5 Everyone Needs an Egg Protector!

Get Started

You are part of a famous design team. One day, your manager comes running into your office. Many people where you live have "pet eggs" that they carry around with them. But these eggs sometimes break. Now your manager has a great idea to solve the problem. You are to design an Egg Protector. Your manager thinks many people will buy it.

Work On It

It's up to you and your team to design and build an Egg Protector. Your design must meet these standards:

- It should be attractive, so people will want to buy it.
- It needs to solve the problem of breaking eggs. When it is finished, you will put an egg in it and drop it outside on the ground from a height of 2 m. Your Egg Protector should keep the egg from breaking when it experiences the force of hitting the ground.
- It needs to be as cheap as possible, so more people can afford to buy it. Each material you use has a cost. Keep a record of all the materials you use and calculate the total cost of building your structure. Try to have the least expensive Egg Protector in the class!

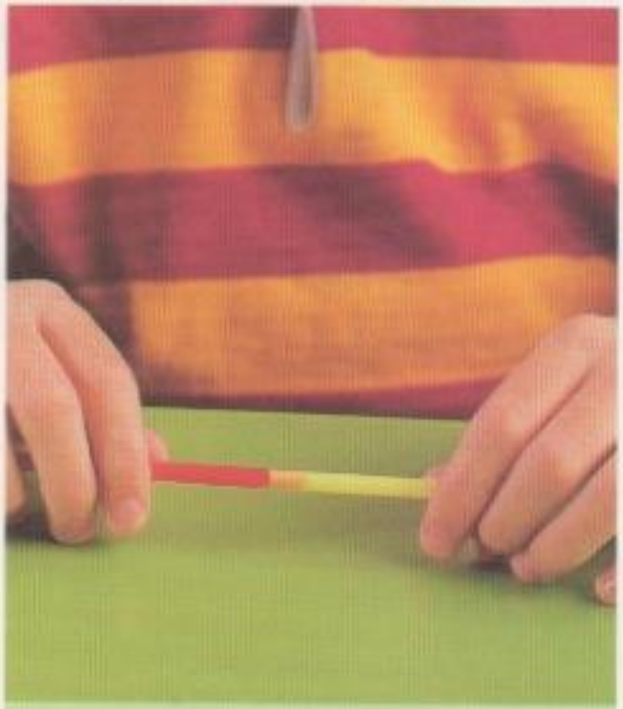
Materials for each group:

1 egg (to be given later)
straws ($0.10 each)
masking tape ($0.50 per 50 cm)
newspaper ($1 per page)
elastic bands ($0.02 each)
cardboard
($0.75 for 15 cm x 15 cm piece)
paper ($0.50 per sheet)
Popsicle sticks ($0.30 each)
string ($0.05 per metre)
paper clips ($0.01 each)
glue (free)
coloured markers, fabrics, and other decorative materials (free)

Building Tips

Here are some building tips that may be helpful:

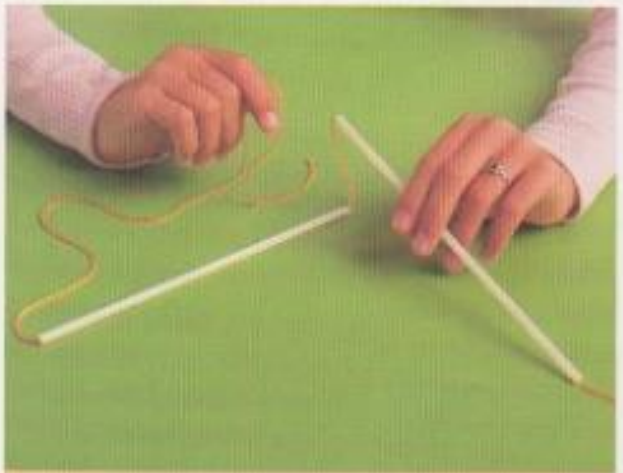
- Straws can be joined together in a variety of ways. Here are some suggestions.



Fold one straw and insert it into the other.

Use paper clips for flexible connections.

Use a paper tube for reinforcement.



Use string to hold the straws together.

- When connecting two straws to form a corner, the joint can be strengthened by adding a triangle of cardboard or paper.

Procedure

In your group, discuss how you will use the materials in a safe way. Then, go ahead and build your Egg Protector. When everyone in the class is finished, your teacher will give you an egg. Put it in the protector and take it outside. Test your protector by dropping the egg in the protector from a height of 2 m. (You may want to stand on a chair.)

Safety Caution

Your teacher will arrange a drop zone for testing your egg. To protect the ground, arrange newspaper and plastic sheets in the drop zone.

Communicate

Write Present Discuss

1. In your group, create a TV or radio commercial to sell your product. Your commercial should make people want to buy your product. Explain why your Egg Protector is more attractive, more useful, and less expensive than anyone else's. Present your commercial to the class.
2. What problems came up while you designed or built your product? How did you/could you solve these problems?
3. How was it difficult having limited time and materials to build your product?
4. If you had a whole week and plenty of materials, how could you modify your product? How could you make it
   a) work better?
   b) look nicer?
   c) be safer for the environment?
5. What parts of your Egg Protector were under compression? What parts were under tension?

Build On What You Know

If you could use any material, how would you design an Egg Protector that could fit into a school backpack? Include a design and description in your Inventor's Notebook.