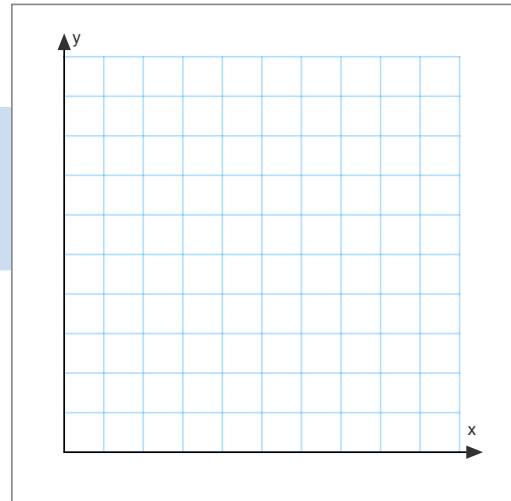


Rate of change

Average rate of change

$$\text{Average rate of change} = \frac{y_2 - y_1}{x_2 - x_1} \text{ or } \frac{\text{Rise}}{\text{Run}}$$



When a graph is linear we use a _____. When a graph is nonlinear we use the _____.

Identifying Rates of Change in a Table or Graph		
Rate of change	Table	Example of graph
Zero	The first differences are 0.	<p>Dependent variable</p> <p>Independent variable</p>
Constant	The first differences are equal.	<p>Dependent variable</p> <p>Independent variable</p>
Changing	The first differences are changing.	<p>Dependent variable</p> <p>Independent variable</p>

Look for a horizontal line.

Look for a straight line.

Look for a curve.

In a table the rate of change is calculated by subtracting consecutive y-values. eg. First differences.

On a graph, the rate of change is the slope of the line between two points on the graph.

1. For each table, name the variables.
2. State the units of the rate of change for each table in question 1.
What does the rate of change represent?
3. Refer to the tables in question 1. Determine the average rate of change between each pair of points in the table.

a)

Hours worked	Earnings (\$)
4	32
20	160

b)

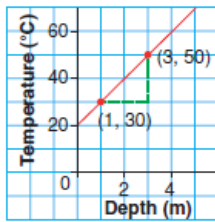
Pages printed	Cost (\$)
1000	56
5000	145

c)

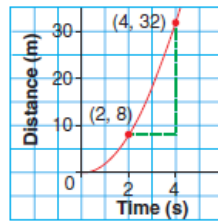
Distance driven (km)	Fuel used (L)
45	3
60	12

4. For each graph, name the variables.

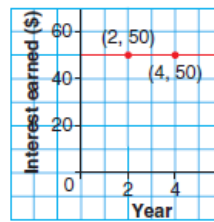
a) Graph A



b) Graph B



c) Graph C



5. State the units of the rate of change in each graph in question 4. What does each rate of change represent?

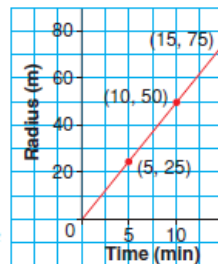
6. Refer to the graphs in question 4. Determine the average rate of change between the indicated points on the graph.

10. Assessment Focus

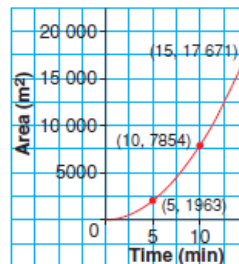
A tanker runs aground, creating a circular oil spill.

- a) For each graph, calculate the average rate of change:
 - i) From 0 min to 5 min
 - ii) From 10 min to 15 min
 What do the rates of change represent in this situation?

Radius of Oil Spill



Area of Oil Spill



- b) Describe the change in the radius of the spill.
- c) Describe the change in the area of the spill.