

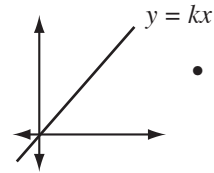
Linear Relations (2)



Words TO LEARN

Direct variation:

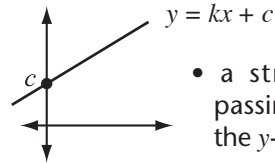
a relation where two variable quantities have a constant ratio called the constant of variation. The formula for direct variation is $y = kx$, where $k =$ constant of variation.



- a straight line passing through the origin

Partial variation:

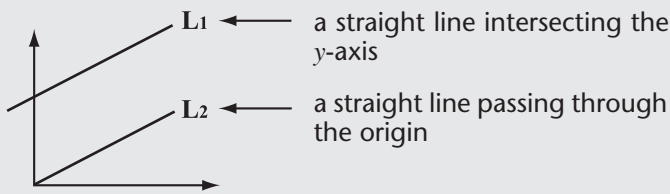
a relation where one variable is a constant of the other, plus another constant. The formula for partial variation is $y = kx + c$, where $k =$ constant of variation and $c \neq 0$.



- a straight line passing through the y-axis at c

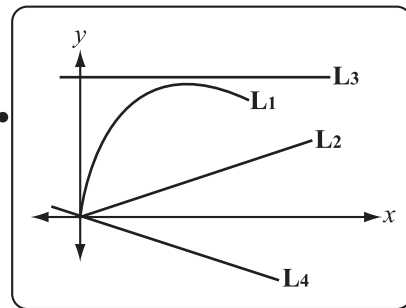
Example

Look at the lines on the graph. State whether it shows a direct variation, a partial variation, or neither.



L1: a partial variation L2: a direct variation

Try This



L1: _____

L2: _____

L3: _____

L4: _____

State whether each equation represents a direct or partial variation. Then find the constant of variation and constant term.

	Variation	Constant of Variation	Constant Term
① $y = \frac{1}{3}x + 6$	_____	_____	_____
② $4y = -16x$	_____	_____	_____
③ $2x - y = 9$	_____	_____	_____
④ $\frac{1}{2}x + 10 - y = 6$	_____	_____	_____

Write an algebraic equation to match each situation. Then state each situation as a direct or partial variation.

- ⑤ The cost of staying in a hotel is \$89/night.

$y = 89x$ where $y =$ the total cost
and $x =$ no. of nights

It is a _____ variation.

- ⑥ The cost of renting a car is \$50/day plus \$25 service charge.

- ⑦ The speed of sound in air is 331.4 m/s plus 0.6 m/s for each degree Celsius above zero.

- ⑧ There are 16 floor tiles in each row.

Make a table of values for each of the situations above. Then graph it and state whether it is a linear or nonlinear relation.

⑨

x	y
0	
2	
4	

Total Cost

It is a _____ relation.

⑩

x	y
1	
2	
3	

Cost of Renting

It is a _____ relation.

⑪

x	y
0	
10	
20	

Speed of Sound

It is a _____ relation.

⑫

x	y
0	
4	
8	

Total No. of Tiles

It is a _____ relation.