

DINOSAUR RAMP WALKER



Use the fundamentals of physics to create a “walking” dinosaur

What you'll need:

- Dinosaur ramp walker template (provided below)
- Printer
- Card stock or recycled cardboard
- Scissors
- Markers, pencil crayons or other materials for decorating your dinosaur
- A rough, textured surface, like corkboard or a plank of wood
- Something sturdy to prop up the planks, like books

No printer? No problem! Grab a pencil and ruler to draw your own template using the measurements provided.



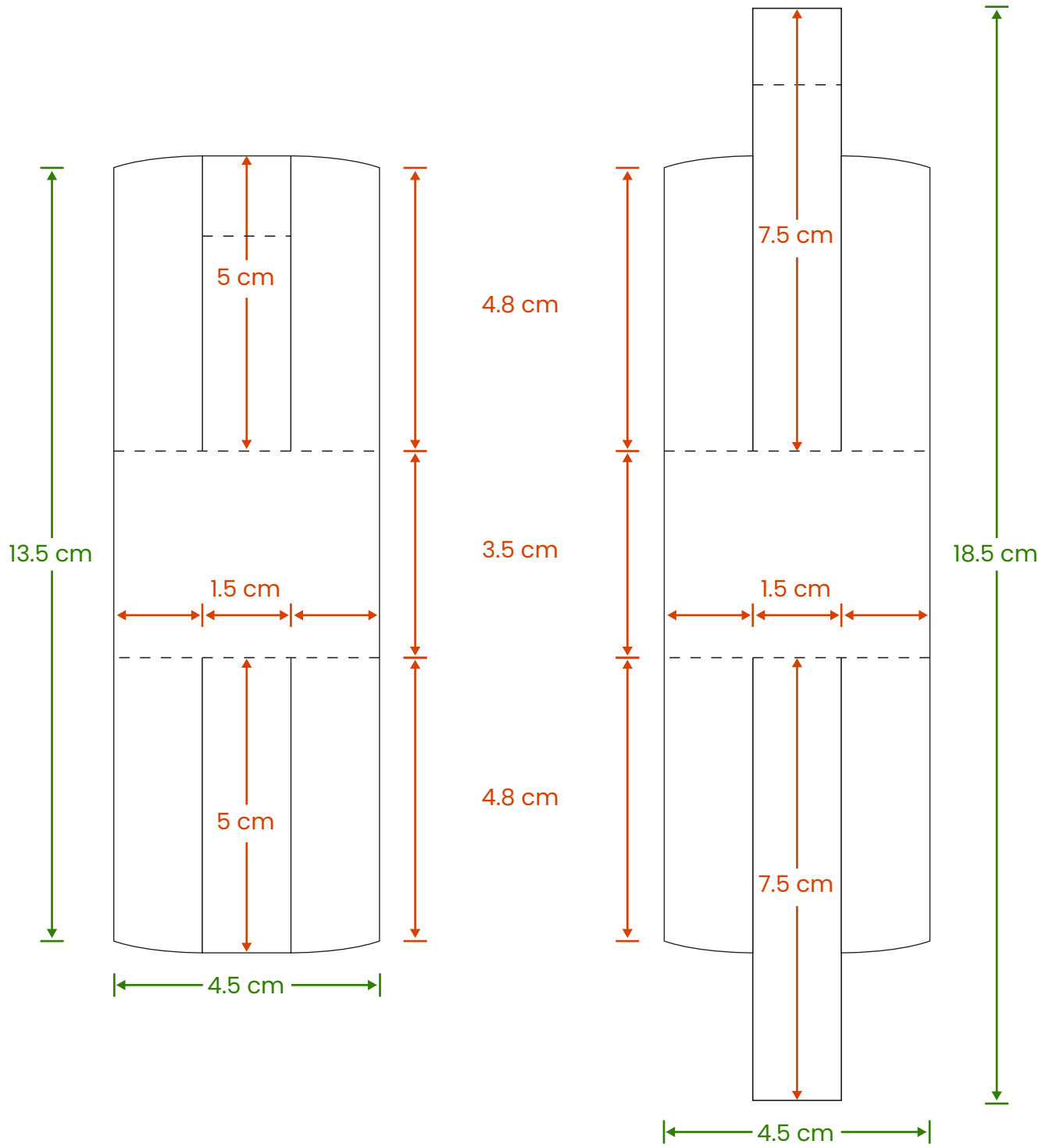
Activity setup:



1. Print the template on card stock. Drawing your own? Feel free to use card stock or thin recycled cardboard, like a cereal box.
2. Follow the template to cut the outline as needed with your scissors. Be sure to cut small curves on the bottom of the dinosaur's legs, as indicated on the template.
3. Colour and decorate your dinosaur's head, body, legs and tail.
4. Once your dinosaur is decorated, use the template as a guide to fold its legs downward. Be sure to create a firm crease.
5. Follow the dotted lines on the template to fold the dinosaur's neck and tail in the opposite direction of its legs. To give your dinosaur a head, fold the last dotted line at the top of its neck.
6. Set up a pile of books on top of a flat surface. Rest one end of your corkboard or plank of wood on the books and place the other end on your surface to create a ramp.
7. Place your dinosaur at the top of your ramp. Lean the dinosaur slightly to the left or right side to help it get started.
8. Release the dinosaur and watch it walk down the ramp!



TEMPLATE

Make one dinosaur, or try both!

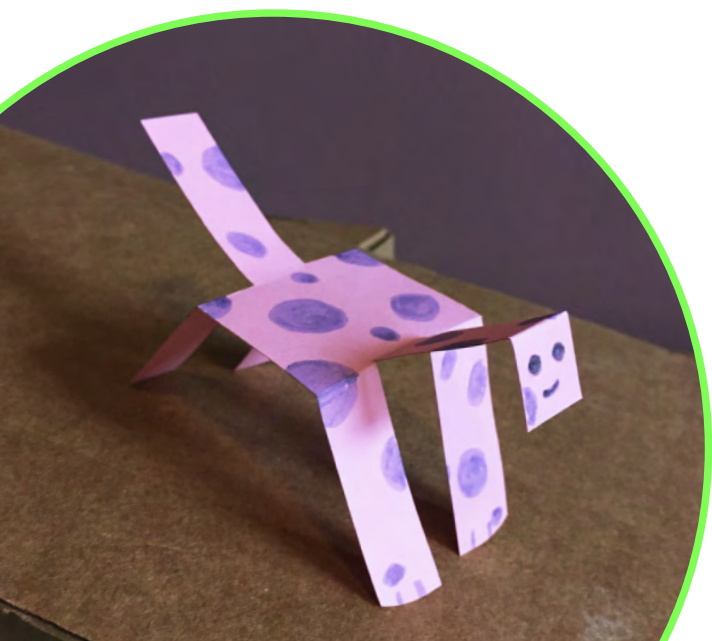


-  Cut solid lines.
-  Fold dashed lines.

Experiment

There are many ways to experiment with your dinosaur ramp walker! Here are a few things to try:

- Use different materials for your ramp. What happens when you use a thicker material, like wood, compared to a thinner material, like stock paper?
- Play around with different ramp surfaces. Try adding materials like plastic wrap or rubber placemats to your ramp. You can also try making your cardboard or wood more rough using sandpaper.
- Change the curvature of your dinosaur's feet. Does your dinosaur move better when its feet are flatter or more curved?
- Try adding weight to the front or back of your dinosaur using paperclips or extra cardboard. How does this affect its walking?
- Make multiple dinosaurs with different dimensions and race them. Will a dinosaur with longer legs move faster? What about a bigger body?



How does it work?

There are two simple machines causing the life-like walking movements of your dinosaur ramp walker: levers (the dinosaur's legs and feet) and an incline plane (the ramp).

The curvature of the dinosaur's feet is key to its movement. The small curves added to the feet cause the dinosaur to rock back and forth from one leg to another. One front leg makes contact with the surface of the ramp while the other leg lifts up, causing the dinosaur to "walk." A transfer of energy also takes place: The potential energy from the leg touching the surface is transferred to kinetic energy when the leg lifts up and springs forward.

For the ramp to work, it needs to have a certain level of friction and the proper angle. If the ramp's surface is too smooth, the dinosaur will slide down; if it's too rough, the dinosaur will not move at all. If the ramp is too steep, the dinosaur will tumble down; if it's too flat, the dinosaur will stand still.

Did you know?

Ramp walker toys, most commonly made of wood, have been around since the late 1800s. Plastic versions of these toys were popular in the 1950s and 60s.

