Student Activity: To investigate the effect on the graph when the toy cars have different starting times and different speeds

Use in connection with the interactive file, '2 Cars Graph', on the Student's CD.

1.

a. Complete the following table for a toy car, if the car starts at 1 metre beyond the starting point and its speed is 2 metres per minute.

Time in Minutes	Distance in Metres from starting point
0	
1	
2	
3	
4	
5	

b. In your own words, describe the pattern formed from the numbers in the table above?

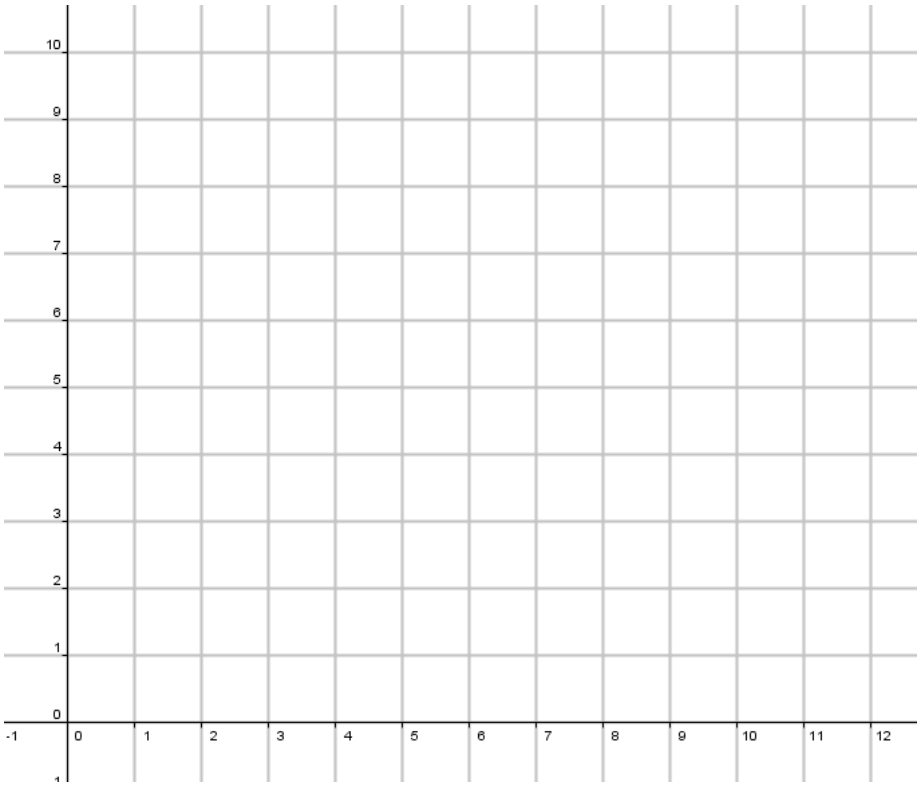
_____

_____

c. How does this pattern relate to the information received in part a of this question?

_____

d. Draw a graph to represent the table above:



2. The red line in the graph below represents the route taken by a toy red car.

a. Complete the following table for the red car in the diagram below:

Time in Minutes	0	1	2	3	4
Distance in metres					

b. What is the starting point of the red car?

_____

c. What distance is the red car is from its starting point when it reaches point A?

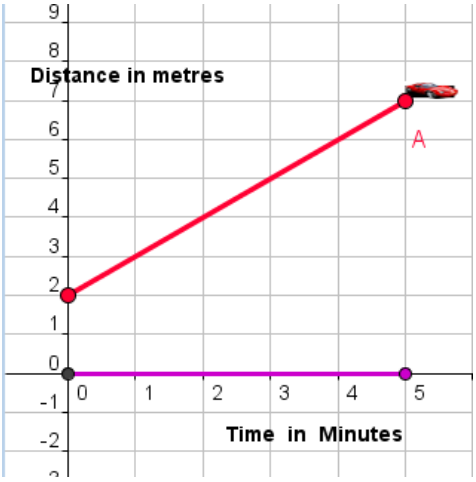
_____

d. What is the time in minutes the red car has taken to reach point A?

_____

e. What is the speed of the red car?

_____



f. What is the change in the distance of this red car from its starting point, between time equals 1 and time equals 2?

_____

g. What is the change in the distance of this red car from its starting point, between time equals 2 and time equals 3?

_____

h. From the graph, what is the change in the distance for each unit change in time?

_____

i. How does the change in distance per minute relate to the speed of the car?

_____

j. If the slope of a line equals $\frac{\text{Change in y}}{\text{Change in x}}$, which in this case is $\frac{\text{Distance}}{\text{Time}}$, calculate the slope of the line followed by the red car using 3 different pairs of points.

_____

_____

_____

_____

k. What can you conclude about the relationship between the speed of the car and the slope of the line, represented by the route taken by the car?

_____

_____

3. The green line represents the route taken by a toy green car, what is:

a. The starting point of the green car?

_____

b. The distance travelled by the car from its starting point until it reaches point B?

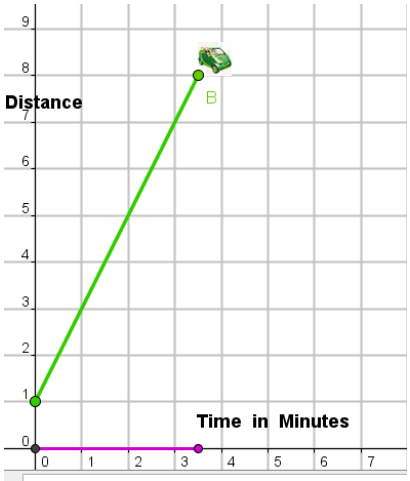
_____

c. The time in minutes the green car has taken to reach point B?

_____

d. The speed of the green car?

_____



e. What is the change in the distance of this green car from its starting point, between time equals 1 and time equals 2?

_____

f. What is the change in the distance of this green car from its starting point, between time equals 2 and when time equals 3?

_____

g. From the graph, what is the change in the distance for each unit change in time?

_____

h. How does the change in distance per unit relate to the speed of the car?

_____

i. If the slope of a line equals $\frac{\text{Change in y}}{\text{Change in x}}$, which in this case is $\frac{\text{Distance}}{\text{Time}}$, calculate the slope of the line followed by the green car using 3 different pairs of points.

_____

_____

_____

_____

j. What can you conclude about the relationship between the speed of the car and the slope of the line that is represented by the route taken by the car?

_____

_____

4.

a. What was the starting point of each of the cars?

_____

b. For how long has each car had been travelling?

_____

c. After how much time did the 2 cars meet?

_____

d. What was the speed of each car?

_____

e. What is the slope of the line followed by the red car?

_____

f. What is the slope of the line followed by the green car?

_____

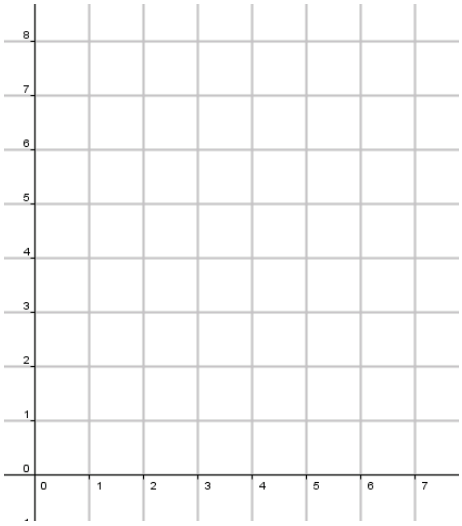
g. Which line has the greatest slope and what does that tell you about the speed of that car?

_____

5.

a. Draw a graph to represent the following situations. A red car starts 1 metre from the starting point and its speed is 2 metres per minute.

A green car starts 2 metres from the starting point and its speed is 1 metre per minute.



b. When do these 2 cars meet?

_____

Challenges

6.

a. In the opposite diagram, what determines the slope of the red line?

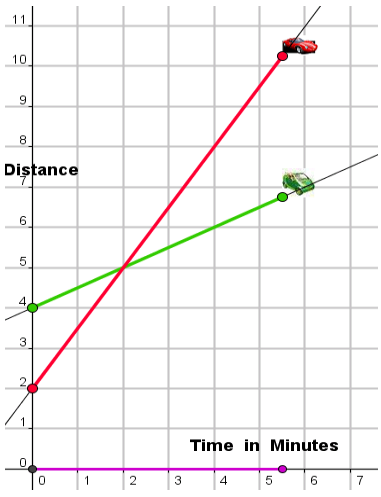
_____

b. What happens to the slope of the path followed by a car if the speed increases?

_____

c. Find the slope of the line travelled by the red car in the opposite diagram.

_____

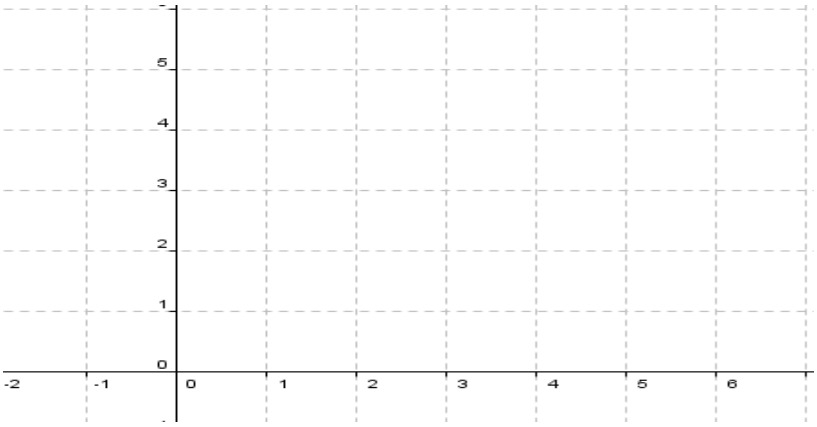


d. Find the slope of the line travelled by the green car in the above diagram.

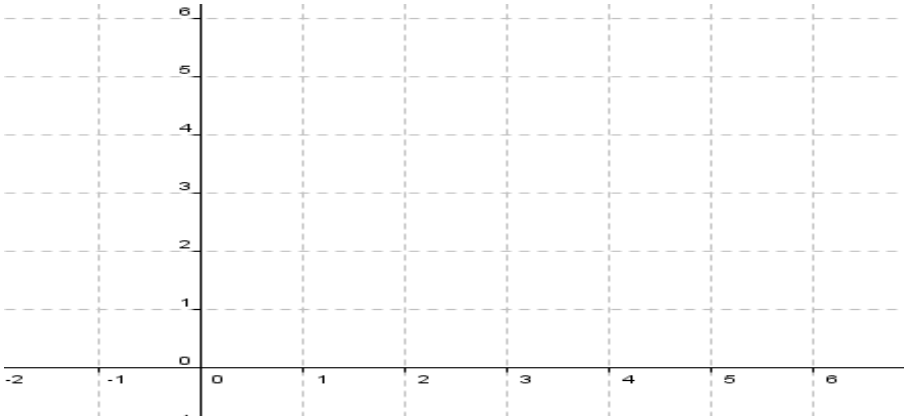
_____

_____

7. If toy car A has a higher starting point than toy car B and goes faster than toy car B, will they ever meet? Draw a diagram.



8. If toy car A has a higher starting point than toy car B and goes slower than toy car B, will they ever meet? Draw a diagram.



9. Draw a diagram to represent a toy car that starts at 4 metres from the starting point and has a speed of zero.