

Rules

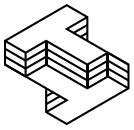
The Tech Challenge 2027

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Important Note About the Rules

Clarifications and additions to the rules may be made. When changes occur, registered teams will be alerted by email. See the website for more information: thetech.org/thetechchallenge/rules



Unleash the Power of Play



Scenario

The Tech was built on the idea that engineering is fun. To celebrate the 40th anniversary of The Tech Challenge, we invite you to unleash the power of play!

Everyone needs to play! Games help people relax, connect with others, and practice new skills. You don't need access to expensive playground equipment or devices to enjoy a game. Sometimes, the best games are made from simple materials and clever engineering.

Think about people you know.

- What kinds of games would they enjoy playing?
- What mechanical motions like pushes, pulls, spins, and swings could you include?
- How might you design and build a hands-on game for a real-life player?

The Challenge

Design, build, and playtest a mechanical game for a real-life player.



Teams

1. A Tech Challenge team is a group of at least two but no more than six students.
2. Your team level is set by the highest grade represented in your group.
3. Every team member has a responsibility to follow all safety instructions and use tools with care!



See the [website](http://thetech.org/thetechchallenge) to print out and post the **Team Safety Rules Poster** and review the **Team Guide**.

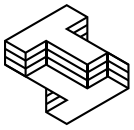


Advisers

1. Each team must have an adult adviser.
2. The role of the adviser is to encourage your team and help everyone stay safe while you design, build, and test your solution for The Tech Challenge. **Note:** Team solutions must be completely designed, built, tested, and demonstrated by team members.
3. An adviser cannot be a Tech Challenge judge.



For more information on this role, see the **Adviser Guide** on the [website](http://thetech.org/thetechchallenge).



Game Design Criteria

Each team must design and build their own game. It can be anything you can imagine, as long as it meets these criteria and constraints:

1. **User-Centered Design:** Plan and build your game with a specific player(s) in mind.
 - **Identify** a user or group of users (type of player).
 - These examples are just starting points: Your team might decide to design a game for a younger sibling, older adults at a senior living facility, a school that doesn't have money for sports equipment, teenagers who speak a specific language, people who have limited hand mobility, or another player or group that you care about.
 - **Interview and observe** your player(s). Talk to them to get ideas for your game. Learn about their interests and abilities.
 - **Imagine** and brainstorm game ideas.
 - **Create** prototypes of your game.
 - **Playtest** your game with your player(s) several times.
 - **Improve** your game by building and testing more than once.
 - **Document** your process in your team journal.
 - **Share** your game at the Showcase.

User-centered design: An approach to the design process that puts human needs, abilities, and behavior first. Designers try to understand their users by interviewing and observing them.

2. **Mechanical Motion:** Make physical, moving mechanisms a central part of your game.
 - A mechanism is a system of two or more moving parts that work together to create action in your game. Examples of mechanisms include levers, gears, springs, pulleys, and linkages.
 - You can use electronics, but the main action must happen in the real world, not on a screen.

Mechanical motion usually falls into four categories:

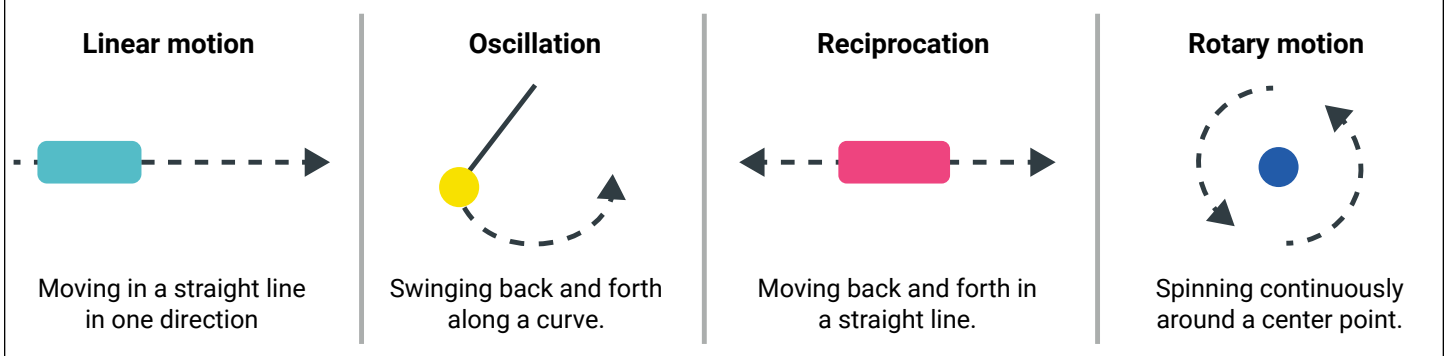
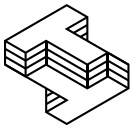


Figure 1



Tip: Fun mechanical games often convert motion like turning a handle (rotary) to make a target move up and down (reciprocation) using levers or gears!

The following types of motion can be included but do NOT meet the mechanical motion requirement:



Human power and gravity are moving the beanbag, but they are not a mechanism.



Game pieces moved by humans do not count as mechanical motion.

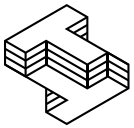
See the [Safety Rules](#) for more details about electricity and power requirements.

3. **Quick Start:** Players should be able to play the game without detailed instructions.
- Use directional signs, visual cues, and (a little) text on your game to communicate how to play.
 - During Test Trials and Showcase playtesting, you will be able to demonstrate how to play your game to judges during a timed tutorial period.

The timed tutorial period will vary by grade level

4th-6th grade	Up to 1 minute
7th-12th grade	Up to 30 seconds

4. **Players and Scoring:** Design a game that can be played by 1-2 players.
- The game needs to have an objective. There should be a way to succeed or score toward that objective.
 - It needs to be clear to the player when they are doing well or poorly in the game (ex: sound, visual cue, vibration etc).
 - Games may be single-player, competitive, or cooperative.
5. **Length of Game:** Your game can be played in 3 minutes or less.
- During playtesting judges will have up to 3 minutes to play the game. They may play more than once within the 3 minutes.



6. **Durable and Reliable:** The game needs to be able to be played during the Showcase playtesting without repair.
 - The game must work as intended on a consistent basis. For example, a ball always goes into a hole or a wheel stays on a track when it is supposed to.
7. **Portable Size:** The game and all the game pieces must fit inside 1-2 extra large bags (see *Figure 2*). When fully assembled the game must fit into the Game Build Area (See *Figure 3* for dimensions).
 - Game parts should not extend beyond the handles of the bag when carried.
 - All game parts should be put in the bags for inspection at Showcase.
 - Teams must be able to move and set-up their games without the assistance of others outside the team.
 - Wagons and carts will not be allowed at the Showcase event due to venue constraints.
 - Teams needing physical accommodations can contact us at challenge@thetech.org for more details.

Figure 2. Two 19 gallon shopping bags (21 $\frac{3}{4}$ in $\times$ 14 $\frac{1}{2}$ in $\times$ 13 $\frac{3}{4}$ in or 55 cm $\times$ 37 cm $\times$ 35 cm)



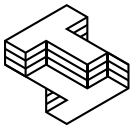
Bags will be provided to registered teams. See the [website](#) for details on picking up the required bags.

Image sources:

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8. **Built by your team:** Purchased components may be part of your game. Purchased kits are not allowed.
 - Teams may remix or recreate existing game concepts, but make sure you add a unique spin on them and improve upon the original game for your specific player.
9. **Safety:** Team members must follow all safety rules.
 - **Judges may stop your game if they spot something unsafe during Test Trials and Showcase.**
 - Eye protection and head protection will **NOT** be required at Showcase events this year. Therefore, all games and devices created need to be safe for players, visitors, and other guests.
 - **Projectiles will be assessed by judges to ensure they are safe to test:**
 - Projectiles that are at risk of leaving a team's Player Zone may not be allowed by judges.
 - **No sharp edges.** Cover pointy ends, dull sharp corners, and sand down rough splinters.
 - **No mess or hazards.** Games must be spill-proof.



- **No drones or flying devices.**
- **No toy guns or weapon replicas.** Any launchers must also be fixed to the game (not handheld)

Review all of the [safety rules](#) at the end of this document.



Tip: Attending a **Test Trial** is a good way to make sure your device meets all the requirements! See the [website](#) for in-person and virtual options.



Space and Size Requirements

The Tech will provide a designated space and optional table during Test Trials and Final Showcase.

Game Build Area and Player Zone Dimensions at the Final Showcase

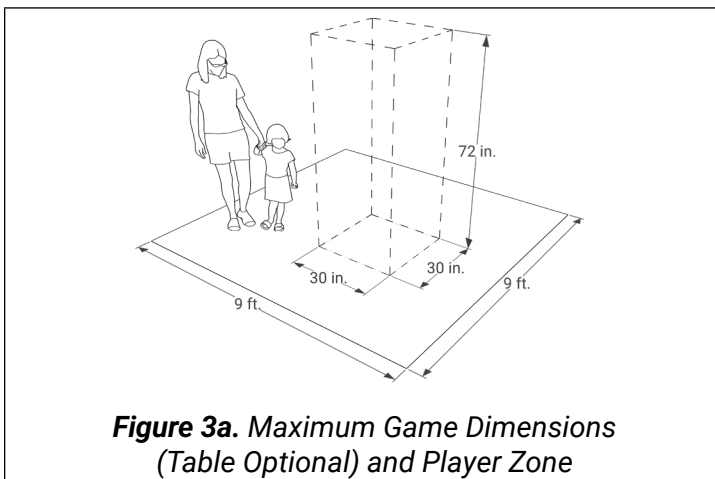


Figure 3a. Maximum Game Dimensions (Table Optional) and Player Zone

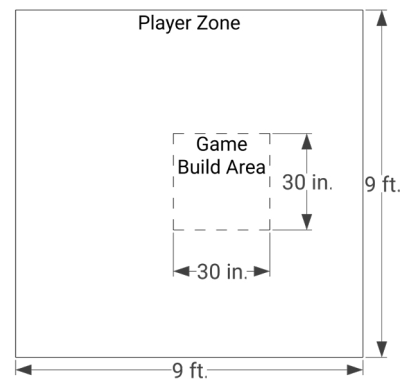
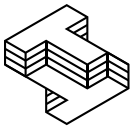


Figure 3b. Top View of Player Zone

- **Game Build Area:** The device (game) must fit inside a 30 inch by 30 inch square (76.2 cm x 76.2 cm), with no parts hanging outside.
 - Teams will be provided with a 30 inch (76.2 cm) high table.
 - Optional: teams may choose not to use the table and move it out of the Player Zone.
 - The maximum height of the entire Build Area is 72 inches (183 cm). Games may not extend beyond that height even if placed on the provided table.
 - All game parts must arrive at the Final Showcase packed inside the extra large storage bags (see [Portable Size Rules](#)) and be assembled on-site in the Build Area.
- **Player Zone:**
 - Game may be placed anywhere inside of the Player Zone – a 9 foot by 9 foot (2.74 m x 2.74 m) square – as long as it does not interfere with a neighboring team's game.
 - Judges and other players should be able to play your game while standing or sitting within the Player Zone
- Teams must be able to place and set-up their device (game) inside the Player Zone without assistance.



Final Showcase

This is your team's chance to share your final design with hundreds of excited parents, industry volunteers, and fellow students. Judges are interested to learn about these aspects of your project:

 Team Journal	 Team Interview	 Device Demonstration
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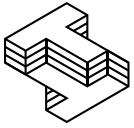
Team Journal

Start the Team Journal when you first begin thinking about the Challenge. Make an entry every time something important happens: a meeting held, a decision made, a test run, or a failure experienced. Your completed journal should feature a well-organized collection of notes, photos, sketches, and detailed drawings that tells the story of your engineering journey.

Submission and Logistics:

- **Format:** Typed or handwritten. Legibility and organization matter the most!
- **Pre-Showcase Submission:** Each team must submit one (and only one) PDF copy of their Team Journal before the Showcase.
- **Showcase Day:** Teams are highly encouraged to bring a hard copy of their journal (or a collection of sketches, dimensioned drawings, photos, calculations, etc.) to share with the Interview Judges.
- **AI Tools:** You must clearly identify any content in your journal that was generated using AI (artificial intelligence).

A note from the judges: Remember, the person who reads your journal will not be able to talk to you or ask you questions. So include details, stories, and images that share the unique ways your team worked together while building your game.



Journal Content Requirements:

Before turning in your journal, use this checklist to make sure your team has covered all the required topics.

Special journal requirements around documenting your user-centered design process and final game design are highlighted in blue.



Defining the Problem

- ☐ **Team Roles and Goals:** Explain how your team worked together and list the goals you set for yourselves.
- ☐ **Safety First:** Describe the role of your safety manager. Share examples of safe procedures your team used when handling tools or building equipment.
- ☐ **Research:** Share important facts you learned about engineering and game design in the real world. List your sources.
- ☐ **Target User / Player:** Who are you designing this game for? Include information about your player(s) and what you learned from interviewing them.
- ☐ **Challenge Requirements:** Based on the rules and your player(s), explain what your game needs to do to be successful.



Imagining

- ☐ **Brainstorming:** Show us your brainstorming methods and the different ideas that you explored. Explain how your team decided which ideas were actually worth prototyping



Creating

- ☐ **Game Development:** Share sketches and drawings of your game prototypes as they're developed. Include dimensions, materials, and who worked on what.
- ☐ **Multiple Prototypes:** Document the different versions of your game. Note what you changed, why you made the change, and what worked (or didn't).



Testing & Iteration

- ☐ **Testing:** Test everything and record your results. (Tip: Create a worksheet or scoresheet to track your data). Include all test sessions and the conclusions you drew from them.
- ☐ **Playtesting Results:** Share detailed results from testing your game with your target user, and explain how their feedback influenced your design choices.
 - ☐ *4-6th grade include at least 1 playtest, 7th-12th grade at least 2 playtests*
- ☐ **Failure Stories:** Write about the failures your team experienced along the way. What went wrong, and what did you do next?



Sharing the Final Design

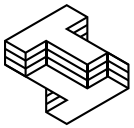
- ☐ **The Final Game:** Identify your final version and explain why it is the best solution. Include detailed drawings or photos of the exact prototype you are bringing to the Showcase.
- ☐ **How to Play:** Include a clear description of how to play your game. (Note: Printed pages of rules can be included in the journal, but they will not be referenced during playtesting).
- ☐ **List of Materials:** Provide a complete list of all physical parts and components needed for your game.
- ☐ **Final Reflection:** Share the insights gained and lessons learned. Include individual or team reflections on what you will remember most about The Tech Challenge experience.



See the [Team Guide](#) for more information about the journal.

Updated October 2026

Tip: You know you've done a good job if someone could recreate your game after reading your journal.



Interview

During the Team Interview, tell our volunteer judges how your team made plans, worked together, and solved problems.

- Every team member should be ready to describe the work they did.
- It is fine if some team members speak a language other than English.
- Please let The Tech know in advance if any special accommodations are needed.

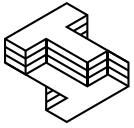
Note: In addition to the interview at the beginning of the Showcase, teams will also have a chance to talk to the Playtesting Judge and answer questions during the team demonstration as well.

Game Demonstration

When your team playtests your game on Showcase Day you will follow the process below:

Playtest Phase	Description
Setup (10 minutes)	• Bring your game to the designated Player Zone inside the required bag. • You will have 10 minutes to set up or assemble your game.
Judge Playtest (8 minutes)	Game Tutorial (<i>time varies by grade level</i>) • Show the judges how to play your game • 4-6th grade teams have up to one minute • 7-12th grade teams have up to 30 seconds. Judges' Turn (3 minutes) After observing your tutorial, judges have up to 3 minutes to play your game. They may play more than once within the 3 minutes. You will not be able to answer questions or provide additional directions during this time. Team Demonstration (4 minutes) • After the Judges' Turn, you will have another opportunity to demonstrate your game and share your game design choices with the judges. • At this time you may also play the game again with the judges.
Visitor Playtest (10 minutes)	After the Judge Playtest, we will invite guests and visitors into the playtest area. You may demonstrate your game as needed and invite people to try your game.

This is the perfect time for your team to celebrate your success! Whether your final game worked or not, remember that playtesting is just one of many things the judges will notice about your team. Every team excels in their own way.



Spirit of the Challenge

The Tech admires every student who tackles The Tech Challenge. We value your creative thinking and encourage teams to pursue surprising solutions that are better than anything we might imagine.

Remember that this is a challenge, **NOT a competition**. Teams work to beat the challenge, not other teams. Work together and keep trying when the going gets tough. Failures are an important part of the process. Be ready to tell us about your journey, even the times when your team felt like quitting. Your journal, interview, and game demonstration do not need to be perfect to be amazing!

See The Tech Challenge website for additional information including:

- Registration!
- Answers to frequently asked questions (FAQs) which are posted and updated periodically.

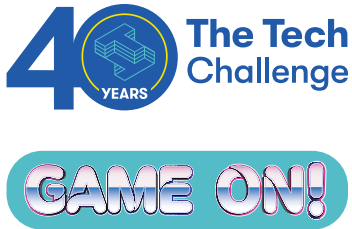
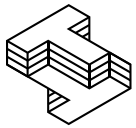
thetech.org/thetechchallenge



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thetech.org/thetechchallenge/rules



2027 Tech Challenge Safety Guidelines

Safety is a top priority during all phases of The Tech Challenge.



ALL team members are responsible for safety



Identify a Safety Manager for your team who will make sure everyone is practicing the safety guidelines.

ALWAYS

wear safety gear when using tools, building, or testing your device.

Eye protection	Head protection	Closed-toed shoes	Tie or tuck back long hair



Ask advisers for help when using new tools!

DON'T

forget the following are not allowed around tools and test rigs.

No flammable liquids or gases	No pressurized gases > 5 psi	No animals	No running and unsafe play

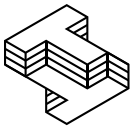


Advisers and judges can stop any activity they think is unsafe.



Print this page and post it at your team's construction site!

For more rules and resources go to
thetech.org/thetechchallenge



Detailed Reminders for Test Trials and Showcase

	Judges have full authority to stop any activity they view as unsafe. The judges' word is final.
	- Eye protection and head protection will NOT be required at Showcase events this year. - All games and devices created need to be safe for players, visitors, and other guests.
	- Wagons and carts will not be allowed at the Showcase event due to venue constraints. - Teams needing physical accommodations should contact us at challenge@thetech.org for more details.
	- No pressurized tanks/cylinders are allowed. - Teams may not use pressurized gases greater than 5 psi. Teams using pressurized gas must be able to demonstrate to judges by using a team-provided gauge that the pressure does not exceed 5 psi.
	- AC power (ex. wall outlet access) is not provided at Test Trials or Showcase. - Portable power banks to provide AC and DC power are allowed, however, they must safely fit within the 30" x 30" Game Build Area. - Batteries used must be sealed and in good condition.
	- Team members may not sit, stand, climb on or go under rigs, or be lifted by other team members during the set-up and device demonstration periods. - No ladders, step stools, or other equipment will be allowed to lift team members.