## 5.8.A.1. Develop an explanation of motion using the relationships among time, distance, velocity, and acceleration

Name _			
Date			
Period			

#### **Dance and Acceleration**

Learning Goal: I will utilize the elements of dance to calculate and graph acceleration.

**Background:** Acceleration is the rate at which an object changes its velocity. An object is accelerating if it is changing its velocity. In the last class you created a dance to calculate your speed. You will now use that same dance to calculate and graph the acceleration during your dance.

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Proced	lure:	∞-
1.	Tape off a total distance of 10 meters.	<b>I</b>
2.	Mark 2 meter increments along the taped line	9
3.	You will complete your dance with someone taking the time at each marked	~~ —
	Increment.	4
4.	Complete the data table below to calculate velocity	~~
	Complete up to 4 trials	
	Create acceleration graph comparing your data with someone else's	_

#### Data:

Trial	<u>0m to 2 m</u>	2 m to 4 m	4 m to 6 m	6 m to 8 m	8 m to 10
					<u>m</u>
1					
2					
3					
4					
Average time (seconds)					
Average Velocity (m/s)					

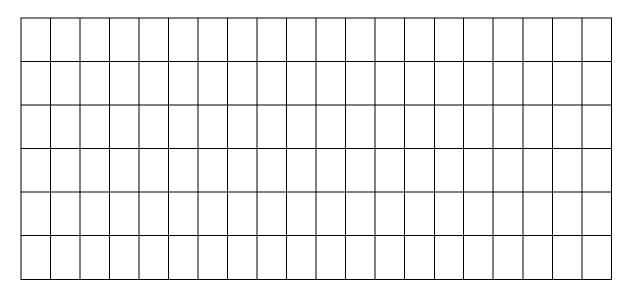
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1. Complete the graph using TAILS

**Dancer 1** 2 m\_\_\_\_\_ 4 m \_\_\_\_\_ 6 m \_\_\_\_\_ 8 m \_\_\_\_\_ 10m \_\_\_\_\_

**Dancer 2** 2 m \_\_\_\_\_ 4 m \_\_\_\_ 6 m \_\_\_\_ 8 m \_\_\_\_ 10m\_\_\_\_



### Time

- 1. During which 2 m long interval were you car traveling the fastest on average? \_\_\_\_\_
- 2. During which 2 m long interval were you traveling the slowest on average? \_\_\_\_\_
- 3. Between 0 m and 6 m, did you have a positive acceleration or negative acceleration? How do you know?

# 5.8.A.1. Develop an explanation of motion using the relationships among time, distance, velocity, and acceleration

	a) Assume your average speed 2 m was its initial velocity, and that the average speed of your rt at 8 m was its final velocity. Calculate the change in velocity of your cart from 2 m to 8 m.
b)	Calculate the time it took (use the averages) for you travel from the 2 m line to the 8 m line.
	c) Using your answers from parts a) and b) above, and the equation for acceleration, calculate the acceleration of your cart from 2 m to 8 m.
5.	What are three possible sources of error in this experiment?
	1.
	2.
	3.
6.	In the space below, describe your motion as you danced across the floor