JA Our Nation®

Session Two

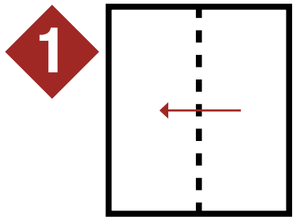
Innovation Nation

Name _____

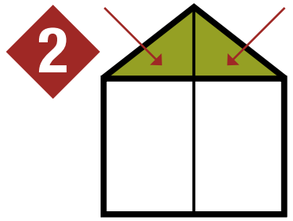
Be an Engineer

Engineers rarely build just one of anything. Engineers design and test many versions of their ideas to find the best one. Using sheets of paper and the directions below, build a basic paper airplane and test it. Build a second plane with weight, thrust, and lift in mind and test one of the following modifications: tilt the wings, add some weight (a paper clip or pieces of tape), or change the shape of the tail. You can test different materials—aluminum foil or card stock, for example—to see if your planes fly faster and farther.

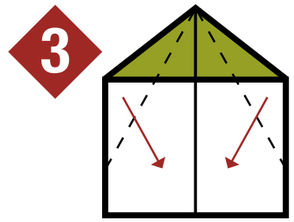
Paper Airplane Steps



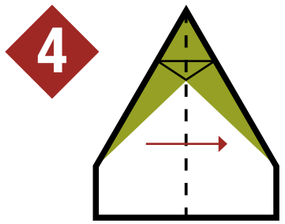
Step 1: Fold an 8 ½-inch by 11-inch sheet of paper in half the long way to form a crease. Unfold.



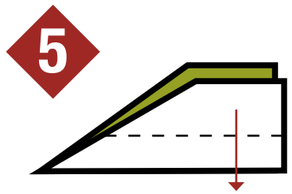
Step 2: Fold down the top corners toward the centerline to form a triangle at the top.



Step 3: Fold the two edges in toward the centerline.



Step 4: Fold the paper in half along the original center crease to form a valley. Rotate the paper 90 degrees.



Step 5: Create a wing crease that begins at the nose.

Helpful Hint: *Bend up the tailing edge of the wings for lift if the plane dives nose first.*

Junior Achievement®

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Our Innovation Is the Best!

Directions: Answer the questions below and sketch your design on the next page.

1. What is the problem?

_____

_____

_____

2. How will you solve it?

_____

_____

_____

3. List the resources (human, natural, capital) you will need.

_____

_____

_____

4. What name will you give your innovation?

_____

_____

_____

5. What could go wrong?

_____

_____

_____

6. Important! Did you solve the problem? How?

_____

_____

_____

Vocabulary

Capital resources
Buildings, tools, machines, and money that businesses use to make products.

Entrepreneur
A person who takes a risk to start a business with the intent of earning a profit.

Entrepreneurship
The innovative thinking needed to start and operate a business.

Human resources
People who do the work a business needs.

Innovation
An improvement of an existing product or method.

Natural resources
Things a business needs that occur naturally, such as air, water, minerals, and trees.

Resources
Things businesses use to produce goods and services.

Skill
The ability to do something well.

Work Space

Dr. Robert Cade



First Aid for the Gators

When Robert Cade finished his medical training to become a doctor, he never imagined his work would lead him to invent a popular sports drink, Gatorade. His background in internal medicine and kidney disease, along with his curiosity, led him to search for a solution to a problem experienced by athletes everywhere.

In the 1960s, Cade was a medical researcher at the University of Florida. His specialty was nephrology, which means he studied how the kidneys function and affect other body organs. At the time, it was general knowledge that the human body required lots of water during physical activity. But the football coach at the university was concerned because it seemed that water wasn't enough to keep his players healthy and capable of training in the hot Florida weather. The team doctor contacted Cade to see if he had any suggestions.

Cade and his research group set up experiments to find out what was happening to athletes' bodies during workouts. They discovered that when athletes lose fluid by sweating, they also experience changes in body temperature and blood pressure. These changes can cause serious damage and even death. To replace what pours out of the body during exercise, the research group created a drink that would put these fluids, salts, and minerals back into the athletes' bodies quickly.

As researchers tested the formula to see if it would work scientifically, they also had to create something that tasted good so athletes would want to drink it.

After many taste tests, a combination of sugar, water, sodium, potassium, phosphate, and lemon juice became Gatorade, named for the Florida team mascot, the Gator. Cade applied for a patent for Gatorade and eventually worked with the Stokely-Van Camp Company to produce and market the drink.

As the Florida football team began to win national games, the word spread that its secret weapon was Gatorade. The drink with the odd name suddenly became even more popular when millions of television viewers watched as the New York Giants football team began the tradition of pouring a container of Gatorade on their coach after winning Super Bowl XXI in 1987. Even after his Gatorade success, Cade continued to conduct research on kidney and liver disease, as well as on how a good diet can help patients with mental illnesses. Besides the now-famous drink, he developed other products for athletes to help their bodies recover from exercise. Cade died in 2007 at age 80.

Answer the questions below using what you just learned.

- How would you explain the connection between a scientist and a football team's problem?
- The following sentence is from the text above: "As researchers tested the formula to see if it would work scientifically, they also had to create something that tasted good so athletes would want to drink it." What other sentence or sentences in the text helped you determine what the words "work scientifically" mean?
- How did Dr. Cade take his formula from the laboratory and turn it into a drink you can buy at a store?
- Telling consumers about products is an important part of marketing. What is unique about the way consumers learned about this product?