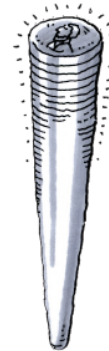


1.1.4 How big is a million?

Investigating a Proportional Relationship

Can you imagine a tower built out of one million pennies? How tall would it be? In this lesson, you will work with your team to predict just how tall such a tower would be. To make sense of this question, you will measure some pennies and investigate the relationship between the height of a tower of pennies and the number of pennies in that tower. This is an example of a special relationship called a **proportional relationship**, which you will learn more about later in this course.



- 1-23. How tall would a tower of a million pennies be? Would it be taller than your school building? Would it be taller than Mount Everest? (Mount Everest is approximately 8848 meters or 29,029 feet high.)

Discuss these questions with your team and make a prediction. Record your prediction on the table provided by your teacher.

Height of One Million Pennies

Table	Prediction

9/12

How tall is a million pennies?

1-25. TINY TOWERS

To begin to investigate this question, start by collecting data. Parts (a) and (b) will lead you through the data-collection process.

- a. How many pennies does it take to build a tower that is one centimeter tall? Use the tools provided by your teacher to answer this question.
- b. On your own paper, create a table like the one at right. Work with your team to complete the missing information. Be prepared to explain your reasoning to the class.

Height of Tower (cm)	# of Pennies
1	
2	
3	
4	
5	
...	
10	
...	
20	
...	
30	
...	
	100 pennies
	1,000,000 pennies

1-26. THE HUNDRED-PENNY TOWER

"I have an idea!" Carol said. "If I know how tall a tower of one hundred pennies would be, maybe that can help me figure out how tall a tower of one million pennies would be."

- a. Discuss this idea with your team. How could Carol's idea work?

- b. Work with your team to figure out how tall a tower of one hundred pennies would be. Can you find more than one way to figure this out? Be sure that each member of your team is prepared to explain your team's reasoning to the class.

Height of Tower (cm)	# of Pennies
1	
2	
3	
4	
5	
...	...
	100

1-27. THE MILLION-PENNY TOWER

Now it is time to answer the big question: How tall would a tower of one million pennies be?

Your Task: Work with your team to calculate the height of a tower of one million pennies as accurately as you can. Can you find the height more than one way? Be prepared to explain your ideas to the class.

Discussion Points

Where would one million pennies belong in our table?

How can the height of the hundred-penny tower help us?

What is the relationship between the number of pennies and the height of the tower?