**Hot Wheels Acceleration Lab: Speed**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per.: \_\_\_\_\_\_\_**

**Data:**

Use the sentence frames provided to record your description/observations of the car’s travel down the track.

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| --- | --- | --- | --- | --- | --- |
| **Distance (m)** | **Time (s)** | | | | **Average Time (s)** |
| **Trial 1** | | **Trial 2** | |
| 0.0 |  |  |  |  |  |
| 0.10 |  |  |  |  |  |
| 0.20 |  |  |  |  |  |
| 0.30 |  |  |  |  |  |
| 0.40 |  |  |  |  |  |
| 0.50 |  |  |  |  |  |
| 0.60 |  |  |  |  |  |
| 0.70 |  |  |  |  |  |
| 0.80 |  |  |  |  |  |
| 0.90 |  |  |  |  |  |
| 1.0 |  |  |  |  |  |
| 1.20 |  |  |  |  |  |
| 1.40 |  |  |  |  |  |
| 1.60 |  |  |  |  |  |
| 1.80 |  |  |  |  |  |
| 2.0 |  |  |  |  |  |

**Data Analysis and conclusion: Distance vs. Time Graph**

1. Create a distance vs. time graph of the data. Be sure to include all necessary graph features.
2. Use the sentence frames provided to write a description of the motion shown in the distance vs. time graph.
3. Explain how the graph supports or does not support your observations of the car’s motion.
4. Calculate the average speed of the car at each distance. Don’t forget the units!

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| --- | --- | --- |
| **Distance** | **Average Time** | **Average speed** |
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**Hot Wheels Acceleration Lab: Acceleration**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per.: \_\_\_\_\_\_\_**

1. According to your distance vs. time graph, was the car accelerating? How can you tell?
2. In science, what three changes can cause an object to accelerate? Circle the ones you observed your car doing.
3. What is the equation for acceleration?
4. Use your data from the lab to calculate the car’s acceleration. **Show your work!**
5. Use the average speed data you calculated to create a **speed vs. time graph** for your car.
6. Use the sentence frames provided to write a description of the motion shown in the speed vs. time graph.
7. What does slope represent in a speed vs. time graph?
8. How does the change in slope show what happens to the speed of the car?
9. What is the difference between what the distance vs. time graph and the speed vs. time graph showed you about the motion of your car?