Egg Drop Team Challenge

Choose a sealed raw egg or a reusable plastic payload, build a container, and run one controlled 24-inch drop without making an engineering claim.

Host guide / Letter / 3–5 adults per team; multiple teams can build in parallel / 25–35 minutes, including setup and cleanup

Read the guide privately first if this activity has hidden answers. Print single-sided at Actual size / 100%. Cut only sheets marked CARDS. Keep answer keys with the host.

What you need

- Per team, choose one final payload: either 1 large raw egg sealed in a leak-resistant bag, or 1 reusable plastic egg or similarly sized object.

- For a team that chooses the raw-egg option: 1 reusable plastic practice egg or similarly sized object for test fitting before the final drop.

- Per team: 2 paper cups, 4 paper drinking straws, 2 sheets of newspaper, 4 cotton balls, up to 60 cm (2 ft) of masking tape, and 1 pair of scissors kept at the table.

- Shared: a stable platform that places the payload bottom no more than 60 cm (24 in) above the landing surface, a washable tray or drop cloth, measuring tape, paper towels, a waste bag, and handwashing access.

- No ladder, window, balcony, roof, throwing, or participant standing on furniture.

How to run it

1. Before the activity, let each team choose its final payload: a raw egg in a sealed leak-resistant bag or a reusable plastic egg or similarly sized object. Do not ask anyone to handle an egg. Place the landing tray on the floor, mark a clear no-entry zone, and measure a stable platform so the payload bottom starts no more than 60 cm (24 in) above the landing surface.

2. Give each team the listed building materials. Read the drop rule and cleanup plan before anyone opens a supply bag. Keep scissors at the table; only the host controls the drop station.

3. Ask each team to sketch a simple design for five minutes. Identify how it will hold the selected payload and which materials will cushion it. No design needs to imitate a spacecraft or professional protective product.

4. Allow 12–15 minutes to build. Teams choosing a raw egg should test-fit the container around the reusable practice payload and may adjust once; keep the raw egg sealed and separate. Teams choosing plastic build around their final reusable payload and use it for the final drop.

5. At the drop station, the host checks that the landing zone is clear and the platform is stable. For the raw-egg option, the host places the sealed egg bag into the container; for the plastic option, the host places the selected reusable payload. Release straight down without pushing or throwing. Do not exceed 60 cm.

6. After the drop, the host waits until the landing area is clear and retrieves the container over the tray. For a raw egg, inspect the sealed bag; participants do not handle a leaking or broken egg. For a plastic payload, remove it for reuse and wipe the container if needed. Follow venue cleanup rules and wash hands after handling materials.

7. Invite a brief debrief about design choices and what the team noticed. Do not score individual builders, claim a safety breakthrough, or repeat a drop with a broken raw egg.

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Set up a controlled low-height test

The 24-inch (60 cm) maximum is a conservative limit chosen for this guide, not a universal engineering standard. Measure from the payload's lowest point to the landing surface. Use a stable low platform at the marked height. If the venue cannot provide that arrangement safely, skip the drop and use the design discussion with the reusable plastic payload.

Keep the landing zone clear before every release. No one reaches under the platform, stands on furniture, leans out a window, or drops over a stairwell. The host releases the device straight down into a tray or protected floor area. There is no target-accuracy contest.

Use a sealed payload and plan cleanup

Teams choose either a raw egg sealed in a leak-resistant bag or a reusable plastic egg for the final drop. Ask about preferences before materials are distributed. A team choosing the raw-egg option also uses a reusable practice payload to test fit; the raw egg stays sealed until the host loads it for the final release. A team choosing plastic uses that payload throughout and does not need a raw egg.

Have paper towels, a waste bag, and handwashing access ready before the test. If a raw egg breaks inside its sealed bag, keep it sealed and follow the venue's disposal rules. If the bag leaks, keep people away while the host follows the venue's food-safety and cleaning procedure. Clean and reuse a plastic payload.

Build and test without overclaiming

The teams get a fixed material set and a single final drop. Raw-egg teams use a reusable practice payload during construction, then the host loads the sealed egg for the final test. Plastic-only teams use their reusable payload throughout. The result applies only to the chosen payload, height, surface, and build; it is not evidence about helmets, packaging standards, or real-world transport.

Avoid a "winner" framed as the best engineer. If the group wants a light comparison, note which materials were used and what each group observed. The conversation should remain optional and focused on the object, not people's ability.

Printable host script

"This is a short design activity. You may build, sketch, observe, keep time, or pass. Your team may choose a sealed raw egg or a reusable plastic payload. Any raw egg stays sealed; I will load it only for the final drop. Our drop limit is 24 inches from the payload to the protected landing surface. I will operate the drop station; no one goes under it or climbs. A result is only for this one test—not a safety rating."

Before release, say: "The landing area is clear. Please stay outside the marked zone." Afterward: "We will retrieve and clean the device, then discuss one design choice if you would like."

Follow the eight host cards in order

These cards are sequential, so keep them in order rather than drawing them randomly. They form one complete activity: prepare the drop zone, sketch, build, check the release, retrieve safely, clean up, and debrief. If a safety condition is not met, skip the drop and use the design discussion with the reusable payload instead.

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CARDS / Egg Drop Team Challenge

R_EGGDROP-001 / Sequential host step

1. Prepare the zone

R_EGGDROP-002 / Sequential host step

2. Choose the payload

R_EGGDROP-003 / Sequential host step

3. Sketch the design

R_EGGDROP-004 / Sequential host step

4. Build the container

R_EGGDROP-005 / Sequential host step

5. Check the release

R_EGGDROP-006 / Sequential host step

6. Retrieve and inspect

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CARDS / Egg Drop Team Challenge

R_EGGDROP-007 / Sequential host step

7. Clean up

R_EGGDROP-008 / Sequential host step

8. Debrief and stop

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Host answer key

Keep this section separate from player cards. Accept equivalent wording where the meaning matches.

01. Place a washable tray or drop cloth on the floor. Measure 60 cm (24 in) from the landing surface to the bottom of the payload when it is on the platform. Mark a clear area that participants must not enter during release.

If there is no stable low platform or the zone cannot be kept clear, do not conduct a drop.

02. Before building, each team chooses one final payload: a raw egg in a sealed leak-resistant bag or a reusable plastic egg or similarly sized object. A team choosing plastic can use it for the entire activity and needs no raw egg.

No one is required to handle an egg. A participant may observe, sketch, keep time, or pass.

03. Give each team five minutes to draw a container and identify where the payload sits. Ask the team to choose which supplied materials will cushion or hold it.

The sketch is an activity plan, not a professional engineering drawing.

04. Provide 2 paper cups, 4 straws, 2 newspaper sheets, 4 cotton balls, up to 60 cm of masking tape, and scissors kept at the table. Allow 12–15 minutes. Raw-egg teams test-fit and make one adjustment around the reusable practice payload while keeping the raw egg sealed. Plastic-only teams build around and keep their selected reusable payload for the final drop.

Keep scissors at the table and away from the drop zone.

05. The host checks the measured height, stable platform, selected payload, and clear zone. For a raw-egg team, place the sealed egg bag into the container; for a plastic-only team, use its reusable payload. Release straight down with no push or throw.

The maximum is 60 cm (24 in). Never use a ladder, window, balcony, roof, or overhead release.

06. Wait until the landing area is clear. The host retrieves the device over the tray. For the raw-egg option, inspect the sealed bag; participants do not touch a leaking or broken egg. For the plastic option, remove the reusable payload for inspection and reuse.

If the raw-egg bag leaks, isolate the area and follow the venue cleanup procedure.

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07. For a raw-egg team, place the sealed egg and bag into the waste container; wipe the tray and nearby surface as needed. A plastic-only team may clean and reuse its payload. Wash hands after handling materials.

Have paper towels, waste bag, and handwashing access ready before starting.

08. Ask: “What material did your team choose first?” and “What would you change if you had another build round?” Record observations only if the group agrees. Do not call the result a safety certification or judge individual skill.

Stop after one final drop. Do not re-drop a broken raw egg or turn the activity into a height contest.

Hosting questions

How high should the egg drop be?

This guide sets a maximum of 24 inches (60 cm), measured from the payload’s lowest point to the landing surface. This is a conservative activity choice, not a universal standard.

Can we use a plastic egg?

Yes. A reusable plastic egg or similarly sized object can be the final payload for the entire activity. That team does not need a raw egg. Teams choosing raw eggs use the reusable object only for test fitting, then the host loads the sealed raw egg for the final drop.

Who should release the device?

The host controls the drop station and releases the device over a protected zone. Participants stay clear and never climb, lean, or drop from a window or balcony.

Does a successful drop prove the design is safe?

No. It shows only what happened in this single activity under the stated conditions; it is not a safety or engineering certification.

References

University of California MESA-hosted RAFT activity: recommends starting low and gradually increasing; includes bagging eggs, handwashing, drop-zone cleanup, and keeping spectators clear. Our page sets a conservative 60 cm maximum as an editorial safety limit, not a source standard.

https://mesa.ucop.edu/wp-content/uploads/2018/09/3.3.RAFT-Egg-Drop-Activity.pdf

University of Illinois Extension egg-drop activity procedure, roles, test recording, and discussion. Used for the staged design/test/debrief framing, not to support a safety claim.

https://extension.illinois.edu/how-fragile-and-egg

Lunar and Planetary Institute egg-drop activity: team design, building, testing, revision, and discussion. Used as activity structure context only.

https://www.lpi.usra.edu/education/explore/beyondEarth/activities/eggDrop.shtml

Original AI-assisted resource with AI editorial review. Independent human playtesting and physical printing have not been completed. Answer, listen, or pass.

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