



Downpour Designs

Grade 1 - 4

Challenge yourself to construct a shelter that will protect you in a downpour! Test your shelter by making it rain and trying to keep the people inside from getting wet.

Background Information

A structure is something we build or arrange in a certain way. Think about something that is built, made, or put together, and you're probably thinking of a structure. There are many kinds of structures, some smaller like tables and chairs, and some bigger like houses, schools, bridges, and skyscrapers. Can you think of other kinds of structures?

Animals can build structures too! Birds make nests in trees, beavers make dams in rivers, and groundhogs dig burrows underground. Can you name other animals that make structures? What do they build?

Structures can be made from many different materials, depending on their purpose. A structure might be made of a single material or may use more than one. Some common materials are wood, glass, metal, concrete, plastic, dirt, and rock. Each of these materials have different properties. Some are strong, some are waterproof, and some keep us warm. When planning to build a structure, it's important to choose a material, or several materials, with the right properties: materials that do what we want them to do for the structure that we want to build.



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Background Information Cont.

We make structures for a lot of different reasons, but one of the main reasons is to use them as shelters to cover and protect us. Shelters are very important and we use them everyday to shield us from the weather, keeping us safe from snow, heat, wind, and rain.

Now that we have explored different structures and materials, it's time to construct one of our own! Our purpose is to build a shelter to keep a paper person safe and dry in a rainstorm. Get as creative as you want with your shelter but keep our purpose in mind: staying dry!

Materials

- Find materials to form your shelter, such as recyclables, cardboard, plastic wrap, newspaper, tinfoil, or Lego
- A place to test your shelter such as a sink, a large plate, a bathtub, or outside
- Printed paper person template or coloured/blank paper to draw your own (see page 6)
- Colouring supplies (crayons, markers or coloured pencils) to decorate your person
- Scissors
- Items to help hold your shelter together such as tape, glue, string or a stapler
- Something to use to make it rain on your shelter such as a spray bottle, watering can, water bottle, garden hose, or the faucet in your sink



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Instructions

1. Make a plan for your shelter before you start putting it together. What steps might you need to take to build your shelter? What materials and tools do you want to use? What will you use to hold the materials together? What do you want the shelter to look like?
2. Write your ideas down, draw a picture or explain your ideas to someone before you start. Use the box below to make your plan!



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Instructions Cont.

3. Use your chosen materials to build your shelter following your plan.
4. Colour your paper person and cut along the dotted lines. Put your paper person inside the shelter.
5. To test your shelter start to pour or spray water over it. Begin with a small amount of water and slowly increase the force of your rainstorm (increase the amount of water hitting your shelter and/or how fast it hits the structure) until there is a downpour!
6. If you notice water getting into your shelter, pause to consider why. You can make small changes to modify your design and see if that changes your results.
7. Check on your paper person. Did they stay dry? Reflect on the results of your testing. What worked well? What might you do differently next time?





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Thing to Consider

- Think about what materials might resist water better than others. Are some materials more waterproof than others?
- Get creative when you build your shelter. You can cut and tape materials together, you can stack materials (like a brick wall) or any other building system.
- Your shelter can be as big or as small as you want, as long as at least one figure can fit inside.

Questions for Reflection & Activity Extensions

- Explore what happens to your shelter if you pour more or less water on it at a time (light drizzle vs. downpour)?
- How did the water change your materials?
- Can the structure be returned to its original form after it dries? Why or why not?
- Consider what else usually happens when there is rain (wind, hail, etc.) How would you modify your structure to combat this? Explore what happens to your shelter in the wind by placing it outside, using a fan, or blowing on it.



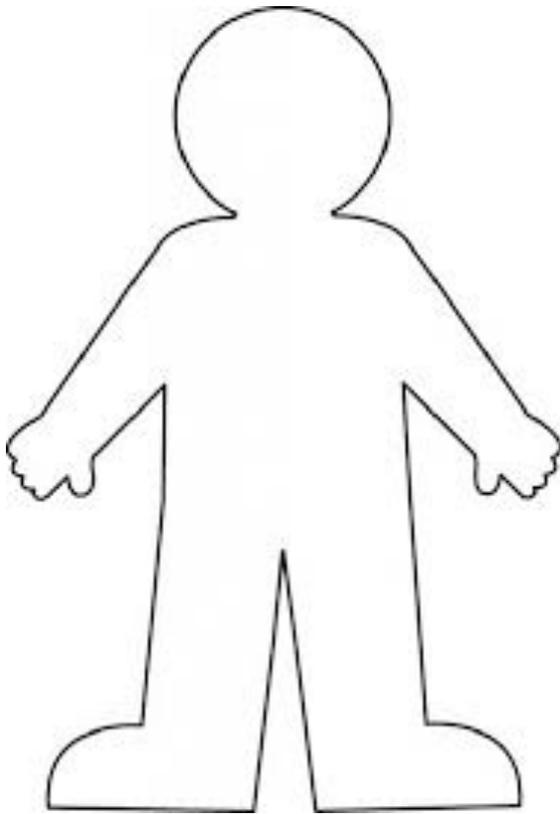
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Paper Person:



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