



Odyssey of the Mind

Problem No. 4:

STRUCTURE TOSS



Structure Toss

Problem No. 4: Divisions I, II, III & IV

A. The Problem

Step right up and put your structure to the test! Teams must strategize risk for points and “toss” their structures using a device in a carnival game. The riskier the toss, the higher the score. During the performance, a Carnival Barker will entice others to join the fun. Once the structure has been tossed, it can be tested for strength. Creative games of skill and chance will be integrated with testing of the structure.

The **creative emphases** of this problem are on the performance, the Carnival Barker character, and the additional games.

The **Spirit of the Problem** is for the team to design, build, and test a structure, made only of balsa wood with the option of using glue to connect the parts, and to test it by placing weights onto it. The team will test its structure in a performance where it first uses a device to toss it for score. A Carnival Barker character will inform the audience of the action that is taking place as other games appear. After the structure has been successfully tossed the weight-placement activity that is incorporated into the performance may begin.

B. Limitations (*Italicized words/terms are defined in the 2018-19 Odyssey of the Mind Program Guide*)

1. **General Rules:** Read the *2018-19 Odyssey of the Mind Program Guide*. This manual is updated each year and includes important rules for solving Odyssey of the Mind problems and forms required for competition. This problem cannot be solved without referring to the **Program Rules** section of the guide.
2. **Problem Clarifications:** The *Odyssey of the Mind Program Guide* explains the types of questions that will be clarified and how to submit them. Problem clarifications can be submitted and accessed at www.odysseyofthemind.com/clarifications. The deadline for submission is February 15, 2019. CCI may find it necessary to issue clarifications after that date, so continue to check for them after February 15 and before each competition.
3. The **time limit** for this problem is 8 minutes. This starts when the Timekeeper says, “Team begin,” and includes setup, Style, and the presentation of the solution including the structure toss and weight placement. Time ends when the team finishes or the Timekeeper says, “Time,” whichever comes first.
4. The **cost limit** for this problem is \$125 (U.S.). The combined value of all materials used during the presentation of the solution, including Style, cannot exceed this amount. The Odyssey of the Mind Program Guide explains the cost limit and how to determine the value of the materials used.
5. The team’s solution will be presented in an original performance that includes:
 - a. a structure for testing made of only balsa wood. Glue may be used to hold the pieces of balsa wood together.
 - b. a device that is used to toss the structure.
 - c. testing the structure by placing weights onto it.
 - d. a Carnival Barker *character*.
 - e. games of skill or chance.
 - f. five Style elements including two that are chosen by the team.
6. The structure:
 - a. must be made of only balsa wood and glue that is used to connect the balsa wood. Glue is only allowed to be used to connect pieces directly together.
 - b. must weigh no more than 15 grams.
 - c. must be a minimum of 8” (20.32cm) in height when resting on the Tester base and supporting the Crusher Board (see Fig. B) and another weight. Extension pieces used to meet minimum height limitations but not to support weight are not allowed.
 - d. must be a single assembled structure that is designed and built by team members without any outside influence (see B21). All pieces of balsa wood must be *interconnected*.
 - e. may be assembled using other items and/or devices; however, these must be removed before Weigh-In.
 - f. must have an open area running the entire height that will accept a column that is 2” (5.1cm) in diameter. Therefore, the opening in the structure must be greater than 2”. This will be measured at Weigh-In. The safety pipe must pass through the opening of the structure during weight placement (see Fig. A).
 - g. must be successfully tossed using the device before it is allowed to be tested for weight-held score.

7. The balsa wood used in the structure:

- a. must come from only commercially-produced strips of balsa wood. No other type of balsa wood or any variation of balsa wood may be used. Balsa wood may be purchased through www.odysseyofthemind.com/shop — any balsa purchased from here during the current program year will be considered as being within the limitations. Teams must provide an invoice from CCI that shows the purchase information including the date of the transaction.
- b. must come from strips with a cross section of 1/8" x 1/8" that are at least 36" (0.91m) long when the team receives it. It is not allowed to be cut by the team into strips from oversized wood (greater than 1/8" in width or depth) to meet the 1/8" x 1/8" cross section limitation.
- c. must have a 1/8" x 1/8" deep (0.32cm x 0.32cm) cross section for most of its length. Some commercial cuts vary, so the allowed cross section dimensions enforced will be 0.115" to 0.135" (0.31cm to 0.33cm). Any piece that does not have a cross section within 0.115" to 0.135" (0.31cm to 0.33cm) will be considered a prohibited piece. Teams are allowed to sand or carve pieces of wood in small areas to form joints as long as the cross section for the rest of its length beyond the joints is within this range.
- d. is not allowed to be hand-picked by anyone other than team members. Team members may request wood to be from a commonly known grade, but no one else may sort and pick specific pieces.
- e. must be cut by the team. The only exceptions are the perpendicular end cuts of the original strip as defined in B7a & b.
- f. must be used "as is." The wood is not allowed to be strengthened in any way. Use of water, hot and/or cold air are not considered strength-enhancing.

8. If glue is used in the structure:

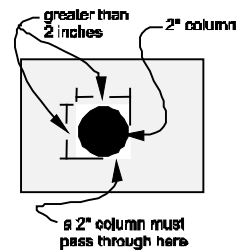
- a. it must be a commercial brand that has the word "glue," "epoxy," "cement," or "adhesive" printed by the manufacturer on its label (container and/or packaging). More than one type of glue may be used. The container or packaging from any glue used in the structure must be brought to Weigh-In.
- b. it must be used as purchased. That is, nothing may be added to it, and it is not allowed to be mixed with anything unless the manufacturer specifies that the ingredients, sold together, combine to form the glue. Accelerants are not allowed to be used.
- c. must only be used to adhere pieces of balsa wood together to form a single, interconnected structure.

9. Judgements dealing with measurements, weight, wood, the "open area" (see Fig. A) and artificial strengthening will take place at the Weigh-In Site before competing. Judges not associated with Weigh-In may bring certain matters to the attention of the Weigh-In Judges. Penalties may be given before and/or after a team has competed.

10. Tossing the structure:

- a. The toss must take place after time begins and before weight placement.
- b. A device must be used to toss the unprotected structure through the air and over the Score Cross Bar. This device may be commercially-produced or team-made.
- c. The structure and device must be completely behind any of the three taped Toss Lines as selected by the team when it is released. After choosing a Toss Line, the team is allowed to make multiple attempts from that line or different Toss Lines. However, only one successful attempt will count for score as determined by the Toss Line selected by the team. If there is a successful toss and the team wishes to try tossing the structure from a higher-valued Scoring Line, it is allowed. If it succeeds, it will receive the higher score, if it does not, it will receive the score from where it was successfully tossed.
- d. Nothing is allowed to touch, guide, propel, or protect the structure when it is tossed. This means the structure must travel freely from the time the structure passes above the selected Toss Line until after it comes to rest on the bare floor.
- e. The structure must pass completely over and beyond the Score Cross Bar to be a successful toss (See Fig. C).
- f. At least one toss must be integrated into a game. This must be done before the structure is tested.

Figure A: Top View of the Opening



11. Additional games:
 - a. may be anything the team wishes.
 - b. must be made by the team.
 - c. are allowed to be tests of skill or chance. There must be at least two additional games. All games will be considered when scoring D1, D2, & D4-8.
 - d. will be described by the Carnival Barker or other characters.

12. The theme of the performance is allowed to be anything the team wishes. It must integrate all action, including weight placement, into the presentation.

13. The team may begin the weight-placement process any time after a successful toss. The structure must be *completely within the boundary* of the Tester base without touching the corner supports of the Tester before weights are placed onto it.

14. The team must use only the weights and Tester supplied by the Tournament Director. These are allowed to be used only in the normal process of placing weights; for example, the weights are not allowed to be used for Style, the Tester cannot be decorated, etc.

15. Team members must place weights one at a time onto the structure. The first weight must be the Crusher Board supplied by the Tournament Director. This will count toward the total weight held.

16. Team members are required to safely select, lift, carry, and place weights onto the structure. Division I and Division II teams are not required but are allowed to have adult assistance in placing weights as follows:

- a. Adults are not allowed to help any team in any division select weights for placement.
- b. Division I and II teams will determine if they will use limited adult assistance. They may use adult assistance at any time during weight placement from when the weight has been selected by the team until it is resting in place on the weight stack.
- c. Division I teams may have an adult assist* at least one team member in placing weights heavier than 20 lbs.
- d. Division II teams may have an adult assist* at least one team member in placing weights heavier than 40 lbs.
- e. The adult is only allowed to help. If the judges determine an adult is selecting a weight, or is doing more than assisting one or more team members, they will instruct the team to remove the weight and place it back onto the unused weights and continue weight placement. If the weight would not fall to the floor if the team member let go, the adult is breaking the rules.

**only one adult (18 years of age or older) is allowed to be on the competition site and assist the team at any time. The adult is allowed to help one or more team members lift, carry, and/or place eligible weights onto the stack. The adult is allowed to assist one or more team members in placing weights onto the structure whether or not they helped carry the weight to the Tester.*

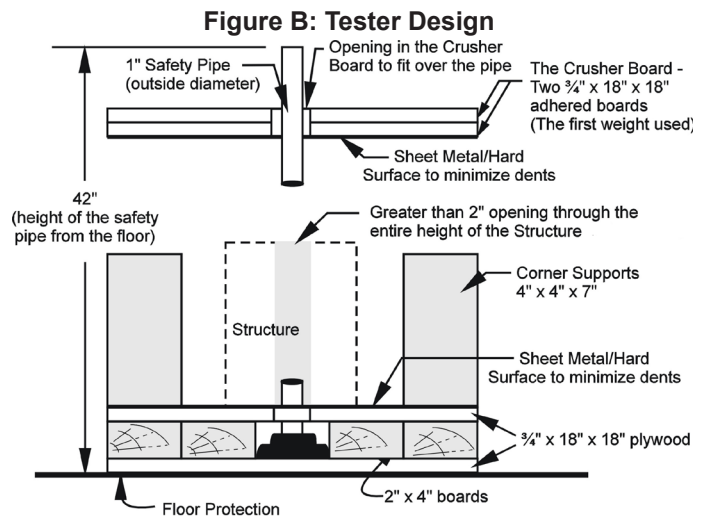
17. Team members must wear safety goggles, eyeglasses with plastic lenses, or other protective eyewear (approved by the judges) if they are within the Safety Area with their head below the level of the Crusher Board while the structure is supporting weight. This applies to everyone in the Safety Area (see E11).

18. A weight must be held on the stack for at least 3 seconds to count in the total weight-held score.

19. If the weight stack reaches the top of the safety pipe, it is the team's responsibility to add an extension pipe to the safety pipe.

20. The team should preset the Staging Area with four copies of the Team List Form found in the forms section at www.odysseyofthemind.com/members or four copies of a list on one side of one or two sheets of 8½" x 11" or A4 paper. This list can be hand-printed, typed, or computer-generated. It is for reference only. The list must include:

- a. the team's membership name and number, the problem and division.
- b. a brief description of the Barker Character.
- c. a brief description of the additional games to be presented and when in the performance they will occur.
- d. the signal the team will use to indicate if has finished its performance (weight-placement can continue if time allows).
- e. five Style elements including two that are chosen by the team.

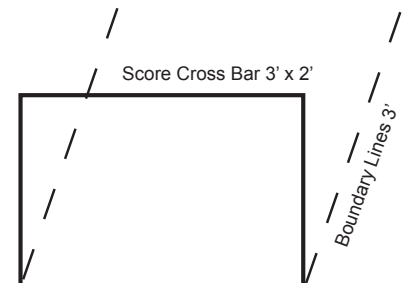


21. A reminder about Outside Assistance: All Outside Assistance rules apply. Team members are responsible for making an original design and building an original structure. Photographing or otherwise referencing other teams' solutions is outside assistance.

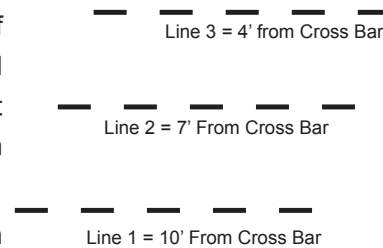
C. Site, Setup and Competition

1. A stage or floor area a minimum 18' x 18' (5.5m x 5.5m) will be used, but a larger area is desirable. This will not be marked. Teams must be prepared to perform in a 18' x 18' area. If space permits, the team may perform and/or place equipment, props, etc. outside the 18' x 18' area. If a drop-off exists beyond the 18' x 18' dimensions, a caution line may be taped 30" (76.2 cm) from the edge of the drop-off. This will serve as a warning, not a boundary.
2. There will be three taped Toss Lines 3' (.9m) wide and a Score Cross Bar 3' (.9m) wide and 2' (.6m) high. The Toss Lines will be 10' (3 m) (Line 1), 7' (2.1m) (Line 2), and 4' (1.2m) (Line 3) away from the Score Cross Bar. There will be taped boundaries 3' long for officials to use as reference to make sure the structure passed above the Score Cross Bar.
3. If possible, the Tester will be on a solid, level floor. The Tester will be positioned in the center of the Safety Area, a 60" x 60" taped square, which will serve as a guide to keep team members aware of their proximity to the Tester and as a reminder of where they must wear safety glasses. The team is not allowed to move the Tester.
4. Each competition might have specific times to report to Weigh-In, but generally teams report to the Weigh-In Site with its structure and glue, if used, to have it checked for specifications at least 30 minutes before its scheduled performance time.
5. If the structure does not meet specifications, Weigh-In Judges will try to give the team an opportunity to bring it into specification or submit a different structure before the team's competition time. In most cases, corrections should be completed no less than 20 minutes before competition time. There is no penalty if the structure is brought into specification before completing the Weigh-In process.

Figure C: Toss Lines



6. Once the structure is weighed and measured, a judge will provide the team a bag, or the team can use its own container if it is approved by the Weigh-In officials. The team will place the structure into the bag and the judge will keep it at the Weigh-In Site until the team picks it up for competition. The team must return to pick up its structure no later than 25 minutes before its scheduled competition time.
7. The judge will attach a Weigh-In Checklist to the bag containing the structure. The team is not allowed to remove the Weigh-In Checklist until directed to do so by the Staging Area Judge. If the Weigh-In Checklist has been removed, the bag tampered with, or the structure removed, the team may have to repeat the Weigh-In process. Depending on the situation, the team could receive a Spirit of the Problem penalty.
8. Team members must report to the competition site with everything they will use in their solution at least 20 minutes before they are scheduled to compete.
9. The team may place the structure onto the tester any time after a successful toss. If the team continues to toss the structure for a higher score, it is allowed. Once it has been successfully tossed the team may begin weight placement whether or not it is successfully tossed from a higher-valued toss line.
10. The team is allowed to touch and adjust the structure while placing the Crusher Board onto it. They are not allowed to touch the structure once the team begins to place weights onto the Crusher Board. If the team wishes to adjust the structure, they must remove all weights. They are allowed to remove the Crusher Board, but it is not required. Team members may then touch the structure before resuming weight placement.



11. If any of the following occur, all weight-placement will end:
 - a. the Crusher Board or any part of the structure touches any corner post.
 - b. any part of the structure touches anything other than the surface of the Tester base and the bottom of the Crusher Board.
 - c. the top weight rests against the safety pipe and the judges determine that the pipe is helping to support the weight stack. If time remains, the team will be given the opportunity to adjust that weight and continue weight placement.
 - d. a weight extends beyond the height of the full length of the safety pipe, including extension pipes, if used.
 - e. the team indicates it wishes weight placement to stop.
12. The team has 8 minutes to test its structure and present its performance. The team must stop all activity when the judge calls "time." Or, the team may give a signal indicating the performance is over.
13. The team should inform the Staging Area judge if it expects to continue its performance after the structure breaks. Should the team finish its performance before the structure breaks and has given the signal to end the performance, the team will be allowed to continue placing weights until any one of the criteria from C11 or C12 occurs.
14. Teams should bring cleaning utensils to clean up any mess. Should a team take an unreasonable amount of time to clean the site, or leave a mess, the judges will assess an Unsportsmanlike Conduct penalty. Others not on the team's roster may help the team clear the site and remove the team's props. The competition area must be left clean and dry for the next competing team.
15. A three-prong electrical outlet will be available at the performance area. Teams must bring their own extension cords and adapters, if needed.

D. Scoring

1. Overall creativity of the theme of the performance..... 1 to 15 points
2. Overall quality of the presentation 1 to 15 points
3. Weight held..... 1 to 100 points
(In each division, the team with the highest weight-held score will receive 100 points. All other structures will receive a corresponding score based on the percentage of weight held.)
4. The successful Structure Toss (one score only)..... 0 or 5, 10, or 15 points
 - a. Is from behind Line 1 0 or 15 points
 - b. Is from behind Line 2 0 or 10 points
 - c. Is from behind Line 3 0 or 5 points
5. How well the required Structure Toss is integrated into a game..... 1 to 10 points
6. Carnival Barker character 2 to 15 points
 - a. Describes activity 0 or 5 points
 - b. Effectiveness in the performance 2 to 10 points
7. Creativity of additional games 2 to 15 points
8. How well additional games and weight placement are integrated into the performance..... 4 to 15 points
Maximum Possible: 200 points

E. Penalties

1. "Spirit of the Problem" violation (each offense) -1 to -100 points
2. Unsportsmanlike conduct (each offense) -1 to -100 points
3. Incorrect or missing membership sign -1 to -15 points
4. Outside assistance (each offense) -1 to -25 points
5. Having someone other than team members cut pieces of wood, apply glue, or work on the structure in any way weight-held score of zero
6. Over cost limit -1 to -100 points
7. Artificially strengthened structure -5 points to weight-held score of zero

8. Structure is not successfully tossed (see B10).....weight-held score of zero
9. Structure does not meet specifications and is not corrected before completing Weigh-In*:
 - a. **Overweight structure** (Weight will be determined by the official gram scale for each competition.): Any structure weighing more than 15 grams will receive -5 points for every .1 gram overweight up to 2 grams. Two or more grams overweight will receive zero score for weight-held. The penalty must not exceed the calculated weight-held score.
 - b. Undersized or Oversized Wood per B7cweight-held score of zero
(*Not assessed if it is an irregularity of that piece and the rest is within limitations*)
 - c. Undersized Structure:
 - (1) Less than 8" but more than 7-7/8" high..... - 50 points
 - (2) 7-7/8" or lessweight-held score of zero
10. Open Area does not accept the 2" diameter column through its enter height.....weight-held score of zero
11. If any team member is not wearing safety glasses while inside the Safety Area with their head below the Crusher Board, the team must stop weight placement until that team member puts on safety glasses. Time will continue.
12. If an adult selects a weight or places it without help from a team member, that weight does not count toward weight-held score. The weight must be removed. It may be placed properly for score. A judge will warn the team and the adult. If this continues after two warnings, a 10-point Outside Assistance penalty will be assessed for each future occurrence.

**These penalties will be substituted with a weight-held score of zero if, in the aggregate, that is less of a penalty. Teams that don't present a scored element of the problem will not receive a penalty, they will receive a zero score for that category.*

F. Style (*Elaboration of the problem solution; use four copies of the Style Form from the 2018-19 Odyssey of the Mind Program Guide*)

1. Creative use of a type of trash item in an additional game..... 1 to 10 points
2. Creativity of how a *contestant is supported* by one or more fans..... 1 to 10 points
3. (Free choice of team) 1 to 10 points
4. (Free choice of team) 1 to 10 points
5. Overall effect of the four Style elements in the performance..... 1 to 10 points

Maximum possible: 50 points

G. Tournament Director Will Provide

At the Weigh-In Site:

- a. a gram scale accurate to 1/10th of a gram.
- b. a micrometer or other precision method of checking wood thickness.
- c. a 2-inch diameter column-measuring device.
- d. an accurate ruler or device to measure the structure's size requirements.
- e. a bag to hold the team's structure.
- f. tape to attach the Weigh-In Checklist to the bag.

At each competition site:

- a. a 18' x 18' (5.5m x 5.5m) competition area (larger if possible) with a taped safety area, three taped Toss Lines, a Score Cross Bar, and taped boundaries for reference.
- b. a three-prong electrical outlet reaching the performance area.
- c. a Tester and a 60" x 60" (1.5m x 1.5m) taped Safety Area.
- d. a 12" extension to the safety pipe.
- e. three pairs of safety glasses: one to be used by a judge and two that are available to the team.
- f. a judging team and all materials necessary to judge this problem.

- g. a minimum of 400 lbs. of weights in assorted sizes, generally from 5 lbs. to 45 lbs., each with a hole 2” in diameter. When registering for a tournament, teams needing more weight should notify the Tournament Director. Teams are not allowed to bring and use their own weights.

**Note: Contact your Tournament Director for information regarding specific competition sites such as actual dimensions, amount and size of weights, weight of the Crusher Board, registration procedures, floor surface, etc. Do not submit a clarification request for this information.*

H. The Team Must Provide

1. Four copies of its Style Form, one Cost Form, one Outside Assistance Form, and all of its team clarifications.
2. Four copies of the Team List. This list is to assist the judges. If the team fails to provide the list, there will be no penalty; however, it benefits the team to have the lists because without them the judges might miss a scored aspect of the performance.
3. Safety glasses or other eye protection. However, the team may use up to two pairs of goggles provided by the tournament director.
4. Any necessary extension cords or adapters.
5. Cleanup materials as needed.

I. Metric Equivalency Chart

Lengths:

1 inch = 2.54 cm 1 foot = 30.48 cm
 1 cm = .39 inches 1 meter = 3.28 feet

Weights:

1 ounce = 28.35 grams 1 gram = .035 ounces
 1 pound = .45 kilograms 1 kilogram = 2.2 pounds

J. Problem Glossary (*Italicized terms that are not in this Glossary can be found in the 2018-19 Odyssey of the Mind Program Guide*)

Interconnected – Attached together in some way. Parts may be glued together. An interconnected structure is able to be held at any point of contact and be lifted and rotated in any direction and remain rigidly connected. Pieces may change their orientation or position but they must be able to move as one unit. Touching alone is not considered interconnected.

A contestant is supported – a character participating in a game will have at least one fan demonstrate their support in an observable way.

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P R E C A U T I O N S

- Use eye protection, e.g., a face shield, safety glasses, goggles, etc., when looking closely at a structure holding weight. Collapsing structures may project pieces of wood several feet.
- Keep your fingers on the sides of the weights when placing them onto the Crusher Board or onto other weights.
- Remain aware of the structure, the testing device, and the weight stack at all times to avoid injury in case of collapse.
- Do not stand too close to the structure, Tester, and weight stack unless necessary, and avoid bumping them accidentally.
- Use a safety pipe through the center hole of the weights to help prevent them from falling.
- Place a piece of plywood/hardboard or a tumbling mat under weights waiting to be placed onto the weight stack to help prevent damage to the floor.
- Super glues are extremely dangerous to use and some glues have dangerous fumes. Read and follow all precautions and directions on the manufacturer’s labels. Non-toxic model airplane wood glues are recommended. If toxic glue is used, proper precautions, such as adequate ventilation and parental supervision, are advised.