



Odyssey of the Mind

Problem No. 4: **BALSA LIMBO**



Balsa Limbo

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

A. The Problem

It's time to do the Limbo, but this time with Balsa! Teams will build balsa wood structures that will have adjustable interconnected parts that allow them to perform a "limbo dance." Higher score will be awarded for how low the bar is when the structure passes under it. However, the structure is not allowed to be lower than $\frac{1}{2}$! The limbo bar test and maneuvering the structure for testing will take place during the performance time. After the structure completes its limbo, it will be tested by balancing and holding as much weight as possible. Testing the structure will be done during a performance with a theme about dancing and movement and a character made of balsa.

The **creative emphases** of this problem are on the performance, the balsa character, and the dance.

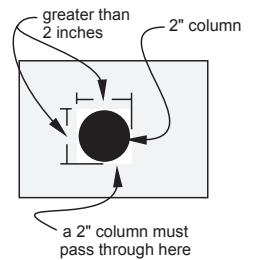
The **Spirit of the Problem** is for the team to design, build, and test a structure made only of balsa wood, glue if desired, and the option of using one other material to hold the structure in limbo form, and to place as much weight as possible onto it. Before weight-placement begins, the structure must pass under a limbo bar and then be adjusted for testing. There will be a sound effect when the structure performs the limbo, a character made from balsa wood, and an original dance. The performance will also incorporate weight placement and a theme about dancing and movement.

B. Limitations *(Italicized words/terms are defined in the 2019-20 Odyssey of the Mind Program Guide or the Problem Glossary.)*

1. **General Rules:** Read the *2019-20 Odyssey of the Mind Program Guide*. This manual is updated each year and includes important rules for solving the 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, 2020.** 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. Time ends when the team finishes or the Timekeeper says, "Time," whichever comes first.
4. The **cost limit** for this problem is \$150 (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 lists items that are exempt from cost.
5. The team's solution will be presented in an original performance that includes:
 - a. a structure of interconnected parts for testing made of only balsa wood. Glue may be used to hold the pieces of balsa wood together. Materials used only to connect the parts of the structure in limbo form are allowed but will count toward the structure's weight.
 - b. the structure passing under a limbo bar then, if necessary, being adjusted for weight testing. The height of the bar will determine the team's limbo score. Adjusting the structure means changing its shape from limbo form to the form it is intended to be in for holding weights.
 - c. a sound effect indicating when the structure is performing the limbo.
 - d. a *character* made of balsa wood.
 - e. an original dance.
 - f. a theme that includes weight-placement, dancing and movement.
 - g. 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.
 - b. is allowed to have one type of additional material as part of it, however; that material will be used solely to connect pieces together for the limbo and must not be weight-bearing and will count towards the structure's weight.
 - c. must weigh no more than 18 grams including glue and other materials as used to connect pieces together.
 - d. must pass under a limbo bar at the team's selected height and then be adjusted for testing height as described in B10f.

- e. 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, as determined by the judges, are not allowed.
- f. must be a single assembled structure that is designed and built by team members without any outside influence (see B21). All balsa wood parts must be interconnected at all times. This includes when they are rearranged for weight-held testing after passing under the Limbo Bar. Nothing can be added or removed at any time.
- g. when adjusted for weight-placement, must have each balsa wood part touching at least one other balsa wood part, to form a single assembled structure.
- h. may be assembled using other items and/or devices; however, these must be removed before Weigh-In.
- i. must have an open area running the entire height that will accept a column that is 2" (5.1cm) in diameter when being used for testing. Therefore, when being tested, the opening in the structure must be greater than 2". This opening will be measured at Weigh-In. The safety pipe must pass through the opening of the structure during weight placement (see Fig. A.).

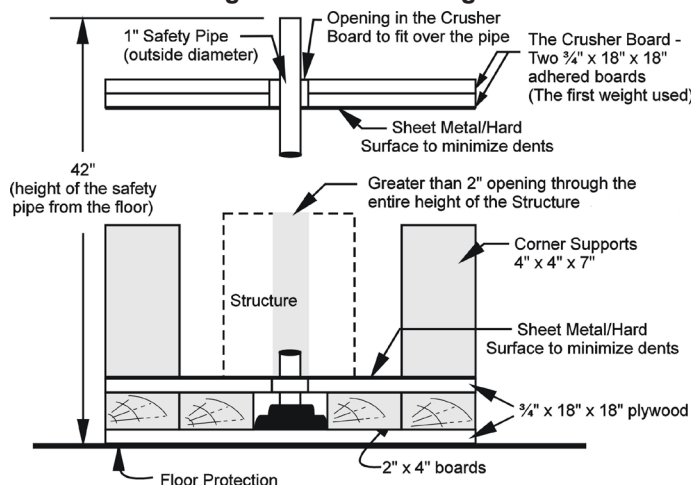
Figure A: Top View of the Opening



- 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" 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, packaging or purchase invoice 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 part.
- 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. The structure passing under the limbo bar:
 - a. will occur during the 8-minute performance time.
 - b. must take place before weight-placement begins. The team can make as many attempts to pass the structure under the bar as it wishes. This can be done in any way, but the limbo bar must be at one of the required heights. The team may ask the judges to raise or lower the limbo bar at any time.
 - c. will begin in the limbo form.

- d. will receive score according to the height of the limbo bar the structure passes under (supplied by the Tournament Director). The team will select one of the following heights for the limbo bar: 1", 2", 3" or 4".
- e. is allowed to include one type of material that connects the structure parts together for its limbo form, but it is not required. If the team decides to connect with an additional material, it cannot be weight-bearing and it must remain connected to the structure. If used, the additional material will count towards structure weight.
- f. will remain connected while being adjusted to testing height. Once the structure is adjusted to 8" or taller, it can be placed on the tester and weight-placement can begin. No part of the structure can be removed at any time. All parts of the structure must be connected to one another the entire time- from its limbo form to its testing form.

Figure B: Tester Design



11. The sound effect will occur when the structure performs the limbo. It must be loud enough to be heard by the judges and audience. It can be anything the team wishes, but it must be produced by the team during the performance.
12. The *character* made from balsa wood:
 - a. may represent anything the team wishes except for a real, known person or character.
 - b. can be made from any size/dimension of balsa wood. It can be connected by glue and any other items the team wishes, but it must be recognizably balsa wood. Decorations may be added.
13. The original dance must be choreographed by the team. The choreography must be original. The style does not need to be original. The dance can occur any time in the performance.
14. The theme of the performance can be anything the team wishes, but it must include weight-placement, dancing and movement.
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 towards 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 before continuing weight placement. If the weight would not fall to the floor if the team member were to let go, the adult is breaking the rules. There are no other constraints on adult assistance.

**only one adult (18 years 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 weights onto the stack (per limitations). The adult is allowed to assist in placing the weights 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 E12).
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 (if provided by the Tournament Director).

20. The team should present 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 8 1/2" x 11" or A4 paper. This list can be hand-printed 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. the sound effect to be scored during the limbo.
 - c. a brief description of the balsa wood character and when appears in the performance.
 - d. the signal the team will use to indicate it has finished its performance (weight-placement can continue if time allows).
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 of 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" (76.2cm) from the edge of the drop-off. This will serve as a warning, not a boundary.
2. 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.
3. The weigh-in judges will ask the team to adjust the structure into its limbo form. It must not be able to pass under a 1/2" bar, in any orientation, to be eligible for limbo score. Judges will then have the team adjust the structure as it will be used for weight placement.
4. 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.
5. Once the structure is weighed and measured, and back in its limbo form, 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/container and the judge will attach a Weigh-In Checklist to it. The structure will remain 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.
6. 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. 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 or container 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.
7. 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 C15 occurs.
8. 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.
9. A three-prong electrical outlet will be available at the performance area. Teams must bring their own extension cords and adapters, if needed.
10. If possible, the Tester will be on a solid, level floor. The Tester will be positioned in the center of a 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.
11. 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.
12. There will be a limbo bar at the performance site supplied by the tournament director. A judge will place the limbo

bar at the height requested by the team during staging. If the structure does not fit under the bar, the team can ask the judge to adjust the height or the team may manipulate its structure. The team can make as many attempts as needed to get the structure to pass under the limbo bar so it may proceed to weight testing.

13. After the structure “performs the limbo,” whether successful or not, the team will adjust the structure to be a minimum of 8” in height for weight testing. This will be demonstrated and measured during Weigh-In. Once the structure is adjusted during the performance, it can be placed on the tester and weight-placement can begin.
14. 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.
15. If any of the following occur, all weight-placement will end when:
 - 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 provided by the tournament director.
 - e. the team indicates it wishes weight placement to stop.

D. Scoring

1. Overall creativity of the performance 1 to 15 points
2. Overall quality of the presentation 1 to 15 points
3. Weight Held (calculated based on the most weight held in that competition) 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 structure passes under the limbo bar 0, 10, 15 or 20 points
 - a. Passes under ½” weight held score of zero “0”
 - b. Passes under 1” 20 points
 - c. Passes under 2” 15 points
 - d. Passes under 3” 10 points
 - e. Passes under 4” 0 points
5. The sound effect 1 to 10 points
 - a. Occurs when the structure performs the limbo 0 or 5 points
 - b. Effectiveness in the performance 1 to 5 points
6. The character made of balsa wood 3 to 15 points
 - a. Creativity of the character’s construction 2 to 10 points
 - b. Impact its portrayal has on the performance 1 to 5 points
7. The dance 1 to 10 points
 - a. Occurs during the performance 0 or 5 points
 - b. Creativity 1 to 5 points
8. How well weight-placement, dancing and movement are integrated into the performance 3 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 wayweight-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 does not pass under the limbo bar.....-75 points
9. Structure passes under the limbo bar set at ½" at Weigh-Inweight-held score of zero
10. 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 18 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 B7c weight-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
11. Open area does not accept the 2" diameter column through its entire height.....weight-held score of zero
12. Additional material (B6b) assists the structure in holding weight must be removed or -75 points
13. 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.
14. 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 again 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 2019-20 Odyssey of the Mind Program Guide.)

1. Creativity in how a costume grows or appears to grow 1 to 10 points
2. *Artistic quality* of a prop 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 and a ½" limbo bar to measure required height.
- 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.
- b. a Limbo Bar resting on a table with the following heights: 1", 2", 3"and 4".
- c. a three-prong electrical outlet reaching the performance area.
- d. a Tester and a 60" x 60" (1.5m x 1.5m) taped Safety Area.

- e. a 12" extension to the safety pipe (if available).
- f. three pairs of safety glasses: one to be used by a judge and two that are available to the team.
- g. a judging team and all materials necessary to judge this problem.
- h. 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 *2019-20 Odyssey of the Mind Program Guide*.)

Interconnected-- Attached together. Parts may be glued together. A structure with interconnected parts is able to be held at any point of contact and be lifted, tilted and rotated in any direction and remain connected. Pieces may change their orientation or position, but they must be able to move as one unit.

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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.