

A HOP, SKIP, JOG N A WALK LAB

Purpose: To determine a person's speed by measuring a given distance and seeing how long it takes to go that distance. **SPEED = DISTANCE/TIME (s=d/t)**

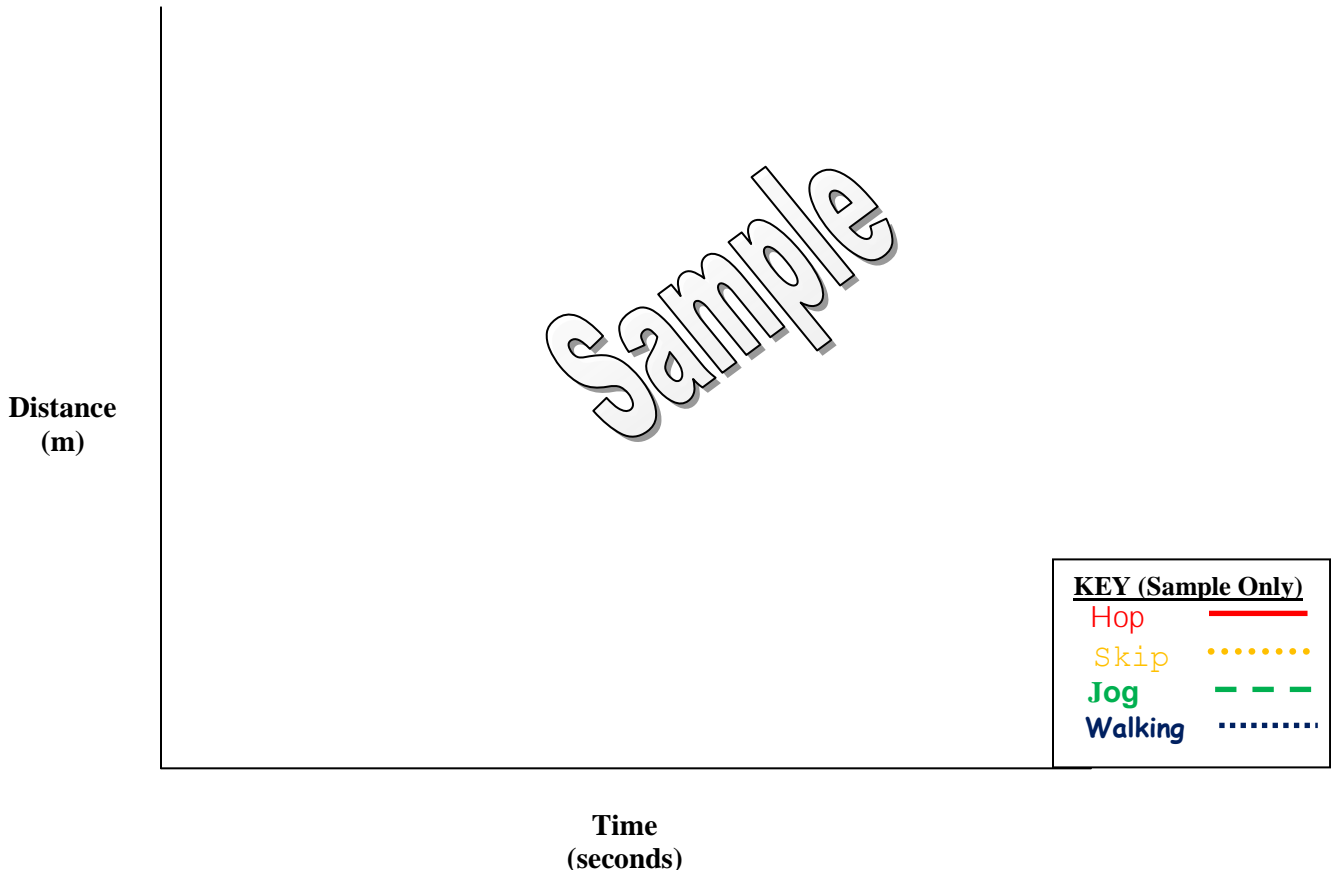
The Challenge

1. **Copy down the data table below** into your notebook **using rulers** so you will have beautiful, **straight** lines.
2. **Record data** on **distance** and **time** for each event. You should have a **minimum of 3 trials** at the same distance for **each person** in your group of 3 people. **The distance should be between 6 and 12 meters.** Each person will record only their own time they achieved on each trial for the 4 events.
3. You will find your speed for: Hopping, Skipping, Jogging, and Walking Backwards. You will have to do **3 trials for each event** and take **the averages of those 3 trials to use for your DISTANCE and TIME values** that you will put into the formula for speed (**speed=d/t**). On this lab you **do not need to show your work** when finding the average speed you traveled for each of the 4 events. Make sure you add all 3 distances and all 3 times together to **get the average over the 3 trials**. This is extremely important so as to minimize errors in collecting data. *The more trials one runs in science (and finds a consistent pattern), the better and more reliable the experimental results are in general.*
4. Create a **DISTANCE vs. TIME** (SPEED GRAPH) for the 4 events. You can use the sample graph on the back of this page to plot your own data.
5. Round your answers when calculating the average speed to the nearest tenth (one decimal place).

Data Table: 4 Types of Motion and Your Average Speed for Each

Event	Distance (m)	Time (second)	Avg. Speed (m/s)
Hop			
1			
2			
3			
Average			
Skip			
1			
2			
3			
Average			
Jog			
1			
2			
3			
Average			
Walk Backwards			
1			
2			
3			
Average			

Distance vs. Time Graph (SPEED GRAPH)
(Hop, Skip, Jog, and Backwards Walking)



DIRECTIONS FOR GRAPHING

1. Make a graph that takes up **at least 1/2 of the page in your notebook**. It should look similar to the graph above, but with a **proper scale used for distance and time** (look at your **max values** for **time** and **distance** to help determine the proper scale.).
2. Use the values from your data table for **average distance** and **average time** for **each event** as your **data point**. Draw a line from **(0, 0) (your initial distance and initial time)** to that data point on your graph (**final distance and final time**) to make your line for each of the four events (the **slope** of that line will = your **average speed**).
3. Make sure you **use a ruler** to make straight, beautiful lines.
4. Make sure each of the events has its **OWN COLOR (or unique line)** and you **include a key**.
5. At the **top of each line segment** write the **average speed** from your data table for each event.

Post Lab Questions/Tasks:

1. In your notebook below your beautiful graph answer the following questions in complete sentences: Which type of motion (Hop, Skip, Jog, or Walking) were you the **fastest**? The **slowest**? **Explain how you know**.
2. Check to see if your graph is correct: Select a point (ex: at distance 5 m) and its corresponding time value. Divide the distance you selected from the time value. It should be equal to (or very close) to the average speed you calculated in your data table. **Do this for all four lines. Show your work using the formula for speed with the correct units.** Does it work for multiple points on the line or only the one you initially selected? **Explain** why this works.