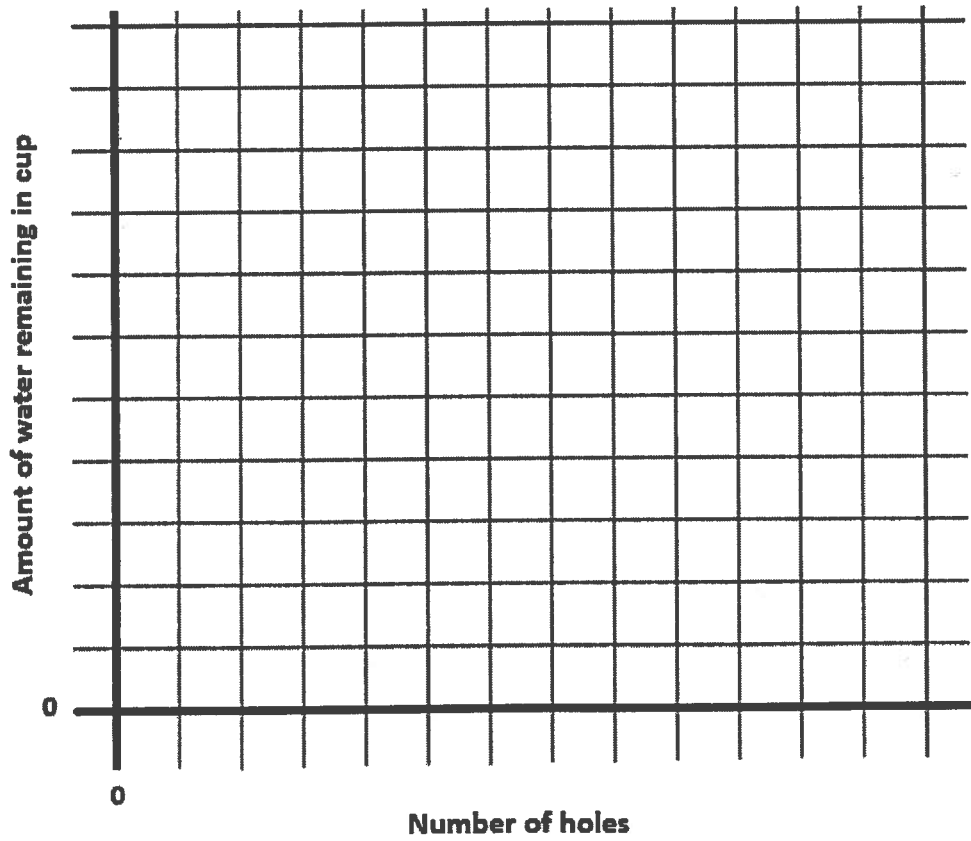
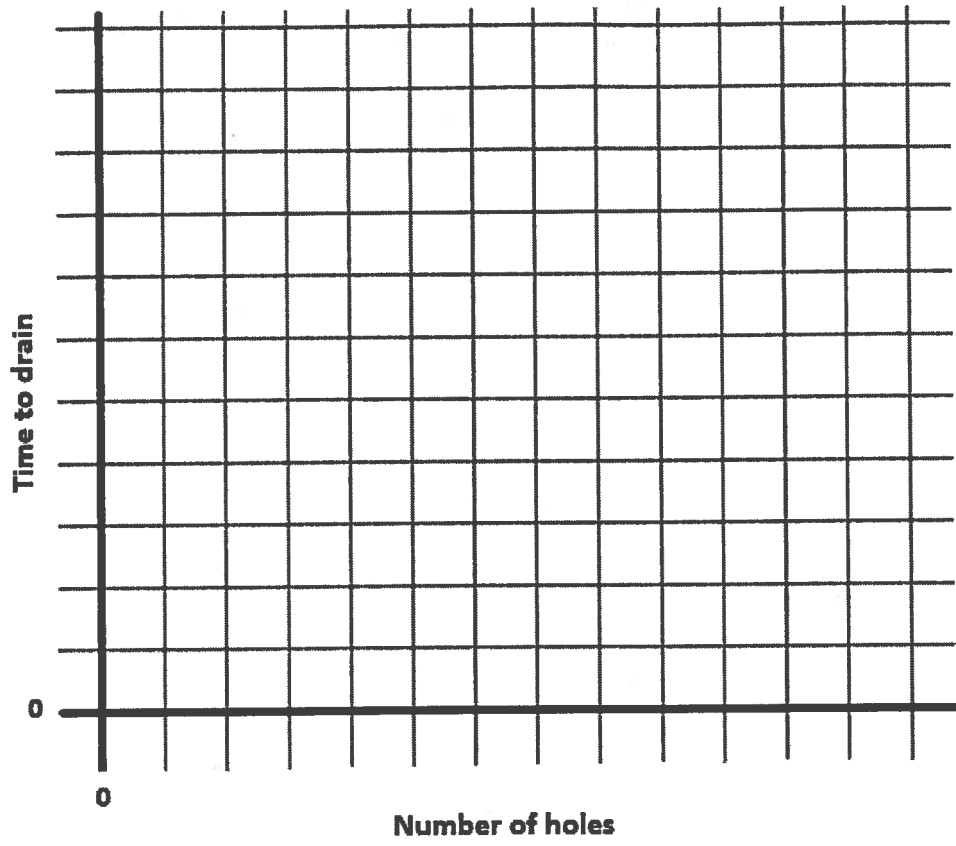


## Worksheet for Magical Rain

	Cup 1	Cup 2	Cup 3	Cup 4
Object used to poke holes				
Number of holes in the cup bottom				
Amount of water poured into the cup				
Prediction: How much water will remain in the cup?				
Prediction: How long will it take the water to drain out of the cup?				
Actual amount of water remaining in the cup				
Actual amount of water that drained from the cup				
Amount of time it took for water to drain from the cup				

Extra room for making predictions:

Write your reflection here:



## The Plan

### Materials:

- Four 5 oz paper cups
- Needle, pin, or safety pin
- 1 cup plastic measuring cup with ml, teaspoon, tablespoon, or quarter ounce markings
- Pencil
- Large cup
- Timer or stop watch (cell phones usually have timers built in)
- Paper towels, or a cloth towel for spills
- Waterproof surface on which to pour water (plastic under-bed storage box or cookie sheet)

### Set Up:

1. Using a pin or other sharp object with a similar diameter, poke holes in the bottom of three 5 oz paper cups as follows: poke 5 holes in Cup 1, 10 holes in Cup 2 and 15 holes in Cup 3.
2. Use a pencil to punch 1 pencil-sized hole in the bottom of Cup 4.
3. Place a plastic under-bed storage box on a table. The box will contain any spills and prevent water from damaging the table and floor. Recommended dimensions are approximately 22" x 17" x 5".

### Activity:

1. Carefully measure 4 oz of water (1/2 cup) with the measuring cup. Record this on the worksheet.
2. Start with Cup 2, the paper cup with 10 holes in it. In the directions below, 'paper cup' refers to a 5 oz cup.
3. Hold the paper cup over the large cup. Get a timer ready.
4. Predict what will happen when you pour the water into the paper cup. Will all of the water drain out? How long do you think it will take? Record your predictions on the worksheet.
5. Start the timer as you start to pour the water into the paper cup. The water draining out of the bottom of the cup should look like rain.
6. Press stop on the timer when the water stops draining. Record this time on the worksheet.
7. Pour the water remaining in the paper cup into the measuring cup. On the worksheet, record how much water remained in the paper cup. Did it surprise you that water was left in the cup?
8. How much water drained from the cup? You should be able to solve this word problem by subtracting two numbers. Record your answer on the worksheet.
9. Predict what will happen when you repeat steps 3 through 8 with the 5-hole cup and then with the 15-hole cup. Will there be water left in either cup? If there is water left, will there be more, less, or the same amount of water remaining in the cup? Will the number of holes change how long it takes for the water to drain? Record your answers on the worksheet under your predictions.
10. Repeat steps 3 through 8 using the 5-hole paper cup and then the 15-hole paper cup. Record all of your results on the worksheet.
11. What will happen if you use a larger hole instead of the pin holes you used earlier? Will a larger hole allow all the water to drain out? How quickly do you think it will take for the water to drain? Record your predictions on the worksheet.
12. Repeat steps 3 through 8 using the paper cup with the pencil hole in it. Record your findings on the worksheet.
13. Reflection: What did you find out? When you changed the number of holes, what effect did this have on the amount of water that drained from the cup? How about the amount of time it took to drain the water from the cup? How close were your predictions? What do you know now that you did not know when you started the experiment? What surprised you?