

# Challenge A: Obstacles, Of Course!

## The Destination:

### Where This Challenge Will Take You!

Young or old, big or small, we all face obstacles in everyday life. Things are always getting in our way! Overcoming these obstacles, and how we do it, helps all of us grow and reach our goals. To solve this Challenge, your team's vehicle will need to go over, under, around and through obstacles that it encounters on its path. Calculate carefully: your final score will depend on the choices your team makes – to overcome obstacles, of course! It's all up to YOU!

### Points of Interest! Your team will:

- ★ Design and construct an **Obstacle Course**, with from three to ten different Obstacles.
- ★ Design and construct a **Vehicle** that will travel the Obstacle Course. The Vehicle will score points for the number of Obstacles successfully Overcome.
- ★ Create an original, non-verbal **Story** about overcoming obstacle(s). The appearance of the Obstacle Course should be linked to the Story's theme.
- ★ Create two *Side Trips* and integrate them into the Presentation.

### 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**.

### Membership

Teams and individuals using these Program Materials must hold a 2007-08 membership. The Destination ImagiNation membership 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 registered memberships is on [www.idodi.org](http://www.idodi.org)

- My 2007-08 membership number is:  
\_\_\_\_\_ - \_\_\_\_\_
- My team is planning to compete in a sanctioned Tournament.  
I have registered for that Tournament with the:
  - Regional  
or
  - Affiliate Director.



### Roadmap for Success:

This Challenge can be solved on many levels, with solutions ranging from very simple to very complex. In order to successfully solve this Challenge, teams must read and follow:

#### Team Challenge

- A. Itinerary: The *Central Challenge* (240 points)
- B. Itinerary: *Side Trips* (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 on all teams. As it says on page 1 of the Challenge, **"If it doesn't say you can't, then you can!"**

Team Managers are strongly encouraged to read and use:

- Team Manager Guide*
- Charting Your Course*
- Instant Challenge Practice Set*
- TravelGuide for Teams* (available online after Jan 1, 2008)

### Focus:

Technical Design and Construction,  
Innovation and Design Process, Mathematics,  
Experimentation, Theater Arts, Teamwork



## Special Definitions

### Propulsion System:

The Propulsion System moves the Vehicle around the Obstacle Course. It includes both the source of the energy and the Vehicle parts that use the energy to move the Vehicle.

### Technical Energy Source:

An energy source is technical when the energy source propelling the Vehicle is NOT a team member. Team members may store energy in the Technical Energy Source (for example, wind a rubber band or load a spring); however, the energy used to propel the Vehicle must come from an energy source other than a team member.

### Overcome:

To complete the task as defined in the "intent of the Obstacle." (Table 1) The Vehicle must accomplish the defined task to receive score for Overcoming the Obstacle.

### Technical Innovation:

Technical refers to the use of principles from scientific fields such as chemistry, computer science, electricity, hydraulics, mathematics, mechanical engineering, physics, and structural engineering. (Other technical fields are also acceptable.) Innovation relates to a new, unique or creative way to solve a problem, accomplish a Task, or combine traditional elements. Scores for Technical Innovation will be based on methods actually used during the Presentation to accomplish or Attempt the required Challenge scoring element.



The maximum allowable dimensions of the Vehicle are 12in. x 5in. x 7in.  
(30.5 cm x 12.7cm x17.8cm)

## A. Itinerary: The Central Challenge (240 points)

1. **The Intent of the Challenge:** To solve this Challenge, the team must design and build one Team-created Vehicle that can travel around a Team-created Obstacle Course multiple times. The team must also present an original, non-verbal Story about overcoming obstacle(s). Teams will earn points for:
  - a. Design and Construction of the Team-created Vehicle.
  - b. Design and Construction of the Team-created Obstacle Course.
  - c. A map that shows the order and the placement of the Obstacles on the Course.
  - d. Obstacles successfully Overcome by the Vehicle and the Technical Innovation of the methods used for overcoming the Obstacles.
  - e. An original, non-verbal Team-created Story about overcoming obstacle(s). Additional points will be earned for integrating the appearance of the Obstacle Course into the Story's theme.
  
2. **The Vehicle:** The team will design and build a Team-created Vehicle with a **Propulsion System** that has a **Technical Energy Source** and with Special Features that will enable it to **Overcome** Obstacles.
  - a. It is the intent of this Challenge that a team designs and constructs the Vehicle using their own ideas and skills. Purchased items **with substantial and noticeable modifications in function** will be allowed, but Vehicles that have been created in their entirety by the team will score higher for Design, Construction and **Technical Innovation**. Purely decorative changes to a purchased item will not meet the requirement for the Team-created Vehicle. Teams should be prepared to explain to the Appraisers the ideas and skills they used in the design and construction of their Vehicle. If the Appraisers conclude that a Vehicle violates the intent of the Challenge, the Vehicle will earn no points for Design and Construction (D.2.a) and Technical Innovation (D.2.d).
  - b. The Vehicle should be designed with Special Features. For the purpose of this Challenge Special Features are aspects of the Vehicle that enable it to Overcome different types of Obstacles. The team will list the Special Features of the Vehicle on the *Tournament Data Form*.
  - c. The maximum allowable dimensions of the Vehicle are 12in. x 5in. x 7in. (30.5cm x 12.7cm x 17.8cm), in any order. These dimensions must include the Propulsion System and any Special Features that are a part of or are carried by the Vehicle, with the exception of extension cords. The dimensions do not include control devices. If the initial size of the Vehicle in the Prep Area is larger than allowed, the team must make adjustments to meet the size requirement or they will receive no score for Overcoming Obstacles. (D.1.a)
  - d. Any Special Features required to Overcome specific Obstacles must be carried on the Vehicle at all times. No Special Features may be intentionally added or removed from the Vehicle after it has been measured in the Prep Area. Items that accidentally fall off or are broken during the Presentation, however, may be reattached or repaired. If items are intentionally added or removed, the team will receive no score for Overcoming Obstacles. (D.1.a)
  - e. The Vehicle must move around the Obstacle Course, Attempting or Overcoming each Obstacle in order, before moving on to the next Obstacle.
  - f. Only **indirect team member involvement** is allowed in the Overcoming of Obstacles. During the Presentation, the Vehicle may change size or shape by itself or with indirect team member involvement. If there is direct team member involvement in the Vehicle changing shape or in moving the team will receive no score for Overcoming the Obstacle that is involved.
  - i. Indirect team member involvement: The intent of this Challenge is that

team members are NOT allowed to use body parts such as hands, legs or arms to directly interact with the Vehicle. Instead, the team needs to use some sort of mechanical device to touch the Vehicle. The mechanical device may be very simple and may be powered by team members. A piece of material that simply covers a body part does not qualify as a mechanical device.

g. The team will earn points for the Design and Construction of the Vehicle.

3. **The Obstacle Course and Map:** The team will design and construct a Team-created Obstacle Course that consists of **no fewer than three** and **no more than ten** Team-created Obstacles. The Obstacle Course will earn points for Design and Construction.

a. There will be four 12in. (25.4cm) taped X's on the floor of the Presentation Site. (**Diagram 1**) When the Vehicle is moving around the Obstacle Course, at least three of the four X's must have a part of one Obstacle on or above its approximate area.

b. In the Prep Area the team must provide a **Map** of their complete Obstacle Course, with each Obstacle's type and location clearly marked. Each Obstacle on the Map must be numbered, starting with 1, indicating the order in which they will be Overcome. This will be given to the Appraisers in advance of the Presentation to assist them in following the Vehicle's defined path around the Course. The Map will be scored for creativity and clarity.

4. **The Obstacles:** The team will select and create no fewer than three and no more than ten Obstacles of their choice from **Table 1** to use in their Obstacle Course.

a. Each Obstacle Type can be used only once in the Obstacle Course. For example, only one Obstacle may be Over a Low Wall, only one Obstacle may be a Tunnel and so on.

b. Obstacles must be an impediment to passage of the Vehicle. An Obstacle may be designed to assist the Vehicle to Overcome that Obstacle, but the Vehicle must contribute to its Overcoming of the Obstacle. Scores for Technical Innovation of the methods for Overcoming Obstacles will include technical elements from both the Vehicle and from the Obstacles.

c. Obstacles must be Overcome individually, one at a time. Teams will earn points for successfully Overcoming an Obstacle. If the Vehicle makes an unsuccessful Attempt to Overcome an Obstacle, team members may intervene, placing the Vehicle directly on the other side of that Obstacle. However, no points will be earned for this Attempt.

i. For the purpose of this Challenge, an Attempt is an effort to accomplish the Overcoming of an Obstacle. It is the intent of this Challenge that the team will expend an honest effort to Overcome each Obstacle on every Trip around the Obstacle Course, even if it is difficult or the Obstacle or Vehicle has been damaged during the Presentation. This effort should be equal to the effort used when the Obstacle was successfully Overcome on earlier Attempts.

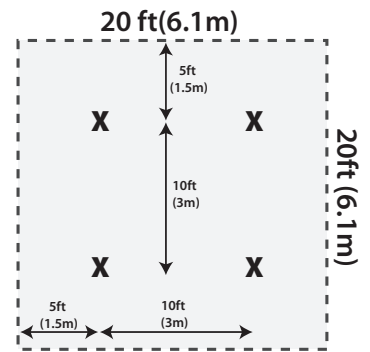
d. A Trip is a complete circuit of the Obstacle Course by the Vehicle, starting with Obstacle 1.

i. A Trip is complete once the Vehicle has Attempted all Obstacles on the Obstacle Course, whether they were Overcome or not.

ii. All Obstacles must be Attempted or Overcome in the same order on every Trip by the Vehicle around the Course or no points will be awarded for any Obstacle successfully Overcome on that Trip.

e. The score value for each Obstacle will be reduced by one point after each completed Trip around the Obstacle Course.

i. After five completed Trips around the Course, Easy Obstacles will no longer receive score. However, they **MUST** still be Overcome or Attempted on every trip. After ten completed Trips around the Course,



**Diagram 1**  
**Obstacle Course**

### Challenge Checkpoint Obstacle Course Map

- types
- locations
- numbered in order



### What is a Trip?



Medium Obstacles will no longer receive score. Even so, they MUST still be Overcome or Attempted on every Trip. After 15 completed Trips around the Course no Obstacles will be scored.

5. **Story:** The team will create and perform an original Story that features overcoming obstacle(s), real or imagined. The Story must be presented non-verbally; this means the team's eight-minute Presentation to the audience and Appraisers must contain no spoken language.
  - a. Private team member conversations that may be necessary to address problems during the Presentation will be allowed, but any other spoken language as part of the performance will substantially reduce the number of points earned for the effective use of non-verbal techniques.
    - i. The team may use sounds, but not spoken words in their Presentation.
  - b. The theme of the Story should be integrated with the appearance of the Obstacle Course.
  - c. The Story will earn points for the effective use of non-verbal techniques, for how well the Story's theme is integrated with the appearance of the Obstacle Course and for the originality of the Story, with emphasis on overcoming obstacle(s).
6. **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.s



See the *Rules of the Road* for more info on *Side Trips*.

## B. Itinerary: *Side Trips* (60 points)

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

1. The team must present both *Side Trips* as part of the eight-minute Presentation and each *Side Trip* should have a meaningful connection to the team's *Central Challenge* solution. 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. Both *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* will be evaluated in two ways: for the Creativity and Originality of the *Side Trip*, and for the Quality, Workmanship, and/or Effort that is evident. Evaluation of *Side Trips* is subjective.




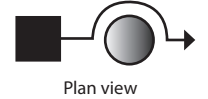

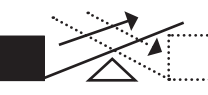
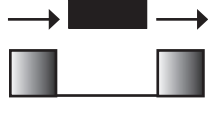

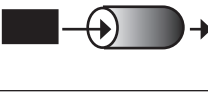

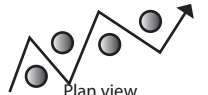
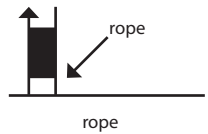


Be sure to set up a site and practice before going to Tournament.

## 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 20ft. x 20ft. (6.1m x 6.1m), but teams may use any additional space that Tournament officials designate as available. The 20ft. x 20ft. site will not be taped.
3. **Electrical Power:** A 3-prong electrical outlet will be provided at the edge of each Presentation Site for the team's use.

## Table 1 – Obstacles

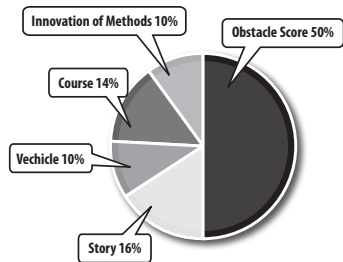
**IMPORTANT:** The example images provided here are for clarification only. There are many different ways that Obstacles can be designed and many different ways that the Obstacles can be Overcome.

Obstacle Type	Level	Intent of the Obstacle	Example	Initial Score
Under	Easy	Vehicle must travel under a solid barrier that is 5in. (12.7cm) or less in height above the floor.		5
Go Around	Easy	Vehicle must go around a solid object that is at least 12in. (30.5cm) wide. This Obstacle must be directly in the Vehicle's path as the Vehicle approaches it.	 Plan view	5
Through	Easy	Vehicle must pass through an opening that is at most 7in. (17.8cm) wide.		5
Ramp & Fulcrum	Easy	Vehicle must travel up and down a ramp centered on a fulcrum at least 3 in. (7.6cm) high.		5
Cross a Gap	Medium	Vehicle must travel across a gap that is at least 7in. (17.8cm) wide. Distance will be measured in the direction of travel. The gap must be at least 5in. (12.7 cm) above the floor. Floor contact points used when the Vehicle travels around the Obstacle Course must NOT contact the floor within the gap.		10
Over a Low Wall	Medium	Vehicle must pass over a wall. The wall ascended by the Vehicle must have a vertical face that is at least 5in. high (12.7cm).		10
Tunnel	Medium	Vehicle must travel through a tunnel of any shape that is at least 24in. (61 cm) long. The entrance and exit openings must be no larger than 7in. (17.8cm) wide and 7in. (17.8cm) high.		10
Steps	Medium	Vehicle must climb steps with 4 risers equaling a total height of 5in. (12.7cm) or more. The face of each riser must be vertical.		10
Slalom	Hard	Vehicle must wind its way through 4 pylons, passing them on alternate sides without touching them. Pylons must be spaced at least 12in. (30.5 cm) apart, but no more than 18in. (45.8cm) apart, in a straight line.	 Plan view	15
Rope Climb	Hard	Vehicle must travel vertically up a rope (making no contact with any other surface) for a distance of 12in. (30.5cm), measured from the Vehicle point of attachment to the rope. The intent is for the Vehicle to climb the rope, not to be pulled by the rope. Teams should mark the rope at 4in. (10.2cm) intervals so the Appraisers can easily measure the distance the Vehicle has traveled up the rope.		15
Beam/Tight Rope	Hard	Vehicle must cross a tight rope or solid beam, which is ½ in. (1.3cm) wide or less, for a distance of at least 12in. (30.5cm).		15
Over a High Wall	Hard	Vehicle must pass over a wall. The wall ascended by the Vehicle must have a vertical face that is at least 12in. high (30.5cm).		15

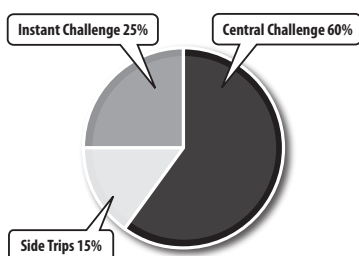
What are the different types of obstacles?



## Central Challenge Scoring at a Glance



## Putting It All Together



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**Why are the scores in each Central Challenge section scaled separately?**

## D. Reward Points

ELEMENT	POINTS	DETAIL
<b>Central Challenge</b>		
<b>Up to 240</b>		<b>A</b>
<b>1. Overcoming Obstacles</b>	<b>Scaled to 120 points</b>	
a. Overcoming Obstacles (Easy, Medium, Hard)	Up to 120 points	A.4
<b>2. Vehicle and Obstacle Course</b>	<b>Scaled to 80 points</b>	
a. Design and Construction of the Vehicle	Up to 25 points	A.2.g
b. Design and Construction of Obstacle Course	Up to 20 points	A.3
c. Creativity and clarity of Obstacle Course Map	Up to 10 points	A.3.b
d. Technical Innovation of methods to Overcome Obstacles	Up to 25 points	A.4.b
<b>3. Story</b>	<b>Scaled to 40</b>	
a. Effective use of non-verbal techniques	Up to 15 points	A.5.c
b. How well the Story's theme is integrated with the appearance of the Obstacle Course	Up to 15 points	A.5.c
c. Originality of Story, with emphasis on overcoming obstacle(s)	Up to 10 points	A.5.c
<b>Side Trips</b>		
<b>Up to 60</b>		<b>B</b>
<b>1. Side Trip 1</b>	<b>Up to 30</b>	<b>B.3</b>
a. Creativity and Originality	Up to 15	B.3
b. Quality, Workmanship, or Effort that is evident	Up to 15	B.3
<b>2. Side Trip 2</b>	<b>Up to 30</b>	<b>B.3</b>
a. Creativity and Originality	Up to 15	B.3
b. Quality, Workmanship, or Effort that is evident	Up to 15	B.3

In this *Central Challenge*, there are three scoring sections: Obstacles, Vehicle and Obstacle Course and the Story. **The scores for each of these sections will be scaled separately.** The scaled scores for each section are then added together to calculate the team's Raw Score for the *Central Challenge*.

**What does it mean to 'scale' the score?** 'Scaling' the score means that the team having the highest score in each section of the Challenge will receive the maximum score for that section (i.e. Story, 40 points). The scores for all other teams in that Level will be based on the percentage of their score compared to the team with the highest score.

### For example:

**Scaled Score for Overcoming Obstacles:** A team's Raw Score for Overcoming Obstacles is the sum of the scores that they receive for the Obstacles they Overcome, as described in A.4.e. Within each Competition Level, the team with the highest Raw Score for Overcoming Obstacles will receive 120 points for their Scaled Score for Overcoming Obstacles. The Scaled Score for Overcoming Obstacles for all other teams in that Level will be determined using this formula:

$$\text{Scaled Score for Obstacles} = (\text{Raw Score for Obstacles} \div \text{highest Raw Score for Obstacles}) \times 120$$

So, if Team A has a Raw Score of 100 for their Overcoming Obstacles (which is the highest Raw Score in that Level at their Tournament) and Team B (who is in the same Level) has a Raw Score of 70, the Scaled Score for Team A would be 120 points and the Scaled Score for Team B would be  $(70 \div 100) \times 120 = 84$ .

This scaling process is also applied to the remaining sections: Vehicle & Obstacle Course and the Story. The scaled scores for the three different *Central Challenge* sections will then be added together to equal the total Raw Score for the *Central Challenge*. This Raw Score for *Central Challenge* is scaled again, and combined with the *Side Trip* and *Instant Challenge* scaled scores as described in the Scoring section of the *Rules of the Road*.

By scaling the scores for each Challenge section, no section will lose its value relative to the other sections because the Appraisers for that particular section scored particularly low or high at the Tournament.

# Tournament Data Form

## Challenge: *Obstacles, Of Course!*

Page 1 of 2

**Team Name:** \_\_\_\_\_

**Team Number:** \_\_\_\_\_ - \_\_\_\_\_ **Level:** **EL ML SL UL**

**School/Organization:** \_\_\_\_\_

**To our Teams and Team Managers:** Help your Appraisers identify the required elements of your Challenge solution so they can award you all of the points you have earned. Please fill this form 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 Presentation 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.** This is PAGE ONE of the form. Page Two may be copied onto the back of this sheet. This form may not be used as a scoring item.
  
- \_\_\_\_\_ **TWO Copies** of the completed *Declaration of Independence*. Blank copies of this form can be found in the *Rules of the Road*. One copy of this form is for *Team Challenge*, the other copy of is for you to take to *Instant Challenge*.
  
- \_\_\_\_\_ **One Copy** of the completed *Expense Report*. This form can be found in the *Rules of the Road*. Be sure to bring copies of your receipts in case you are asked for them, 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 Team Name, Team Number, School/Organization (if different from Team Name), and Level. It cannot be scored. See the *Rules of the Road* for more information.

### **PART TWO: Side Trip Choices: Brief Description of each Side Trip**

**SSide Trip 1: What is your Side Trip?** \_\_\_\_\_

Please write a brief Description of your *Side Trip*. Make sure that Appraisers know **exactly** what you want them to evaluate. What would you like them to know about each *Side Trip*?

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**Side Trip 1: What is your Side Trip?** \_\_\_\_\_

Please write a brief Description of your *Side Trip*. Make sure that Appraisers know **exactly** what you want them to evaluate. What would you like them to know about each *Side Trip*?

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# Tournament Data Form

## Challenge: *Obstacles, Of Course!*

Page 2 of 2

**Team Name:** \_\_\_\_\_

**Team Number:** \_\_\_\_\_ - \_\_\_\_\_ **Level:** **EL** **ML** **SL** **UL**

**School/Organization:** \_\_\_\_\_

### **PART THREE:**

This Challenge requires the team to supply the following information to help the Appraisers evaluate your solution. This is PAGE TWO of the form. Be sure to fill in both pages.

1. What are the dimensions, in any order, of your Vehicle?

\_\_\_\_\_

2. Describe your Vehicle and its Propulsion System.

3. Describe the Obstacles on the Course and the Special Features of your Vehicle that contribute to Overcoming them.

4. Briefly state the plot of your team-created Story.