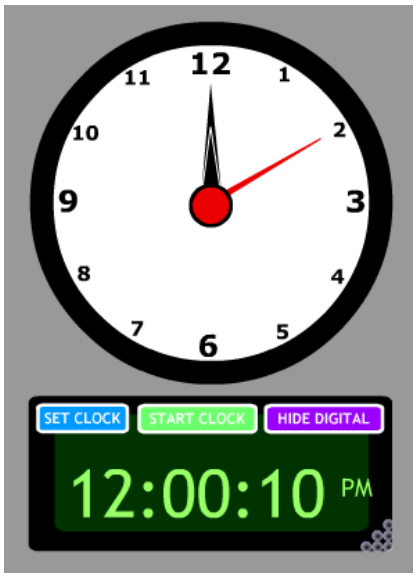
4.2 Average Speed as a Rate of Change

With a partner (one readers and one recorder).

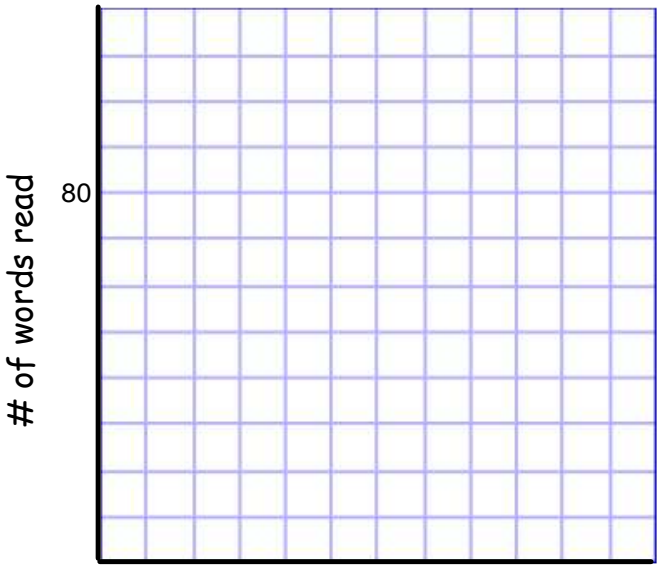
Read the following tongue twister 5 mes as fast as you can. Keep going even if you stumble.

"A big bug bit the lile beetle but the lile beetle bit the big bug back."



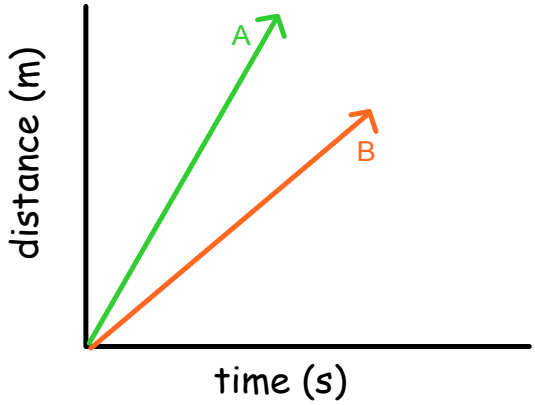
Time in sec	# of words read
	80
	80
	80
	80
	80
	80
	80

16 words
x 5 times
80 words



Who read the fastest?
What do you noce about their line?

4.2 Average Speed as a Rate of Change



Who walked faster
Person A or Person B?

Person A
Line A has a steeper slope
Line A has a larger rate of change

Slope = Rate of Change

Slope or rate of change (roc) is used to measure the steepness of a line.

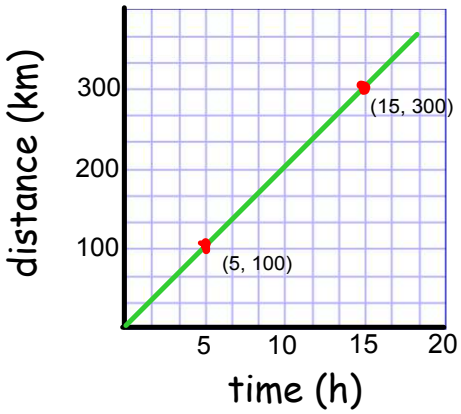
Ex. 1 Given the following distance/me graph:

a) Find the rate of change (roc) of this line.

ROC

- How fast one of the variables is changing with respect to the other.
- Slope or steepness.
- Vercal change versus horizontal change.

Think



- The distance travelled over a given period of me is the vercal change between points.
- The me taken for this distance is the horizontal change between the points.

RISE ⇦

RUN ⇦

(5, 100) (15, 300)

Rate of change = rise / run

rise: up or down

run: le or right

b) What does the rate of change represent?

- speed (km/h)
- distance/time from graph ⇦

c) Would you get a different answer if you used two different points?

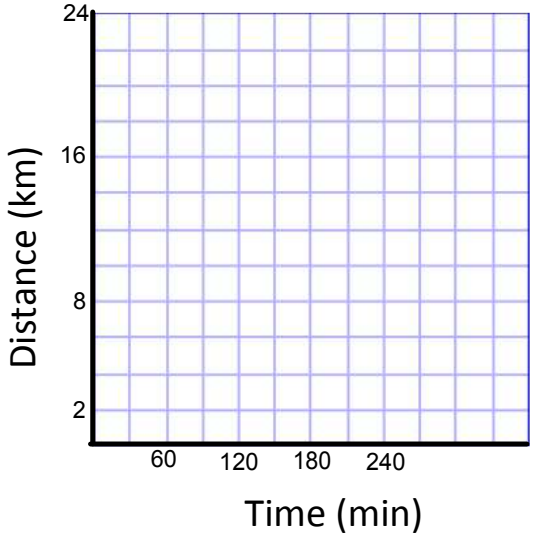
No, because it is a constant rate of change ⇦

Ex. 2: page 200 # 5.

A group of friends is hiking 15 km around a lake. It takes the group 30 minutes to hike the first 2 km.

a) Make a table to show the distance from the start at 30 minute intervals.
Graph the data.

Time (min)	Distance (km)
0	
30	
60	
90	
120	
150	
180	
210	
240	



b) What is the roc? What does it represent?

c) How long will it take the group to complete the hike?
Use the chart and rate or the graph.

d) What is the average hiking speed in kilometres per hour?