

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 $2 \text{ mm} + \text{ or } - .1 \text{ mm}$.
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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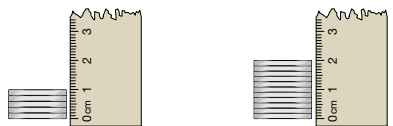
Measuring Stacks

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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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?



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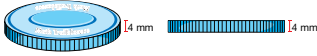
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*Answers and/or discussion are included in the lesson.

Name _____ Date _____

Stacks
Homework

Show or tell how to solve each problem. Use a calculator.

- A plastic checker is 4 mm thick. What is the thickness of the checker in cm?

- How tall is a stack of ten checkers?
 A. in millimeters? _____
 B. in centimeters? _____
- How tall is a stack of 250 checkers?
 A. in millimeters? _____
 B. in centimeters? _____
- Tanya says a stack of 221 checkers is 884 cm tall. Do you agree with Tanya? Why or why not?
- How many checkers does it take to reach a height of 264 cm?
- How tall is a stack of 50 checkers?
 A. in millimeters? _____ mm
 B. in centimeters? _____ cm
 C. in meters? _____ m

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Name _____ Date _____

- Complete the table.

	Number of Checkers	Height of Stack in mm	Height of Stack in cm	Height of Stack in m
A.	50			
B.	500			
C.		80		
D.			80	
E.				80
- Complete each statement.
 - A stack of _____ checkers is 3004 mm.
 - A stack of _____ checkers is 3004 cm.
 - A stack of _____ checkers is 3004 m.
- A nickel is 1.98 mm thick. How many checkers would equal the height of \$1000 worth of nickels? Show your work.
- A quarter is 1.75 mm thick. Imagine a stack of quarters as tall as the Willis Tower (443 meters). Calculate the number of quarters in this stack. Show your work.
- How much is this stack of quarters worth?

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

Student Activity Book

Stacks (SAB p. 293–294)

Homework

Questions 1–11

- .4 cm = 4 mm
- A. 40 mm
B. 4 cm
- A. 1000 mm
B. 100 cm
- Possible response: I do not agree with Tanya. A stack of 221 checkers is 884 mm (221×4 mm).
- 660 checkers; $264 \times 10 = 2640$ mm, $2640 \text{ mm} \div 4 \text{ mm} = 660$ checkers
- A. 200 mm
B. 20 cm
C. 0.2 m

7.

	Number of Checkers	Height of Stack in mm	Height of Stack in cm	Height of Stack in m
A.	50	200	20	.20
B.	500	2000	200	2
C.	20	80	8	0.08
D.	200	800	80	0.8
E.	20,000	80,000	8000	80

- A. 751
B. 7510
C. 751,000
- 9900 checkers; \$1000 nickels is 20,000 nickels. $20,000 \times 1.98 \text{ mm} = 39,600 \text{ mm}$ and $39600 \text{ mm} \div 4 \text{ mm} = 9900 \text{ mm}$.
- 253,142 quarters; $443 \text{ m} = 443,000 \text{ mm}$ and $443,000 \div 1.75 \text{ mm} = 253,142.85$ quarters or 25,3142 quarters.
- $\$63,285.50$; $253,142 \times \$0.25 = \$63,285.50$