LET'S MAKE

GATHER YOUR SUPPLIES

So we can, you know, do this thing!

FULL-SIZE HANG GLIDERS THAT CAN SUPPORT THE WEIGHT OF A PERSON ARE TYPICALLY MADE FROM ALUMINUM ALLOY TUBING AND SYNTHETIC SAILCLOTH. OUR MODEL HANG GLIDER IS GOING TO BE CONSTRUCTED FROM MORE COMMON MATERIALS:



CLOTHESPIN



GLUE STICK



MASKING TAPE



HD BOND II GLUE

TISSUE PAPER

BALSA STRIPS

NOT INCLUDED: CARDBOARD OR FOAMBOARD AS A BUILDING SURFACE (AT LEAST 12" X 12"). RULER OR TAPE MEASURE. SCISSORS

ABOUT HANG GLIDERS

Hang gliders are generally delta-shaped, flexible air foils that have a supporting structure that the pilot (the rider) hangs from as the glider moves through the air. For takeoff, the pilot attaches him- or herself to the glider and runs down a hill or leaps off a cliff to begin the flight. The force of gravity pulls the glider toward the ground, and the glider picks up speed as it descends. This increase in speed causes air to flow over the fabric of the flexible wings, providing lift to keep the glider in the air.

The pilot often searches for updrafts – air moving upward due to heat or circulation from geographic features such as mountains, valleys, or large bodies of water. These updrafts are often strong enough to lift the hang glider and pilot to even higher altitudes, and then gravity once again takes over. If you have ever watched an eagle or hawk, you might have noticed them circling and gaining altitude as they circle. When this happens, they have found an updraft from a plowed field or other natural upward airflow – and they circle around that updraft to gain altitude without having to exert energy by flapping their wings!

Pilots steer the hang glider (depending upon the model) by shifting their body weight and/or pulling on cables to change the shape of the flexible airfoil. By shifting their body weight, they are changing the center of gravity of the hang glider. This change in the center of gravity can cause the glider to turn left or right, or to gain or lose altitude. Just like an eagle or hawk, they can circle around an updraft and ride it high into the sky!

Dependent upon several factors, hang gliders can glide down to the ground at a relatively moderate slope, making it easy for the pilot to land on the ground, using a running motion to help keep their balance and slow down. The slope of the hang glider flight is referred to as the glide ratio and is determined by the following formula:

Glide ratio = Change in altitude
Change in distance along the ground

In other words, the glide ratio is how far a glider drops as it travels a specific distance forward. Glide ratios for hang gliders typically are around 5:1 to 15:1. A 5:1 glide ratio means that the glider moves forward five feet as it drops one foot.

ACTIVITY 1 LET'S BUILD A MODEL HANG GLIDER

STEP 1

Gather the four balsa sticks, the construction template, and the masking tape. Use a piece of cardboard, foamboard, or other flat surface for construction.

STEP 2

Use one of the 12" balsa sticks and place it on the template over the position of the #1 stick. Be certain the end of the stick is exactly at the point where the #1 stick ends at the joint between the three sticks (Point A). **Note:** The other end of the stick will extend beyond the edges of the template.

