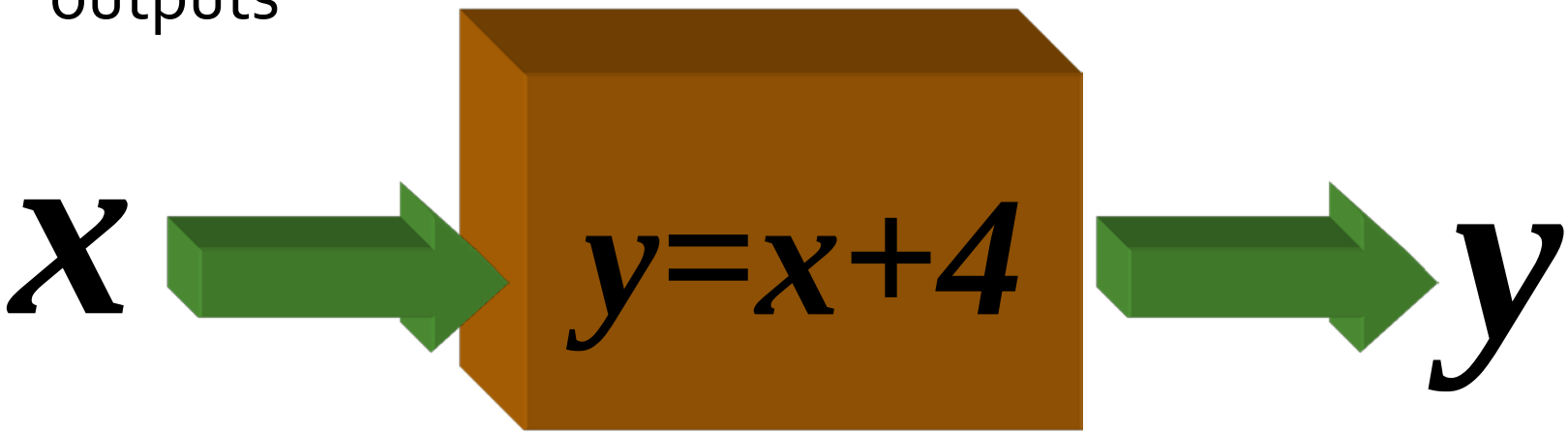
Functions Review

Functions

A **function** is a type relationship between inputs and outputs



- **Input**
- **Domain**
- **Independent Variable**
- **Output**
- **Range**
- **Dependent Variable**

x								
y								

Functions

An **ordered pair** is the combination of the input and output written in the form (x,y).

x	-1	0	1	4	6
y	1	2	3	6	8

a) Write the table as a set of ordered pairs

b) Identify the domain and range of the relation

Domain - _____

Range - _____

Functions

Not all relations are functions.

In order for it to be a **FUNCTION**, for every input ***x*** there has to be one output ***y***.

Decide among these charts, which ones are functions.

Input	Output
2	6
3	9
4	12
5	15
6	18

Input	Output
2	8
3	8
4	8
5	8
6	8

Input	Output
2	0
2	1
3	2
3	3
4	4

Functions

Not all relations are functions.

In order for it to be a **FUNCTION**, for every input ***x*** there has to be one output ***y***.

Decide if the following ordered pairs are functions. Explain.

a) (0,3), (1,4), (2,5), (3,6)

b) (0,4), (1,7), (1,12), (2,6)

Functions

Not all relations are functions.

In order for it to be a **FUNCTION**, for every input ***x*** there has to be one output ***y***.

Which relation is a function?

a) {(-3,5), (5,-3), (-3,-3)}

b) {(2,3), (2,4), (2,5)}

c) {(5,7), (6,8), (7,9)}

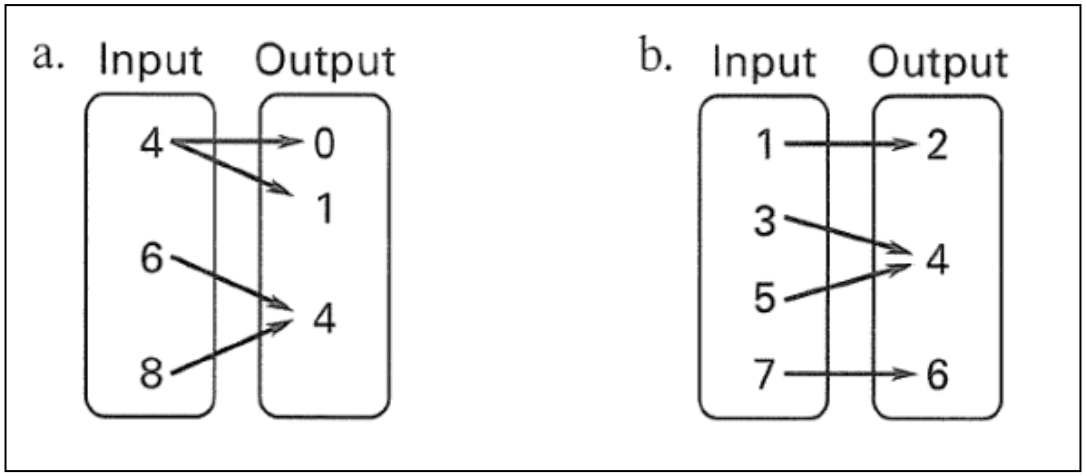
d) {(2,6), (3,5), (2,5)}

Functions

Not all relations are functions.

In order for it to be a **FUNCTION**, for every input ***x*** there has to be one output ***y***.

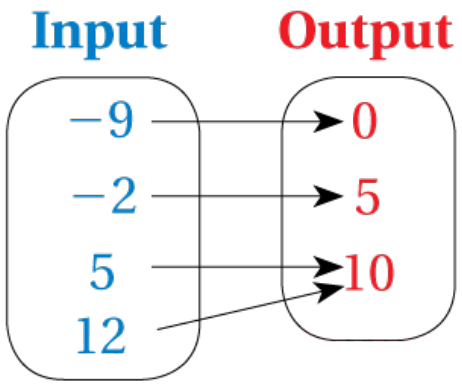
Decide whether the relation shown is a function. If it is a function, give the domain and range.



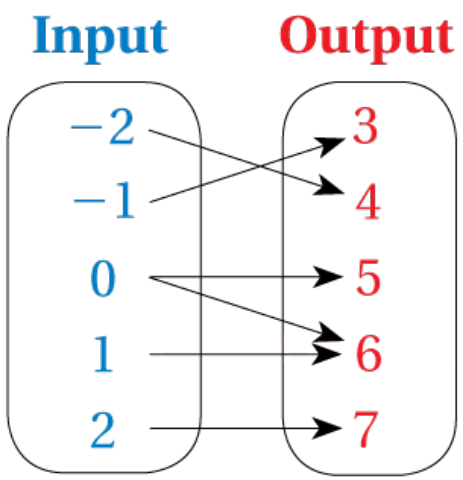
Functions

1) Determine whether each relation is a function.

a.

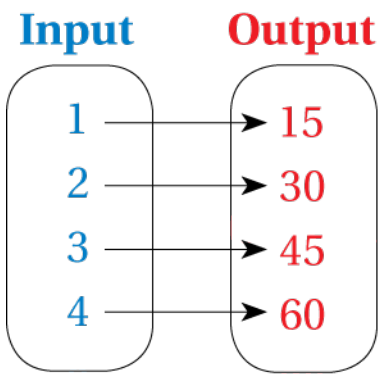


b.



Functions

2)

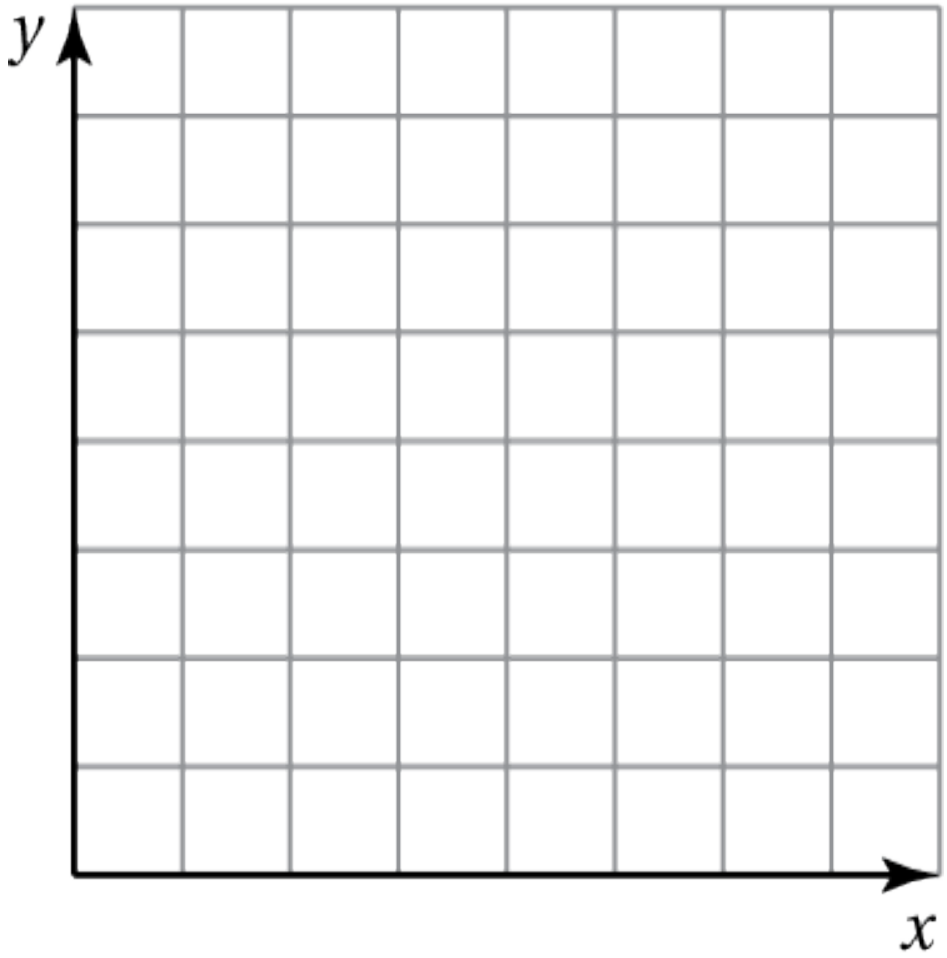


Consider the mapping diagram at the left.

a. Determine whether the relation is a function.

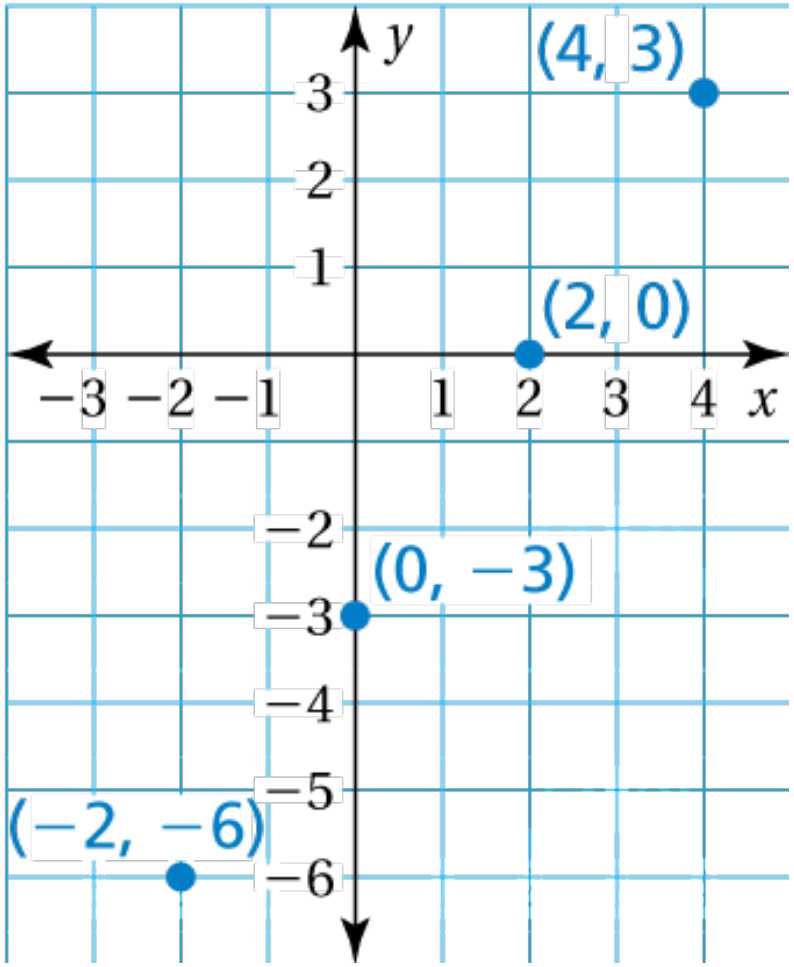
b. Describe the pattern of inputs and outputs in the mapping diagram.

3) **The number of pounds p of carbon dioxide produced by a car is 20 times the number of gallons g of gasoline used by the car. Write and graph a function that describes the relationship between g and p.**



Linear Functions

4) Use the graph to write a linear function that relates y to x.



Linear Functions

5) Use the table to write a linear function that relates y to x.

x	-3	-2	-1	0
y	9	7	5	3

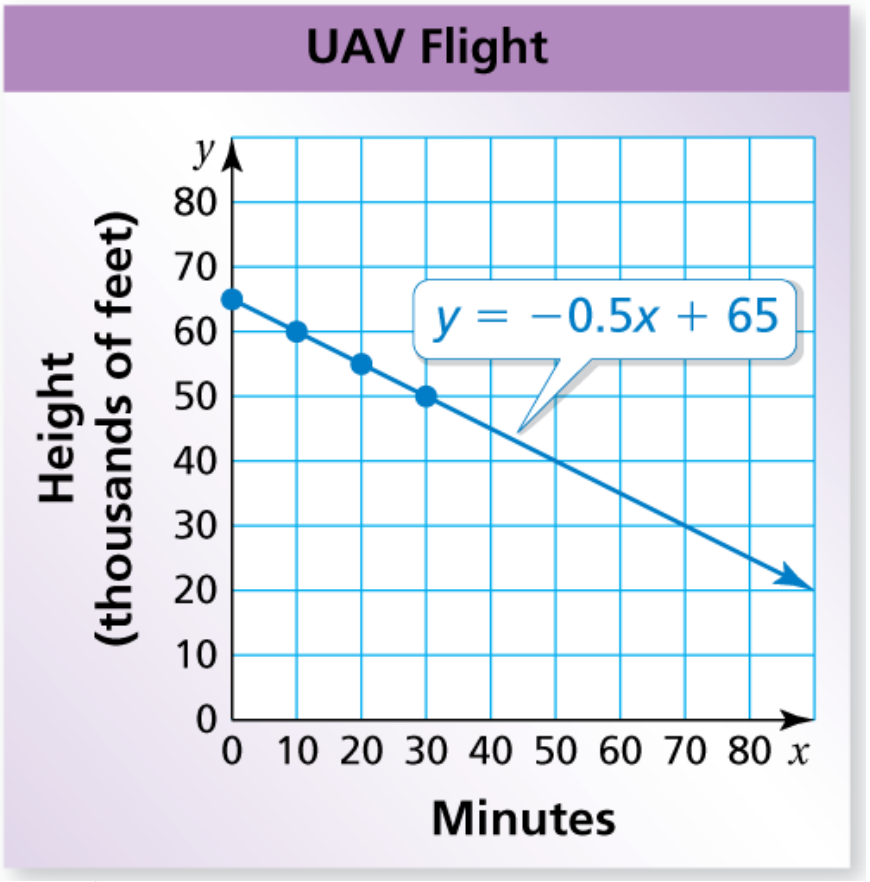
Linear Functions

6)

Minutes, x	Height (thousands of feet), y
0	65
10	60
20	55
30	50

You are controlling an unmanned aerial vehicle (UAV) for surveillance. The table shows the height y (in thousands of feet) of the UAV x minutes after you start its descent from cruising altitude.

Write a linear function that relates y to x. Interpret the slope and the y-intercept.



Linear Functions

7) The table shows the number *y* of calories you burn in *x* hours of jogging.

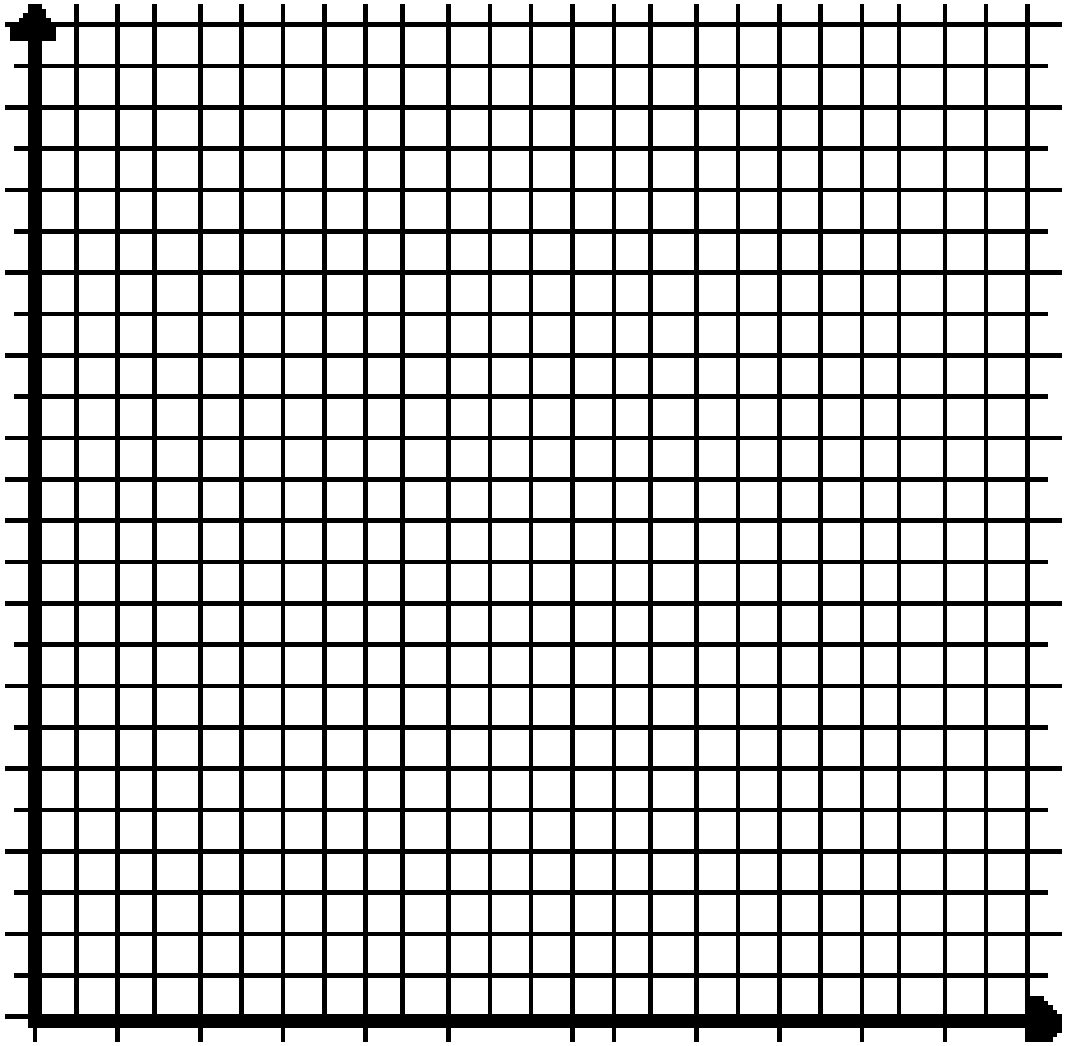
Hours Jogging, *x*	Calories Burned, *y*
2	800
4	1600
6	2400
8	3200

a. Write a linear function that relates *y* to *x*. Interpret the slope and the *y*-intercept.

b. Graph the linear function.

c. How many calories do you burn in 150 minutes?

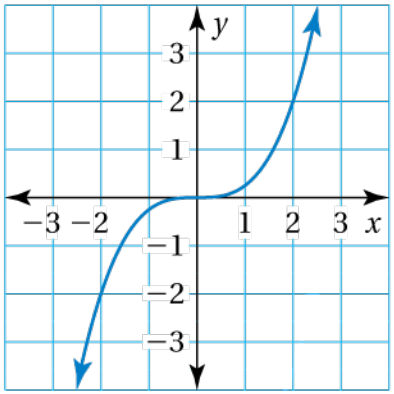
Linear Functions



Linear vs Nonlinear Functions

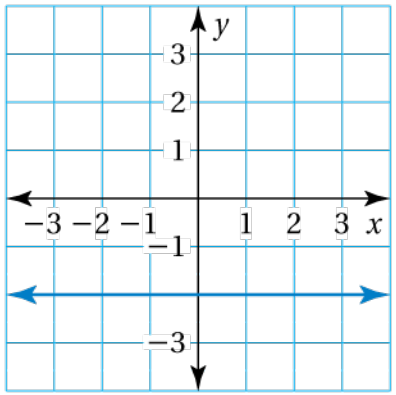
8) **Does the graph represent a *linear* or *nonlinear* function? Explain.**

a.



∴ The graph is *not* a line. So,
t

b.



∴ The graph is a line. So,

Linear vs Nonlinear Functions

9) **Does the table represent a *linear* or *nonlinear* function? Explain.**

a.

			+3	+3
x	3	6	9	12
y	40	32	24	16
			−8	−8

+3 +3 +3

−8 −8 −8

- As x increases by 2

J

I

S

b.

			+2	+2
x	1	3	5	7
y	2	11	33	88
			+9	+22

+2 +2 +2

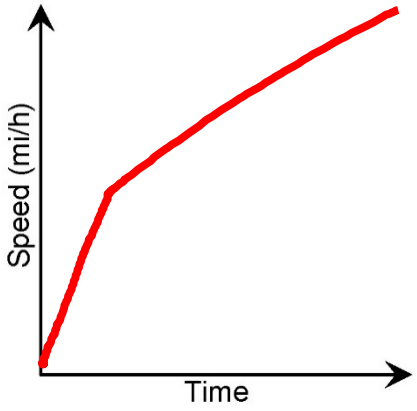
+9 +22 +55

- As x increases by 2

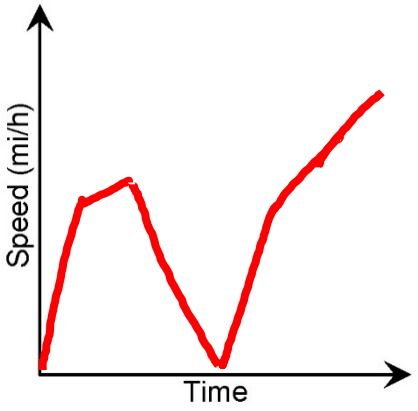
Matching Situations to Graph

The graphs show the speeds of three snowboarders during the Olympics. Match the graph to the situations below.

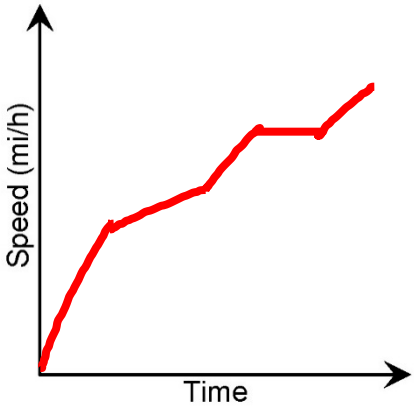
Graph 1



Graph 2



Graph 3



A) **Jordan gets off to a good start and continues through the course, picking up speed.**

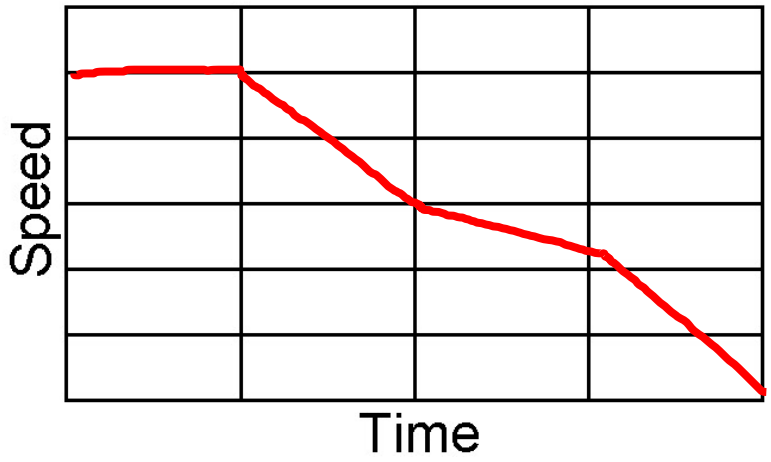
B) **Stacy gets off to a good start and picks up speed. Towards the end of the race, she nearly falls and her speed stops increasing. She rights herself and finishes the race, reaching her greatest speed.**

C) **Xavier gets off to a good start but falls around the middle of the race. He gets up and finishes the race, gaining speed through the finish line.**

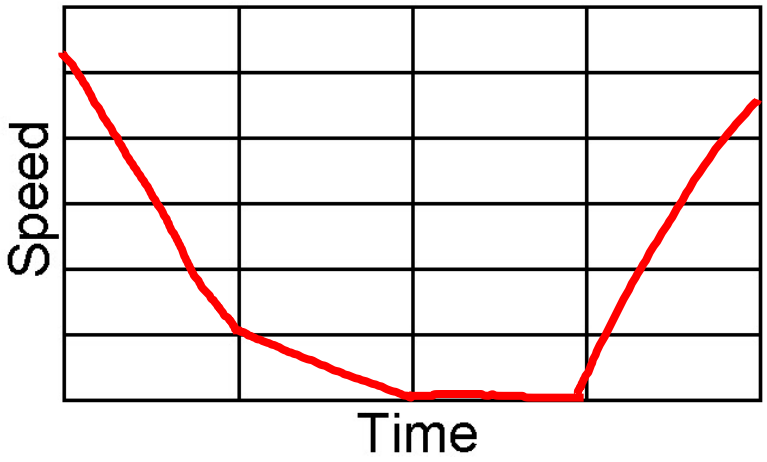
Matching Situations to Graph

The graphs show the speeds of two cars over time. Match the graph to the situations below.

Graph 1



Graph 2

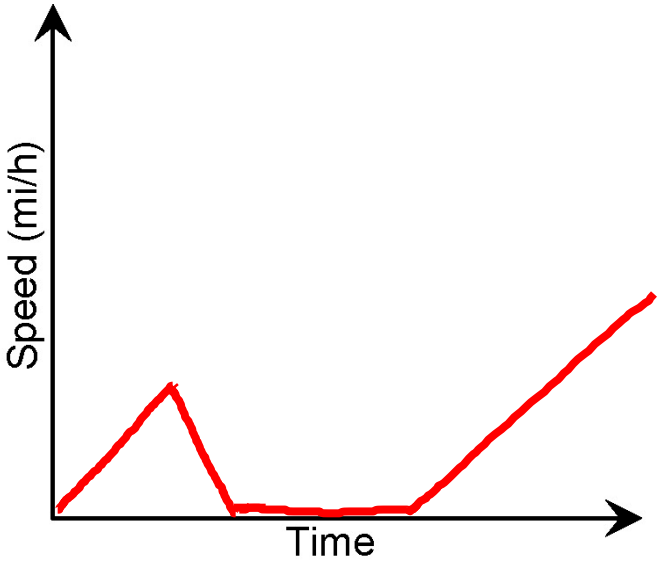


A) **Ms. Nguyen is traveling on the highway. She pulls over, stops, and then accelerates rapidly as she gets on the on the highway.**

B) **Ms. Hutsell slows down as she leaves a main road. She continues to slow down as she turns onto other streets and eventually stops in front of a house.**

Describing a Graph

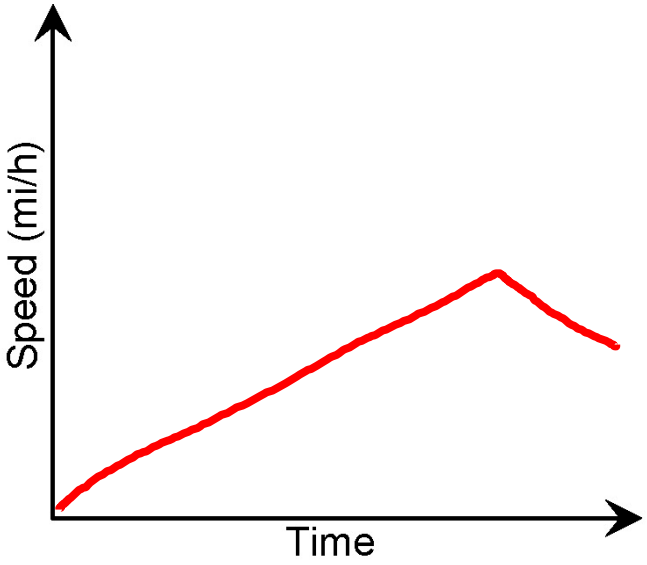
The graph gives the speeds in mi/h of David who is riding a snowmobile.



In your own words, describe David's ride.

Describing a Graph

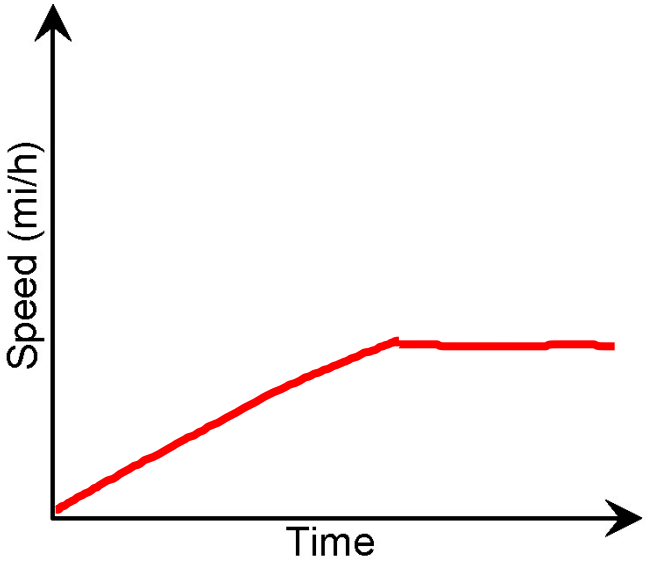
The graph gives the speeds in mi/h of Amber who is riding a snowmobile.



In your own words, describe Amber's ride.

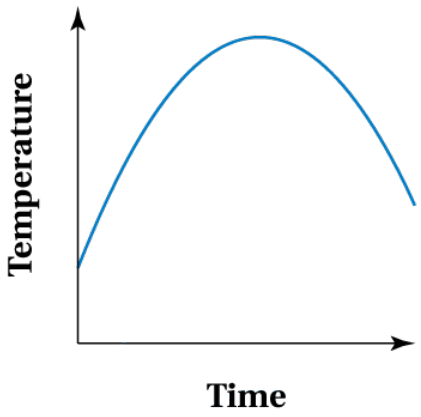
Describing a Graph

The graph gives the speeds in mi/h of Kai who is riding a snowmobile.



In your own words, describe Kai's ride.

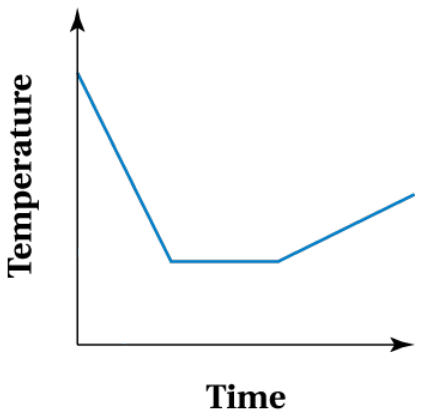
Belfast, Maine



The graphs show the temperatures throughout the day in two cities.

a. Describe the change in temperature in each city.

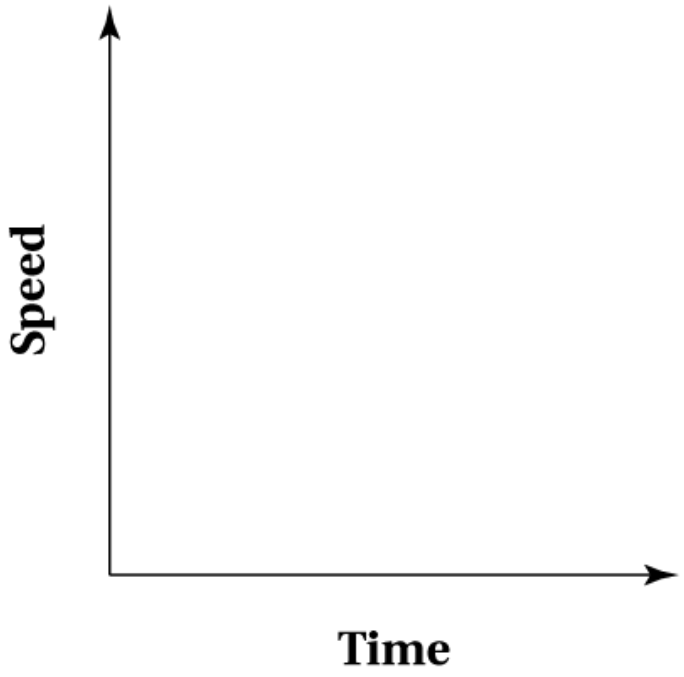
Newport, Oregon



b. Make three comparisons from the graphs.

Sketch a graph that represents each situation.

a. A stopped subway train gains speed at a constant rate until it reaches its maximum speed. It travels at this speed for a while, and then slows down at a constant rate until coming to a stop a the ne



b. As television size increases, the price increases at an increasing rate.