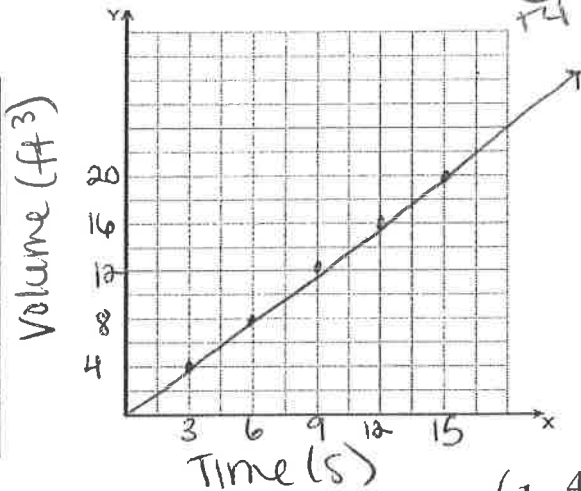


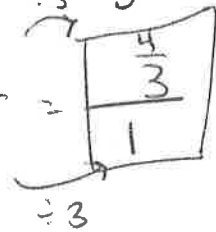
Every 3 seconds, 4 cubic feet of water pass over a dam. Draw a graph of the situation. Find the unit rate of this proportional relationship.

Time (s)	3	6	9	12	15
Volume (ft ³)	4	8	12	16	20



Slope = $\frac{\text{rise}}{\text{run}} = \frac{4}{3}$

Unit rate: $\frac{4}{3}$



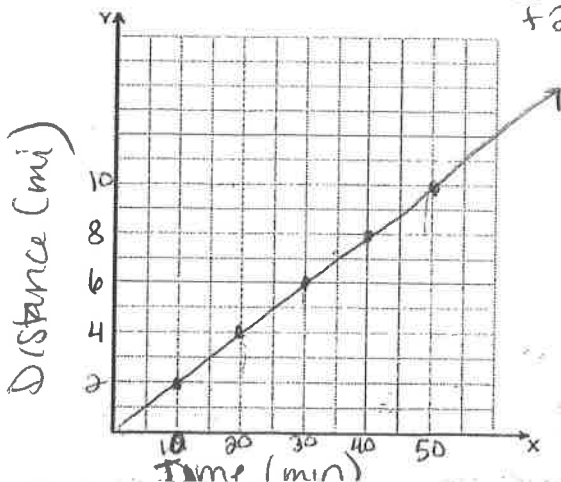
← Unit rate

How do you know that the point $(1, \frac{4}{3})$ is on the graph from the previous problem?

Because $(1, \frac{4}{3})$ is the unit rate → the amount of ft³ that goes over the dam in 1 second.

Tomas rides his bike at a steady rate of 2 miles every 10 minutes. Graph the situation. Find the unit rate of this proportional relationship.

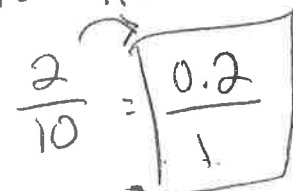
Time (min)	10	20	30	40	50
Distance (mi)	2	4	6	8	10



Slope =

$\frac{\text{rise}}{\text{run}} = \frac{2}{10}$

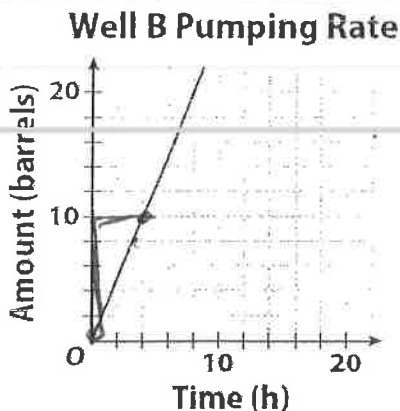
Unit rate = $\frac{2}{10}$



÷10

The equation $y = 2.75x$ represents the rate, in barrels per hour, that oil is pumped from Well A. The graph represents the rate that oil is pumped from Well B. Which well pumped oil at a faster rate?

x-axis Time (h) run	1	2	3	4	5
y-axis Quantity (barrels) rise	2.75	5.50	8.25	11	13.75



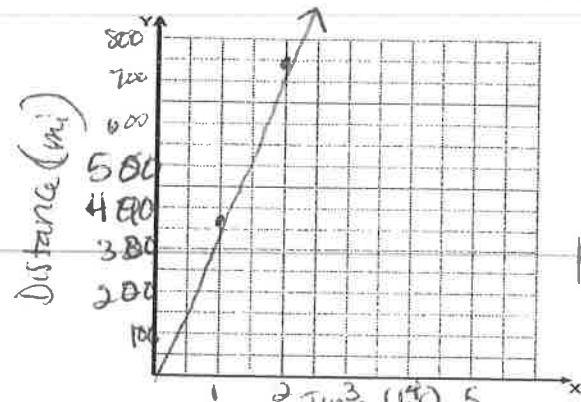
Rate for Well A:
 $y = 2.75x$
 $y = m \cdot x$ = proportional equation
 well A: $\frac{2.75 \text{ barrels}}{1 \text{ hour}}$
 Rate for Well B:
 $\frac{\text{rise}}{\text{run}} = \frac{10 \text{ barrels}}{4 \text{ hrs}} = \frac{2.5 \text{ barrels}}{1 \text{ hr}}$

Describe the relationships among the slope of the graph of Well A's rate, the equation representing Well A's rate, and the constant of proportionality.

Well A pumps faster

They are all the same!
 The 2.75 is the slope ($\frac{2.75}{1}$), m , and constant of proportionality.

The equation $y = 375x$ represents the relationship between x , the time that a plane flies in hours, and y , the distance the plane flies in miles for Plane A.



Plane A: $y = 375x$
 $y = m \cdot x$
 $m = \text{slope} = \frac{375 \text{ mi}}{1 \text{ hr}}$

The table represents the relationship for Plane B.

x Time (h) run	1	2	3	4
y Distance (miles)	425	850	1275	1700

$\frac{425 \text{ mi}}{1 \text{ hr}}$

Find the slope of the graph for each plane and the plane's rate of speed. Determine which plane is flying at a faster rate of speed.

Plane B flies faster