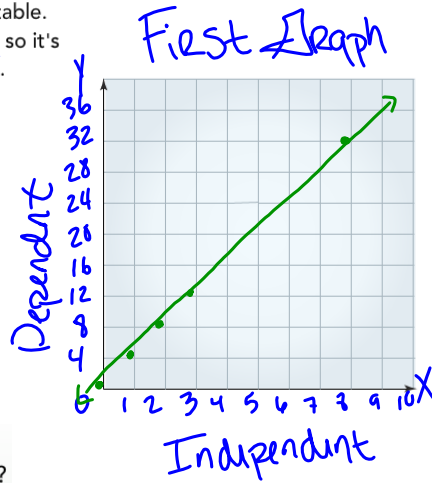


Make a graph based on the data in the table.
Give the graph a title and label the axes so it's clear what the variables could represent.

Independent Variable X	Dependent Variable Y
0	0
1	4
2	8
3	12
8	32



What does the graph of a proportional relationship look like?

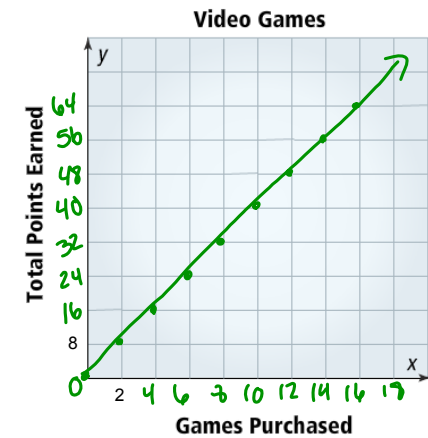
Straight lines

Example

A video game store has a frequent shopper program. You earn 4 points for every video game you buy. Draw a graph to model this situation. ✓

You need 48 points for a free game. How many video games do you need to buy to have enough points for a free game?

12 Games

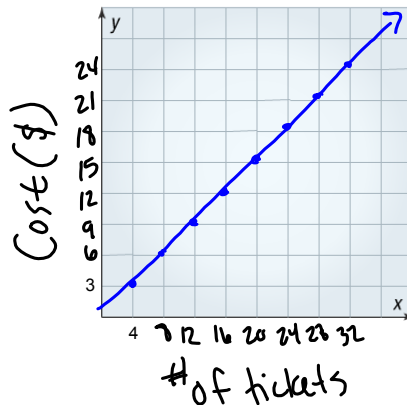


Got It?

Your school is selling raffle tickets as a fundraiser. The raffle tickets are sold in groups of 4 for \$3. Draw a graph to model this situation where the horizontal axis is the number of raffle tickets purchased and the vertical axis is the total cost. ✓

You have \$21. How many raffle tickets can you buy?

28 tickets



x	y
0	0
1	2
2	4
3	6

TABLE

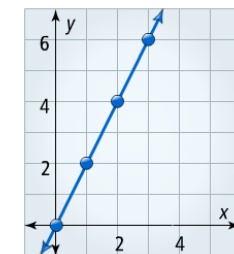
A table shows a proportional relationship when one quantity is a constant multiple of the other quantity.

EQUATION

The equation of the line is $y = 2x$.

Equations in the form $y = mx$ represent proportional relationships. In the equation, m is the constant of proportionality, or the constant multiple $\frac{y}{x}$.

GRAPH



A graph shows points with a proportional relationship if a line that passes through the origin can be drawn through the points. For each point, the y-coordinate is a constant multiple of the x-coordinate.

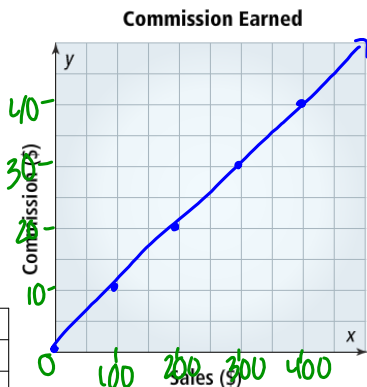
Example

A salesperson earns a 10% commission on sales of energy efficient appliances. Draw a graph to model this situation.

Is the amount of the commission proportional to the amount of sales? How do you know?

Yes, straight line.

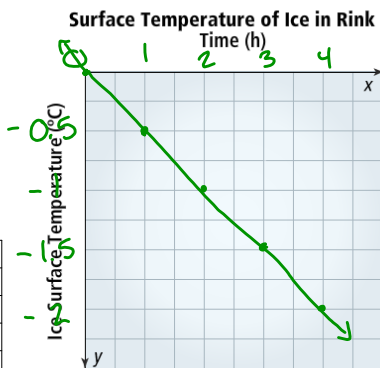
Sales (\$)	Commission (\$)
100	\$10
200	\$20
300	\$30
400	\$40



Example

Ice forms at 0°C. The surface temperature of the ice on an ice rink decreases 0.5°C every hour. Draw a graph to model this situation. Start when the surface temperature of the ice is 0°C.

Time (h)	Temperature (C)
1	-0.5°C
2	-1.0°C
3	-1.5°C
4	-2.0°C



Is the surface temperature of the ice proportional to time? How do you know?

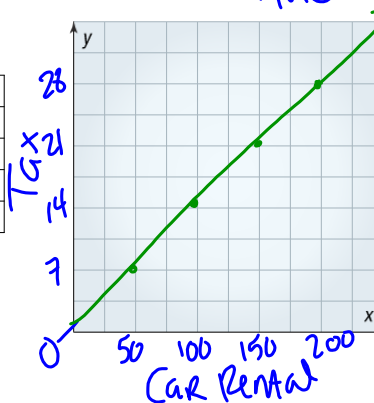
Yes, straight line.

Got It?

At some airports you pay a tax of 14% on the cost of a car rental. Draw a graph to model this situation where the horizontal axis is the cost of the car rental and the vertical axis is the amount of the tax. Is the amount you pay in tax proportional to the cost of your car rental? How do you know?

Car Rental (\$)	Tax (\$)
50	\$7
100	\$14
150	\$21
200	\$28

Yes, straight line.



Got It?

A drill makes a well by tunneling down into the ground. A certain drill can tunnel down 10 m every 8 h. Draw a graph to model this situation where the horizontal axis is time and the vertical axis is the position of the drill head relative to the surface.

Is the position of the drill head relative to the surface proportional to time? How do you know?

Time (h)	Position (m)
8	-10
16	-20
24	-30
32	-40

