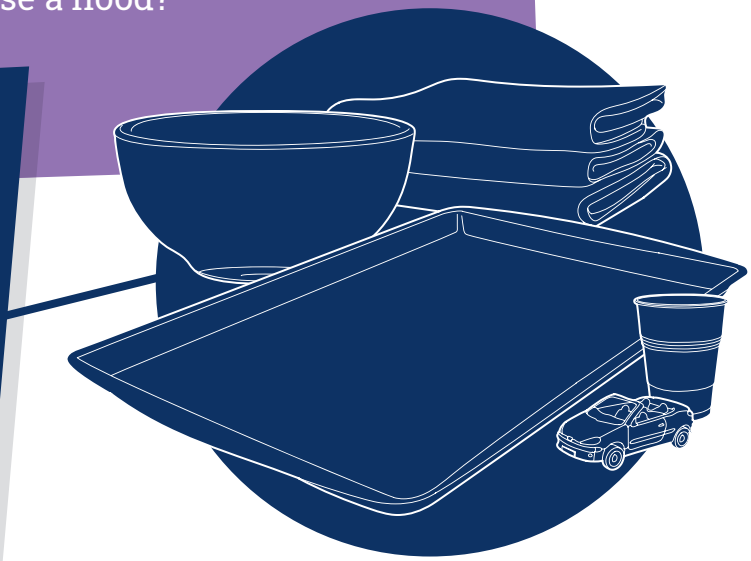
FLOOD DEMO

How can just a few inches of rain cause a flood?



MATERIALS

You will need:

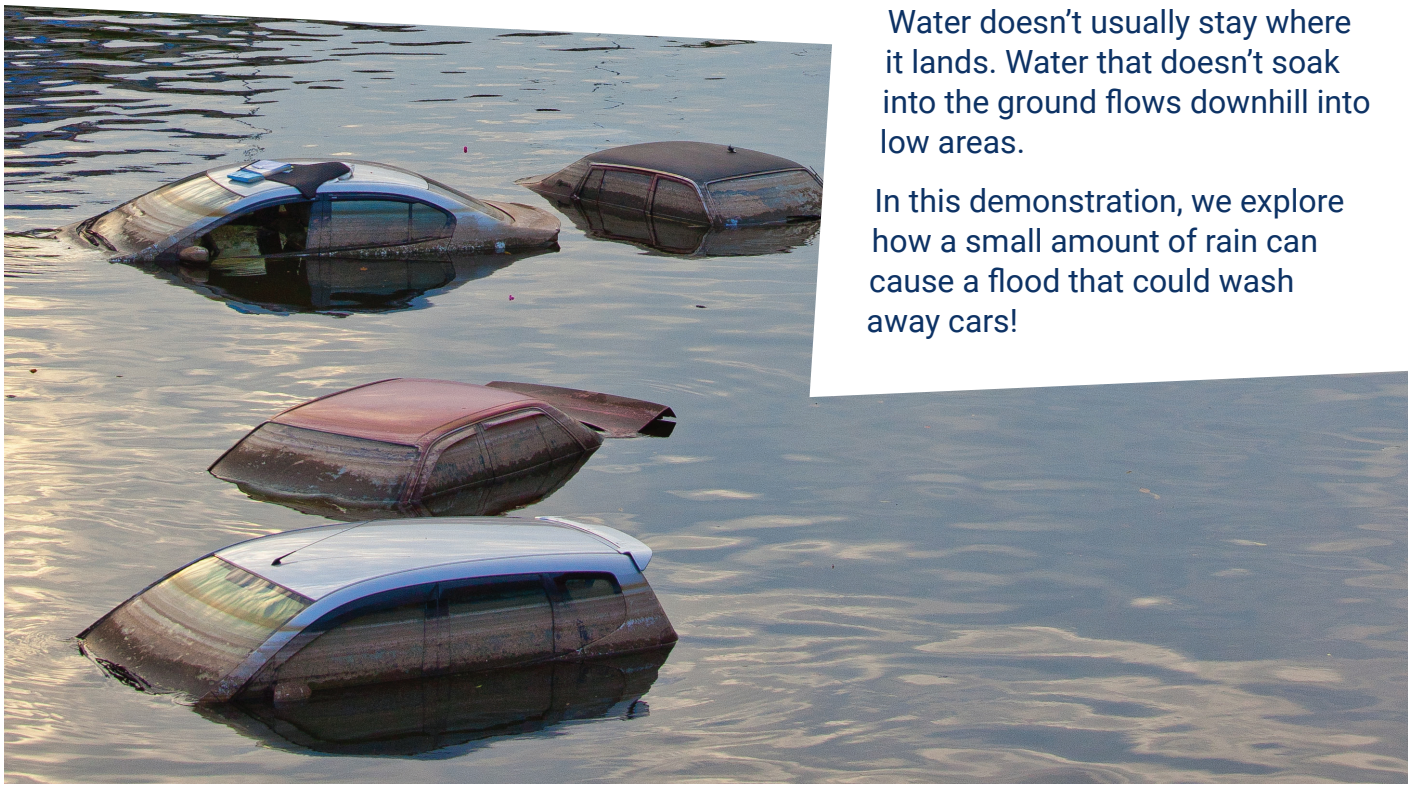
- Water
- Small cup
- Large, rimmed baking sheet
- Large bowl
- Toy car
- Towel (for the extension)

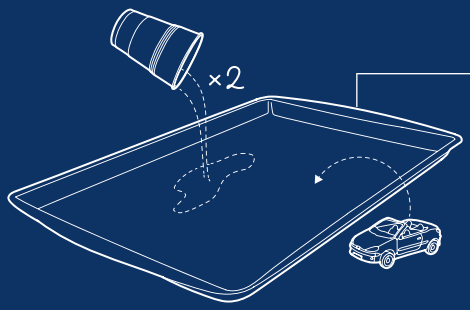
FLOODS

A few inches of rain can cause several feet of water to collect in some areas. How?

Water doesn't usually stay where it lands. Water that doesn't soak into the ground flows downhill into low areas.

In this demonstration, we explore how a small amount of rain can cause a flood that could wash away cars!

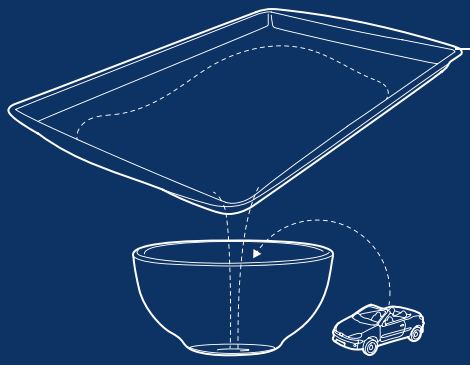




1. Pour two small cups of water onto your baking sheet. Place the toy car in the water on the baking sheet.

JOURNAL:

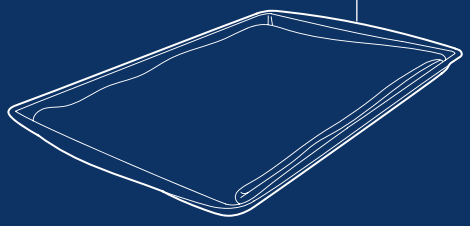
29 Make a drawing that shows how the depth of the water on the baking sheet compares to the height of the toy car. Is the water over the tires? The hood? The roof?



2. Next, with help from an adult, carefully pour the water from one corner of the baking sheet into the big bowl. Place the toy car in the bowl.

JOURNAL:

30 Make a second drawing that shows how the depth of the water in the bowl compares to the height of the toy car. Is the water over the tires? The hood? The roof?



EXTENSION Start over. Try the two steps above, but this time place a folded towel on the baking sheet before you pour any water on it. Pour the water onto the towel-covered baking sheet, then into the bowl.

JOURNAL:

31 What happens when you pour the water from the towel-covered baking sheet into the bowl? How do you think this relates to flooding in the real world?

FLOOD PREVENTION

In the flood demonstration on the previous pages, we were able to keep the water from flowing out of the pan and into the bowl by covering the pan with a towel.

The towel soaked up most or all of the water and held it in place so it couldn't flow quickly into the bowl. We can't cover cities in towels to prevent flooding, but the towel can teach us about one method of flood prevention.

PRACTICE:

Answer the questions below about rainfall and flooding.

32 Circle the surface below that you think will soak up the most rain water. Cross out the surface that you think will soak up the least water.

Brick Pavers

Tall Grass

Loose Soil

Paving Blocks

33 Circle the surface below where rain water will flow slowest down a hill. Cross out the surface where rain water will flow fastest.

Dense Plants

Grass Lawn

Concrete Sidewalk

Packed Dirt

34 How can having natural areas with lots of plants help reduce flooding in a city?

DISCUSSION:

35 Which surfaces on the previous page could be replaced with a different surface to reduce flooding? Which replacements wouldn't make sense?

JOURNAL:

36 This building in Rome, Italy has a roof covered with plants and soil. It's called a green roof.

How could buildings with green roofs help reduce flooding in a city?

What are some other possible benefits and problems of a roof like this?

Sponge Cities

A **sponge city** has lots of natural areas that absorb rain and help prevent flooding.

Collecting storm water is just one of the many benefits of having lots of natural areas in a city.

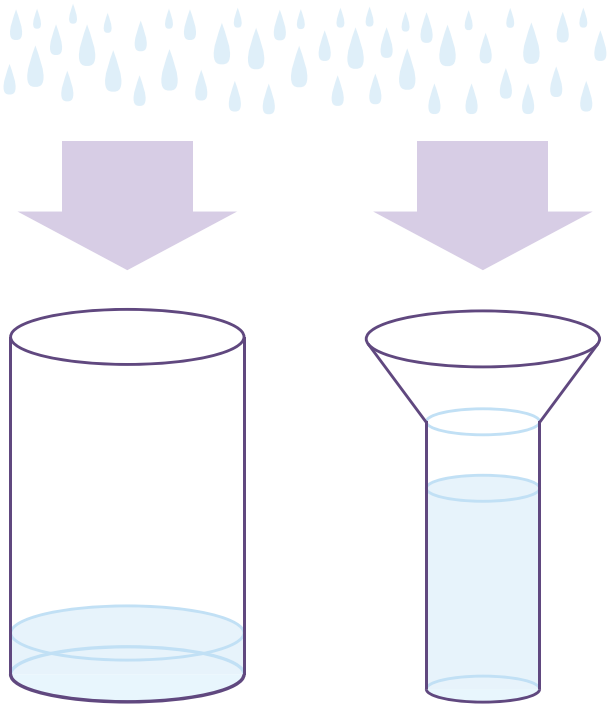
COLLECTING RAIN

Rainfall is measured using a **rain gauge** which collects water in a tube like one of the containers shown on the right.

Both containers have the same-sized opening in the top. So, they will collect the same **total amount** of rain.

But the water **depth** will be higher in the container with the smaller collection tube.

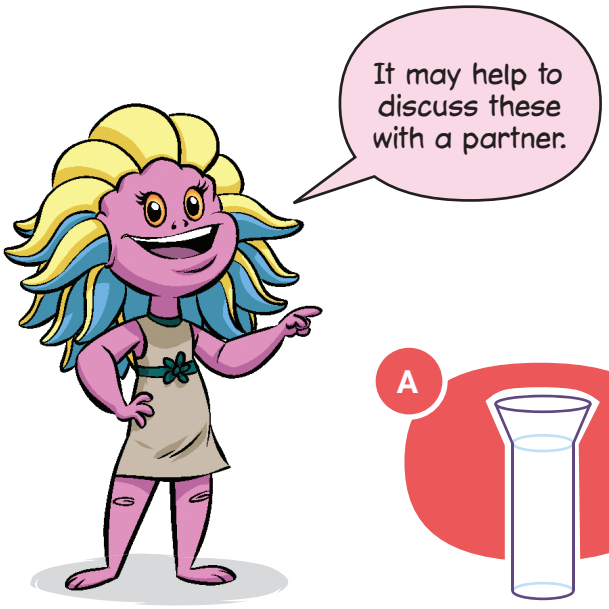
Most rain gauges are shaped like the container on the right. Since the tube on the right fills up faster, it's easier to tell the difference between small amounts of rain.



PRACTICE:

Think about how the size of each container compares to the opening in the top as you answer the questions that follow.

37 The three containers below collect rain in the same location. Which one do you think will fill up first? Which one do you think will fill up last? Why?



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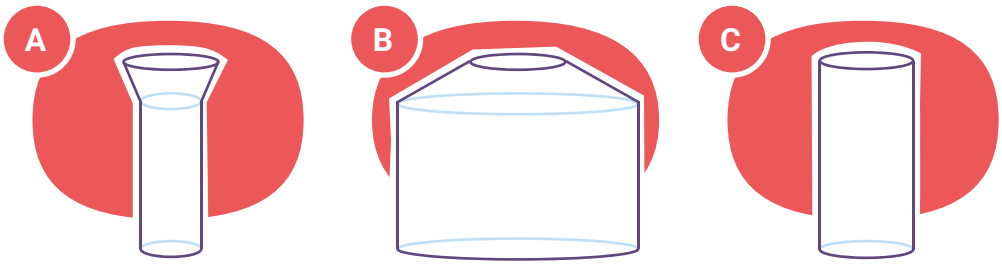

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