

# STEM

## Engineering

### Egg Engineering - Equipment

You can use anything that is provided, but it can only be used once. So if you use the item for the parachute you cannot re-use the item for the zip line, nor the escape car

### Egg Parachute

Using the equipment provided design and build a parachute that will protect Ethan Egg from shattering when dropped from height. Ethan Egg must be able to be completely removed from the parachute to continue on his journey

**Think:**

How are you going to protect Ethan Egg from breaking?

### Egg Zip Line

Using the equipment provided design and build a harness to enable Ethan Egg to traverse the zip line. Ethan Egg and zip line equipment must not be touched once it has gone past the start line. Ethan Egg must be able to be completely removed from the zip line harness to continue on his journey.

**Think:**

How are you going to design it so it does not get stuck?

### Egg Escape Car

Using the equipment provided design and build Ethan Egg's vehicle. The vehicle and Ethan Egg must travel a distance of 5m. The vehicle must not be touched once Ethan Egg is ready to begin his journey & no push starts allowed with anything!

**Think:**

How are you going to make the car move?

### Egg Engineering - Notes for Leaders

#### Equipment list:

The list that can be provided is endless and recycling material can be used:

- Egg
- Scissors
- Sticky tape
- Card
- Paper
- String
- Straws
- Toilet rolls
- Pipe cleaner
- Milk carton lids [with holes for skewers]
- Bamboo skewers
- Egg box
- Washing up liquid bottle
- Elastic bands
- Cocktail sticks
- Cotton wool balls
- Balloon

**10 minute** talk

**45 minute** Guide discussion on activity & build time

**15 minute** Testing

**5 minute** What could have been done better discussion

**Egg Parachute:** Crash testing is carried out in the car industry to test the design and how it protects the people inside from injury - just not like this!

**Egg Zip Line:** If our shoes didn't have friction we would slip when running, so friction is a good thing. A hovercraft doesn't like friction and uses an air cushion to enable it to glide over land and water, so in this case friction is bad. For a zip line some friction is needed as you don't want it to run away but too much friction and it won't slide.

**Egg Escape Car:** Propulsion is the driving forces which moves an object. A car uses propulsion to move but gravity, friction and air resistance acts against it. Gravity pushes the car down, the surface friction and air resistance also act against the population.

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### STEM Notes for Leaders

STEM is Science, Technology, Engineering and Mathematics

This activity covers Science and Engineering skills.

Ethan Egg needs your help to complete his Mission. You are his back-up team and must design and make his specialist equipment to enable him to parachute out of his plane, cross to the next mountain via the zipline to reach his escape vehicle, which still needs to be built!

Like all Engineering projects you have a limited time to design and make the equipment. You need to use your time well and share tasks amongst your team. There is no money available and you have limited resources to make the equipment. You will be supplied with your Scope of Works detailing what you need to do and what you can't do. You have 45 minutes to complete your design and build the equipment ready for testing.

### Alternative

This activity could be changed for Easter and use Cadbury crème eggs and escaping the large Easter bunny who loves chocolate....yummy!