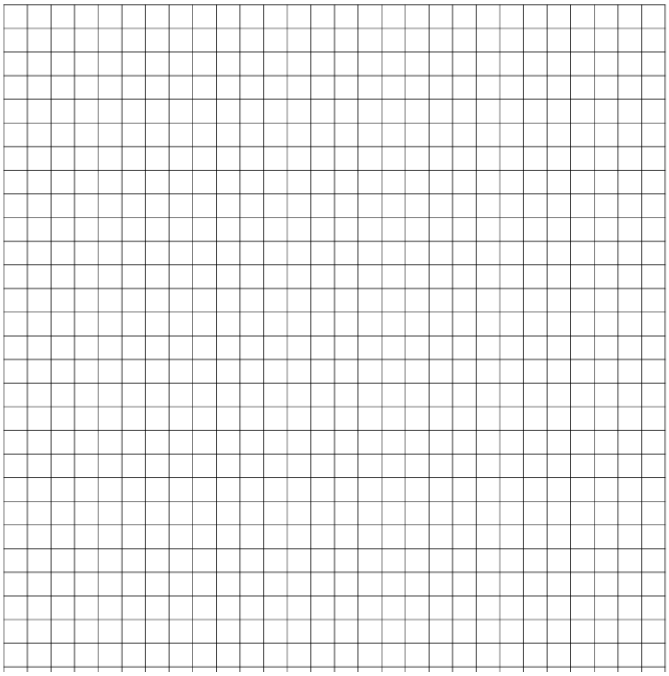
Another popular event at Les Folies Grenouilles is the fireworks display. Assume that the event organizers send off 20 firework shells each minute.

a) Is the relationship between the total number of fireworks and the duration of the event linear or non-linear? Explain how you know.

b) Assign a variable to represent each quantity in the relation. Which variable is the dependent variable? Which is the independent variable?

c) Create a table of values for this relation. What are appropriate values for the independent variable?

d) Create a graph for the relation. Is the data discrete or continuous?



Lesson 6.2 Name: _____

Linear Relations

Ex. 2

Determine whether each relation is linear. Explain why or why not.

a) the relationship between the cost to rent a dance hall and the number of people attending the dance, if the hall charges $200 plus $5 for each person who attends

b) the relation described by the equation $x^2 + y^2 = 25$

c) the relation described by the set of ordered pairs {(10, 12), (15, 4), (20, -4), (25, -12), (30, -20)}

Ex. 3

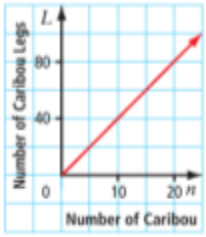
There is a linear relationship between the number of caribou, n, in a herd and the number of caribou legs, L. Which representations model this relation?

A $L = 4n$

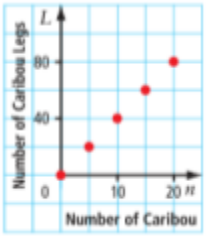
B (0, 0), (3, 12), (8, 32), (15, 60), (50, 200)

C $L = n + 4$

D



E



F

n	L
3	6
6	12
9	18
12	24

Practice

1. Given the following tables of values, determine which relations are linear and which are non-linear. Describe each relation in words.

a)

x	−3	−2	−1	0	1	2	3
y	6	2	0	0	2	6	12

b)

x	−3	−2	−1	0	1	2	3
y	−5	−3	−1	1	3	5	7

Lesson 6.2 Name: _____

Linear Relations

2. A video store charges $4.50 to rent a new release movie. The store's owner wants to put up a poster to make it easy for customers to determine the cost of renting multiple movies.
   a. Name the independent and dependent variables in this situation.

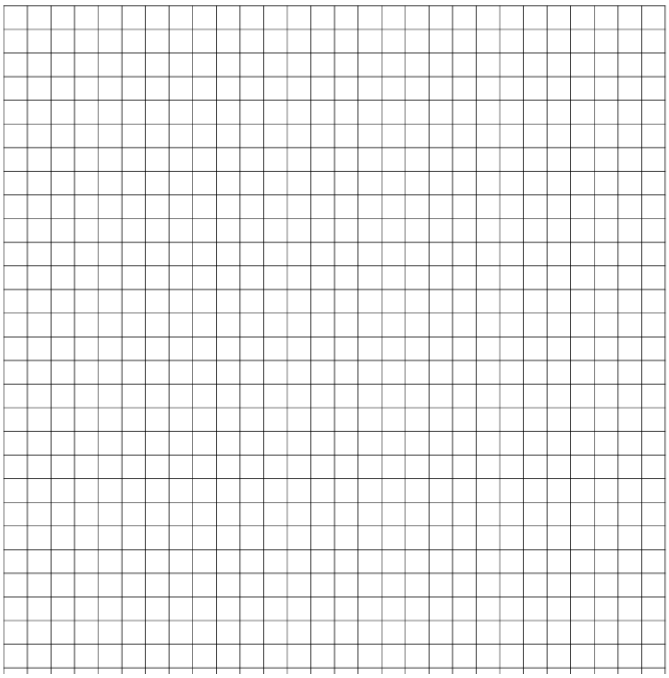
   b. Describe the pricing policy in words.

   c. Write an equation to represent the cost of renting 1 through 5 movies.

   d. Show a set of ordered pairs for renting 1 through 5 movies.

   e. Make a table of values that shows the cost of renting 1 through 5 movies.

   f. Make a graph for renting 1 through 5 movies. Does it make sense to show the cost of renting zero movies?



   g. From the 5 ways you represented the relation, which do you think would be the best way for the owner to present the information on the poster? Explain.

Lesson 6.2 Name: _____

Linear Relations

3. When looking at a given relation, describe a way that you can predict whether the relation is linear or non-linear if the relation is

    a. an equation

    b. a table of values

    c. a set of ordered pairs

    d. a graph

    e. given in words