



This year's Friday After Thanksgiving (F.A.T.) Chain Reaction is the final one. To make this the biggest, fattest F.A.T. ever, we're counting on the creativity of our building teams!

In the weeks before the event, you will construct your link: a device with moving parts that interact in a mini chain reaction. On November 29, we'll connect everyone's links and trigger a spectacular, community-built chain reaction!

In addition to following the building guidelines, try adding style and humor to entertain the audience. Use a range of materials and motions and play with extra features. For instance, your reaction could activate blinking lights, ring bells, unfurl a flag or banner, or trigger a blast of confetti.

The theme is "Gear Up for the Future." It may be the end of F.A.T., but not the end of exciting community events hosted by the MIT Museum! We are developing innovative and inclusive new programs as we prepare to move to a new location in 2021, and look forward to building something new together!

Building Guidelines for Your Link

1. Size and Weight Requirements: Maximum length 6 feet, maximum width 2 feet, maximum height 4 feet. Lightweight enough to carry into the gym and place on a table.

2. String Pull Requirements: Each link must start and end with the pull of a string. The strings should tie easily to neighboring links. The strings must be at least 2 inches long and the pulling action must move the string with a force of about 0.5 Newton. *

* What does a force of 0.5 Newton feel like? Tie a string to an unopened can of beans, pumpkin, tomatoes, etc. (commonly 15 ounces or 425 grams). Place the can upright on a flat surface and pull the string parallel to the surface with enough strength to slide the can 1 meter (39 inches) in 1 second. That's about 0.5 Newton of force.

3. Duration Requirements: Once activated, your link should take between 30 seconds and 3 minutes to complete its sequence of movements. Making the link last long enough is among the biggest challenges for F.A.T. builders. Try making the link complex with many different steps, and try to control the speed of moving parts (such as a tilting lever or rolling ball) so they're not too fast.

4. Theme Challenge: Gear Up for the Future. Try to include one or more gears. Gears can be combined with each other and with cams, cranks, and pulleys to convert one direction of motion (like the rotation of a motor) to another (like the up-and-down motion of a piston). Gears come in many useful shapes other than the well-known spur gear (round with teeth around the edge).

Information and Examples: Gears, Cams, Cranks, and Pulleys

- View excellent animations showing types of gears and how they can be combined on Thang010146's [YouTube channel](#).

- See how artist/engineer Arthur Ganson, host of the F.A.T. event, creates complex moving sculptures on [Ted.com](#).

- Read simple explanations of "[Gears](#)" and "[Crank and Cams](#)" in Explain that Stuff by Chris Woodford.

5. Do not use live animals.

6. Do not use open flames.
7. Do not use hazardous chemicals. Small amounts of baking soda and vinegar are OK. Avoid bleach, motor oil, strong cleaners, or anything that's found only in chemistry labs.
8. Water can be used, but limit the amount to 1 cup or less.
9. Batteries can be used, but do not use devices that need to be plugged in because power outlets are not available.
10. Test, test, test! Before you come to the event, make sure your link's chain reaction is repeatable and reliable.

Event Day Instructions for Builders

- Pre-registration is required for building teams and closes at 5:00 pm on November 28, 2019.
- Location of the event is Rockwell Gymnasium, next to Zesiger Sports and Fitness Center, 120 Vassar St, Cambridge, MA 02139.
- Builders should arrive with their links between 11:30 am and 12:30 pm.
- Parking is challenging. If using a car, the driver can drop off the link and team members at Rockwell Gym, then look for parking. But ongoing construction makes parking hard to find. Learn about [parking options](#), or consider using a taxi or rideshare service (such as Uber) to carry your link to the event.
- At 2:30 p.m., Arthur Ganson will interview the building teams as they finish setting up their links.
- At 3:30 p.m., the Chain Reaction will begin!

Thanks for joining us!