

Destination ImagiNation®

# the solar stage

scientific

## Points of Interest

- Create and present a theatrical performance that tells a Story about the use of solar energy.
- Integrate research about past and/or current uses of solar energy.
- Design and create a Solar Energy Prototype that demonstrates a new way to collect, capture and use solar energy.
- Design and provide Theatrical Lighting to be used to illuminate the Presentation and to create special theatrical effects.

## Focus

- Science
- Solar Energy Research
- Model and Prototype Construction
- Storytelling
- Theatrical Lighting Design
- Creativity
- Critical Thinking
- Collaboration
- Communication



## TEAM CHALLENGE OVERVIEW

Since the first sunrise, solar energy has shaped and fueled planet Earth. Now it is your turn to harness the sun's awesome power in a new way... **IN THE DARK!** Can someone please dim the lights? It's time to shine—on The Solar Stage.

**In order to successfully solve this Challenge, teams must read and follow:**

- Team Challenge**
  - A. *Central Challenge* (240 points)
  - B. *Team Choice Elements* (60 points)
  - C. Presentation Site
  - D. Reward Points
- Rules of the Road**
- Published Clarifications** (online at [www.IDODI.org](http://www.IDODI.org))

The information in these materials is binding for all teams.

**Team Managers are strongly encouraged to read and use:**

- Roadmap*
- Instant Challenge Practice Set* (available online in the Resource Area at [www.IDODI.org](http://www.IDODI.org))
- TravelGuide for Teams* (available online after Jan. 1, 2012)

### Time Limit

The team must complete the Presentation (including setup) in **eight minutes**. Please review section A.3 for important details that pertain to this Challenge.

### Team Budget

The total value of the materials used may not exceed **\$175US**.

### Approaching This Challenge

This Challenge can be solved on many levels, from simple to complex, and by using many types of creativity. Please try to solve this Challenge as it is intended. If you find the intent or any of the details of the Challenge unclear, we encourage you to ask for a Clarification. (See the *Rules of the Road*.) Remember—if it doesn't say you can't, then you can. However, if it says you "must" perform specific requirements, then those requirements have to be met.

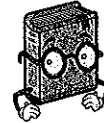
### Team Number

Teams and individuals using these Program Materials must hold a 2011-12 Team Number. The Destination ImagiNation Team Number is a license to compete in sanctioned Tournaments and/or to use the *Program Materials* for educational purposes within your team, school, group or organization. Online access to *Program Materials* for teams who have purchased Team Numbers is on [www.IDODI.org](http://www.IDODI.org).

- My 2011-12 Team Number is: \_\_\_\_\_
- My team is planning to compete in a sanctioned Tournament.
- I have registered for that Tournament with the:
  - Regional or
  - Affiliate Director

## A. CENTRAL CHALLENGE (240 POINTS)

- 1. The Intent of the Challenge:** To solve this Challenge, teams will tell a Story about one or more characters facing a situation where solar energy is used. Teams will design and build a Solar Energy Prototype that is to be used by at least one character in the Story to demonstrate one or more ways to collect, capture and use solar energy to resolve the situation. Teams will provide Theatrical Lighting to illuminate and theatrically enhance the Story.
- 2. Presentation Site:** This Challenge will give teams the opportunity to explore theatrical lighting techniques. While each Tournament is encouraged to dim the lighting for each team's Presentation, not all Tournament Sites will be able to be darkened. Therefore, teams should attempt to design lighting enhancements that are effective, no matter what amount of light is provided at the Tournament Site. Teams should be ready for any level of lighting: whether it is dark, dim or light. All Tournaments will provide the same level of lighting for each team presenting at that Site. Specific details about the level of darkness that your team can expect at your Presentation Site cannot be answered through the Clarification process. Teams should contact their Tournament Directors to learn about the lighting conditions that will be available at their Tournaments.
- 3. Procedures at ALL Tournaments:**
  - a. The Tournament Site will remain lit until the team signals a designated Tournament Official for the Tournament Lights to be turned off, thus indicating it is ready to start using its **Theatrical Lighting** (see definition at right). This procedure will be followed for venues that are darkened, dimmed or even fully lit. The team will describe its signal on page 2 of the *Tournament Data Form*. From this point on, the team must provide its own Theatrical Lighting to be used for illumination and special theatrical enhancement(s) for the remainder of the eight-minute Presentation. After the Presentation is completed, the Tournament Lighting will be turned back on.
  - b. Team members will not be allowed access to **Tournament Lighting** (see definition at right) or electrical wall switches. Only Tournament Officials will be allowed to control the Tournament Lighting.
  - c. Teams may not use lasers or laser pointers. Any lights or scanners that produce high intensity beams of light may be of danger to eyes, so they will not be allowed.
  - d. In order to maintain consistency in lighting conditions for every team, no flash photography will be allowed during any team Presentation. Entrance/Exit doors will be closely monitored to remain closed during each eight-minute Presentation.
  - e. At Global Finals, all Challenge Sites will be darkened. Therefore, all teams that will present their solutions at that level must prepare their Theatrical Lighting to be effective in a darkened site.
- 4. The Story:** Humans have always devised methods for using solar energy. Early man kept warm by trapping the heat of the sun. As time passed, civilizations discovered how to boil water using only the sun's energy. In recent history, experts around the world have developed the ability to turn sunlight directly into electricity. Now it's your turn to imagine something new under the sun!
  - a. The team will tell a Story about one or more characters who face a situation where solar energy is needed. There are no restrictions on the



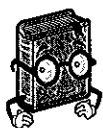
### Special Definitions

#### Theatrical Lighting

Team-provided lighting that teams will use to illuminate and/or create a sense of visibility, time and place, and mood during the Presentation.

#### Tournament Lighting

The installed lights of the facility and/or the Tournament-provided lights and lamps that are intended to provide general illumination and safety at the Site.



### Special Definition

#### Solar Energy Prototype

A team-designed and team-built model that looks real for demonstration purposes, but is not required to be fully functioning. It may be full-size or scaled to a larger or smaller size to show its features and functions.

nature or the extent of the situation. The team will earn points for the Creativity of the Story. This includes original and novel development of the storyline, including the plot, characters and the ending.

- b. There are no restrictions on the specific settings, time periods or characters in the Story.
- c. Teams will earn points for Clear and Effective Storytelling. This means that the Story has a beginning, middle and end that are easy to follow and understand.
- d. The team will research the past and/or current uses of solar energy. Teams will earn points for Creatively Integrating their Research into the Presentation. They may use set design, characters, props and costumes, script, or any other effective means to present their research to the audience and Appraisers.

5. **Solar Energy Prototype:** In many fields, engineers and designers build prototypes to test the performance or suitability of new designs. Some prototypes are models that are used for demonstration purposes only. These prototypes are only intended to have the appearance, color and surface textures of the intended product or device. Your team will design and build a **Solar Energy Prototype** (see definition at left) to be demonstrated during the Presentation. Based on the team's research, this Solar Energy Prototype must demonstrate how it would collect and convert solar energy into usable energy.

- a. For the purposes of this Challenge, solar energy is considered to be convertible into mechanical, electrical, stored or other forms of energy. If the team intends any part of the Solar Energy Prototype to be functional, they must follow the guidelines for the use of excessive heat or cold that are specified in the *Rules of the Road*.
- b. There is no requirement that the application or end-use of the Solar Energy Prototype must be practical or realistic.
- c. The features and functions of the Solar Energy Prototype will show the process that the team proposes to collect and convert the solar energy.
- d. Points will be awarded for:
  - i. Quality of appearance and workmanship involved in the construction of the Solar Energy Prototype.
  - ii. Original and/or unexpected methods that the team proposes to be used to collect, convert and use the solar energy.
  - iii. Effective demonstration of the Solar Energy Prototype.
- e. The demonstration of the Solar Energy Prototype must be large enough to be visible from an approximate distance of 25ft (7.62m). This is to ensure that the features and functions of the team-built model are large enough to be appreciated from a distance.

6. **Theatrical Lighting:** Stage lighting is a theatrical art form and many different methods can create a sense of visibility, time, place and mood during the Presentation. In this Challenge, your team will design and provide lighting to illuminate the Presentation and create special theatrical effects.

- a. Examples of lighting techniques include, but are not limited to: use of light boxes, color wheels/gels, black lights, shadows, silhouettes, illusions, light movement and negative space. Teams may use several

lighting techniques, but they will select ONE Lighting Technique, which will earn points for its Creative Effect. This choice must be listed on the *Tournament Data Form*.

- b. Teams will earn points for the Effective Theatrical Use of ALL Theatrical Lighting. For the purposes of this Challenge, Theatrical Lighting is effective when it is used to illuminate actors and/or scenery, focus attention on or distract from details, set the mood(s), highlight stage scenery, and demonstrate the contrast between light and darkness during the Presentation. Teams will list ALL their Theatrical Lighting Techniques on the *Tournament Data Form*.
7. **Team Identification Sign:** The team should provide a free-standing Identification Sign (ID Sign) of approximately 2ft x 3ft (0.6m x 0.9m) displaying your team's Team Name, Team Number, School/Organization (if different from Team Name), and Level. It cannot be used as a scoring element. See "Team Identification Sign" section in *Rules of the Road* for further information.

## B. TEAM CHOICE ELEMENTS (60 POINTS)

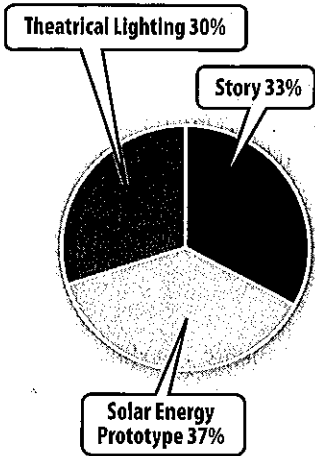
In addition to the above requirements, the team must present **TWO** creations called *Team Choice Elements* that show off their interests, skills, areas of strength and talents. The team may create anything it wishes for *Team Choice Elements*, including props, music, technical gadgets, costumes, physical actions, etc.

1. The team must present both *Team Choice Elements* as part of the eight-minute Presentation, and each *Team Choice Element* should have a meaningful connection to the team's *Central Challenge* solution. Each *Team Choice Element* must be described briefly on the *Tournament Data Form* found at the end of this Challenge.
2. A *Team Choice Element* may not be a specific item that is required in the *Central Challenge* that is already being evaluated. A *Team Choice Element* MAY be a single unique PART of a required item, as long as it can be evaluated as a standalone item. Both *Team Choice Elements* may be presented at the same time ONLY IF both can be easily identified and scored separately. Examples of these can be found in the *Rules of the Road*.
3. Each *Team Choice Element* will be evaluated in three ways: for the Creativity and Originality of the *Team Choice Element*, and for the Quality, Workmanship, or Effort that is evident and Integration of the *Team Choice Element* into the Presentation. Evaluation of *Team Choice Elements* is subjective.

## C. PRESENTATION SITE

1. **Floor Surface:** Destination ImagiNation strongly suggests that the Presentation Site be a large space with a hard floor such as wood, linoleum, concrete or very short-napped carpet. Teams should be prepared to deal with a variety of floor surfaces.
2. **Site Size:** The minimum required overall size of the Presentation Site is 10ft x 12ft (3.05m x 3.66m), but teams may use any additional space that Tournament officials designate as available. For safety purposes at Tournament Sites that are darkened, once time begins teams may not enter the space reserved for the audience.
3. **Electrical Power:** Electricity will be provided at each Presentation Site via an extension cord connected to an electrical outlet or via a 3-prong electrical outlet at the edge the Presentation Area. It is the team's responsibility to determine that their own power needs will not exceed the power available at the venue from one wall outlet and they must supply their own GFI power strip(s), if needed. Teams should check with their Tournament Director to see what circuit amperage will be used at the Presentation Site.

## Team Challenge Scoring at a Glance



## D. REWARD POINTS

ELEMENT		POINTS	DETAIL
<b>CENTRAL CHALLENGE</b>		<b>UP TO 240</b>	<b>A</b>
<b>1.</b>	<b>STORY</b>	<b>UP TO 80</b>	<b>A.4</b>
	a. Creativity of the Story	Up to 30	A.4.a
	b. Clear and Effective Storytelling	Up to 25	A.4.c
	c. Creative Integration of Research into the Presentation	Up to 25	A.4.d
<b>2.</b>	<b>SOLAR ENERGY PROTOTYPE</b>	<b>UP TO 90</b>	<b>A.5</b>
	a. Quality of Appearance and Workmanship of Prototype	Up to 30	A.5.d.i
	b. Original and/or Unexpected Methods used to Collect, Convert and Use the Solar Energy	Up to 30	A.5.d.ii
	c. Effective Demonstration of Solar Energy Prototype	Up to 30	A.5.d.iii
<b>3.</b>	<b>THEATRICAL LIGHTING</b>	<b>UP TO 70</b>	<b>A.6</b>
	a. Creative Effect of ONE Lighting Technique	Up to 30	A.6.a
	b. Effective Theatrical Use of ALL Lighting Techniques	Up to 40	A.6.b

<b>TEAM CHOICE ELEMENTS</b>		<b>UP TO 60</b>	<b>B</b>
<b>4.</b>	<b>TEAM CHOICE ELEMENT 1</b>	<b>UP TO 30</b>	<b>B.3</b>
	a. Creativity and Originality	Up to 10	B.3
	b. Quality, Workmanship, or Effort that is evident	Up to 10	B.3
	c. Integration into the Presentation	Up to 10	B.3
<b>5.</b>	<b>TEAM CHOICE ELEMENT 2</b>	<b>UP TO 30</b>	<b>B.3</b>
	a. Creativity and Originality	Up to 10	B.3
	b. Quality, Workmanship, or Effort that is evident	Up to 10	B.3
	c. Integration into the Presentation	Up to 10	B.3

## Putting It All Together

