

Speed and Motion Activity Bag

CIBL Flyer: Student Activity Guide

Think about a time you went down a slide or threw a ball in the air. Both you and the ball returned to the ground. In this activity, we will explore what causes things fall to the ground.

Materials From The Bag

- Marble
- CIBL Flyer
- Food Tray
- Chipboard (extra thick paper)
- Straw

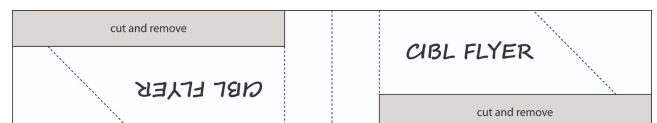
You Will Need

- Science Notebook or Student Activity Sheet from the teacher
- Scissors

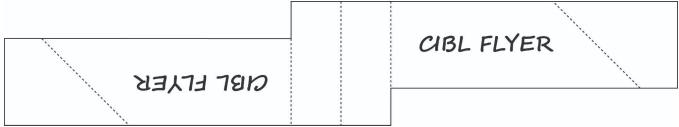
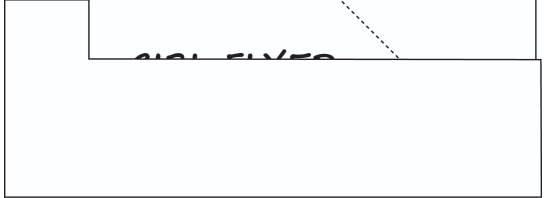
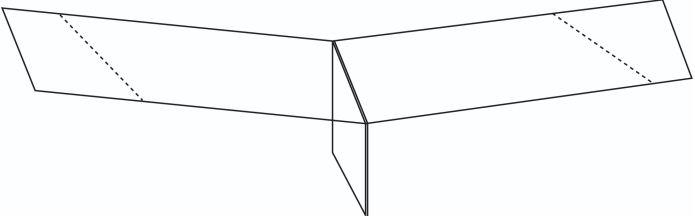
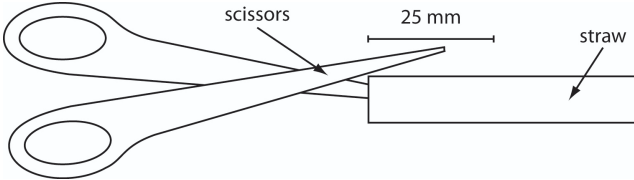
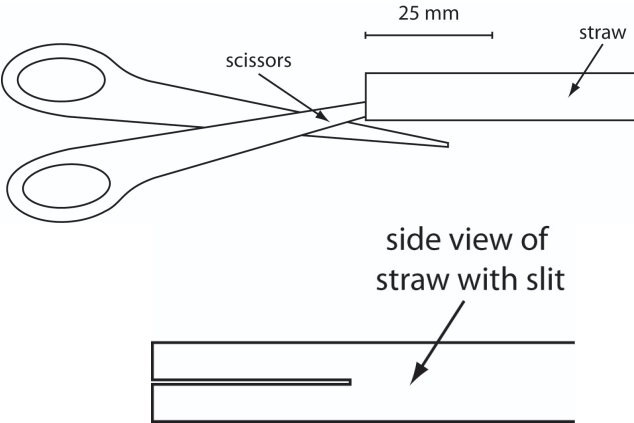
Part 1: CIBL Flyer: Exploration

In this part we will build a CIBL Flyer prototype. A prototype is a basic design that you can improve.

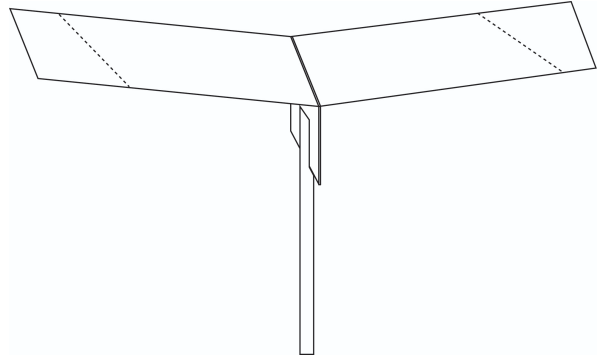
1. Using scissors carefully cut out one CIBL Flyer from the CIBL Flyer page (page 5).



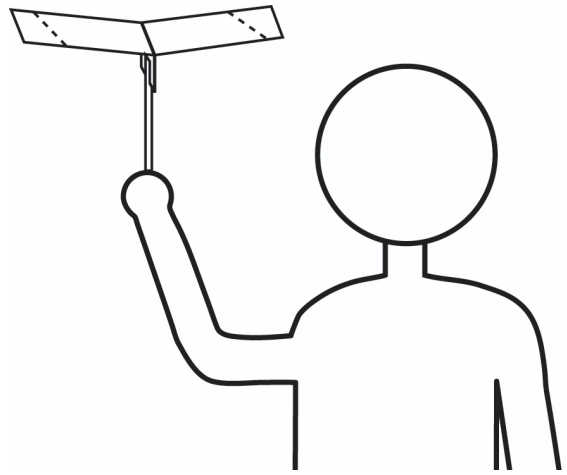
CIBL Flyer pg. 2

<p>2. Cut and remove the dark gray areas labeled cut and remove.</p>	 <p>The diagram shows a rectangular template for a CIBL Flyer. It features two rectangular sections, each labeled 'CIBL FLYER'. Dotted lines indicate fold lines, and dashed lines indicate areas to be cut out. The text 'CIBL FLYER' is printed on both sections.</p>
<p>3. Fold the wing in half on the middle dotted line so that the words CIBL Flyer face each other.</p>	 <p>The diagram shows the flyer template from the previous step, now folded in half along the central dotted line. The two 'CIBL FLYER' sections are now facing each other.</p>
<p>4. Fold each wing back on the dotted lines in the middle.</p>	 <p>The diagram shows the flyer with its wings folded back along the dotted lines. The wings are now pointing outwards, and the body of the flyer is in the center.</p>
<p>5. Take the straw, place one of the scissor blades inside one end of the straw, and cut the straw about 25mm.</p>	 <p>The diagram shows a pair of scissors with one blade inserted into one end of a straw. A horizontal line indicates a cut 25mm from the end. Labels include 'scissors', '25 mm', and 'straw'.</p>
<p>6. Place the other blade into the SAME end and cut the straw directly below the first cut. The cut should be about 25mm. The straw can now open up.</p>	 <p>The diagram shows the second blade of the scissors cutting the straw directly below the first cut. A horizontal line indicates a second cut 25mm from the end. Labels include 'scissors', '25 mm', and 'straw'. Below this, a 'side view of straw with slit' is shown, illustrating the straw opening up.</p>

7. Place the CIBL Flyer wings into the slit of the straw.



8. Practice dropping your CIBL flyer from as high as you can reach.



What's happening...

When you let go of your CIBL flyer, it always came back to the ground. The Earth ‘pulls’ on all objects on or near the earth without touching them. This force is called earth’s **gravity**.

Part 2: CIBL Flyer: Challenge

Your challenge is to get your CIBL flyer to take the longest amount of time to hit to the ground.

1. Draw your CIBL flyer. Drop the CIBL flyer from as high as you can reach.

Use a timing device, or count, to see how long it takes for the flyer to hit the ground.

CIBL Flyer pg. 4

2. Record your time next to your drawing.
3. Change the wings on your CIBL flyer to make it slower. You may fold or cut the wings. Repeat **steps 1-2**. If needed, cut out a new CIBL Flyer from page 5.
4. Repeat **step 3 three** more times and make a new change each time.
5. Which design went the slowest? How do you know? Describe what you did to the wings.

Part 3: Ramps and Gravity

1. Set up your ramp from Activity 2 Races.
2. Place the marble at the top of the ramp. Release it and watch the marble cross the finish line.
3. Explain the effect of earth's gravity on the marble.

What's happening...

Earth's gravity is pulling on the marble at the top of the ramp, as it travels, and even when it has stopped moving. Imagine if the Earth no longer had gravity. What do you think would happen?