Car Track

KNOWLEDGE TEST

Match the words to their definitions.

___Force  A. To move something away from you.
___Motion  B. The action of moving or changing position.
___Pull    C. An object pushing on another object, slowing it.
___Push    D. To move or haul something towards yourself.
___Friction E. A push or a pull.

ACTIVITY

Overview
In this activity students explore force, friction, and motion while sending a car down ramps of varying heights.

Materials
• Toy cars
• Ruler
• Stop watch
• Dry erase board
• Textbooks

Instructions
1. Stack two books on top of each other, and then lean a dry erase board off of them to create a ramp.
2. Measure the height of your ramp.
3. Release the car and start the stopwatch, stopping the watch at a predetermined stop point (one person is in charge of the stopwatch, one is in charge of releasing the car, and one is observing).
4. Record observations, repeating three times at this height.
5. Add more books to create a higher ramp and record three more times.
6. Repeat as many times as desired, adding height to the ramp.

Discussion Points
• Ramp height determines speed but only to a certain point; once the ramp gets too high the car just bounces.
• Attempt on different flooring (carpet vs. gym floor vs. pavement) to see how it alters the speed.
• Importance of measuring multiple times on the same ramp to ensure accuracy.
Rubber Band Car

ACTIVITY

Overview
Students explore elasticity, balance, motion, and mechanics while building a rubber band car.

Materials (one per car)
- One toothpick broken into parts
- Hot glue gun and glue
- 6 rubber bands
- Utility scissors
- Straw
- 2 wooden craft skewers (roughly 3.15”x 0.16” sticks)
- 2- 4 1/2” popsicle sticks
- Corrugated cardboard to cut out 2” cardboard wheels with hole in center
- 2 bolts
- 4 nuts

Instructions
1. Cut the straw into 4 one-inch pieces.
2. Connect 2 rubber bands equaling the length of a 4.5” popsicle stick.
3. Cut toothpick into thirds.
4. Put rubber bands around cardboard wheels to increase friction.
5. Twist the stick (axel) into wheel hole.
6. Secure outside of wheel with hot glue.
7. String two straw pieces on each stick (axel).
8. Place wheel on opposite end and secure with glue.
9. Spread straw pieces apart and hot glue small toothpick pieces in center.
10. Hot glue popsicle sticks on straws.
11. Hot glue bolts on the back of the car to weigh it down and decrease spin out. Add nuts as needed.
12. Attach rubber band to front axel.
13. Connect rubber band loop to the back toothpick, twist to wind up, and release.

Discussion Points
- Introduce Newton's Laws of Motion.
- Talk about how they tested and altered their design using engineering.

For resources, visit: https://figmentcreativelabs.com/2018/02/rubber-band-car-diy/
When it comes to working on a car, believe it not, some people still don’t know how to change a tire. Now, you don’t have to teach your child to be Henry Ford himself, but a general understanding of the basics is great. Let them watch as you change the oil or brakes, or even, restore a vintage car back to its glory. Even simple things like detailing a car and teaching the wash, wax, and polish routine can go a long way.

The Mark Miller Subaru Express Service Exhibit engages young children to learn about the science that drives vehicles like the Subaru Ascent. Work under the hood, change the oil, and fill the Ascent with gas! Science is a powerful tool, and with Mark Miller Subaru and the all-new Subaru Ascent’s help, this exhibit is sure to inspire children for generations to come. Now available for play at Discovery Gateway Children’s Museum.

Making Car Memories

When it comes to working on a car, believe it not, some people still don’t know how to change a tire. Now, you don’t have to teach your child to be Henry Ford himself, but a general understanding of the basics is great. Let them watch as you change the oil or brakes, or even, restore a vintage car back to its glory. Even simple things like detailing a car and teaching the wash, wax, and polish routine can go a long way.

Mark Miller Subaru is a proud supporter of Discovery Gateway Children’s Museum and this science activity booklet.