

Student Guide

Measuring Stacks (SG pp. 360–361)

Questions 1–12

1. 3 cm; $30 \text{ cm} \div 10 \text{ blocks} = 3 \text{ cm}$
2. 4 meters; $440 \text{ meters} \div 110 \text{ stories} = 4 \text{ meters}$
- 3.* 22.5 inches. $4.5 \text{ inches} \times 5 \text{ pots} = 22.5 \text{ inches}$
- 4.* 1.2 cm or 12 mm or .012 m
5. **A.** Possible response: 10 nickels
B. Possible response: 20 mm
C.* Possible response: 2 mm
D. Possible response: $20 \div 10 = 2 \text{ mm}$
6. **A.** 2 mm; $1 \text{ cm} = 10 \text{ mm}$ and $10 \text{ mm} \div 5 = 2 \text{ mm}$
B. It takes 11 nickels to measure 2 cm or 20 mm. So, one nickel is 1.81 mm.
- 7.* Responses will vary. A nickel should measure about $2 \text{ mm} +$ or $-.1 \text{ mm}$.
8. **A.*** 20,000 nickels
B. Answers will vary; 2 mm
C.* Answers will vary; 40,000 mm
D.* Answers will vary; 4000 cm
E.* Answers will vary; 40 m
9. **A.** \$1000 worth of pennies
B. \$1000 worth of nickels
C. \$1000 worth of nickels
- 10.*

	Coin	Thickness of Coin	Number of Coins in \$1000	Height of \$1000 Stack in mm	Height of \$1000 Stack in cm	Height of \$1000 Stack in m
A.	quarter	1.75 mm	4000	7,000	700	7
B.	dime	1.35 mm	10,000	13,500	1,350	13.5
C.	nickel	1.98 mm	20,000	39,600	3,960	39.6
D.	penny	1.57 mm	100,000	157,000	15,700	157
11. **A.** 0.1 mm
B. 0.01 cm
12. **A.** 10 sheets are needed to make a stack that is 1 mm.
B. 100 sheets are needed to make a stack that is 1 cm.
C. 10,000 sheets are needed to make a stack that is 1 meter.


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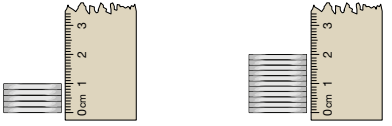
Measuring Stacks

Show or tell how to solve each problem. Include units. You may use a calculator.

1. Jerome built a stack with identical blocks. There are 10 blocks in the stack and the stack of blocks is 30 cm. How thick is each block?
2. The Willis Tower in Chicago is about 440 meters tall and has 110 stories. How thick is each story of the building?
3. Mrs. Green was stacking pots. Each pot is 4.5 inches tall. How tall is a stack of 5 pots?
4. Emily stacked 6 sandwich cookies. If the stack is $7\frac{2}{10}$ cm tall, how thick is each cookie?
5. Build a stack of nickels. Measure the stack in millimeters.
 - A.** How many nickels are in your stack?
 - B.** How tall is your stack in millimeters?
 - C.** How thick is one nickel in millimeters?
 - D.** List your calculator keystrokes for Question 5C.
6. The students in Mr. Moreno's class each used a different number of nickels. Use the information in each picture to complete the related sentences.

A. The height of five nickels is one centimeter. So one nickel is _____ mm thick.	B. It takes _____ nickels to measure _____ cm or _____ mm. So one nickel is _____ mm.
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360 SG • Grade 5 • Unit 8 • Lesson 1 Measuring Stacks

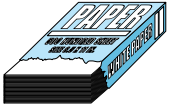
Student Guide - Page 360

7. Ask five classmates what they found for the thickness of one nickel. List all five measurements. Are all the measurements similar? Why or why not?
8. How tall is a stack of \$1000 of nickels?
 - A.** How many nickels are in \$1000?
 - B.** How thick is one nickel?
 - C.** How tall is a stack of \$1000 of nickels in millimeters (mm)?
 - D.** How tall is a stack of \$1000 of nickels in centimeters (cm)?
 - E.** How tall is a stack of \$1000 of nickels in meters (m)?
9. Predict the height of \$1000 stacks. Explain your thinking.
 - A.** Which is taller: \$1000 worth of nickels or \$1000 worth of pennies?
 - B.** Which is taller: \$1000 worth of nickels or \$1000 worth of dimes?
 - C.** Which is taller: \$1000 worth of nickels or \$1000 worth of quarters?
10. Copy and complete the following table.

	Coin	Thickness of Coin	Number of Coins in \$1000	Height of \$1000 Stack in mm	Height of \$1000 Stack in cm	Height of \$1000 Stack in m
A.	quarter	1.75 mm				
B.	dime	1.35 mm				
C.	nickel	1.98 mm				
D.	penny	1.57 mm				

✓ **Check-In: Questions 11-12**

11. A stack of five-hundred sheets of white paper measures about 50 mm. How thick is a single sheet of paper?
 - A.** in millimeters?
 - B.** in centimeters?
12. A sheet of paper is .1 mm thick.
 - A.** How many sheets need to be stacked to reach 1 mm?
 - B.** How many sheets need to be stacked to reach 1 cm?
 - C.** How many sheets need to be stacked to reach 1 meter?



Measuring Stacks SG • Grade 5 • Unit 8 • Lesson 1 361

Student Guide - Page 361

*Answers and/or discussion are included in the lesson.