Comparing Rates in Tables, Graphs, and Equations

Walking to the Yogurt Shop

Ms. Porter's gym class does an experiment to determine their walking rates. Here are the results for three students.

NAME	WALKING RATE
Terry	1 meter per second
Jade	2 meters per second
Jerome	2.5 meters per second

Jerome wonders how a person's walking rate would affect the amount of time it takes him or her to walk from school to the frozen yogurt shop.

1) If Terry, Jade, and Jerome leave school together and walk toward the frozen yogurt shop at the rates given in the table, how far will each have travelled after 1 minute.

Terry: **60m**   Jade: **120m**   Jerome: **150 m**
      1·60   **2·60**   **2.5·60**

2) If the yogurt shop is 750 meters from school, how long will it take each student to walk there?

Terry: **750sec : 12½ min** Jade: **6.25min**   Jerome: **5 min**
      60   **750÷2.5: 300sec.**

You have seen that a person's walking rate determines the time it takes him or her to walkd a given distance. Now, let's more closely examine the effect that the walking rate has on the relationship between time and distance walked. Your findings will give you some important clues about how to identify linear relationships from **tables**, **graphs**, and **equations**.

3) Use the walking rates to complete the table showing the distance walked by each student after different numbers of seconds.

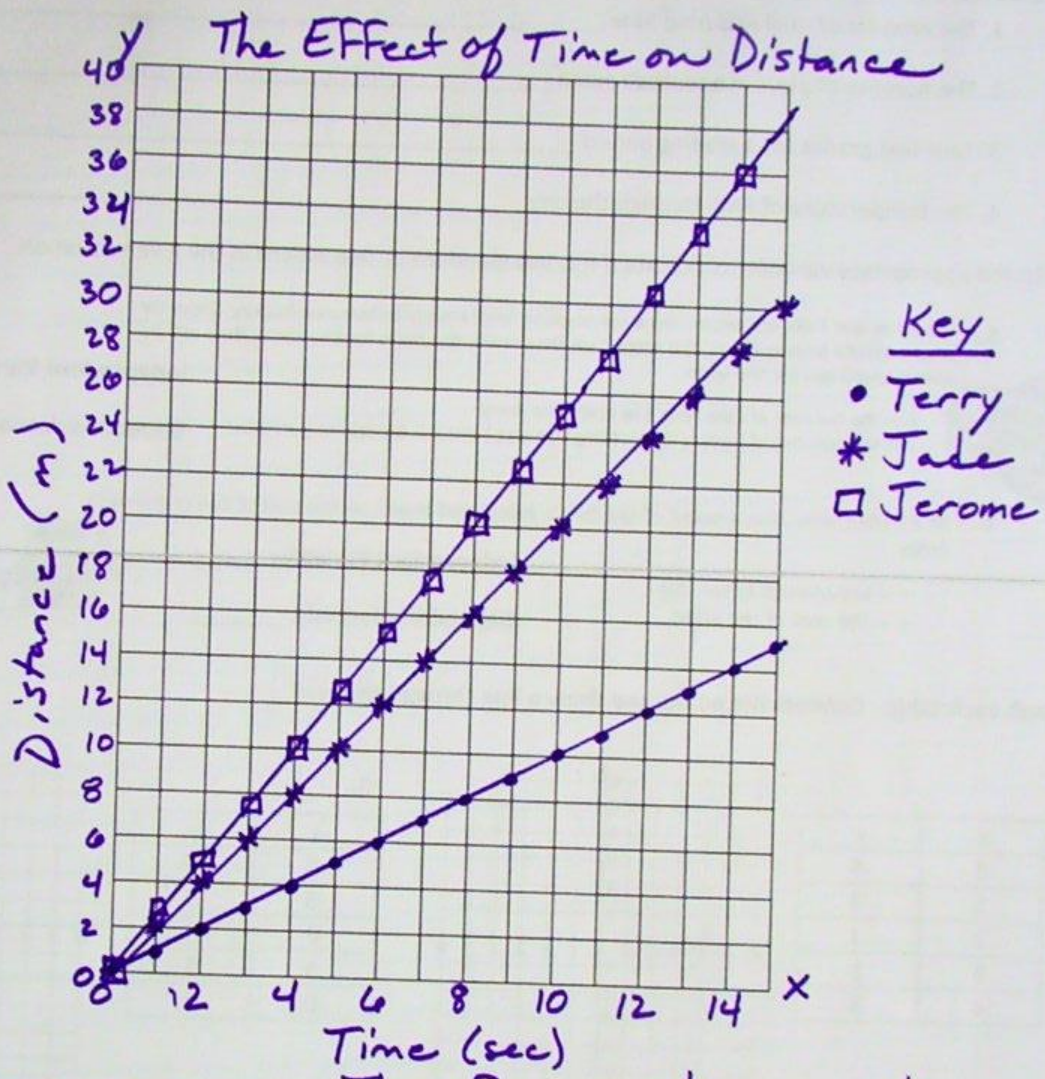| X	Y Distance (meters)		
Time (seconds)	Terry (1 m/s)	Jade (2 m/s)	Jerome (2.5 m/s)
0	0	0	0
1	1	2	2.5
2	2	4	5
3	3	6	7.5
4	4	8	10
5	5	10	12.5
6	6	12	15
7	7	14	17.5
8	8	16	20
9	9	18	22.5
10	10	20	25
	Add 1	Add 2	Add 2.5

4) How does the walking rate affect the patterns in the tables? **The pattern increases by the rate.**

) Graph the time and distance data for the three students o the same coordinate axes. Make a key to distinguish each student's data. Use an interval of 1 on the x-axis and 2 on the y-axis. Your graph should include a title and a label for each axis.

The Effect of Time on Distance

Distance (m)

Time (sec)

Key
- Terry
* Jade
□ Jerome

6) How do the walking rates affect the graphs? __The faster they go, the__ __steeper the lines.__

7) For each student, write an equation that gives the relationship between the time and the distance walked. Let d represent the distance in meters and t represent the time in seconds.

Terry: $d = 1t$ Jade: $d = 2t$ Jerome: $d = 2.5t$

8) How does the walking rate affect the equations? __Multiplied the rate__ __by the independent variable (x)__   (Rate is the coefficient.)