

When Is Drought . . . Out?

No Reading / No Graphing Option



Summary: Counting with dice, students experience the variability of weather and rainfall and how we all use water in the desert. Each year students use "water" from their lake for use indoors and out. Then they roll a die to see how much rain or snow they get to replace the water used from the lake. Watch as the drought causes the lakes to empty. Students guess or predict how long it will take for their lake to recover. (Answer -- It depends!)

Grade: Early Elementary

Subjects: Science, Social Studies

Activity Materials:

- One pair of dice per group
- One usage mat per group
- One small cup per group ("lake" written on cup)
- Beads (water), 20 per group and the same number of beads in the sky
- One plate per group for rain or snow (sky)
- One plastic cup per group for wastewater ("drain")
- One set of 4 jobcards per group of 4 students
- A graphing page (optional)
- Water conservation handout (optional)

Warm Up: How do you use water in your home? What if there wasn't enough water? Could you use less?

Preparation: Each group of 4 students needs these things:

- One Water Use Mat
- One Lake (small clear cup) with 20 beads of water in it
- One Drain (large cup)
- One plate with about 20 beads in it
- One set of die
- One set of four job cards (Steps 1 – 4)

Activity: Put students in groups of 3 or 4. Give them their materials.

Explain that the beads represent the water we store in our lakes. When we need water we let it out so people can use it.

Ask students to each take a job card. Go over each step, making sure each student knows what to do.

1. **Step 1 Cardholder** takes 7 beads out of their lake. They put 1 bead in each box of the Water Use Map. Point out that we use slightly more water indoors (4) than outdoors (3).
2. **Step 2 Cardholder** collects their own 4 indoor beads from their Water Use mat and put them in the wastewater drain (cup). They will take the 3 outdoor beads and put them in the sky (water turns into a gas).
3. **Step 3 Cardholder** rolls one die to see how much rain and snow will replace the water they used. If students need more supervision, the teacher can roll and all groups get the amount teacher rolls. Step 3 cardholder gets beads from the sky (equal to number rolled) and puts them in the lake.
4. **Step 4 Cardholder** counts the beads in the lake. *Note: If you want to graph the lake level, the teacher should roll so everyone has the same amount. Then show them the graph and explain that years are on the bottom, beads on the side. Year 1 is already colored in, so start coloring Year 2.*

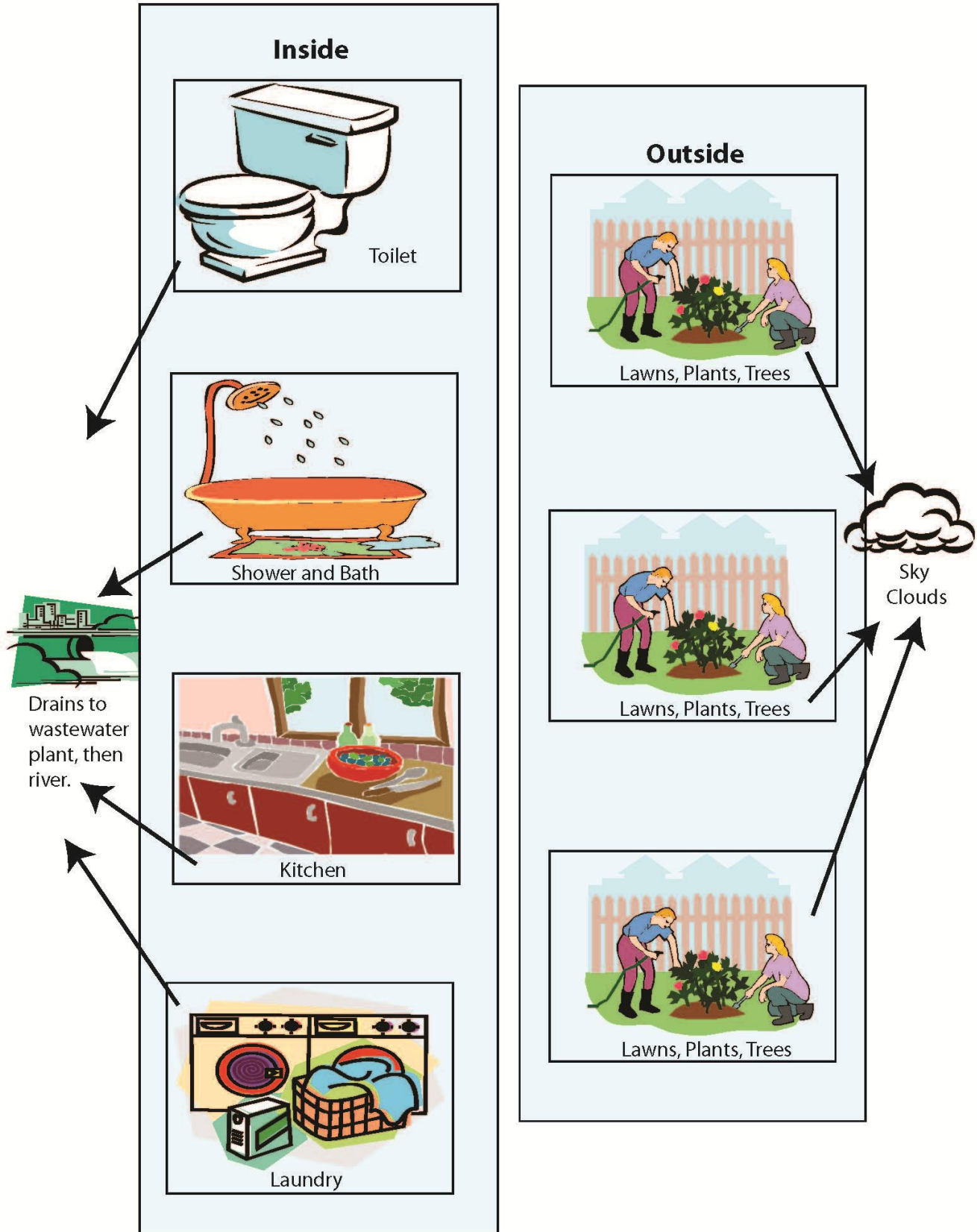
You will notice that you cannot roll a number high enough to replace the 7 beads taken out each year, since the die only goes up to 6. These are drought years. The level of the lake will go down. Ask students to predict what will happen in drought years. Repeat steps 1 – 4 until you have less than seven beads in each lake. Students have to choose which box(es) on the mat they leave empty if they don't have enough water.

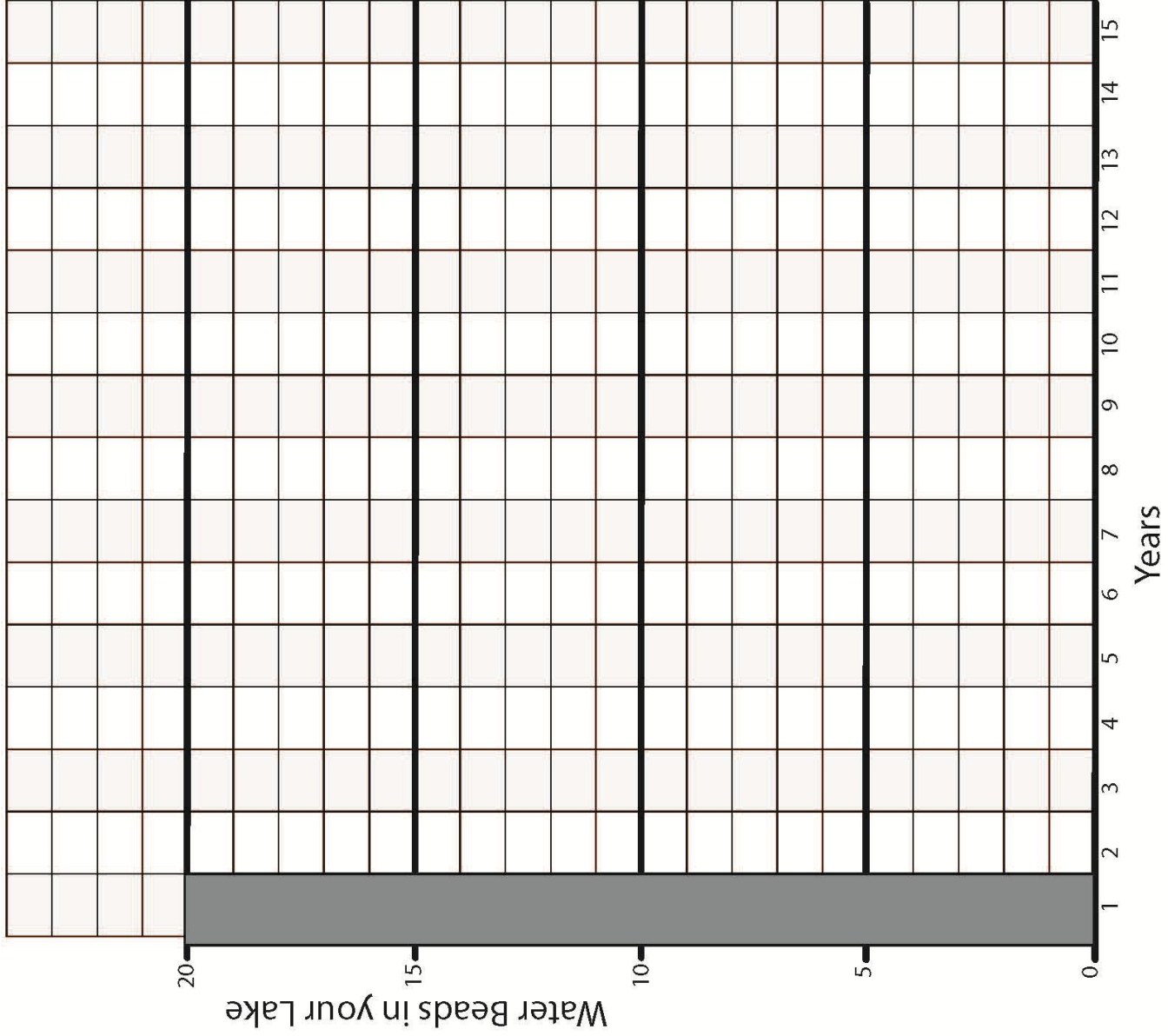
The weather is about to change. Put the water that went down the drain back up in the sky. It's moisture from the oceans, now that the wastewater has traveled downriver and into the ocean. (You can do this whenever the sky is looking dry.)

Wet Years: Now we are now getting rainy years. Ask students to guess how long it will take for their lakes to get back up to 20 beads. Keep track of their answers.

- For rainy years, students have the same jobs.
- Step 3 Cardholder will now be using 2 dice. Set the one new die up so the 6 shows. This one will always be 6. Now roll the other die. If you roll a 1, the Step 3 Cardholder will take $1 + 6 = 7$ beads from the sky and put them in their lake. If you roll a 5, the Step 3 Cardholder will take $5 + 6 = 11$ beads from the sky and put them in their lake. Keep track of the number of beads in your lake. Continue with wet years until your lake is at or above 20. How long did it take to recover from the drought? How close was your prediction? Why doesn't one good rain fix the drought?
- Since we cannot control how much rain or snow we get, we need to control how much water we use. Talk about ways that you can conserve water. This would be a good time to watch the online movie about drought and how to save water. Visit <http://www.abcwua.org/education/drought.html>
- **Hand out the Slow, Slow, Slow Your Flow song pages to color if you choose to do so. Or just teach your students how to sing the song using the pages. You can hear the song by visiting http://www.abcwua.org/education/Sing_Along_Water_Songs.html**

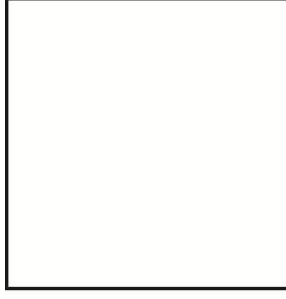
How We Use Our Water

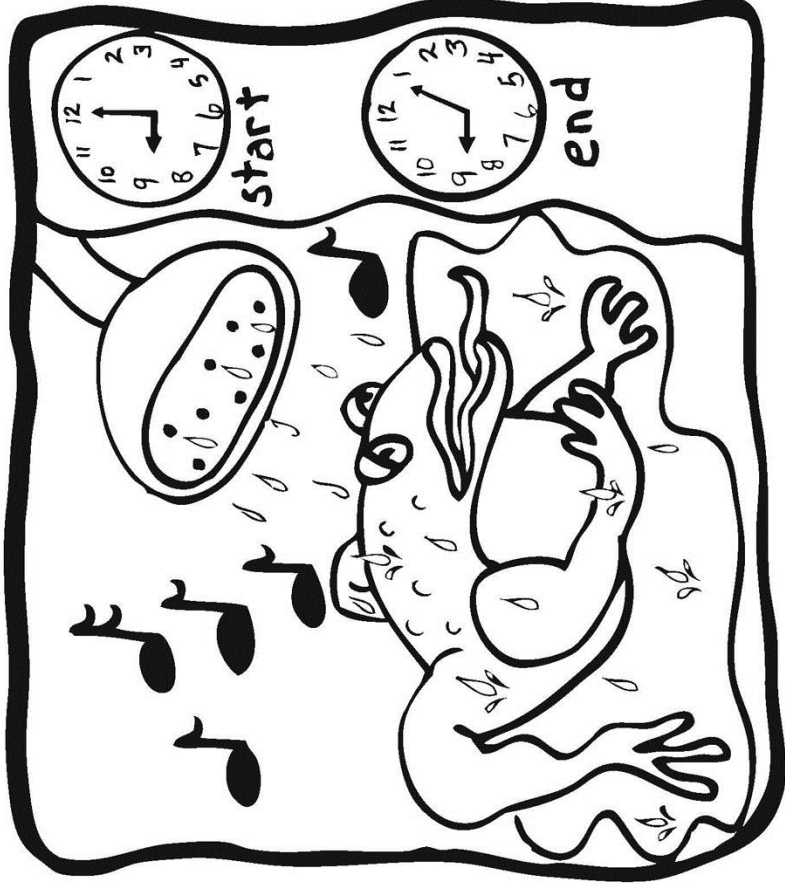




When is the drought ... out?

Predict how long it will take for your lake to recover.





Slow, Slow, Slow your flow;
shorter showers work -
five minutes, no more,
maybe even four.
That's plenty to wash off dirt!



Slow, Slow, Slow your flow;
put a nozzle on your hose.
Easy off, easy on,
water stays on the lawn.
You control where it goes.

Slow, Slow, Slow your Flow

Listen online at http://www.abcwua.org/education/Sing_Along_Water_Songs.html



Slow, Slow, Slow your flow;
water when it's cool.
We need conservation,
not evaporation,
so follow this simple rule.



Slow, Slow, Slow your flow,
while you brush your teeth.
Don't let water gush;
turn it off while you brush.
Let your water use be brief.