Section 4.3: Graphing Proportional Relationships Name: _____

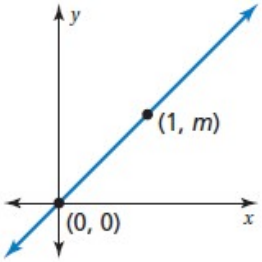
In Class Notes

Key Idea

Proportional Relationships

Words When two quantities x and y are proportional, the relationship can be represented by the equation $y = mx$, where m is the constant of proportionality.

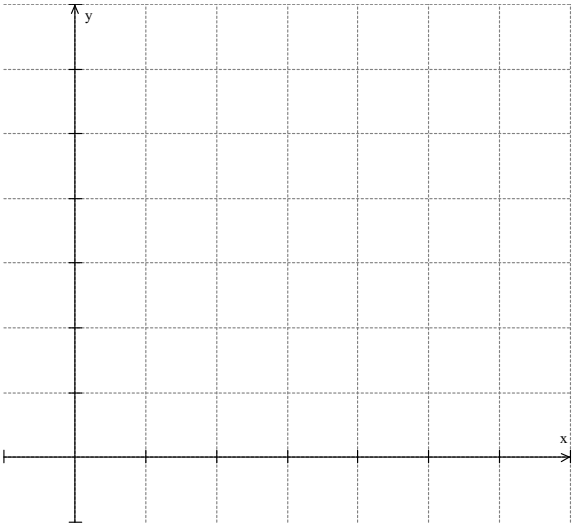
Graph The graph of $y = mx$ is a line with a slope of m that passes through the origin.



Graphing a Proportional Relationship

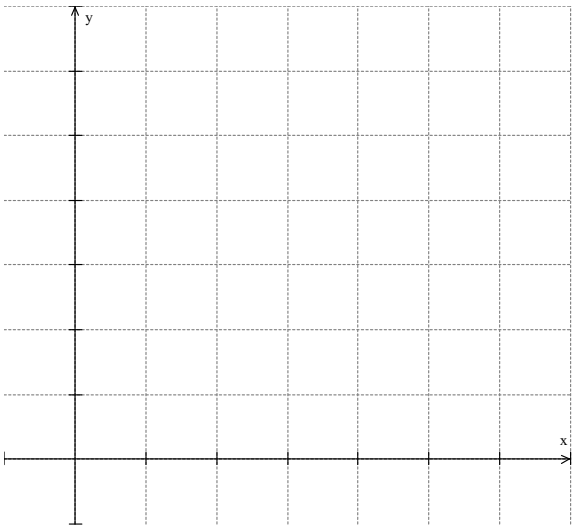
Ex:) The cost y (in dollars) for x ounces of frozen yogurt is represented by $y = 0.5x$. Notes:

Graph the equation and interpret the slope.



OYO:) What if? The cost of frozen yogurt is represented by $y = 0.75x$. Notes:

Graph the equation and interpret the slope.



Writing & Using an Equation

Ex:) The weight y of an object on Titan, one of Saturn's moons, is proportional to the weight x of the object on Earth. An object that weighs 105 pounds on Earth would weigh 15 pounds on Titan. Notes:

a. Write an equation that represents the situation.

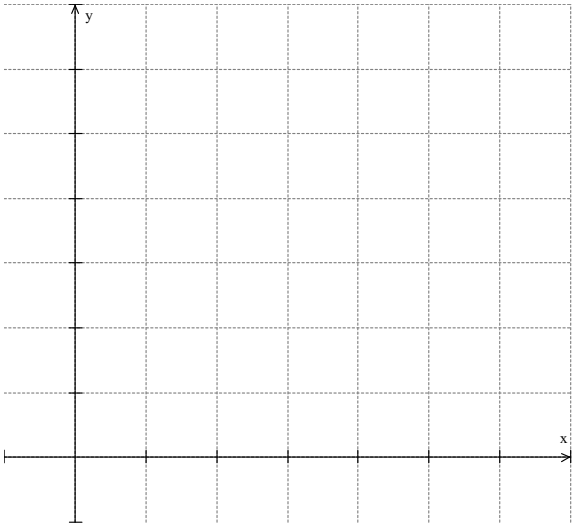
b. How much would a chunk of ice that weighs 3.5 pounds on Titan weigh on Earth?

OYO:) The number y of objects a machine produces is proportional to the time x (in minutes) that the machine runs.
The machine produces five objects in four minutes.

Notes:

a. Write an equation that represents the situation.

b. Graph the equation in part (a) and interpret the slope.

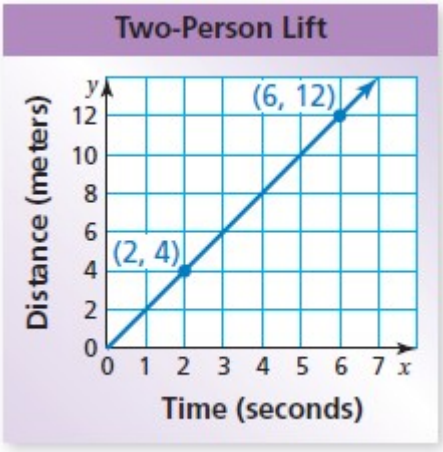


c. How many objects does the machine produce in one hour?

Modeling Real Life

Ex:) The distance y (in meters) that a four-person ski lift travels in x seconds is represented by the equation $y = 2.5x$. The graph shows the distance that a two-person ski lift travels.

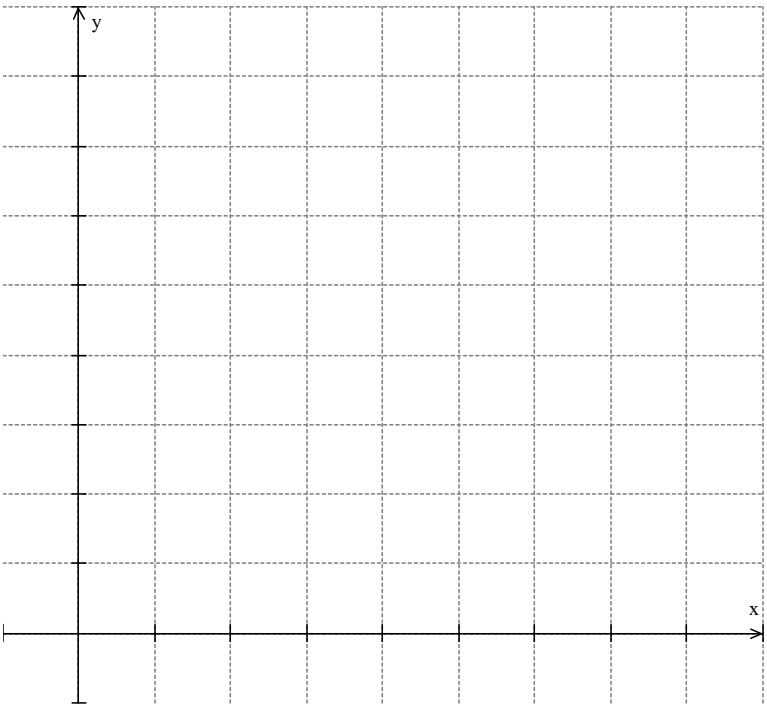
Notes:



a. Which ski lift is faster?

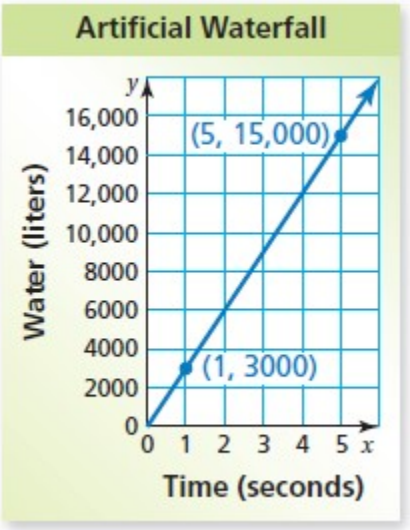
b. Graph the equation that represents the four-person lift in the same coordinate plane as the two-person lift. Compare and interpret the steepness of each graph.

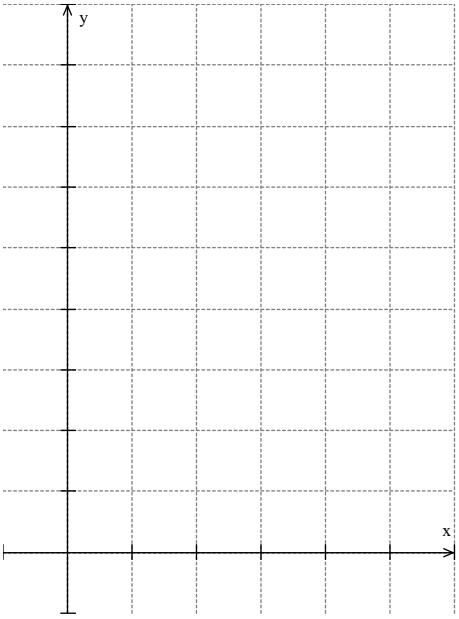
Notes:



OYO:) The amount y (in liters) of water that flows over a natural waterfall in x seconds is represented by the equation $y = 500x$. The graph shows the number of liters of water that flow over an artificial waterfall. Which waterfall has a greater flow? Justify your answer.

Notes:





Ex:) Which of the following tables represents a linear relationship. Explain.

x	1	2	3
y	3	-1	-6

x	1	2	3
y	6	15	24