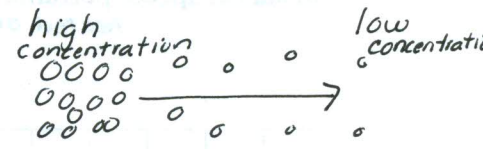


Name Key
 Date _____ Per. _____



Speed of Diffusion

Diffusion: the movement of particles from an area of higher concentration to an area of lower concentration

Question: What is the relationship between distance and speed of diffusion of a heated substance?

Hypothesis: If the distance increases then the speed of diffusion of a heated substance will (increase, decrease, or remain constant.)

Record the time it takes to smell the perfume at each distance in the table below. Convert time in minutes to seconds. Calculate the speed of diffusion for each distance.

Distance (cm)	Time (minutes)	Time (seconds)	$s = \frac{d}{t}$ Speed (cm/s)
60			
120			
180			
240			
300			
360			
420			
480			
540			
600			
660			
720			
780			
840			
900			
960			
1020			
1080			
1140			
1200			

Question:

What is the relationship between distance and speed of diffusion of a heated substance?

Hypothesis:

If the distance increases, then the speed of diffusion of a heated substance will (increase, decrease, or remain constant).

Procedure

Place a 100 watt light bulb on a 0 cm mark. Measure distances every 60 cm from the starting position up to 1200 cm. Position yourself at one of the distances. Your teacher will place one or two drops of substance on the light bulb and turn the bulb on. Time how long it takes to smell the substance. Stop your timer when you smell the substance and sit down. Record the time on your data table.

Seconds Chart

1 minute = 60 seconds

2 minutes = 120 seconds

3 minutes = 180 seconds

4 minutes = 240 seconds

5 minutes = 300 seconds

6 minutes = 360 seconds

7 minutes = 420 seconds

8 minutes = 480 seconds

Per. 1

Distance (cm)	Minutes	Seconds	Speed cm/sec
60		3	20
120		14	
180		14	
240		21	
300		31	
360		33	
420		58	
480		50	
540		19	
600		27	
660		11	
720		45	
780		31	
840		48	
900		50	
960		150	
1020		87	
1080		112	
1140		33	
1200		158	

Per. 2

Distance (cm)	Minutes	Seconds	Speed cm/sec
60		12	5
120		15	8
180		17	
240		17	
300		20	
360		32	
420		58	
480		60	
540		43	
600		48	
660		49	
720		53	
780		39	
840		45	
900		73	
960		81	
1020		85	
1080		58	
1140		63	
1200		91	

Per. 3

Distance (cm)	Minutes	Seconds	Speed cm/sec
60		16	
120		16	
180		20	
240		21	
300		25	
360	$s = \frac{d}{t}$	33	
420		36	
480		32	
540		35	
600		46	
660		32	
720		23	
780		34	
840		36	
900		65	
960		66	
1020		103	
1080		120	
1140		117	
1200		110	

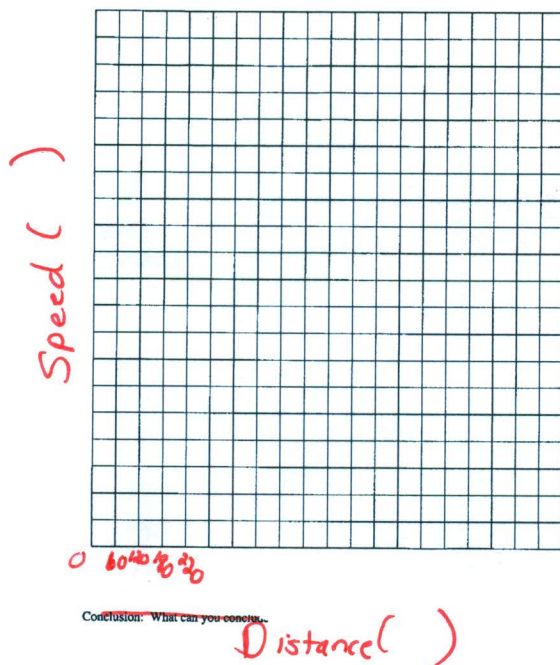
Per. 4

Distance (cm)	Minutes	Seconds	Speed cm/sec
60		12	
120		7	
180		13	
240		41	
300		36	
360		48	
420		48	
480	$s = \frac{d}{t}$	35	
540		37	
600		61	
660		49	
720		47	
780		42	
840		46	
900		48	
960		47	
1020		60	
1080		87	
1140		110	
1200		113	

Per. 7

Distance (cm)	Minutes	Seconds	Speed cm/sec
60		5	
120		10	
180		9	
240		33	
300		34	
360		36	
420		35	
480		34	
540		49	
600		38	
660		75	
720		114	
780		108	
840		143	
900		133	
960		186	
1020		200	
1080		220	
1140		235	
1200		247	

Use your data to make a distance-speed graph (in seconds) of diffusion. Use the words distance, speed, substance and diffusion in your title.



Conclusion:

1. **What can you conclude about the distance and speed of a heated substance?** *(Restate hypothesis correctly)*
2. **Using quantitative data, give two distances and speeds that support your conclusion. Don't forget units.**

Dissolving_Ionic_Compounds.asf