Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_

**Building The Fastest Car!**

**Speed Challenge** – Engineers who design cars must find ways to increase the force generated by the motor, and decrease the friction that slows the car down. In this challenge, your group will use your engineering skill to design and build the fastest cars!

*Note: You may only ask TWO questions to your teacher during the activity. Choose wisely!*

**Follow the Engineering Process!**

**Step 1: ASK – What is the problem?**

Here’s the problem – build a car that can roll down a slanted surface using some or all of these materials:

Play-Doh, Two 9 volt batteries, Toothpicks, Bottle Tops (with holes in the center), straws, tape,

**Step 2: IMAGINE – Brainstorm ideas.**

List ideas your group has below:

**Step 3: PLAN – Draw a diagram.**

Draw a diagram of your idea in the space below:

**Step 4: CREATE!**

Build your car and test it out. Make sure every team member shares in the process. Place two textbooks under one side of the desk legs to create an angle. Can you get your car to move down the desk with only one book under the desk legs?

**Step 5: IMPROVE!**

Discuss what improvements could be made on your car to make it move faster. List your ideas below.

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_

**Build A Car – Part 2**

**HOW FAST IS YOUR CAR?**

**Speed is the distance on object travels in a certain amount of time. For example, car speed is measured in miles per hour (m/h), which tells us how many miles the car can travel in an hour.**

**How can the speed of your car be measured?** **Decribe your team’s method below:**

Step 2. **Test your car!**

Find the average speed of your car.

* Fill in the data sheet below.
* Use the stopwatch to measure SECONDS.
* Use the meter stick to measure CENTIMETERS. (Your car must travel 150 cm or more).
* Do three trials. Calculate the average of these three trials to find the average speed.

**Average Speed of Toy Car (include correct units!)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Distance (cm) | Time (s) | Average Speed |
| Trial 1 |  |  |  |
| Trial 2 |  |  |  |
| Trial 3 |  |  |  |
|  | Average Speed of 3 trials | | |

Questions about the CAR CHALLENGE

1. Describe what you changed to improve your car. What part did friction play?

4. How far (in cm) does your car move in one second during the fastest trial? Explain how you know:

6. What distance would your car have traveled in a minute (60 seconds)? Show your work:

7. Draw and label a model of how you would build a toy car using any scrap materials you can think of.