



*Drexel-SDP GK-12 ACTIVITY*

## Activity: Cars!

<b>Subject Area(s):</b>	<b>Physical Science</b>
<b>Associated Unit:</b>	<b>None</b>
<b>Associated Lesson:</b>	<b>None</b>
<b>Activity Title:</b>	<b>Cars!</b>
<b>Grade Level:</b>	6 (3-8)
<b>Activity Dependency:</b>	<b>None</b>
<b>Time Required:</b>	<b>100 minutes</b>
<b>Group Size:</b>	<b>2</b>
<b>Cost per Group:</b>	<b>\$0.50</b>

### **Summary :**

Students are given a list of materials and parts they could purchase to make a car, as well as the prices of each part. They are given a limit of \$100 to spend, and told that once materials are purchased, they can not be returned. They have to make a car that could go straight, and the challenge is to see which team could make their car go the furthest.

### **Engineering Connection:**

Transportation would not be possible were it not for the work of engineers. In this activity, students will explore some of the principles involved in the design of a car and will engage in the process of designing and testing vehicle with the objective to travel the furthest with a push.

### **Keywords**

Friction, design, cars, automobiles, mechanical engineer

## Educational Standards

3.1.7 B Describe the use of model as an application of scientific or technological concepts.

3.2.7 A,B,C & D Inquiry & Design

3.4.7 C. Identify and explain the principles of force and motion

3.6 C. Explain physical technologies of structural design, analysis and engineering, personal relations, financial affairs, structural production, marketing, research and design.

3.7 A Describe the safe and appropriate use of tools, materials and techniques to answer questions and solve problems.

## Pre-Requisite Knowledge

None.

## Learning Objectives

Students understand and the parts of a car that are needed to make the car function.

Students learn arithmetic with currency.

## Materials List

Straws (2 different sizes)

Paper

Rubber bands

Tape

Glue

Balloons

Paper clips

Binder clips

## Introduction / Motivation

None:

## Vocabulary / Definitions

Word	Definition
Mechanical engineer	A person trained to design and construct machines.
friction	The resistance encountered when one body is moved in contact with another.

## Procedure

### Background

Students are given a list of materials and parts they could purchase to make a car, as well as the prices of each part. They are given a limit of \$100 to spend, and told that once materials are purchased, they can not be returned. They have to make a car that could go straight, and the challenge is to see which team could make their car go the furthest.

### Before the Activity

Collect and distribute materials.

### **With the Students**

Method:

1. Students given list of supplies and what they cost
2. Allowed to spend \$100 on supplies only
3. Teams must decide what they want and “buy” it from the supplies table.
4. No instructions, must “engineer” a way to make the car.
5. Once cars are made, they will test how far they go and if they can go straight,
6. Students worked in teams of two.

### **Safety Issues**

- None

### **Troubleshooting Tips**

Help the students to understand some friction is necessary on the wheels to enable the car to move forward.

### **Investigating Questions**

What worked well on their cars? What needs improvement?

### **Assessment**

#### **Pre-Activity Assessment**

None

#### **Activity Embedded Assessment**

Have the student groups discuss their design as they proceed through the activity.

#### **Post-Activity Assessment**

Evaluation will be based upon teacher observation of student participation, and completion of a car design.

### **Activity Extensions**

Extensions on the project could be to re-design their car with the inclusion of different materials, or a larger budget.

### **Owner**

Drexel University GK-12 Program

### **Contributors**

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