

Imagining One Million

Inviting students to imagine one million of something is an appealing way for them to personalize this large number. Whatever the interests of your students—sports, food, television, animals, cars—they can all be tied to one million. Students can have fun drawing some of their “imaginings” to share with the rest of the class. The mathematics comes into play when students are challenged to think of the consequences of their wishes. For example, if you had a million of a particular favorite food, how long would it take to eat it all? Or, if you really did own a million of a particular animal, how much would it cost to feed them all?



IMAGINING INVESTIGATION 1

What Would You Do With a Million?

BIG IDEA: How can we conceptualize one million?

PROCESS SKILLS: recording, problem-formulating, predicting

What to Do

1. Ask students to imagine having a million of something. It's fun to imagine one million of some things—but scary to imagine one million of others! Children usually focus on the desirability of large quantities. But it is worthwhile to see the downside, too. After all, anyone can be entranced by the idea of having one million dollars. But what about one million brothers? As one youngster, perhaps anticipating a busy future, wrote, “Having a million girlfriends could be a problem.”
2. Focus a discussion on one million by asking students what they'd like to have one million of. Money will usually come up early in the conversation. What else? Record students' responses on a chart titled “We'd Like a Million _____ But We Wouldn't Want a Million _____”.
3. Then copy and distribute Data Sheet 1 on page 63 or Data Sheet 2 on page 64. Note that Data Sheet 2, *Here's What I'd Do With a Million*, contains blank spaces for students' own ideas as well as a list of some starter ideas. You and your students can make your own list of serious and strange things to have. Encourage students to be creative in their responses. Then share results.

Taking It Further

Ask students to look at their lists and speculate about the volume of some of their items. What size container would hold a million jelly beans? How many shelves would hold a million books or a million video games?

IMAGINING ONE MILLION Name _____ Date _____

What would I do with one million?

Think about a wish for a million of something. Then complete the sentences below. Be ready to share your ideas!

1. I wish I had 1,000,000 _____
2. I wouldn't want 1,000,000 _____
3. I can make 1,000,000 _____
4. I could eat 1,000,000 _____
5. I could never eat 1,000,000 _____
6. Having 1,000,000 _____ would be great!
7. Having 1,000,000 _____ could be a problem.
8. If I had \$1,000,000 I would _____

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IMAGINING ONE MILLION Name _____ Date _____

Here's what I'd do with one million.

Read the list of things you might have one million of. Write what you would do with each.

If I had a million . . . I would . . .

- chairs _____
- books _____
- friends _____
- bees _____
- pieces of clothing _____
- dogs _____
- fishing poles _____
- cars _____
- video games _____
- wishes _____
- jelly beans _____
- brams _____
- trees _____

Now make a list of your own. Exchange your list with a friend and complete the list you receive.

If I had a million . . . I would . . .

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The Math Classroom in Action

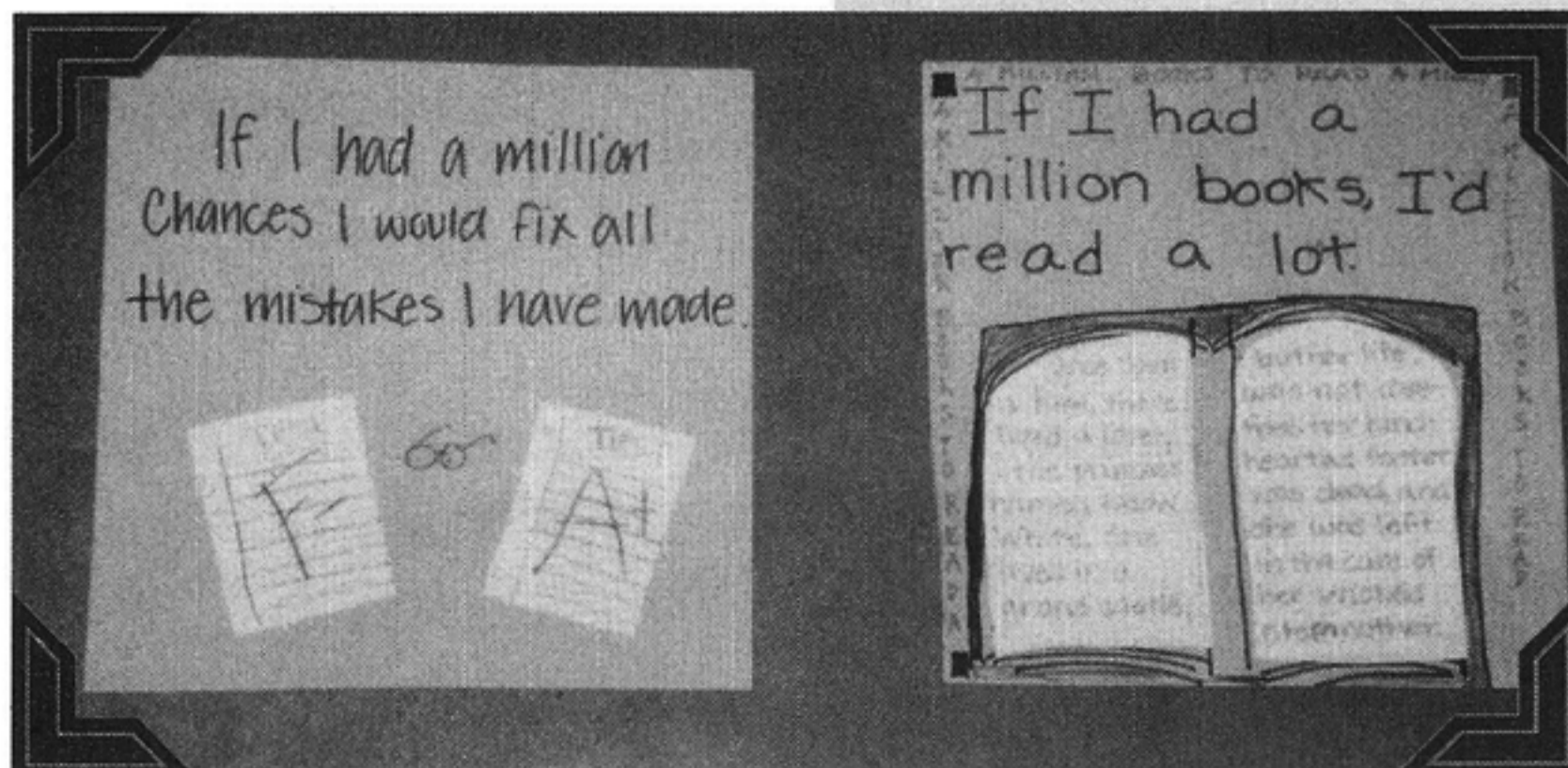
What Would You Do With a Million?



In Yokayo Elementary School in Ukiah, California, students thought about one million in terms of powers of ten. Each grade level used art projects to show their representations of one, ten, one hundred, one thousand, and so on.



At Washington Avenue Elementary School in Chatham, New Jersey, students thought about one million in another way—what it would be like to spend one million dollars. They delved into magazine ads and catalogs with the challenge of spending exactly one million dollars—down to the penny! Math coordinator Mary Costner supplied students with mock checkbooks and students kept track of their spending. There were some restrictions. For example, students could buy no more than one house, and the house could cost no more than \$250,000; they could buy no more than one car, and the car could cost no more than \$25,000; students could buy no more than one of any given item. But with a million dollars to spend, a few restrictions were not a problem! The problem was in getting rid of all that money!



Lisbon Elementary School, in Sacramento, California, took on the challenge of imagining one million, with interesting results. Students wrote about, and illustrated, what they wanted a million of—and what they would do with it. Many adults would probably agree with the sentiments of the student who would "fix all the mistakes I have made"!



IMAGINING INVESTIGATION 2

Explore More!

BIG IDEA: What would we like to investigate involving big numbers?

PROCESS SKILLS: problem posing, problem solving, predicting, verifying, calculating, recording

What to Do

1. Imagining one million of something allows students to see their world through the eyes of a mathematician. With inspiration from David Schwartz's *How Much Is a Million?* invite students to invent their own investigation of a big number (one million or more). They might verify or extend information from *How Much Is a Million?* or they might build an investigation around mathematical wonderings of their own. This is a perfect way to promote real life math—students can investigate problems that affect their own community or that are of particular interest to them.
2. Encourage students to talk with family members, or to use community resources, for ideas and help in calculating if needed. Students might use some of the facts below. Be sure that they describe and justify their work and their reasoning. If you wish, have them use Data Sheet 13 on page 75. (Just change the title at the top of the page before copying.)

	Name _____ Date _____
What do humans do a million or more times a year?	
Record the problem you investigated and your findings. Be ready to share them with the class!	
What we investigated:	

Here are our calculations and results:	

Ideas for Big Number Investigations

Recycling and Garbage

- ★ The glass in a glass bottle lasts one million years.
- ★ Every year in the United States, 10.6 million tons of glass are discarded, and only 2.6 million tons are recycled.
- ★ Overall, the U.S. generates 200 million tons of garbage every year.

Animal Facts

- ★ The heart of a blue-throated hummingbird beats about 1,260 times per minute.
- ★ A colony of 50 big brown bats eats 123,000 crop-damaging insects in one year.
- ★ Army ants amass in groups of up to 20 million.
- ★ It is estimated that 27,950,000 species on earth are insects.

Astronomy Facts

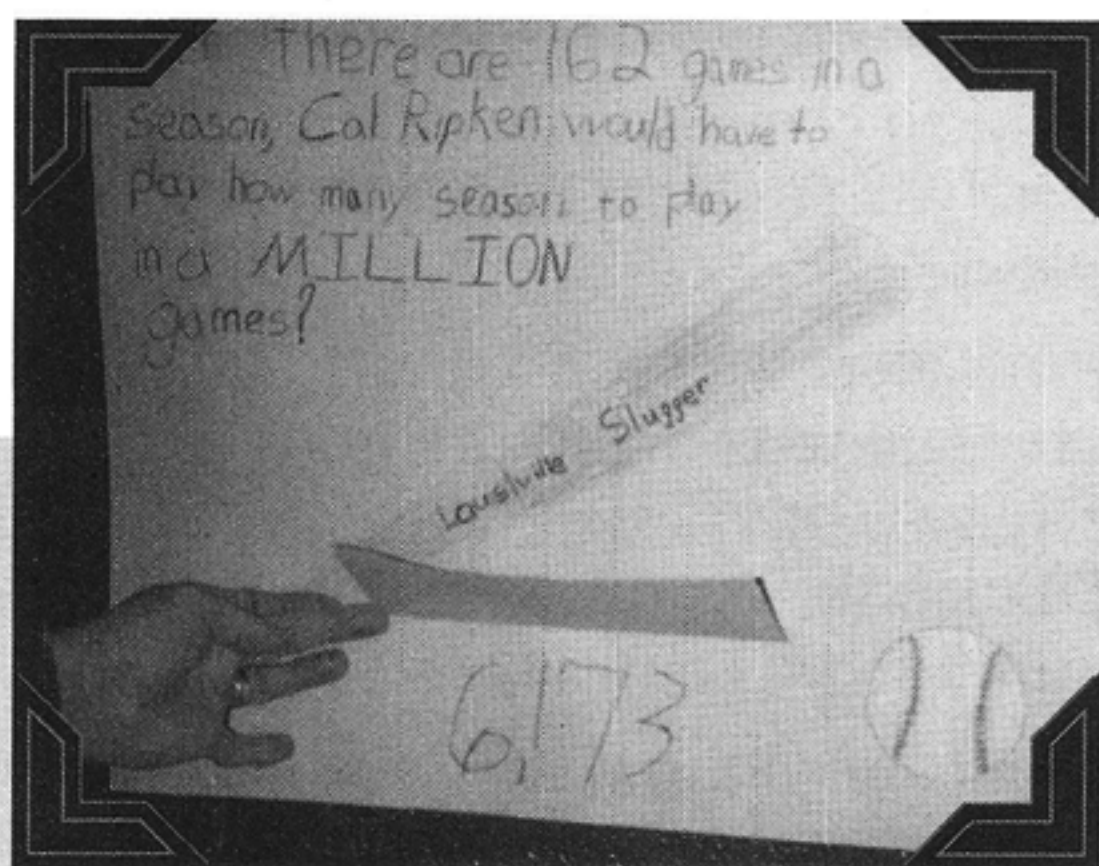
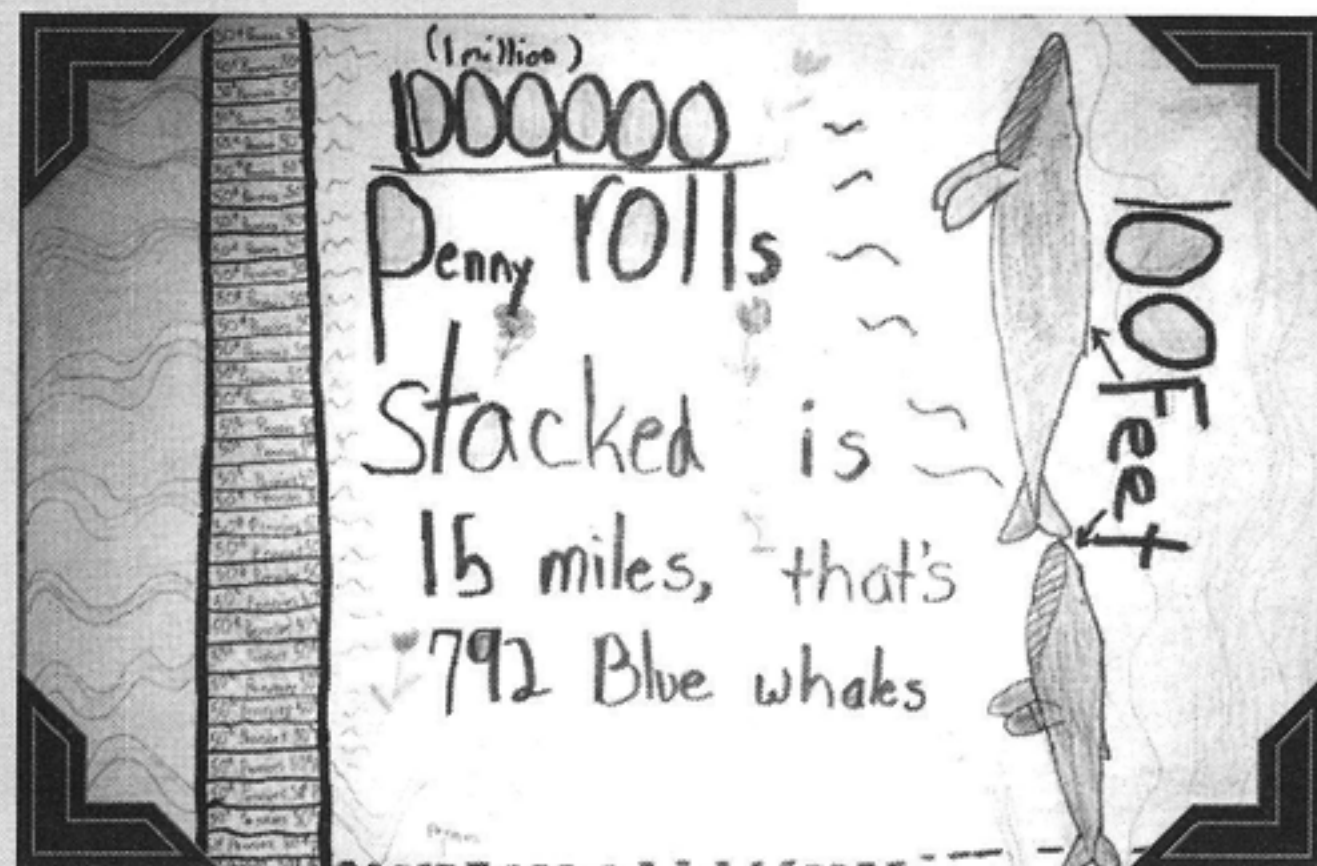
- ★ The sun is about 93 million miles away from Earth.
- ★ The Andromeda Galaxy is racing toward the Milky Way Galaxy at 300,000 miles an hour, but the collision won't occur for about 5 billion years.
- ★ Light travels 186,000 miles per second.

The Math Classroom in Action

Explore More!

In Kathy Reed's combination third/fourth grade class at Sweetbriar Elementary School in Troutdale, Oregon, students built a book, called Big Number Project, around their investigations of big numbers. Kathy encouraged wide-ranging investigations and students wrote about their numerical explorations and illustrated their work. Some of the students came up with mathematical questions that required vast amounts of outside research, including reading and talking to experts, to answer. One student, for example, investigated how many sheets of paper could be made from one log truck's load of logs. Another wondered how many scoops of ice cream it would take to fill the swimming pool of the local community college.

Students had to develop a mathematical strategy for answering their own questions, explain their thinking, and describe any difficulties they had in answering the questions.



Fourth-grade students at Indian Lane Elementary School in Media, Pennsylvania, did their own research to make "million problems." They presented their calculations in a novel way: each student made a poster with the problem stated, and viewers could lift a flap to find the answer. This project generated a lot of interest throughout the school as everyone walked around reading the questions and lifting the flaps to see the answers.

Sports-minded students are everywhere! At Washington Avenue School, in Chatham, New Jersey, students used information about their favorite sports to do some calculations with big numbers. One student chose to run a line of basketballs from the capital of New Jersey to the capital of neighboring Pennsylvania. A map is part of the poster that illustrates his work.

