

STEM in the News

Recently, scientists working for Nature Magazine have discovered a strange quirk of the laws of thermodynamics. Using the Casimir effect, they have successfully transferred heat through a vacuum without radiation. To do this, they suspended two gold plated silicon-nitride membranes a few hundred nano-meters across. They pulled the air out of the chamber and heated one membrane to a temperature about twenty-five degrees Celsius above the other, and recorded that both membranes began to even out to the other levels. This is due to transient electromagnetic waves that fill “empty” space. Albeit only for a fraction of a second, they can allow heat to travel across.

Source: <https://www.scientificamerican.com/article/space-heater-scientists-find-new-way-to-transfer-energy-through-a-vacuum/>

STEM Career Spotlight

Bus drivers are very important in our busy lives. If it was not for bus drivers, a lot of children could not get to and from school. Some adults would not be able to get to work on time either. A bus driver's responsibility is to get people where they need to be while driving carefully and paying attention to people and other cars around them. Bus drivers make 12-23 dollars per hour, and, sometimes, more.

Required education: at least a high school diploma.

“I don't care half so much about making money as I do about making my point, and coming out ahead.” - Cornelius Vanderbilt

STEM in History

Nowadays, there are countless forms of transportation. There are cars, planes, helicopters, trains, buses, canoes, boats and many others. However, the first forms of transportation were not nearly as efficient. In the 8th century BC, the flourishing city of Pompeii had sidewalks and crosswalks similar to those found on our streets. There is one significant difference; the cars we find on our concrete streets were horse-drawn chariots driving down the smooth marble roads back in ancient Pompeii. Thank goodness we have more efficient forms of transportation now!

STEM Across the Curriculum

What better way to learn about physics than to get physically moving? In this P.E. activity, students can measure the amount of time it takes them to walk, jog, or sprint a particular distance and then calculate their speed and average speed. They can alter the variables to determine what affects the speed of their performance.

Source: <https://www.teachhub.com/integrate-science-across-curriculum>

STEM Movies

The Fast and Furious (2001-present) is a thriller franchise that focuses on street races, heists, and spies. In the first movie, Dom Toretto drives a 1970 Dodge Charger. It could go up to 200 mph and run a quarter-mile in approximately 9 seconds, making it a phenomenal vehicle for transportation.

"It is possible to fly without motors, but not without knowledge and skill." - The Wright Brothers

#STEM@ADM Spotlight

Mrs. Ricks uses concepts of technology in her STEM classes with lessons that involve learning and applying technological skills in certain situations. Transportation is a subject that is taught to her students through the technological engineering of GPS systems. Mrs. Ricks does a marvelous job in training her students the essential skills of transportation.

Famous STEM Person

Henry Ford was responsible for transforming the automobile from an invention of unknown utility into an innovation that profoundly shaped the 20th century and continues to affect our lives today. The Model T spawned mass automobility, altering our living patterns.

Source: <https://www.thehenryford.org/explore/stories-of-innovation/visionaries/henry-ford/>

STEM Challenge

Paper Boat Challenge

Materials: Paper/cardboard (letter-sized: 8.5" x 11" or A4)

Steps:

1. Fold the paper/cardboard in half, making a neat crease along the middle.
2. Fold the two corners of the folded edge inwards toward the middle, so that the top makes a point.
3. Now, fold the bottom loose rectangular ends up toward the end of the triangles. Then turn the boat over and repeat on the other side. The boat should look like a hat.
4. Fold the bottom corners inward. Flip the boat over and fold the other side.
- 5: Next, open up the boat into the hat shape and then fold it over into a square
- 6: Fold the bottom flaps upward—toward the top corner—and form another triangle.
- 7: Now take the triangle, shift it, and make it into a square.
- 8: Take the top corners and pull them down to reveal your paper boat!

STEM Puzzle

Reassemble the words to create forms of transportation!

hliecpoter _____

rca _____

hreso _____

baot _____

tarin _____

palen _____

Answers in order: helicopter, car, horse, boat, train, plane