

playbook

Engineering for kids



Warnings

Every playoddity kit is designed as a children's experience that is guided by an adult. All the described activities require adult supervision. Safety instructions for each item in the kit can be found on the item's individual packaging.

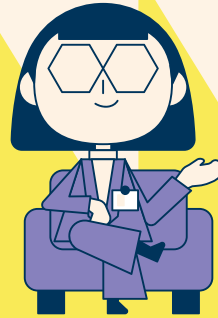
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Hands-On Science: Family Engineering Adventures

Parents have the chance to shine, surprising their kids with cool engineering feats. Kids will create mesmerizing chain reactions using a diverse array of materials. Each experiment is a step toward understanding complex concepts in simple, engaging ways, while providing precious moments for families to connect, learn, and create together.

Discover the wonders of engineering! This kit is a playground of scientific exploration and creativity, perfect for family bonding. It combines fundamental principles such as gravity, balance, and force with hands-on activities, making learning both fun and memorable.

age 5-11



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Unboxing

Explore your innovative toolkit. These items are designed for the activities in this playbook, but the possibilities for engineering are endless! Be ready to adapt and let your creativity expand as you embark on your engineering journey. Share your unique creations with #playoddity.

Each item in the kit has a colored sticker:

- Item can be used by children and adults
- Item should be used by adults only

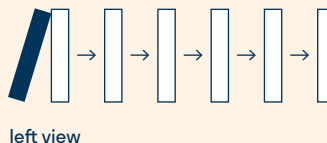
- 1. Wooden chain reaction building set
- 2. Wooden blocks
- 3. Marbles
- 4. Balance Dino Game
- 5. Popsicle sticks
- 6. Stacking stones
- 7. Paper cups
- 8. Ruler
- 9. Stopwatch
- 10. Level
- 11. Voice recording button
- 12. Reception bell
- 13. Adhesive pads
- 14. Double-sided adhesive tape
- 15. String
- 16. Mystery item

Activities

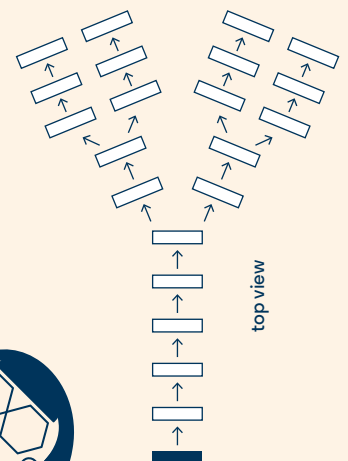
Domino effect

- Let's build your unique engineer chain reaction trace. Start with a simple design.
- Show your kid how the domino principle works using only wooden blocks from the kit.
- Build linear and branched versions to demonstrate the domino effect.
- Add the wooden chain reaction building set to the domino trace.

5 WARNING! It probably won't work the first time. Be patient, look for the problem, and fix it together. It's all about teamwork!



left view



top view



Chain reaction machine

① Test each phase of the chain reaction machine track separately, then connect the phases in a chain.



② Check the incline of your surfaces using the spirit bubbles of the level. By the way, is your table standing level?

③ Check the distances between elements using a ruler. It can also be used as part of the track.

④ Now make your machine bigger and more complicated. Add more objects from the kit. Use extra marbles, the Balance Dino Game, and stacking stones. Make sure to pay attention to how well everything balances.

⑤ Explore your home for objects to include in the chain reaction, plus use the mystery item from this kit (no matter what it is—it may be your biggest challenge!)

⑥ Build on multiple surfaces (table-chair-floor) that give you some height to work on so you can use gravity.

⑦ Increase the slope of the ramp to add more force to the balls to trigger the next step in the chain reaction. This is called a force-velocity relationship: the faster the speed of the ball, the stronger its impact will be, and vice versa.

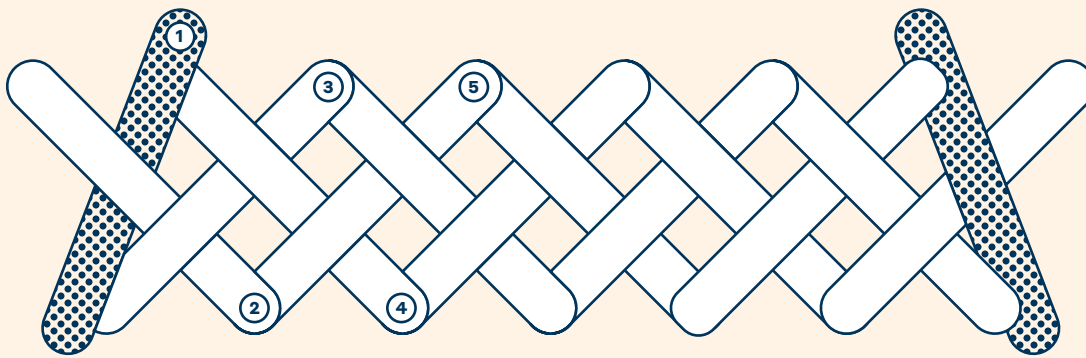
⑧ Tape down objects that are not supposed to move in your chain reaction. Use adhesive pads and tape.

⑨ Measure with the stopwatch how long it takes for the ball to pass through the track or how long it takes you to assemble it after destruction.

⑩ Add an oddity, such as recording a funny sound on the voice recording button, to serve as a signal for starting the chain reaction or when an error occurs.

⑪ Add more sounds by using the reception bell as a part of the track. Let the marble fall directly onto it to make a sound. We also recommend using upside-down pans; they make perfect drums.

⑫ Try to make the final action of the chain more functional so that it unveils some sort of reward. For example, hide a couple of candies under a paper cup, tie a string to the cup, and attach the other end to any small soft toy. Place the toy at the edge of the table, so when it's nudged by a link in the chain, the toy will fall and lift the cup to reveal the candies. Enjoy them in celebration of your success.



Cobra weave kinetic sticks

Use popsicle sticks to make a cobra weave kinetic stick chain reaction. This is a separate experiment, but if you're a master, you can make it part of the track. Find a cobra weave design or video on the internet; it seems difficult, but it's actually not, and it's worth it. The main thing is to hold the entire structure with your hand (or a weight) until the assembly is complete. Otherwise, it will explode prematurely.

Search terms

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Cobra Weave Kinetic Sticks ↗

Popsicle Stick Bomb ↗

Google terms in advance to impress your child, or look at pictures and videos of the search terms together to find inspiration.

