

# Challenge B: *A Change in Direction*

Focus: *Technical Design and Construction; Systems Integration; Teamwork*



## **The Destination: *Where This Challenge Will Take You!***

The carpet you're walking on may one day be a bumper on a car. The school bus you ride on could be turned into a catapult in a junkyard contest. The instructions on your building toy show how to create a miniature city, but you decide to make a pirate ship. Imagine the fun your team will have creating an original technical device that can be rebuilt into a second device which performs different functions than the first!

## **Points of Interest**

- ★ The team will design two different technical devices that can be built from a single set of parts. During the performance, the team will take apart the first device, and then reconnect the parts as the second device. The two technical devices will perform two different tasks.
- ★ The team will design and build a transport system. Before putting together the second technical device, the team will use the transport system to move the pieces from one location to another along a path with *a change in direction*.
- ★ The team will create a Presentation based on an original story that includes a surprising *change in direction*. The story will tie together the devices, the tasks, the transformation from the first device to the second, and the transport system.
- ★ The team will integrate an Improv Element and three *Side Trips* into its Performance.

**Time Limit:** The team must complete the Presentation (including set up) in **eight minutes**.

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

**Roadmap for Success:** Teams must read the *Rules of the Road* in order to successfully solve this Challenge!

## **A. Itinerary: *The Central Challenge – 225 points***

1. **Events:** The Performance will begin with a *Set of Parts (definition C.3.)* put together as *Technical Device One (C.6.)*. After Device One attempts *Task One (C.5.)* to the team's satisfaction, the team will take Device One apart into five or more *Sections (C.2.)* The *Transport System (C.9.)* will then move the Sections to a new location, after which the team will put the Set of Parts back together in a different way as Device Two, which will attempt Task Two.
2. **Technical Devices:** The two Technical Devices must be assembled from exactly the same Set of Parts. Each Technical Device must be *Physically Connected (C.1.)* Each Device will receive a score for *Technical Design (C.7.)*
  - a. Each Technical Device must be team-created and may not be an unmodified commercial device. Individual parts may be commercially available items. The team must devise its own plan to put the parts together. To receive high Technical Design scores, the Devices should not be constructed primarily from commercial kit parts.
  - b. If Technical Device Two is not different from Technical Device One, or if it is not assembled from exactly the same Set of Parts as Technical Device One, the Technical Design score will be zero for Technical Device Two.
  - c. Either Technical Device may obtain power from the electrical outlet provided at the Performance Site. An extension cord that is used only to deliver electricity to one Device does not also have to be used for the other Device. Any other parts used to power or control a Technical Device, such as batteries or motors, must be included on both Technical Devices.

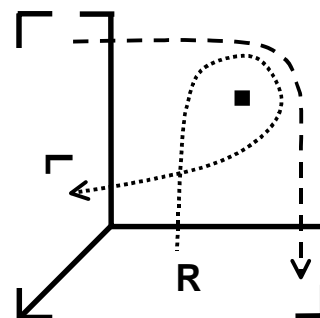
- d. Team members may participate in powering or controlling the Technical Devices, but less direct team member involvement will result in higher Technical Design scores (*E.I.2.a. & E.I.4.a.*). A team member is never considered to be part of a Technical Device, even if the team member is providing power to or controlling the Device.
3. **Systems Integration:** The Set of Parts will receive a score for *Systems Integration (C.4.)*. The Systems Integration score (*E.I.1.*) will measure how creatively and effectively the entire Set of Parts is used to construct two different Technical Devices.
4. **Tasks:** Each Technical Device must attempt to complete a different Task. Device One will attempt Task One. Later, Device Two will attempt Task Two. On the *Tournament Data Form*, found at the end of this Challenge, the team will provide a brief description of what must happen for each Task to be scored as complete; for example, “the light bulb will glow.” The team will receive 10 points for each Task completed as described on the *Tournament Data Form (E.I.2.c. & E.I.4.c.)*. The Technical methods used to attempt the Tasks will receive scores for *Technical Innovation (C.8.)*.
  - a. The Tasks may be attempted anywhere within the Performance Site. The Technical Devices may interact with team members and props to complete the Tasks.
  - b. The team may make any number of attempts to complete each Task. If Technical Device One cannot complete Task One, the team may choose to skip the Task and continue with the rest of the Performance. To receive score for completing a Task (*E.I.2.c. & E.I.4.c.*), the result must happen and it must be caused by the action of the Device. The Appraisers will not signal the team that a Task was or was not completed.
  - c. The Technical methods may receive scores for Technical Innovation (*E.I.2.b. & E.I.4.b.*) even if a Device fails to complete a Task, provided that Task has been attempted. To receive higher Technical Innovation scores, the Technical methods used to attempt the two Tasks should differ significantly from each other.
5. **Transformation:** The team must transform Technical Device One into Technical Device Two. The team will take Device One apart into five or more separate Sections. Each Section must consist of one or more items from the original Set of Parts, and everything from the Set of Parts must be in a Section. After Transportation (*see A.6*) the team will rebuild the complete Set of Parts as Device Two to finish the Transformation.
  - a. During the Transformation, nothing may be discarded from Technical Device One, and no new parts may be added to Technical Device Two. Parts may be modified in shape or appearance.
  - b. The team may start Transportation as soon as the first Section is removed from Device One. Likewise, the team may begin to put Device Two together as soon as two or more Sections have been Transported.
  - c. The team may use tools as needed to take apart Device One or put together Device Two, subject to all safety rules of Destination ImagiNation®. All tools that are to be used during the Presentation must be included on the team's *Expense Report Form* (See *Rules of the Road* for this form.).
6. **Transport System:** The Transport System must move all of the Sections along a path with a *change in direction*. To receive score for Transportation (*E.I.3.b.*), each Section must begin from one of the Loading Docks (*See D.*), travel around a marked square, and arrive in the other Loading Dock. The Technical methods used for Transportation will be scored for Technical Innovation (*E.I.3.a.*).

a. To receive score for Technical Innovation (*E.I.3.a.*), there must be five or more Sections and Transportation must be attempted for at least one Section. Team members may participate in powering or controlling the Transport System, but a lower level of direct team member involvement will result in a higher Technical Innovation score.

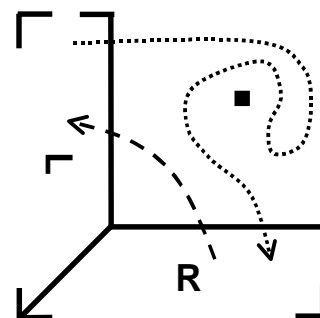
b. To receive score for Transportation (*E.I.3.b.*) there must be five or more Sections and all Sections must be Transported. Any number of Sections may be Transported at the same time.

c. The path followed by each Section on the Transport System must pass completely around the far sides of the 8in. (20.3cm.) marked square. Different Sections may be taken on different paths. If any Section is taken from one Loading Dock to the other without passing completely behind the marked square, the team will not receive points for Transportation (*E.I.3.b.*). *Figure 1* shows two examples of **valid** paths, while *Figure 2* shows two examples of **invalid** paths that do not pass completely around the marked square.

d. During Transportation, if either the Transport System or a Section being Transported touches the marked square, then the team will not receive points for Transportation (*E.I.3.b.*). To regain the Transportation points, the team must return to the Loading Dock all Sections that were being Transported when contact was made, and restart Transportation of those Sections. The Appraisers will not signal the team that contact with the marked square has been made.



**Figure 1: Valid Paths**



**Figure 2: Invalid Paths**

7. **Story:** The team will create a story that includes a surprising *change in direction* and ties together all elements of the Performance. These elements include the Technical Devices, the Transformation, the Transport System, and the Tasks. The story will receive scores for originality (*E.I.5.a.*) and for the effectiveness of the surprising *change in direction* (*E.I.5.b.*).

8. **Improv Element:** At the Tournament, each team will choose from two types of Improv Elements to integrate into their Presentation: An **Improv Item** or the **Improv Alternate**.

a. **Improv Item:** An Improv Item is an ordinary physical object that the team will use as a prop in their Presentation. One minute before their Presentation begins the team will find out what the Item is. It may not be changed from its original form during the team's Presentation.

b. **Improv Alternate:** For this Program year, the Improv Alternate asks teams to **Create a Phrase** and integrate the Phrase into their Presentation. One minute before their Presentation begins, the team will randomly select three letters of the alphabet. The team will then be given one minute to create a three-word Phrase in which the first letter of each word is one of the three letters they have chosen. For example, if the letters chosen were S, T, L, the team might create the Phrase "Leave The School." The team must use all three letters, but team members do not have to use the letters in the order they were selected. However, once the team creates the Phrase, they may not change the Phrase or the order of the words. The words chosen by the team must be real (not nonsense) words in whatever language is the primary language used at the Tournament.

c. The intent of the Improv Element is for the team to improvise and use the Item or Phrase in a meaningful way during the course of the Presentation. The team will be awarded up to 25 points, depending on how well the Improv Element is used in the Performance. More information and details about the Improv Element are provided in the *Rules of the Road* and the *Team Manager Guide*. Teams will benefit from reading these sections.

9. **Team Identification Sign:** Your team must provide a free-standing Identification Sign (ID Sign) of approximately 2ft. (.6m) x 3ft. (.9m) displaying your team's Passport Name, Passport Number, and Level. It may not be used as a scoring element. See "Team Identification Sign" section in *Rules of the Road* for further information.

## B. Side Trips – 75 points

The team must present three creations called 'Side Trips.' *Side Trips* give teams a chance to really show off their Specialties, which are their skills, interests, areas of strength, and talents. **The team may create anything they wish for Side Trips** including props, music, technical gadgets, costumes, and physical actions.

1. The team must present all three *Side Trips* as part of the timed Presentation. Each *Side Trip* must be described briefly on the *Tournament Data Form* found at the end of this Challenge.
2. A *Side Trip* may not be a specific item that is required in the Central Challenge that is already being evaluated. A *Side Trip* MAY be a single unique PART of a required item, as long as it can be evaluated as a stand-alone item. Two *Side Trips* 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 *Side Trip* is worth 25 points and will be evaluated in two ways: The creativity and originality of the *Side Trip*, and the quality, workmanship, and/or effort that is evident. Evaluation of *Side Trips* is subjective.

## C. Special Definitions for this Challenge

1. **Physically Connected:** Two parts are connected when one of them is fastened to, linked to, bonded with, contained by, or constrained by the other. The Technical Device is **Physically Connected** if no part of it can be separated from the rest of the Device without first removing a connection between two or more parts. Examples of valid connections include not only common fasteners such as nails, screws, bolts, glue, and duct tape, but also include parts held together in more unusual ways such as magnetically or with hook and loop tape. Simple physical contact is not a connection.
2. **Section:** Any portion of the Set of Parts, which has been clearly separated from the remainder of the Set of Parts. It may contain one individual part or be made of many parts. The individual parts in the Section do not have to be separated from each other.
3. **Set of Parts:** The collection of everything that has been put together to form Technical Device One. Technical Device Two must be made of that identical collection of things, with nothing added and nothing taken away.
4. **System:** A collection of parts that work together to accomplish a common purpose. **Systems Integration** describes how individual parts work together to form a unified device. In a well-integrated system, each part will have a purpose and be necessary to the proper working of the device. Good integration implies that most parts are necessary to both Technical Devices.
5. **Task:** An action performed by a Technical Device that has a perceptible result.
6. **Technical:** Refers to fields such as chemistry, computer science, electricity, hydraulics, mathematics, mechanical engineering, physics, or structural engineering. (Other technical fields are also acceptable.) A **Technical Device** is a machine or apparatus that uses Technical methods to perform a task.
7. **Technical Design:** A plan for carrying out or accomplishing a Task. A well-designed Technical Device shows careful planning, and it performs its Task using effective, efficient, and reliable Technical

methods. The Technical Design score will take into account the difficulty of the Task that the Device is planned to complete, and the amount of team member involvement required to provide power to and control of the Device.

8. **Technical Innovation:** A new, original, or creative way to carry out or accomplish a Task using Technical methods. (For the Transport System, the “Task” is to move the Sections.)
9. **Transport System:** Any device (or collection of devices) that moves objects from one place to another. The Transport System may be a vehicle (or vehicles) but other designs are also permissible.

### D. Performance Site

Destination ImagiNation® strongly suggests that the Performance Site be a large space with a high ceiling and a non-carpeted, hard floor surface, such as a gym, large stage, or cafeteria. The configuration of the Performance Site is shown in Figure 3. Its overall size is 20ft. (6.10 m.) x 20ft. (6.10m) on each side. The outlined areas are the two Loading Docks. For reference purposes, the Loading Dock areas are labeled **L** (Left) and **R** (Right). The solid, marked square is 8in. (20.3cm.) on each side, with its center point located 8ft. (2.44m.) from each of the Loading Dock areas. The lines drawn in bold are taped. The dotted grid lines are at 2ft. (61cm.) intervals, and are not taped; they are shown only to aid in site setup. Additional space may be available surrounding the Site, but teams must be prepared to perform within the specified dimensions. Additional information about Performance Sites are addressed in the *Rules of the Road*.

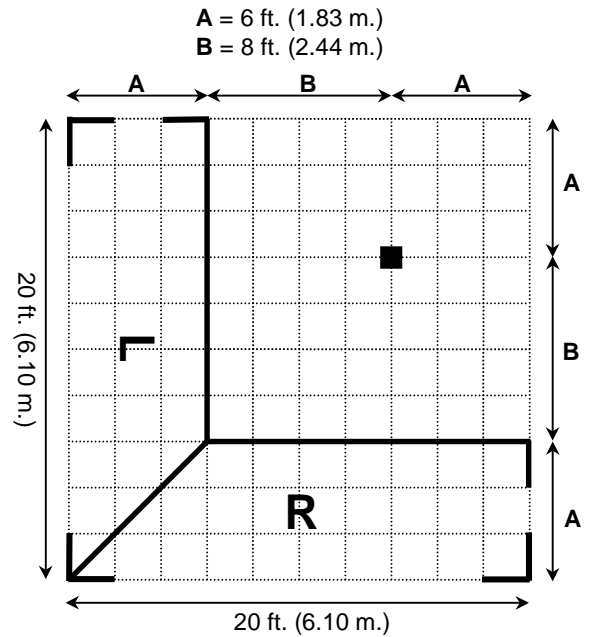
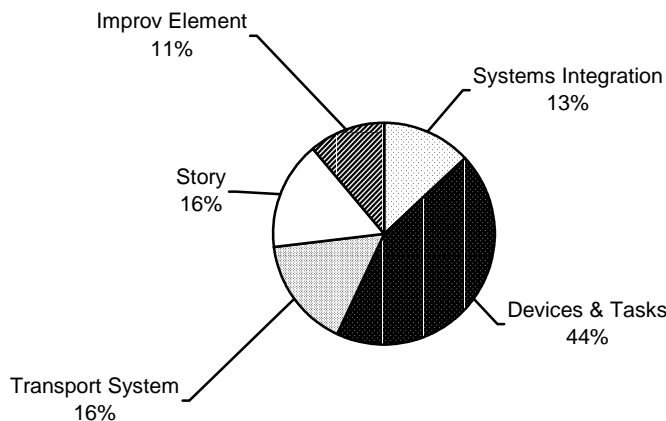


Figure 3

### E. Reward Points



ELEMENT	POINTS	DETAIL
<b>I. Central Challenge</b>	<b>225 points total</b>	A
1. Systems Integration of the Set of Parts	1–30	A.3
2. Technical Device One	2–50	A.2 & A.4
a. Technical Design of Device One	1–25	A.2
b. Technical Innovation for Task One	1–15	A.4.
c. Device One completed Task One	0 or 10	A.4.
3. Transport System	1–35	A.6
a. Technical Innovation of Transport System	1–25	A.6
b. Transportation was completed	0 or 10	A.6.b.
4. Technical Device Two	2–50	A.2 & A.4
a. Technical Design of Device Two	1–25	A.2.
b. Technical Innovation for Task Two	1–15	A.4.
c. Device Two completed Task Two	0 or 10	A.4.
5. Story	2–35	A.7
a. Originality of the Story	1–20	A.7.
b. Effectiveness of the <i>Change in Direction</i>	1–15	A.7.
6. Improv Element	1–25	A.8
<b>II. Side Trips – 1, 2, 3</b>	<b>1–25 each – 75 total</b>	B
1. Creativity and Originality	1–15	
2. Quality, Workmanship, or Effort that is evident	1–10	

## F. Important Directions for Team Managers

- Teams and Team Managers will be expected to read** the *Rules of the Road*, the *TravelGuide for Teams*, and the Published Clarifications for this *Team Challenge*. The information provided in these resources is binding on all teams. All materials can be found on the Destination ImagiNation® website: [www.destinationimagination.org](http://www.destinationimagination.org) or by contacting your Coordinator. The *TravelGuide for Teams* will be available online after January 1, 2003.
- Teams often have questions about the *Team Challenge*.** The answers to these questions are called Clarifications, and Clarifications that impact all teams are listed on the Destination ImagiNation® website. *Such Clarifications supersede the written Challenge.* ALL TEAMS and Team Managers need to check the listed Clarifications frequently throughout the year. For more information about Clarifications, see *Rules of the Road*.

**REMEMBER:** IF the team has read the Challenge, and IF they have checked the *Rules of the Road*, and IF they have checked the Published Clarifications, and it doesn't say they can't do something, THEN THEY CAN!

- Team Managers will find everything they need to know** to manage a team successfully in the *Team Manager's Guide*. Team Managers are strongly encouraged to read and use this Guide which is full of ideas, activities, and helpful hints. It can be found on the Destination ImagiNation® website.
- Teams and individuals using this *Team Challenge* must hold a 2002-03 Passport.** The Destination ImagiNation® Passport is a license to compete in sanctioned Tournaments and/or to use the Destination ImagiNation® *Team Challenges*, *Rules of the Road* and other program materials for educational purposes within your team, school, group, or organization. All Destination ImagiNation® Program materials are copyrighted. Teams or individuals using these materials are liable for all legal obligations and must abide by all the rules of competition and safety as stated in the 2002-03 *Team Challenges* and *Rules of the Road*.
- Each team planning to compete in a sanctioned Tournament must REGISTER** for that Tournament in advance with their Region or Affiliate. If your Program Coordinator has not already received a *Tournament Registration Form* for Teams, ask your Affiliate Director for the contact person in your Region, State, Province or Country who can provide Tournament registration information. A full list of Affiliate Directors is posted on the Destination ImagiNation® web site.

# Tournament Data Form

# Challenge B: A Change in Direction

Page 1 of 2

Passport Name: \_\_\_\_\_ Passport Number: \_\_\_\_\_ Level: EL ML SL UL

**To our Teams and Team Managers:** The purpose of this form is to help your Appraisers identify the required elements of your Challenge solution. It is important to fill it out completely and **neatly**. For Elementary Level teams only: Team Managers MAY fill out the form, writing out the words dictated by the team.

**PART ONE: Required Paperwork:** At the Tournament Performance Site, the Prep Area Appraiser will ask for your team's forms. A complete checklist of the required forms is below.

**Your team needs:**

- \_\_\_\_\_ **Five copies** of this completed two-page *Tournament Data Form*. **Be sure to copy both pages of this form.** Page two **may** be copied onto the back of this form.
- \_\_\_\_\_ **Two Copies** of the *Declaration of Independence*. (One copy will go to the Prep Area Appraiser, one copy to the *Instant Challenge* Appraisers.) Blank copies of this form can be found in the *Rules of the Road* and at the Destination ImagiNation® web site: [www.destinationimagination.org](http://www.destinationimagination.org)
- \_\_\_\_\_ **One Copy** of the *Expense Report*. This form can be found in the *Rules of the Road* and can also be downloaded from the Destination ImagiNation® web site: [www.destinationimagination.org](http://www.destinationimagination.org). Be sure to bring copies of your receipts, but it is not necessary to attach them to the form.
- \_\_\_\_\_ **Team Identification Sign:** This will tell the Appraisers and the audience who you are. It must list your Passport Name, Passport Number, and Level. It will **not** be scored. See the *Rules of the Road* for more information.

**PART TWO: Side Trip Choices:**

**Brief Description of each Side Trip:** Briefly tell the Appraisers about the *Side Trips* your team has prepared. Make sure that Appraisers know **exactly** what you want them to evaluate. What would you like them to know about each *Side Trip*?

**Side Trip 1:** \_\_\_\_\_  
**Description:**

**Side Trip 2:** \_\_\_\_\_  
**Description:**

**Side Trip 3:** \_\_\_\_\_  
**Description:**

