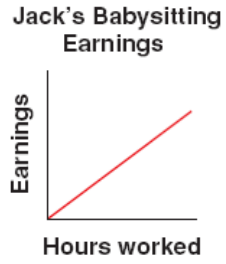
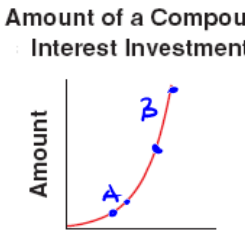
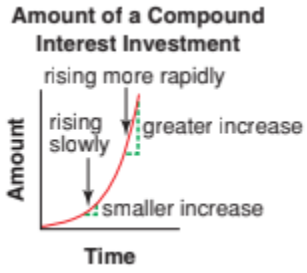
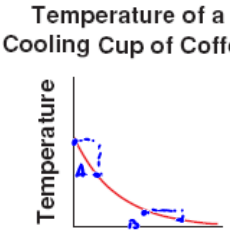
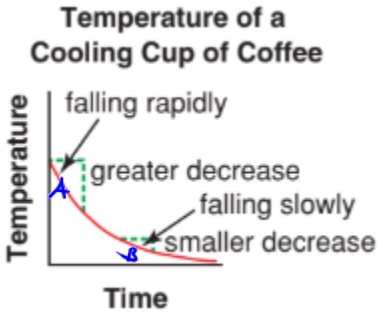
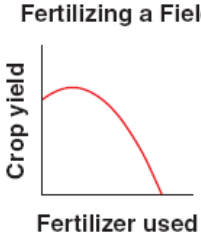
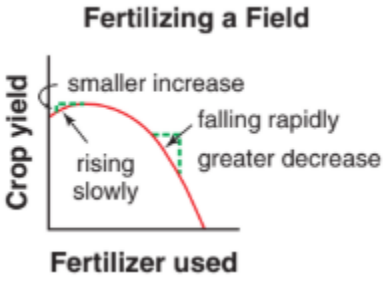
A ***graph*** is a visual representation of the relationship between two quantities. It shows how one quantity changes with respect to the other quantity.

Trends in the graph are used to justify decisions and make predictions

EXAMPLE 1 Describe the relationship shown in each graph. Be specific.

GRAPH	ANALYSIS
	As the number of hours Jack babysits increases, his earnings grows by the same (constant) amount. This graph represents a linear relationship because the line is straight. 
 EXPONENTIAL GROWTH	As time increases, the amount of the compound interest investment: PART A: increases slowly PART B: increases rapidly 
 EXPONENTIAL DECAY	As time passes, the temperature of ____ cup of coffee: PART A: decreases rapidly at first, PART B: cooling slows down, finally levelling off at room temperature. 
 QUADRATIC	As fertilizer use increases, the crop yield also increases to a maximum where it reaches its peak and then decreases. 

KEY WORDS

Increases
grows
Same
Linear
Straight

increases
slowly
rapidly

passes
rapidly
slows down

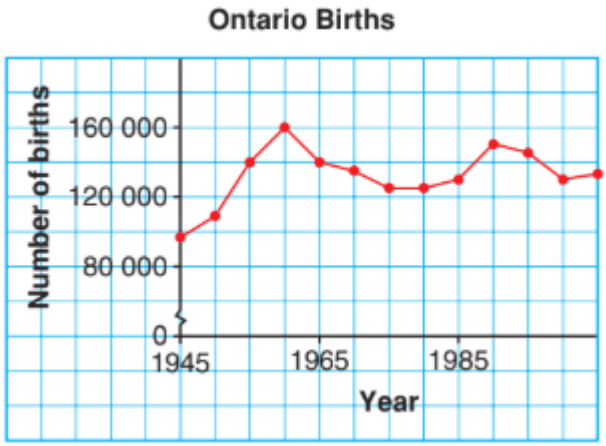
increases
maximum
decreases

Trends (patterns of change) in a graph are often used to justify decisions and make predictions.

Trends occur in 3 broad groups:

1. Increasing
2. Decreasing
3. Constant (no change)

EXAMPLE 2: The graph below shows the number of births in Ontario from 1945 to 2005. Describe the trends in the graph.



- From 1945 to 1960

  The number of births is increasing rapidly. There is a maximum number of births in 1960.
- From 1960 to 1975

  The number of births is decreasing rapidly at first, then slowly, then more rapidly again.
- From 1975 to 1980

  The number of births is constant.
- From 1980 to 1990

  The number of births is increasing, slowly at first, then rapidly. There is another maximum of births in 1990.
- From 1990 to 2000

  The number of births is decreasing rapidly.
- From 2000 to 2005

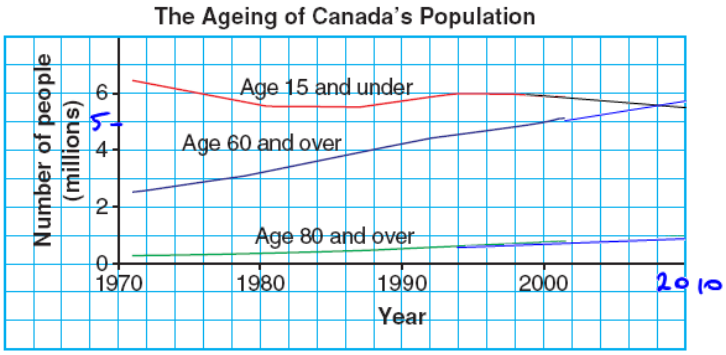
  The number of births is increasing slowly.

EXAMPLE 3 Use the graph to predict the number of Canadians in each age group in 2010.

Age 15 & under: Around 5.5 million

Age 60 to 80: Around 5.8 million

Age 80 plus: Around 1 million.



What decisions might the Canadian government make in response to the trends in the graph?