

**Worksheet 5-5—
Lesson Plan**

Format

(adapted with permission)

Subject: Science	Teacher: Battazzo
Lesson Name: Forces	Location: SMS
Class: 6 th grade	Unit Context: Physical Science
Date: 3//15/09	

<p>Activities Introduction Purpose: Scenario: three man team must design a parachute to air lift food to starving orphanage in China due to monsoons and avian pandemic flu. (integrated curriculum- students are studying ancient China) Brain storm information needed to design parachute</p> <p>What are possible resources? Students brainstorm in teams Share with class</p>	<p>Big6™ Skills</p> <p>Task Definition What types of information do I need</p> <p>Information Seeking Strategies</p>	<p>Idaho Science Standards Forces and Motions impact objects 6.S.2.2.1 Describe the effects of different forces gravity friction on the movement speed and direction of an object.</p> <p>6S.5.2.1 Describe how science and technology are part of our society</p> <p>6s.5.2.2 Describe how science and technology are interrelated</p>
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Learning Context:

Materials/Resources: Chinese scenario to set purpose
Whiteboard list brainstorm ideas
Websites and designated science data bases

Evaluation: student participation, brainstorming inquiry
Student led teacher facilitates

Notes: Students are pumped to begin! They are ready to seek information and begin project

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<p>Activities Develop vocabulary And background knowledge Discovery School video On Forces in Motion How does friction and gravity effect the motion of falling objects? Teacher pauses video at key segments and discusses forces in action. Bungee jumper And skydivers</p> <p>Students share fact finding research with their team. How will you use the information?</p>	<p>Big6™ Skills</p> <p>Use of information</p>	<p>Idaho Science Standards Forces and Motions impact objects 6.S.2.2.1 Describe the effects of different forces gravity friction on the movement speed and direction of an object.</p> <p>6S.5.2.1 Describe how science and technology are part of our society</p> <p>6s.5.2.2 Describe how science and technology are interrelated</p>
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Learning Context: one 45 minute class period

Materials/Resources: Discovery School Video on Forces and Motions
 Reseach activity from day before

Evaluation: Can students compare balanced and unbalanced forces, drag, friction, air
 resistance and gravitational force. How do opposing forces affect acceleration?

Notes: teams discuss, paraphrase and journal about forces concepts

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Subject: Science	Teacher: Battazzo
Lesson Name: Forces	Location: SMS
Class: 6 th grade	Unit Context: Physical Science
Date: 3//17/09 Lesson 3 Lesson 3	

<p>Activities</p> <p>Develop vocabulary And background knowledge Discovery School video On Forces in Motion How does friction and gravity effect the motion of falling objects? Teacher pauses video at key segments and discusses forces in action. Bungee jumper And skydivers</p> <p>Students share fact finding research with their team. How will you use the information?</p>	<p>Big6™ Skills</p> <p>Use of information</p>	<p>Idaho Science Standards Forces and Motions impact objects 6.S.2.2.1 Describe the effects of different forces gravity friction on the movement speed and direction of an object.</p> <p>6S.5.2.1 Describe how science and technology are part of our society</p> <p>6s.5.2.2 Describe how science and technology are interrelated</p>
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Subject: Science	Teacher: Battazzo
Lesson Name: Forces	Location: SMS
Class: 6 th grade	Unit Context: Physical Science
Date: 3//18-19/09 Lesson 4 and 5	

<p>Activities Teams use information to design best parachute See attached lab sheet For complete lesson and evaluation rubric</p>	<p>Big6™ Skills</p> <p>Synthesis</p> <p>Evaluation</p>	<p>Idaho Science Standards Forces and Motions impact objects 6.S.2.2.1 Describe the effects of different forces gravity friction on the movement speed and direction of an object.</p> <p>6S.5.2.1 Describe how science and technology are part of our society</p> <p>6s.5.2.2 Describe how science and technology are interrelated</p>
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Learning Context: two 45 minute class periods

Materials/Resources: complete lab sheet for Eggstraordinary Parachute Design Team

Scissors, plastic bags and string, ziplocks and eggs

<http://www.basd.net/technology/STEEP/Technology/3.6/Para%20Design%20is.htm>

<http://www.physicsclassroom.com/mmedia/newtlaws/efar.cfm>

<http://www.science.gov/index.html>

Evaluation: Walk around and facilitate teams as needed

Use rubric for final egg drop

The Definitive Big6™ Workshop Handbook, page 78

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“Eggstraordinary” Parachute Design Team



How does a parachute affect the fall of an object (egg)?

Name _____

Materials:

Team _____

60cm x 60cm plastic square

string ,ziplock bag, one egg

scissors

Background Information about forces and motion:

1. Gravity is the force of attraction that causes objects to fall forward toward the center of the earth.
2. Air resistance is an opposing or slowing force that acts on anything moving through the air.
3. The larger the object the greater its air resistance.
4. Drag is the force that acts on a body(parachute) to slow down its motion through a fluid (air)
5. Terminal speed is the speed at which the downward pull of gravity is balanced by the equal and upward opposing force of air resistance for a falling object.

Task:



Team shares research with each other



Materials handler get materials for parachute



Draw possible diagrams for parachute



Team must come to consensus on final design



Team constructs parachute



Perform two test drops from class ladder

Record observations

How well does it perform?

What do you observe the way it falls?

Use a stopwatch and calculate terminal velocity



Make sure your team parachute is clearly marked with your team

Logo or names before turning in to teacher.

Library Drop Day 

Will your design save the Chinese orphanage in the Chiang Jiang Basin?

Presentation



Describe the changing forces that acted on the parachute as they fell and the resulting changes in the parachute's motion before you test it.

Word bank: **balanced and unbalanced forces**

Air resistance, gravity, drag, friction

Rubric for Performance Assessment

	1	2	3	4	weight	
Criteria	Beginning	Developing	Proficient	Advanced	X 5	Sub total
Presentation	No vocab used to describe changing forces of parachute	Some vocab used to describe changing forces	Adequate vocab used to describe changing forces	More than suggested vocab used to describe changing forces		
Design	Parachute is not constructed	Parachute is constructed incorrectly	Parachute is constructed correctly	Parachute shows good craftsmanship and creativity		
Results	Not tested	Falls quickly egg breaks	Falls gently to the ground egg survives!	Falls very slowly to the ground and saves orphanage!		
					total	