Student Guide

Workshop: Multiplication Strategies (SG pp. 200–208) Questions 1–23

1. A.*

$$\begin{array}{r} 74 \\ \times\ 86 \\ \hline 5600 \\ 320 \\ 420 \\ 24 \\ \hline 6364 \end{array}$$

B.* Possible response:

Compact method

$$\begin{array}{r} {\scriptstyle 3}\not{\scriptstyle 7}4 \\ \times\ 86 \\ \hline 444 \\ 5920 \\ \hline 6364 \end{array}$$

2. A.*

$$\begin{array}{r} {\scriptstyle 4}\not{\scriptstyle 8}7 \\ \times\ 64 \\ \hline 348 \\ 5220 \\ \hline 5568 \end{array}$$

B.* Possible response:

$$\begin{array}{rcl} 87 & = & 80 + 7 \\ \times\ 64 & = & \underline{60 + 4} \\ & & 28 \\ & & 320 \\ & & 420 \\ & & 4800 \\ & & 5568 \end{array}$$

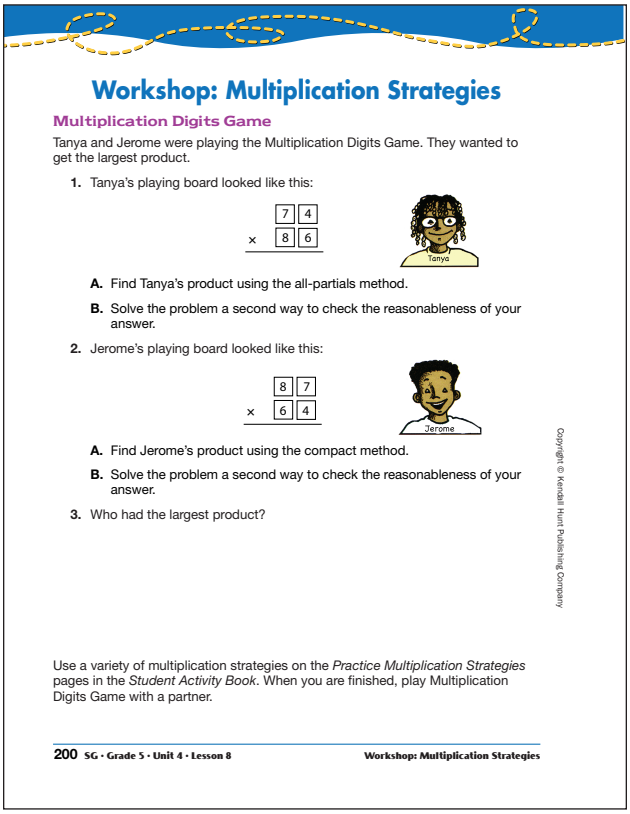
3.* Tanya

4. A. $24

B. $624

C. Responses will vary.

D. Responses will vary.



Workshop: Multiplication Strategies

Multiplication Digits Game

Tanya and Jerome were playing the Multiplication Digits Game. They wanted to get the largest product.

1. Tanya's playing board looked like this:

$$\begin{array}{r} 74 \\ \times\ 86 \end{array}$$

A. Find Tanya's product using the all-partials method.

B. Solve the problem a second way to check the reasonableness of your answer.

2. Jerome's playing board looked like this:

$$\begin{array}{r} 87 \\ \times\ 64 \end{array}$$

A. Find Jerome's product using the compact method.

B. Solve the problem a second way to check the reasonableness of your answer.

3. Who had the largest product?

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Use a variety of multiplication strategies on the *Practice Multiplication Strategies* pages in the *Student Activity Book*. When you are finished, play Multiplication Digits Game with a partner.

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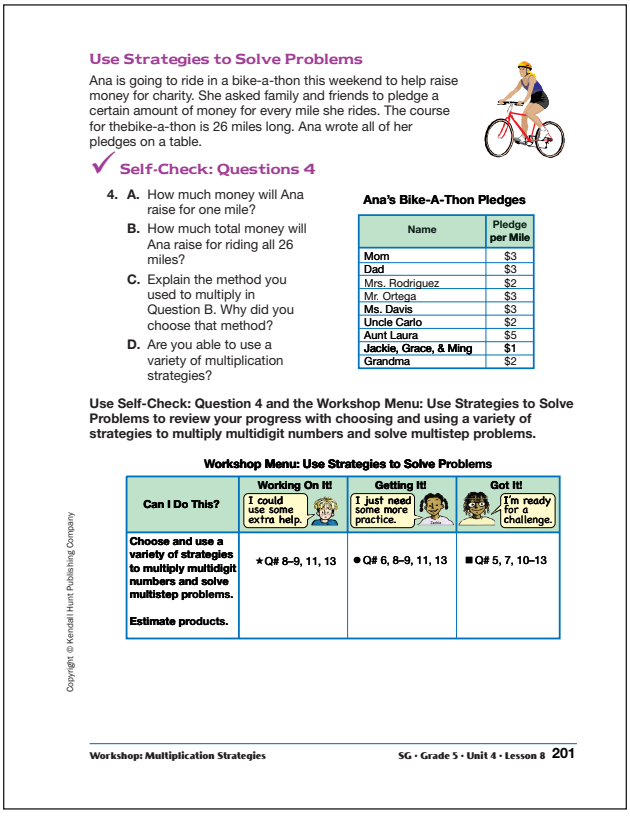

Use Strategies to Solve Problems

Ana is going to ride in a bike-a-thon this weekend to help raise money for charity. She asked family and friends to pledge a certain amount of money for every mile she rides. The course for thebike-a-thon is 26 miles long. Ana wrote all of her pledges on a table.

✓ Self-Check: Questions 4

4. A. How much money will Ana raise for one mile?

B. How much total money will Ana raise for riding all 26 miles?

C. Explain the method you used to multiply in Question B. Why did you choose that method?

D. Are you able to use a variety of multiplication strategies?

Ana's Bike-A-Thon Pledges

Name	Pledge per Mile
Mom	$3
Dad	$3
Mrs. Rodriguez	$2
Mr. Ortega	$3
Ms. Davis	$3
Uncle Carlo	$2
Aunt Laura	$5
Jackie, Grace, & Ming	$1
Grandma	$2

Use Self-Check: Question 4 and the Workshop Menu: Use Strategies to Solve Problems to review your progress with choosing and using a variety of strategies to multiply multidigit numbers and solve multistep problems.

Workshop Menu: Use Strategies to Solve Problems

Can I Do This?	Working On It! I could use some extra help.	Getting It! I just need some more practice.	Got It! I'm ready for a challenge.
Choose and use a variety of strategies to multiply multidigit numbers and solve multistep problems. Estimate products.	★Q# 8–9, 11, 13	●Q# 6, 8–9, 11, 13	■Q# 5, 7, 10–13

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

■5. A total of 546 riders are signed up for the bike-a-thon this year. Last year, a typical rider raised between $750 and $1375. Estimate how much money the bike-a-thon might raise this year.

●6. At last year's bike-a-thon, Ana's pledges totaled $43 per mile, but the course was only 19 miles long. How much money did Ana raise last year?

■7. After this year's ride, Ana will send thank-you letters and collection envelopes to everyone on the list including her parents. Each collection envelope will need a stamp on it, and each letter will have to be stamped too. If Ana uses first-class stamps, how much will Ana spend on stamps?

★●8. Four water stations are being set up along the course. The organizer of the bike-a-thon wants to have enough water so that each of the 546 riders can have one bottle of water at each station.

A. If you were going to estimate the number of bottles needed, should your estimate be higher or lower than the actual number?

B. Based on your answer to Question A, estimate the number of bottles to buy.

★●9. A food store donated 86 boxes of energy bars to give to riders at the rest stations. There are 32 energy bars in each box. How many bars did the store donate?

■10. Ana once counted the number of times her feet went around with the pedals while riding her bicycle. When her bicycle was in fifth gear, her feet went around 58 times for $\frac{1}{10}$ of a mile.

A. About how many times will her feet go around for each mile she rides using the same gear?

B. Estimate how many times her feet will go around the pedals if she used the same gear for the whole bike-a-thon.

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5. Estimates will vary. Possible response: $1000 \times 546 = \$546{,}000$

6. $817

7. Answers will vary based on the cost of a stamp. At $.44 per stamp, postage costs would be $22 \times \$.44 = \$9.68$.

8. **A.** higher

   B. Estimates may vary. $550 \times 4 = 2200$ bottles of water

9. 2752 energy bars

10. **A.** 464 times

    B. Estimates may vary. About 12,000 times

★●■11. Each of the top 360 money-raisers receives a jacket at the end of the bike-a-thon. The race organizer made a table to figure out the cost of the jackets. Find the total cost for each size of the jackets and the total cost.

Jacket Orders

Size	Price	Number Ordered	Cost
Small	$10	75	
Medium	$12	95	
Large	$13	105	
Extra Large	$15	85	
TOTAL			

■12. The organizer ordered 8 banners to hang across the road at different places along the course. The printing company that made the banners charges $145 for each banner plus a one-time printing charge of $3 per character (a character is any letter or punctuation symbol). What is the total cost of all 8 banners?

★●■13. To get ready for the bike-a-thon, Ana rides back and forth to her grandmother's house twice a week. The ride to her grandmother's house is 6 miles one way.

A. How many miles does Ana ride every week?

B. How many miles would Ana ride in a year if she kept riding to her grandmother's twice every week?

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11.
$$\begin{array}{r} \$750 \\ \$1140 \\ \$1365 \\ +\ \$1275 \\ \hline \$4530 \end{array}$$

12. $1310

13. **A.** 24 miles

    B. 1248 miles

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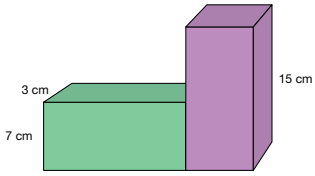
14. $15 \text{ cm} \times 3 \text{ cm} \times 7 \text{ cm} = 315 \text{ cm}^3$;
$315 \text{ cm}^3 \times 2 = 630 \text{ cm}^3$

15. 936 cm^3

Use Strategies to Find Volume

✓ **Self-Check: Question 14**

14. The shape in the sketch below is made of two identical boxes. Find the shape's volume.



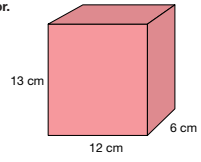
Use Self-Check: Question 14 and the Workshop Menu: Use Strategies to Find Volume to review your progress with using multiplication and division strategies to find the area of rectangles and the volume of boxes in multistep problems.

Workshop Menu: Use Strategies to Find Volume

Can I Do This?	Working On It! I could use some extra help.	Getting It! I just need some more practice.	Got It! I'm ready for a challenge.
Use multiplication and division strategies to find the area of rectangles and the volume of boxes in multistep problems.	★Q# 15–17A–B, 18, 23	●Q# 17B–C, 18–19, 21, 23	■Q# 17C–D, 19–23

Solve the problems. You may use a calculator.

★15. Find the volume of the box.



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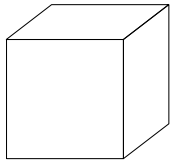
16. 729 cm^3

17. **A.** 448 cm^3
B. 10 m
C. 7 ft.
D. 0.5 m

★16. Find the volume of the cube.



17. Copy the table and find the missing dimension. Include units.

Volume of Boxes

	Height	Width	Length	Volume
★A.	8 cm	7 cm	8 cm	
★●B.	8 m	8 m		640 m^3
●■C.	25 ft.		25 ft.	4,375 ft^3.
■D.		5 m	50 m	125 m^3

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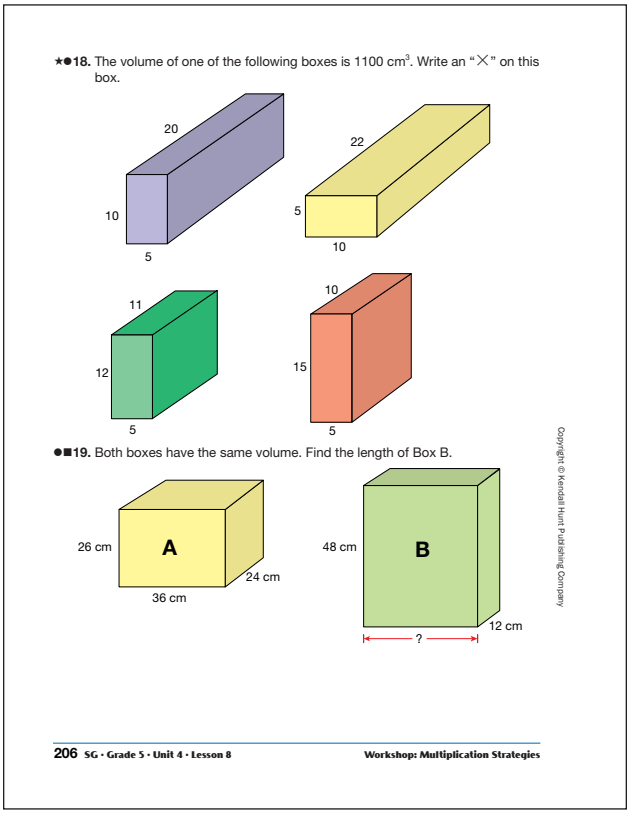

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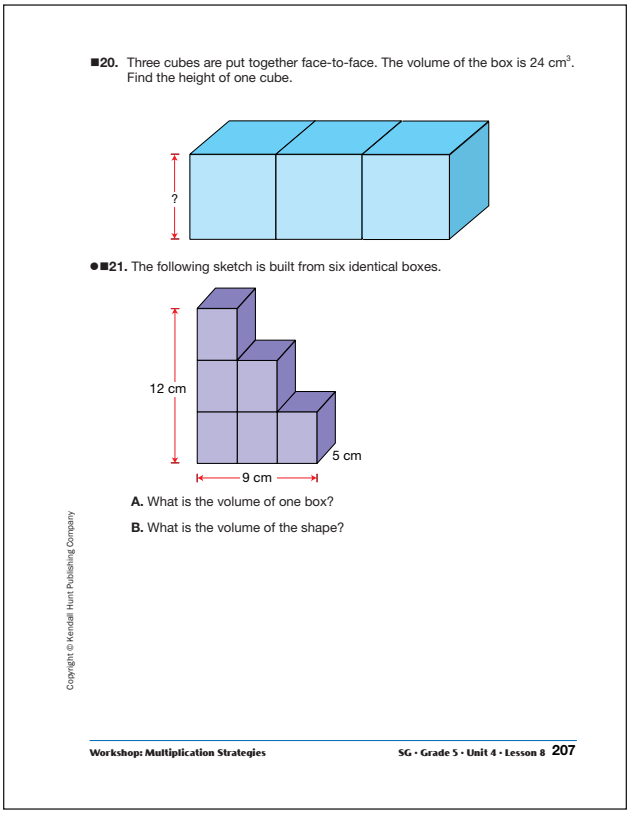
18. The box with dimensions
$22 \text{ cm} \times 10 \text{ cm} \times 5 \text{ cm} = 1100 \text{ cm}^3$.

19. 39 cm



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20. 2 cm

21. **A.** 60 cm^3

B. 360 cm^3

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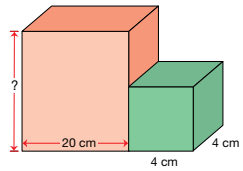
22. A. 64 cm^3

B. 2064 cm^3 − 64 cm^3 = 2000 cm^3

C. 2000 cm^3 ÷ 80 cm^2 = 25 cm

23.* 4 cm

■22. The following sketch is built from a box and a cube. The volume is 2064 cm^3.



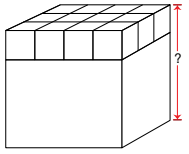
A. Find the volume of the cube.

B. Find the volume of the box.

C. Find the height of the box.

✓ Check-In: Question 23

★●■23. The volume of the box is 48 cm^3. Find the height.



Height _____

Play the Multiplication Digits Game for more practice using value concepts when multiplying.

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