Bouncy Production:
How to make a Bouncy Ball

We are Emerson

Who are we? Emerson Automation Solutions

At Emerson, we help the companies that make all kinds of things… :

- the gasoline for your cars,
- the food for your tables,
- he makeup and cleansers for your face,
- plastics for your phone…

Fuel Dispensing

Ensure the safety, accuracy, flow, and quality of alternative and conventional fuels.

Our products help them make their products safely, quickly and with better quality.

Packaging

Improve the speed, accuracy, and efficiency of your packaging lines

Health and Safety (HSE) Engineer:

A HSE Engineer is responsible for safety in the workplace. They inspect and maintain equipment, identifies potential hazards, and designs ways to prevent them. A HSE engineer might be involved when new products are being considered to design ways to manufacture or work with the new products, when new buildings are being built, when new procedures are being made to ensure that they are safe, pose no health issues, and acceptable to the environment.

Today the HSE Engineer will:

- **Makes sure materials in the area are safe and handled properly.**
- **Makes sure potential safety precautions are on the label.**
- **Makes sure everyone wearing their Safety Goggles and following procedures.**

Process Engineer:

- A process engineer studies how to produce and manufacture different products. They look at safety, quality, ingredients, and the efficiency of how a product is produced; then they make recommendations to improve the process for profitability.

Today the Process Engineer will:

- **Scale up the recipe for how many balls we need to make.**
- **Give your inventory request to the Supply Engineer for approval.**
- **Look for ways to optimize the process**

Supply Engineer:

A supply engineer supervises the sourcing of equipment and raw materials to make the most efficient and profitable products possible. A supply engineer may need to anticipate and plan material needs to insure they are available and plan for alternative sources. They may need to plan for natural disasters and production slowdowns when raw materials may become scarce.

Today the Supply Engineer will:

Based upon the process engineer's requirements, go to the plant warehouse with your necessary list of supplies and bring them back to your plant. (Please weigh/measure the quantity of each supply and bring back to your work area.)

Production Engineer:

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A production engineer is involved in the entire process of making a product. They keep costs to produce the product low and maintain the perfect level of quality. They may calculate yield of product from the production and determine cost of making the product.

Today the Production Engineer will:

Ensure we have the right equipment. Set up the Assembly line and assign tasks for making the bouncy ball.

Make products following the recipe step by step.

Quality Engineer:

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A quality engineer makes sure the processes are working according to the specifications, industry standards, and the processes runs smoothly. They may anticipate potential problems and ways to avoid them. When a potential problem arises, they develop a strategy to resolve the problem and organize the process so it can be avoided in the future.

Today the Production Engineer will:

- **Finish production notes about the process.**
- **Check the size, shape and weight of each ball.**
- **Make sure the area is ready for the next production run**

Packaging Engineer and Technical Marketing Manager:

Packaging Engineer: A packaging engineer design and constructs the containers for the products you make. They consider the chemical properties of the product to determine what container might be best without causing a reaction with the product, finding one that will allow the product to last on the shelf in the store, and meet the required environmental needs: reduce, recycle, reuse.

Once a bouncy ball is produced;

- Designs labels and label product for sale,
- Places the label on plastic bag, and then package it for the customers.
- Makes sure an ingredients list and special instructions are on every label.

Technical Marketing Manager: A technical marketing manager helps sell the products we make. They may determine what products to sell, determine the people to target that may buy them, set their price, and develop promotional materials to advertise.

Decides things like:

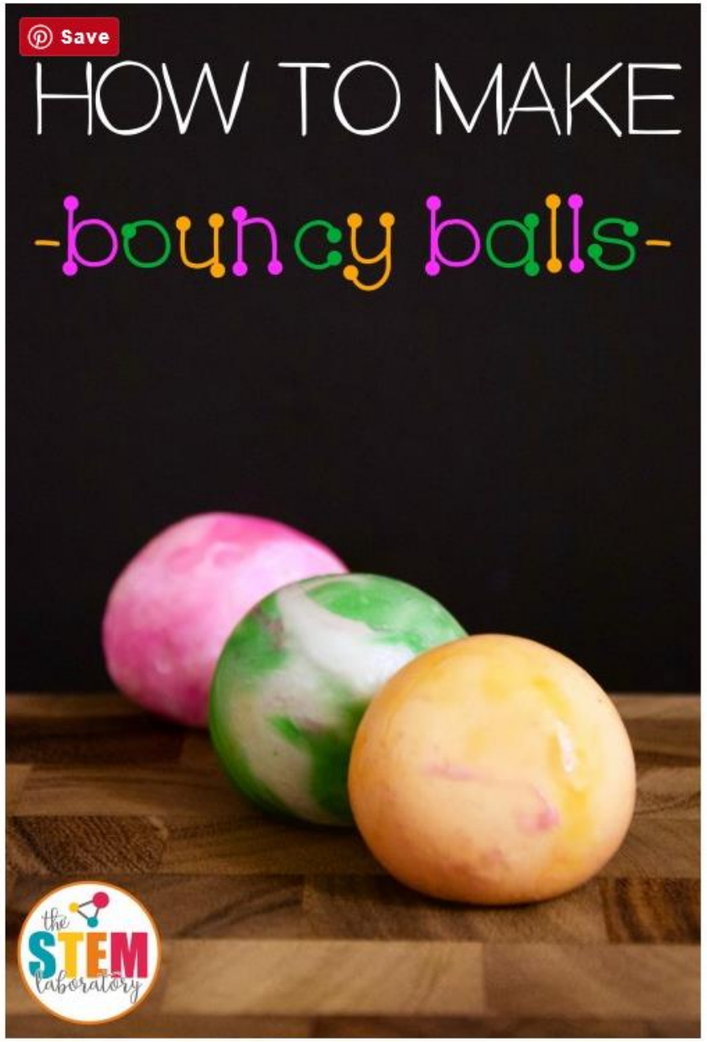
- What should be the name and price of your bouncy ball?
- What materials will you need to market the bouncy balls?
- Who will buy the balls?

Step 1: What do we need? Raw Materials

What do we need? Equipment

- 2 Mixing vessels
- Paper Cup per Ball
- Dry measuring spoons
- Liquid measuring spoons
- Food Color
- Mixing sticks
- Safety goggles (for each team member)

What do we Need – Instructions



http://thestemlaboratory.com/how-to-make-bouncy-balls/

Step 2: Mix the Borax Solution in Vessel 1

Step 2:
In Vessel 1, Mix the Borax with the warm water.

2 Tbsp. Borax per 1 cup Water for up to 6 balls.

Step 3: Make the Glue and Corn Starch mixture

Step 3:
In Vessel 2, Mix the glue and corn starch

2 Tbsp. Glue to 1 Tbsp. starch per ball.

Step 4: Divide and color

Step 4:
Divide the mixture equally into separate cups.
Then add your favorite color and mix well.

Step 5: React Glue Mixture with Borax Solution

STEP 5:
POUR EACH MIXTURE 1 AT A TIME INTO THE BORAX/WATER MIXTURE AND LET THEM SIT FOR ABOUT 10-15 SECONDS.

Step 6: Form the Bouncy Ball

Step 6:
Now Roll it into a Ball
Option: Share and mix colors

Step 7: Package your Ball

Step 7:
Make a Label and place your ball in the Bag

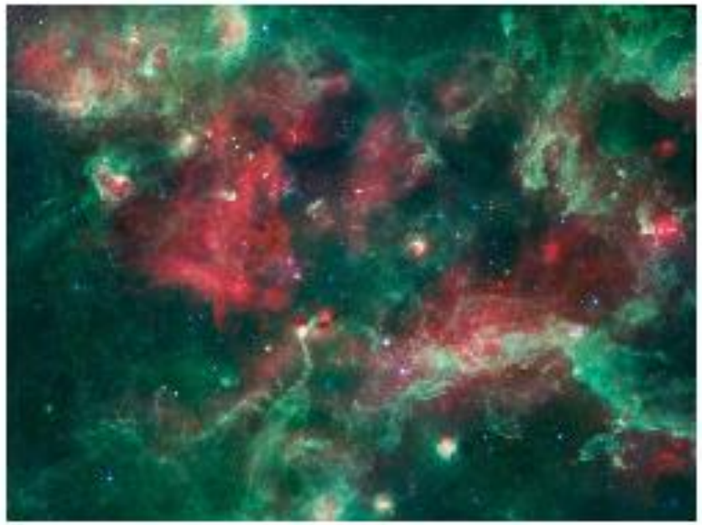
Questions

1. Do the labels look the same? Are the labels applied in the same place on each plastic bag? Why might this be important?
2. How long did it take to make the balls? the labels?
3. Do all the balls look the same?
4. Do they all weigh the same?
5. What if we had to make 6000, could you think of ways to speed up the process?

Engineers help to answer questions like:

- How might we improve the production process to make more identical bouncy balls?
- How do we improve the time to make the balls without sacrificing quality?

What do we use that Engineers help to make?

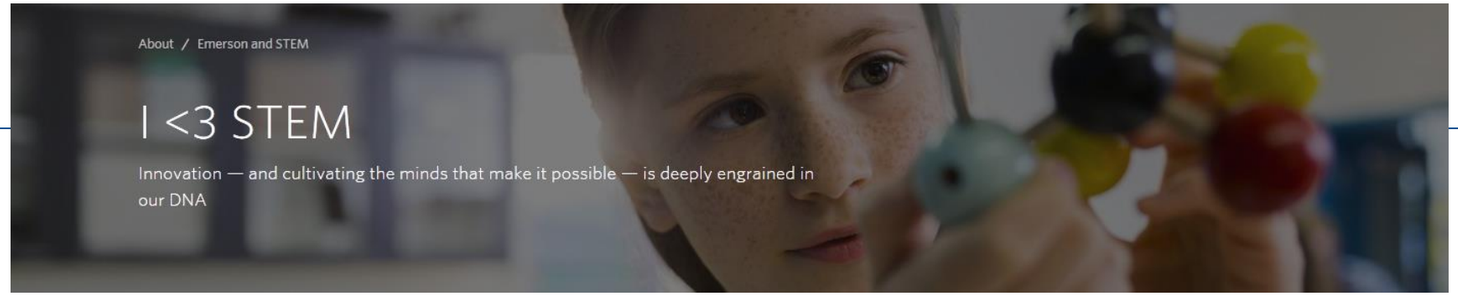


Space

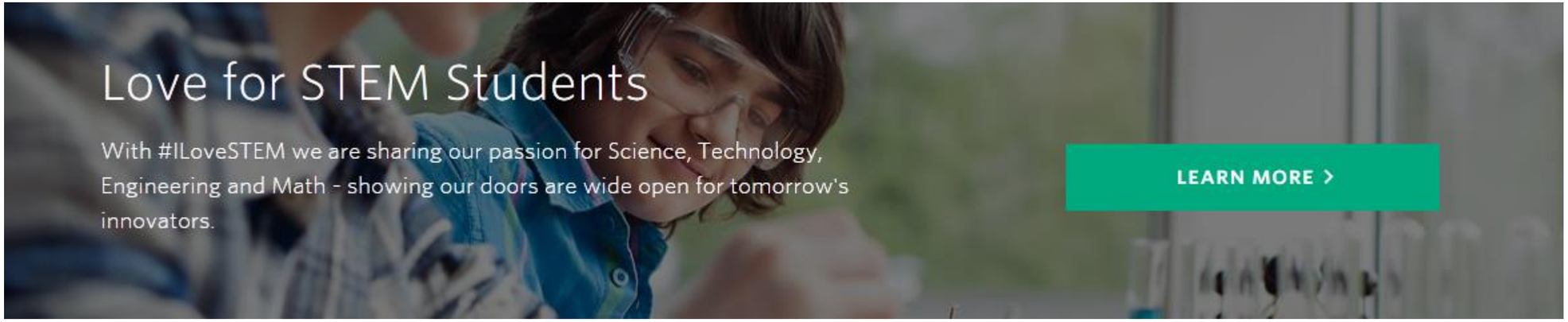
Great challenges like creating colonies in space or on other planets demand the kind of creative problem-solving for which engineers are trained. In these stories, profiles, and resources, find out how engineering has and continues to power human efforts to go into space.

Transportation & Travel

Engineers help us get where we want to go and an engineering career could be your ticket to just about anywhere in the world. Here find out how engineers are shaping the future of transportation and traveling the world to make a difference.



Have a Great Day!



Please take look around and make sure your area is cleaned up.
Then take your balls with you.