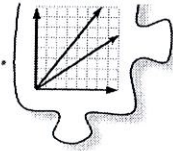


Unit Rates

7.1.3 How can I find the rate?

Unit Rates



7-26

7-26. Tamika and Lois like to knit. They have decided to knit a scarf using the same pattern. The girls knit at different rates, but each one's rate is constant. Tamika started knitting the scarf last week, but Lois is just starting now. The tables below show information about the number of inches of scarf knitted per hour after Lois joins Tamika.

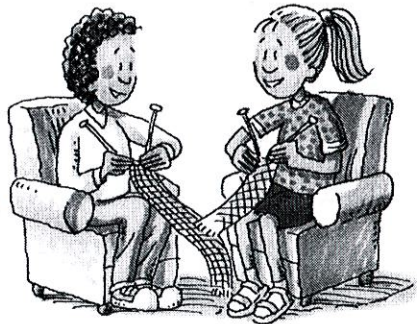
- a) Complete each table to show the amount of time each girl has been knitting and the number of inches that have been knitted.
- b) At what rate does Tamika knit? How can you use the table to find her rate?
- c) At what rate does Lois knit?
- d) Lois decided that she wants her scarf to be 27 inches long. How long will it take her to complete the scarf?

Tamika		Lois	
Time (hours)	Length (inches)	Time (hours)	Length (inches)
0	5	0	0
1	7	1	3
2	9	2	6
3	11	3	9

hour
res

Lois
complete

36 in
12 hrs.



- e) If Tamika and Lois both knitted at their unit rates for 12 hours total, how long would each of their scarves be?
- f) If you graphed the data (so that x is the number of hours and y is the number of inches) for both Tamika and Lois on the same graph, which line would appear steeper? Explain why it would be steeper.

cause
e.

7-27

7-27. Olivia was curious about how fast she knits. She decided to measure how much she could knit in 10 hours. She already had a scarf started and recorded her data in the table.

- a) If Olivia knits at a constant rate, what is Olivia's knitting speed in inches per hour?
- b) How much will Olivia have knitted in 12 hours? How does this compare to Tamika and Lois?

Olivia	
Time (hours)	Length (inches)
0	8
10	53

$$\begin{array}{r}
 10 \downarrow \\
 53 \\
 - 8 \\
 \hline
 45
 \end{array}$$

$$\frac{54 \text{ in}}{12 \text{ hrs.}}$$

LOIS.

7-26

- a) On front
 b) Tamika Knits 2 inches per hour
 (she completed the first 5 inches last week).
 c) Lois Knits 3 inches per hour.

d) $\frac{3 \text{ in}}{1 \text{ hr.}} \times \boxed{\frac{9}{9}} = \frac{27 \text{ in}}{9 \text{ hrs.}}$ It will take Lois
9 hrs. to complete
27 in.

e) Tamika:

$$\frac{2 \text{ in}}{1 \text{ hr.}} \times \boxed{\frac{12}{12}} = \frac{24 \text{ in}}{12 \text{ hrs.}}$$

Lois:

$$\frac{3 \text{ in}}{1 \text{ hr.}} \times \boxed{\frac{12}{12}} = \frac{36 \text{ in}}{12 \text{ hrs.}}$$

Tamika's scarf would be 24 in. and
 Lois' would be 36 in.

f) Lois' line would be steeper because
 she is knitting at a faster rate.

7-27

a) Olivia Knit 45 in which is $\boxed{\frac{4.5 \text{ in}}{1 \text{ hr.}}}$

b) $\frac{45 \text{ in}}{10 \text{ hrs.}} + \frac{4.5}{1 \text{ hr.}} + \frac{4.5}{1 \text{ hr.}} = \frac{45 \text{ in} + 9 \text{ in}}{12 \text{ hrs.}} = \boxed{\frac{54 \text{ in}}{12 \text{ hrs.}}}$

Olivia is faster than Tamika and Lois.