

Unit Rate Key

As you recall, rate is a ratio comparing two different quantities. For example, miles per hour and heartbeats per minute are rates. Other examples would include: 36 commercials in 2 hours of TV and 57 sit-ups in 3 minutes.

The simplest rate is one with a denominator of one. It is called the unit rate. Unit rate is used when we want to know the cost for one item, or how fast we travel for one hour... it's always per one of something. Driving 250 miles in 5 hours would be an example of a ratio or rate; the unit rate would represent the distance driven in one hour, or 50 miles/1hour.

Try this one... If Lisa types 135 words in 3 minutes, what is her unit rate? 45 wpm

We use unit rates to describe real-life situations and make comparisons that involve everyday activities such as shopping or working. As you recall, unit price is helpful for the consumer because it helps you compare the prices of two different sizes or brands of a product. Note: To compare two different units, both must be expressed using the same unit.

Try this example... At the supermarket, a 5-pound pack of rice sells for \$3.59, while a 20-pound sack sells for \$12.99. Which is the better buy? Explain your method.

The better buy would be the 20 lb sack. It sells for 12.99 ÷ 20 or 65¢/1b while the 5-lb sack sells for 3.59 ÷ 5 or 72¢ per lb.

Use mental math for these examples...

- 1) Suppose Joyce read 280 words in 8 minutes. Can you find a way to mentally determine Joyce's reading rate? Explain your method.

280 in 8 min is the same as 140 in 4 minutes (each cut in 1/2)
Again 140 in 4 is the same as 70 in 2 or 35 wpm
Joyce's reading rate is 35 wpm.

- 2) A person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour. What would be the unit rate?

1/2 mile in 1/4 hr is the same as 1 mile in 1/2 hr or 2 miles per hour. The unit rate is 2mph. I found this by doubling again (+ again)!

Let's try one more example...

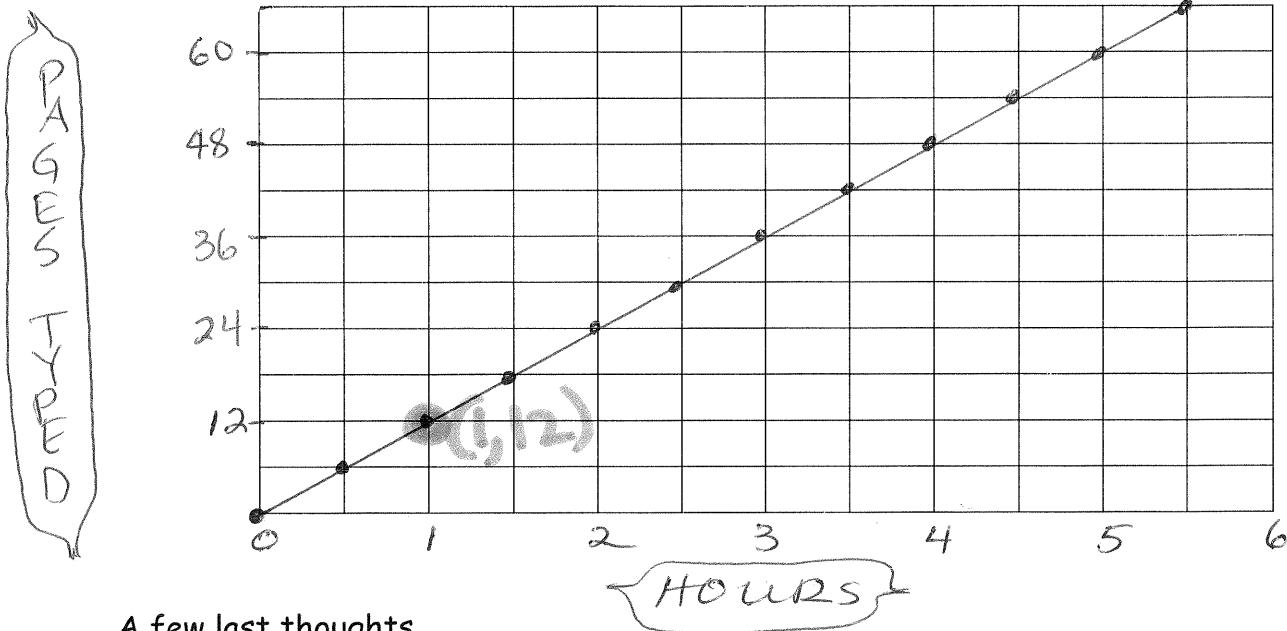
Two competing video stores offer Frequent Renter Programs.
At MegaVideo, you get 2 free rentals for every 15 paid rentals;
at Videorama, you get 3 free rentals for every 20 paid rentals.

I think we all agree that the problem is more complicated than deciding that 3 free videos are better than 2 free videos... Determine which store offers a better deal and explain how you made your decision.

At MegaVideo someone will receive 1 free rental ($15 \div 2$) for every $7\frac{1}{2}$ rentals. At Videorama ($20 \div 3$) or $6\frac{2}{3}$ rentals would get you 1 free rental. Videorama, therefore, has the better deal!

We will now find the unit rate on a graph. Suppose Julie typed 66 pages in 5.5 hours. Complete the table and graph the results on the grid.

Hours	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5
Pages	0	6	12	18	24	30	36	42	48	54	60	66



A few last thoughts...

- 1) Highlight the unit rate in the table. ✓
- 2) Highlight the unit rate on the graph. ✓
- 3) What is represented by the second coordinate when the first coordinate is 1?
the unit rate
- 4) What is meant by the point (0,0)? In 0 hours, no pages were typed

