Mathematical Relationships

Linear relationships and Ratios

Relationship: 55mph or 55 miles/1hour or 55m/h

a. If a person is traveling at 55mph how long were they in the car?

b. If a person is traveling at 55mph how far did they travel?

c. On the back of this paper you will find a graph paper. Create a data table and a graph (distance vs. hours). Pick some reasonable time frames for the graph.   (55 mph)

d. Next to that graph make another graph of someone traveling at 30mph.

e. What are some similarity and different characteristics?

<p align="center">both linear, positive slope</p>

<p align="center" style="color:blue">Each has different slopes and rates</p>
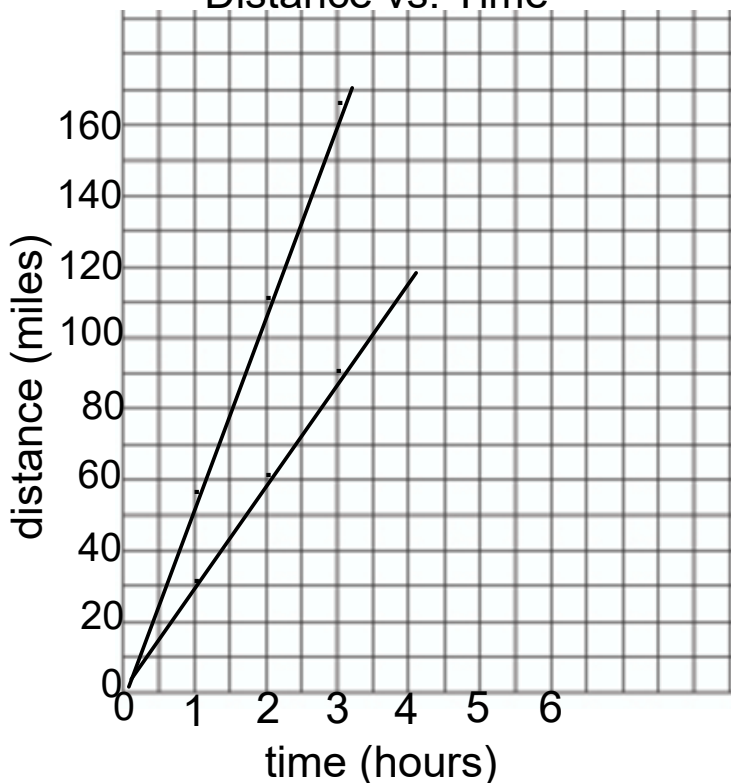
f. Using proportions calculate the following

    i. How far did one travel if moving at 30mph for 95min.?

$$\frac{30\text{mi}}{60\text{ min}} = \frac{X}{95\text{min}} \qquad \frac{95\text{min}}{} \Big| \frac{30\text{mi}}{60\text{ min}} = 47.5 \text{ mile}$$

    ii. How long was a person in the car if traveling at 90mph for 100 miles?

$$\frac{90\text{mi}}{1\text{ hour}} = \frac{100\text{mi}}{X} \qquad \frac{100\text{ mi}}{} \Big| \frac{1\text{ hr}}{90\text{mi}} = 0.9 \text{ hours}$$

Distance vs. Time

distance (miles) vs. time (hours)

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2. A Nurse is making $26.50/hour. Make a graph on the back spanning 40 hours.

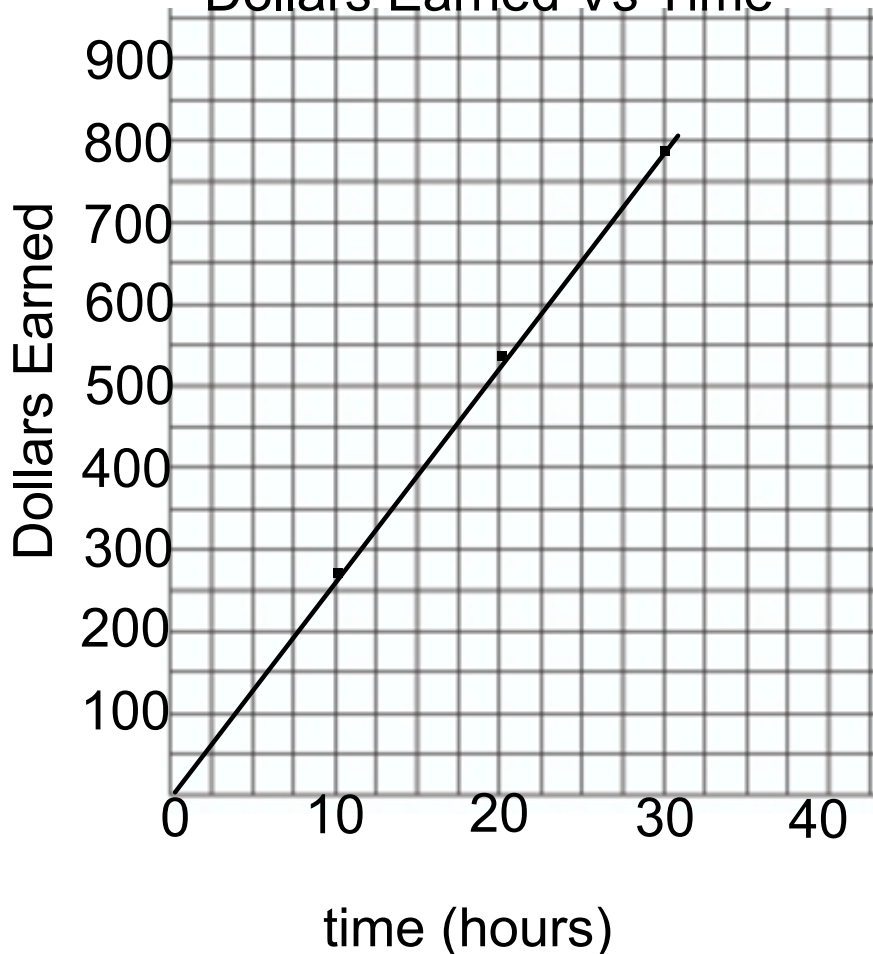   a.   How much has the nurse earned in 1 minute (use a proportion)?

$$\frac{\$26.50}{60 \text{ min.}} = \frac{x}{1 \text{ min}} \qquad x = \$0.44$$

   b.   How much has the nurse earned in 52 weeks or 1 year of 40 hours/week.

52 x 40= 2080 hours $\dfrac{\$26.50}{1 \text{ hr}} = \dfrac{x}{2080 \text{ hr}}$ x=$55,120

$$\frac{52 \text{ weeks}}{} \left|\frac{40 \text{ hours}}{1 \text{ week}}\right| \frac{\$26.50}{1 \text{ hr}} = \$55,120$$

Dollars Earned Vs Time

Graph titled "Dollars Earned Vs Time" with y-axis labeled "Dollars Earned" ranging from 100 to 900, and x-axis labeled "time (hours)" ranging from 0 to 40. A straight line passes through plotted points.

Mathematical Relationships

Linear relationships and Ratios

Radius vs. Area of a Circle

Radius of a Circle (m)

10
8
6
4
2

0   90   180   270   360
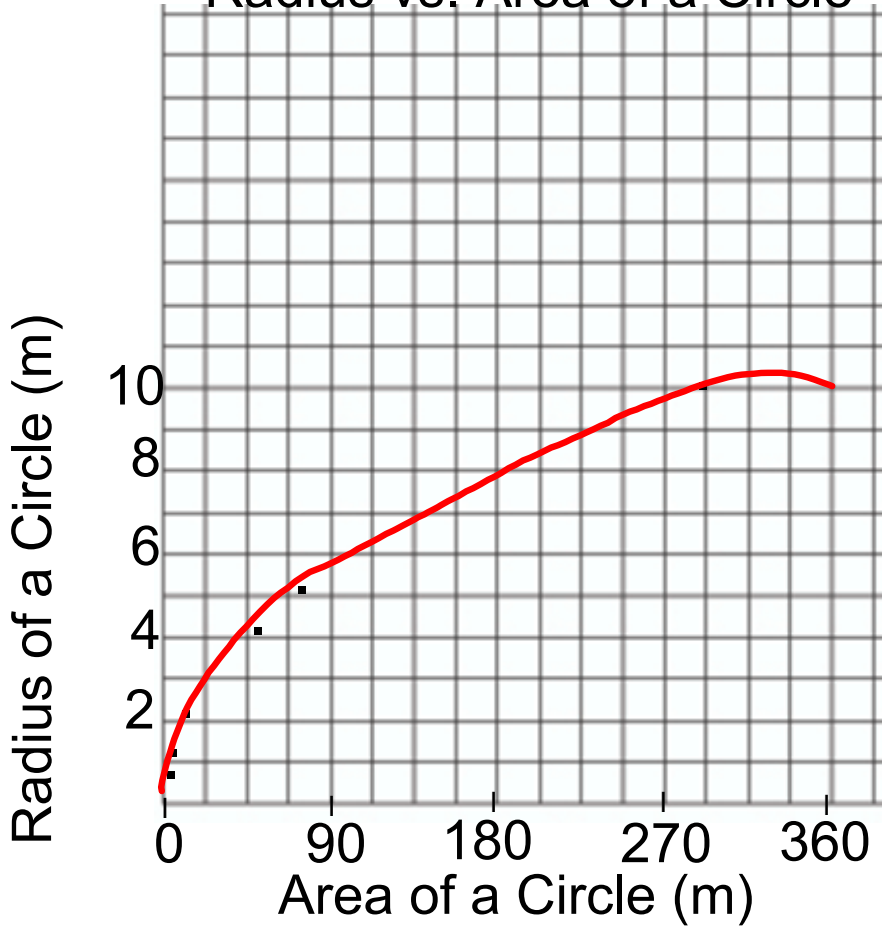
Area of a Circle (m)

πr^2

3. Area of a circle?

    a. Complete a graph on the back with the following information

    b. Is this a linear relationship? Why or why not?   NO   not proportional

Radius of circle (m)	.5	1	2	4	5	10
Area of the circle (m^2)	.4	3.	12.	50	78	314

Jan 9-4:22 PM