Speed, Velocity and Acceleration Calculations Worksheet

Part 1 - Speed Calculations: Use the speed formula to calculate the answers to the following questions. Be sure to show your work for each problem (write the formula, numbers with correct units, and the answer with the correct units).

1. Calculate the speed for a car that went a distance of 125 miles in 2 hours time.

Solving for	Equation
Substitute (work)	Answer w/ units

2. A baseball is thrown a distance of 60 feet. What is its speed if it takes 0.5 seconds to cover the distance?

Solving for	Equation
Substitute (work)	Answer w/ units

3. How much time does it take for a bird flying at a speed of 45 miles per hour to travel a distance of 1, 800 miles?

Solving for	Equation
Substitute(work)	Answer w/ units

4. A comet is cruising through the Solar System at a speed of 50,000 kilometers per hour for 4 hours time. What is the total distance traveled by the comet during this time?

Part 2 - Speed and Velocity Calculations: For problems 5 – 10 use the speed and velocity formulas to solve the following problems. Show your work (formula, numbers with correct units and answer with correct units).

5. Bob rides his bicycle on a bike path that is 75 kilometers long to get to his house that is due east of the bike path. If it takes Bob 15 hours then
   a. What is his speed?

Solving for	Equation
Substitute(work)	Answer w/ units

   b. What is his velocity?

Solving for	Equation
Substitute(work)	Answer w/ units

6. Jessica jogs on a path that is 25 kilometers long to get to a park that is south of the jogging path. If it takes Jessica 2.5 hours then
    a. What is her speed?

    b. What is her velocity?

7. What is the velocity of a motorcycle traveling 10 km west in 3 hours?

Solving for	Equation
Substitute(work)	Answer w/ units

8. How much time does it take a person to walk 12 km north at a velocity of 6.5 km/h?

9. If the velocity of a car is 45 km/h west, how far can it travel in 0.5 hours?

10. What is the velocity of a rocket that goes 700 km north in 25 seconds?

Part 3 – Acceleration Calculations: For problems 11- 13 use the acceleration formula to solve the following problems. Show your work (formula, numbers with correct units and answer with correct units).

11. A driver starts his parked car and within 5 seconds reaches a speed of 60 km/h, as he travels east. What is his acceleration?

Solving for	Equation
Substitute(work)	Answer w/ units

12. A slug traveling at 3 mm/h, north decided to race the slug next to him increasing his velocity to 5 mm/h, north in one hour. What was the slug's acceleration?

Solving for	Equation
Substitute(work)	Answer w/ units

13. In a summer storm, the wind is blowing with a velocity of 8 m/s north. Suddenly in 3 seconds, the wind's velocity is 23 m/s north. What is the wind's acceleration?

SKATEBOARD ACCELERATION

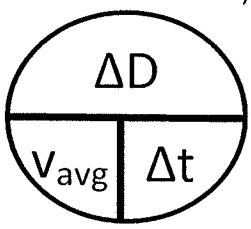
Fill in the tables and calculate the speed and Velocity of the skateboarder.

1) Rider Name:_____

Position #	1	2	3	4
Distance				
Time				

VELOCITY

a) Calculate the average speed of the skateboarder from position 1 to 2



Calculations	Answer Speed from 1-2
	1-2

b) Calculate the average speed of the skateboarder from position 2 to 3

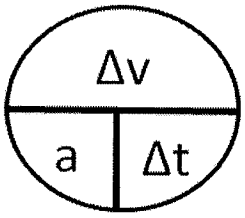
Calculations	Answer Speed from 2-3
	2-3

c) Calculate the average speed of the skateboarder from position 3-4

Calculations	Answer Speed from 2-3
	3-4

SKATEBOARD ACCELERATION

ACCELERATION



d) Calculate the acceleration of the skateboarder from position 1 to 3

Calculations	Answer Acceleration from 1-3
	1-3

e) Calculate the acceleration of the skateboarder from position 2 to 4

Calculations	Answer Acceleration from 2-4
	2-4

Speed Challenge

Name _____

Get Ready!

Step 1: Gather your materials!
Each team needs 2 timers, 1 meterstick, 1 roll of masking tape, and 1 marker.

Step 2: Create your "race" track!
Find a spot in the hallway and measure off a 10 meter race track. Use three pieces of tape to mark the beginning, middle, and end of your track. Mark each distance (0 m, 5 m, and 10 m) on the tape with a marker.

Step 3: Go for it!
Each team member will need to perform the following tasks for each distance: hopping, walking backwards, walking (regular rate), and speed walking. Your team will need people with timers or stopwatches at the 5 meter and 10 meter points. Record the time it takes to perform each task.

NOTE: Speed walking is going as fast as you can <u>without</u> jogging or running!

Collect That Data!

Record your data from the experiment in the chart, then use the information to calculate the speed for each task and distance. Round answers to the nearest hundredth if needed. Label your answers!

Task	Distance	Time	Speed
Hopping	5 m		
	10 m		
Walking Backwards	5 m		
	10 m		
Walking Regular	5 m		
	10 m		
Speed Walking	5 m		
	10 m		

Think About It!

1. Which task and distance resulted in the fastest speed?

   Task = _____ Distance = _____ Speed = _____

2. Which task and distance resulted in the slowest speed?

   Task = _____ Distance = _____ Speed = _____

3. How far could you speed walk in 10 minutes based on your speed for the 10 meter trial? Show your work!

4. How long would it take you to hop 30 meters based on your speed for the 5 meter trial? Show your work!

5. How far could you travel walking backwards in 15 minutes based on your results for the 5 meter trial? Show your work!

6. How long would it take you to walk (regular rate) 1 kilometer (or 1,000 m) based on your speed for the 10 meter trial? Show your work!

7. Are your results accurate? Why or why not?