Displacement Vs Displacement

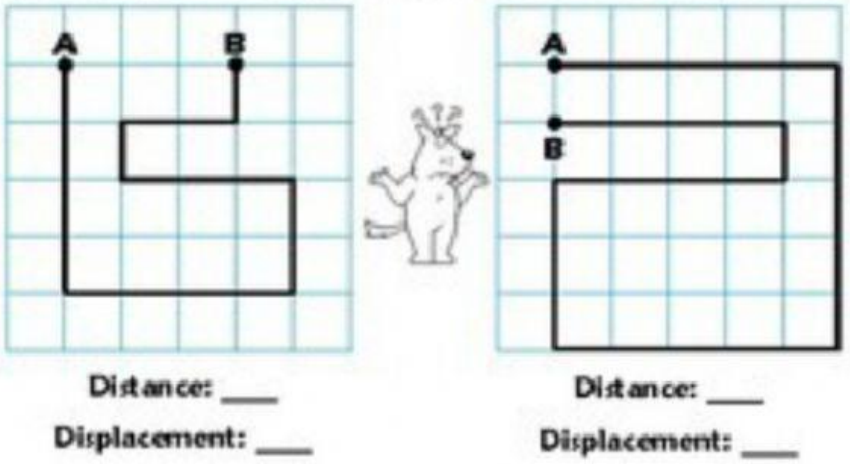
1. Determine the distance and displace covered in the following photos

If:

= 5 meters^2

Example answer:

40 meters



A skater increases her velocity from 2.0 m/s to 10.0 m/s in 3.0 seconds. What is the skater's acceleration?

Looking for Acceleration of the skater	**Solution** $\text{Acceleration} = \frac{10.0\ \text{m/s} - 2.0\ \text{m/s}}{3\ \text{s}} = 2.7\ \text{m/s}^2$ The acceleration of the skater is 2.7 meters per second per second.
Given Beginning speed = 2.0 m/s Final speed = 10.0 m/s Change in time = 3 seconds	
Relationship $a = \frac{v_2 - v_1}{t}$	

2. A car accelerates at a rate of 3.0 m/s^2. If its original speed is 8.0 m/s, how many seconds will it take the car to reach a final speed of 25.0 m/s?

Looking for The time to reach the final speed.	**Solution** $\text{Time} = \frac{25.0\ \text{m/s} - 8.0\ \text{m/s}}{3.0\ \text{m/s}^2} = 5.7\ \text{s}$ The time for the car to reach its final speed is 5.7 seconds.
Given Beginning speed = 8.0 m/s; Final speed = 25.0 m/s Acceleration = 3.0 m/s^2	
Relationship $t = \frac{v_2 - v_1}{a}$	

LIVEWORKSHEETS

Calculate and answer the following including the unis (example: **30 m/s/s)**

1. While traveling along a highway a driver slows from 24 m/s to 15 m/s in 12 seconds. What is the automobile's acceleration? (Remember that a negative value indicates a slowing down or deceleration.)

2. A parachute on a racing dragster opens and changes the speed of the car from 85 m/s to 45 m/s in a period of 4.5 seconds. What is the acceleration of the dragster?

3. The table below includes data for a ball rolling down a hill. Fill in the missing data values in the table and determine the acceleration of the rolling ball.

Time (seconds)	Speed (km/h)
0 (start)	0 (start)
2	3
	6
	9
8	
10	15

Acceleration =

4. A car traveling at a speed of 30.0 m/s encounters an emergency and comes to a complete stop. How much time will it take for the car to stop if it decelerates at -4.0 m/s^2?

5. If a car can go from 0 to 60 mi/hr in 8.0 seconds, what would be its final speed after 5.0 seconds if its starting speed were 50 mi/hr?

LIVEWORKSHEETS

Newton's Second Law Equation

$$\text{acceleration (in m/s}^2\text{)} = \frac{\text{net force (in N)}}{\text{mass (in kg)}} \qquad a = \frac{F}{m}$$

Calculate and answer the following including the unis (example: **30 m/s/s, 40 N, 50 kg)**

6. How much force is needed to accelerate a 66 kg skier at 2 m/s^2?

7. What is the force on a 1000 kg elevator that is falling freely at 9.8 m/s^2?

8. What is the acceleration of a 50 kg object pushed with a force of 500 newtons?

9. The mass of a large car is 1000 kg. How much force would be required to accelerate the car at a rate of 3 m/s^2?

10. A 50 kg skater pushed by a friend accelerates 5 m/s^2. How much force did the friend apply?

LIVEWORKSHEETS