

Vocabulary:

MOST of the time, time is \times

• **Rate of Change:** Slope with words
"per"

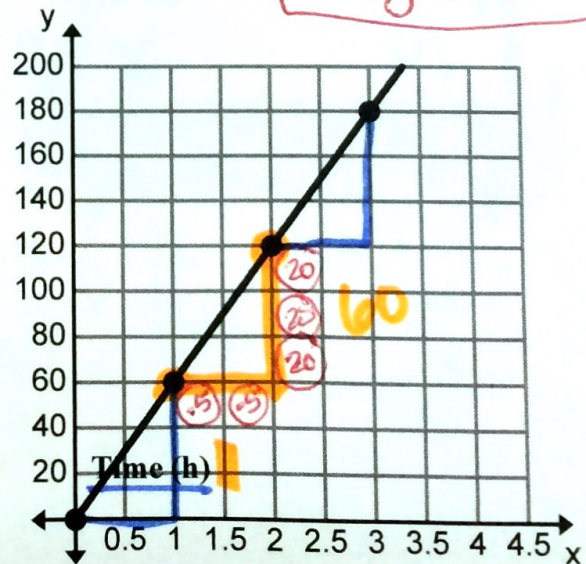
• **Constant:** Stays the same all the time.

• **Proportionality:**
① Slope stays the same for all points
AND
② the line goes through (0,0)

Ex. 1: The graph represents the distance traveled while driving on a highway. Find the constant rate of change. Determine if the situation is proportional.

yes

$\frac{60 \text{ mi}}{1 \text{ hr}} \rightarrow \text{per}$ Distance (mi)
60 miles per hr
60 mph

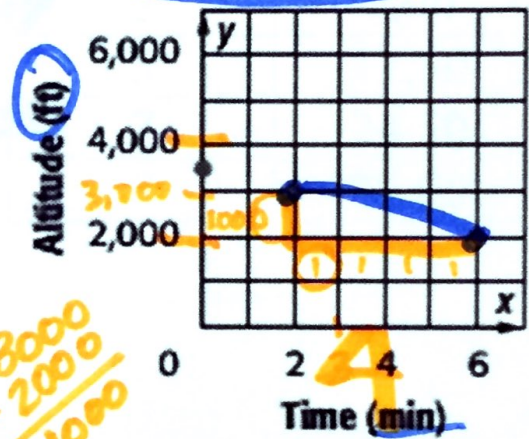


Ex. 2: The altitude y of a certain airplane after a certain number of minutes x is shown in the graph. Is the relationship linear? If so, find the constant rate of change. Determine if the situation is proportional.

Slope words

$$\frac{1000 \text{ ft}}{4 \text{ min}}$$

$$\boxed{-250 \text{ ft per min}}$$



No

Ex. 3: Find the rate of change from the table. Answers must include units. Determine if the situation is proportional.

$$\frac{170 - 110}{3 - 9} = \frac{60}{-6} \text{ trans.}$$

\$ -10 per transaction

Number of Transactions	Balance (\$)
3	170
6	140
9	110
12	80

Handwritten annotations: Blue arrows pointing up from x=3 to x=0 and y=170 to y=200. Red arrows pointing down from y=170 to y=140, 140 to 110, and 110 to 80. Red text: $\frac{170}{3} = 56.$, $\frac{140}{3} = 23.3$, 12.22.

Ex. 4: Find the rate of change from the table. Answers must include units. Determine if the situation is proportional. *yes*

$$\frac{7 - 24.50}{2 - 7} = \frac{-17.5}{-5 \text{ movies}}$$

Number of Movies	Cost (\$)
2	7.00
5	17.50
7	24.50
8	28.00

$$\begin{aligned} \frac{7}{2} &= 3.5 \\ \frac{17.5}{5} &= 3.5 \\ \frac{24.5}{7} &= 3.5 \end{aligned}$$

\$3.50 per movie

Ex. 5: Find the rate of change from the table. Answers must include units. Determine if the situation is proportional. *No*

$$\frac{41.50 - 41.50}{6 - 11} = \frac{\$0}{-5 \text{ rides}}$$

Number of Rides	Amusement Park Admission Fee
0	41.50
3	41.50
6	41.50
8	41.50
11	41.50

\$0 per rides

Ex. 6: Josh made \$15 after 2 hours of babysitting. He worked for a total of 6 hours and made \$45. Find his rate of change. Determine if the situation is proportional. *yes*

$$\frac{15 - 45}{2 - 6} = \frac{\cancel{15} - 30}{-4 \text{ hr}}$$

x hr	y \$
2	15
6	45

$$\frac{15}{2} = 7.5$$

$$\frac{45}{6} = 7.5$$

~~\$~~ 7.50 per hr