WORKSHOP EXTENSION ACTIVITY

Built by The Home Depot Kids Workshops

November 2025: Excavator

Ages 5–12

CONNECT.

Have you ever driven on a really bumpy road? Maybe there were lots of potholes, or maybe it was a dirt road filled with rocks. How did it feel to be a passenger in the car?

INVESTIGATE.

Excavators have to drive over bumpy ground all the time! It's an excavator's job to dig, lift, and move dirt, rocks, and other materials. They usually work on construction sites, and the ground on these sites is rarely paved.

Let's experiment with ground surfaces to see how well your Excavator fares on all different kinds of construction sites!

You'll need:

- Your Excavator
- Large piece of cardboard or poster board (the bigger, the better!)
- Sandpaper
- Carpet samples
- Aluminum foil
- Clay or playdough
- Timer
- Tape and/or glue
- Ruler
- Pencil

1. First, turn your cardboard or poster board into a surface testing zone! Use a ruler and pencil to divide it into at least three "lanes" for your Excavator to drive on. If your board is too small for three lanes, grab a second board.
2. Next, use your materials to give each lane a different type of surface. You could use sandpaper for one lane, carpet samples for another, aluminum foil for a shiny road, or even lumps of clay to make one of the lanes bumpy. Glue everything down securely.
3. Once your lanes are ready and the glue is dry, prop up the board with some books to make a small ramp. It shouldn't be too steep—just enough for your Excavator to roll down on its own.
4. Now, it's time to start your experiment! Hold your Excavator at the top of one lane, start your timer, and let it go. Watch how it travels down the lane and time how long it takes to reach the bottom. Record the results in your Excavator Testing Chart.
5. After testing all the surfaces, review your results. Which road surface was the easiest for the Excavator to move over? Which one was the trickiest?

Excavator Testing Chart

Road Surface	How did your Excavator drive?	Time: Start to Finish

INNOVATE.

Now that you know how your Excavator moves on a variety of surfaces—brainstorm. How could you optimize your Excavator to help it travel more easily or more safely on one of these tricky surfaces?

Choose one surface and consider whether the wheels could use more **friction** or **less friction**.

What is friction?
When an object moves in one direction, friction is the force that acts in the opposite direction and slows or even stops the object from moving. If your Excavator slid from side to side, there was not enough friction. If it got stuck, there may have been too much friction!

Brainstorm how to use the materials from the **INVESTIGATE** section (or other materials from around your home) to help your tires travel better on this type of surface. Then, optimize your tires!

Finally, test how your improved Excavator moves on the road surface you selected. Does it drive better than before?

Share a photo of your optimized Excavator moving along a tricky surface, using #kidsworkshopexplore.

Great job building your Excavator! Did you know that **Construction Workers** and **Remodelers** use all kinds of heavy construction equipment like the Excavator to build and improve our communities. They work hard to keep roads and sidewalks smoothly paved, lay a secure foundation for buildings, and remove hazardous debris.

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