Indicators

Objective:

5.01 Develop an understanding of function.

d) Interpret and compare properties of linear functions from tables, graphs, or equations.

Vocabulary and Resources		
linear function	increasing	parallel lines
non-linear function	decreasing	intersecting lines
domain	intercepts	perpendicular lines
range	slope	collinear points

A. The table below gives the number of diagonals, $f(n)$, that can be drawn from one vertex in a polygon of n sides.

n	4	5	6	7
$f(n)$	1	2	3	4

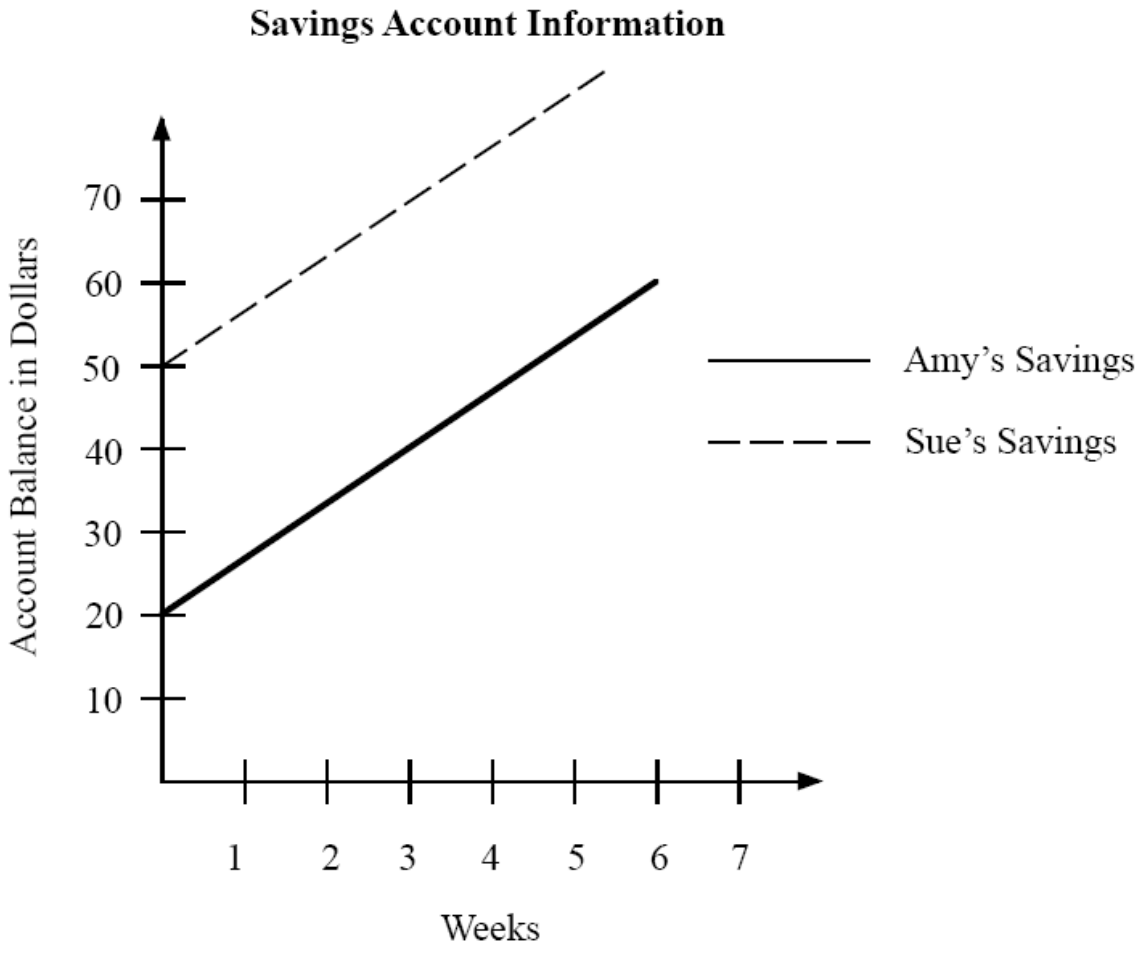
a. What conclusion can be drawn from the information in the table? Draw sketches to justify your conclusion.

b. Using function notation, write an equation that represents the number of diagonals that can be drawn from one vertex of a polygon of n sides.

c. What can you conclude about the total number of different diagonals that can be drawn in a polygon of n sides?

B. United Gameware is a company that makes games for PCs. For the last five years the equation $y = 3.25x + 10.75$ modeled the growth in value of the company's stock. With an initial offering price of \$10.75, \$3.25 is the average annual change in value of the stock, x is the number of years since the initial offering, and y is the value of the stock. A competitor, FedGames, issued its stock with the same initial value but only grew \$1.95 a year in value. What would FedGames' linear model look like? After five years, which company's stock is worth more? by how much? Suppose United Gameware began losing \$0.85 per year in value after the fifth year. What would the linear equation look like then?

C. The following graph illustrates the money in Amy's and Sue's savings accounts over a 6-week period. Using the graph, decide if the two girls will ever have the same amount of money in their savings accounts. Explain your reasoning. If not, how could you change one of the girl's savings plan so that the two girls will eventually have the same amount of money?



D. For each of the following pairs of functions, determine if the graph contains parallel, intersecting or the same lines.

a. $x + y = 8$
$5y + 5x = 12$

b. $4x - 3y = 10$
$8y + 6x = 12$

c. $6x - 9y = 36$
$y = \frac{2}{3}x - 4$

d. $3x - 2y = 12$
$y = \frac{3}{2}x - 6$

e. $6x - 5y = 18$
$2y + 7x = 8$