

The Whirligig Challenge¹

Context: Watch the Seven Minutes of Terror at: <http://www.youtube.com/watch?v=h2I8AoB1xgU>

1. A team of scientists and engineers is planning to land a robot craft on Titan, a moon of Jupiter with a dense atmosphere. Team members are worried that the craft will be traveling too quickly when it lands, damaging the onboard computer. You will work with a model of the craft (whirligig) to determine how to modify its design. You will have just 30 minutes to make design changes before we have to start building the spacecraft. In your own words:



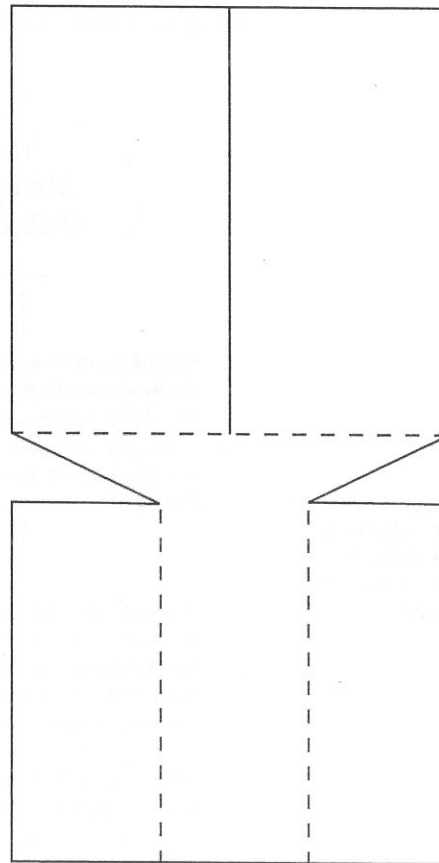
- What problem are you trying to solve?
- What are the criteria for success?
- What are the constraints?

2. Use the materials we have provided to make a whirligig as currently designed. Use the diagram at right. Cut along solid lines and fold along dotted lines. Add a paperclip at the bottom if needed for stability. Then make additional models with changes that you think could solve the problem.

3. Plan and carry out an investigation to determine which model represents the best solution. Be sure that your investigation is a *fair comparison* of at least two different models.

4. Draw a diagram using arrows to illustrate the forces on your model, and use the diagram to explain why your model functions differently from the original design.

5. Consider the explanations and evidence provided by all of the teams to determine which model should be used to solve the problem.



¹ This modified Whirligig Challenge is based on Project Based Inquiry Science (PBIS) *Diving Into Science*, student book pages 35-68. However, this basic activity appears in many other sources.

