

Answer Key • Lesson 7: Multiplication Strategies for Larger Numbers

For Questions 6–20, methods will vary. Students should use each of the methods on the *Multiplication Strategies Menu for Larger Numbers* at least once.

- | | | |
|------------|------------|-------------|
| 6. 270 | 7. 256 | 8. 15,245 |
| 9. 2526 | 10. 9360 | 11. 43,278 |
| 12. 92,040 | 13. 9024 | 14. 255,000 |
| 15. 27,624 | 16. 21,168 | 17. 3800 |
| 18. 9400 | 19. 4700 | 20. 24,800 |
21. Methods will vary.
22. Possible strategy: $6 \times 400 = 2400$ and $6 \times 25 = 150$. $2400 + 150 = 2550$. So 6×421 is a little less than 2550.
23. Possible strategy:
 $(3 \times 3000) + (3 \times 8) = 9000 + 24 = 9024$

Student Activity Book

Smart Multiplication

Questions 1–6 (SAB p. 237)

- $5 \times 600 = 3000$, so the boys' answer of 355 is way too low. They didn't carry the tens and hundreds; 3085
- $2000 \times 7 = 14,000$ and their answer of 1715 is not close; they partitioned 2045 incorrectly and multiplied 7×200 instead of 2000; 14,315.
- $6 \times 700 = 4200$, so the answer should be at least 4200. They forgot the 7 in 748 means 700 and 4 means 40; 4488.
- $4 \times 400 = 1600$, but to get the exact answer they should have subtracted 4, because $4 \times 1 = 4$; 1596.
- $3 \times 500 = 1500$, so 264 is way too low; when they multiplied 3×500 they should have gotten 1500; 1614.
- * $7 \times 158 = (7 \times 100) + (7 \times 50) + (7 \times 8) = 700 + 350 + 56$, but they added incorrectly; 1106.

Practice Problems

Use each of the methods on the *Multiplication Strategies Menu for Larger Numbers* in the *Student Activity Book* at least once. Estimate to be sure your answers are reasonable.

- | | | |
|----------------------|---------------------|----------------------|
| 6. 6×45 | 7. 8×32 | 8. 5×3049 |
| 9. 6×421 | 10. 30×312 | 11. 6×7213 |
| 12. 40×2301 | 13. 3×3008 | 14. 60×4250 |
| 15. 8×3453 | 16. 7×3024 | 17. 38×100 |
| 18. 94×100 | 19. 100×47 | 20. 124×200 |

- Show how to solve Questions 11 and 16 using different methods than the ones you used the first time.
- Explain your estimation strategy for Question 9.
- Explain a mental math strategy for solving Question 13.

Did You Know?

Mrs. Dewey's classroom, Room 204, is in Bessie Coleman School. Bessie Coleman was the world's first African American female aviator.

When Bessie's brother returned to America after World War I, he told Bessie that French women could fly airplanes. At that time, Bessie worked as a manicurist in a Chicago barber shop. Hearing this news, Bessie decided she too could learn to fly. She went to school in Chicago to learn French. Then she went to France. In 1921 she earned her pilot's license from the Federation Aeronautique Internationale. When she returned to Chicago, she became an air circus performer. A street and a library in Chicago are named after Bessie Coleman.



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Smart Multiplication

Joe and Moe Smart worked on their homework together. They did not estimate to make sure their answers made sense.

Estimate to see if Joe and Moe's answers are reasonable. Check their work and discuss their mistakes with your partner. Then solve each problem correctly using the strategy or method Joe and Moe used for that problem.

$$\begin{array}{r} 617 \\ \times 5 \\ \hline 355 \end{array}$$

$$2. \quad 2045 = 200 + 40 + 5$$

$$\begin{array}{r} \times 7 \\ \hline 1400 + 280 + 35 = 1715 \end{array}$$

$$\begin{array}{r} 3. \quad 748 \\ \times 6 \\ \hline 48 \\ 24 \\ \hline 42 \\ 114 \end{array}$$

$$4. \quad 399 \times 4$$

$4 \times 400 = 1600$,
 minus 1 makes 1599.

$$5. \quad 538 = 500 + 30 + 8$$

$$\begin{array}{r} \times 3 \\ \hline 150 + 90 + 24 = 264 \end{array}$$

$$6. \quad 158$$

$$\begin{array}{r} \times 7 \\ \hline 56 \\ 350 \\ \hline 700 \\ 1016 \end{array}$$

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

5. 350
6. 400; 5; 240
7. 4200; 630; 4858
8. 140; 18,000
9. $300 \times 3 = 900$.
 298×3 will be 2×3 or 6 less.
 $900 - 6 = 894$. $298 \times 3 = 894$
10. Cut 486 in half to get 243. Double 5 to get 10.
 $10 \times 243 = 2430$. $5 \times 486 = 2430$.
11. 252 is like \$2.52. $3 \times \$2.50$ is \$7.50.
 $3 \times 2\text{¢} = 6\text{¢}$. Add in 6¢ to get \$7.56.
 So $252 \times 3 = 756$.
12. Paper-and-pencil and mental math strategies will vary.
 - A. 3736; Possible paper-and-pencil strategy:

$$\begin{array}{r} 467 \\ \times 8 \\ \hline 3200 + 480 + 56 = 3736 \end{array}$$
 - B. 1196; Possible mental math strategy:
 $4 \times 300 = 1200$. 299 is one less than 300.
 $4 \times 1 = 4$. $1200 - 4 = 1196$.
 $4 \times 299 = 1196$
 - C. 1020; Possible mental math strategy:
 204 is like \$2.04. $5 \times \$2.00 = \10.00 .
 $5 \times 4\text{¢} = 20\text{¢}$. Add 20¢ to get \$10.20, so
 $204 \times 5 = 1020$.

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For Questions 5–8, fill in the boxes to complete the problems.

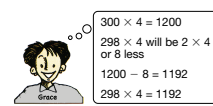
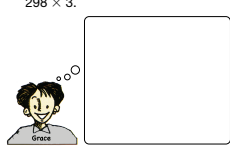
★5.
$$\begin{array}{r} 54 \\ \times 7 \\ \hline \square \\ + 28 \\ \hline 378 \end{array}$$

★6. $485 = \square + 80 + \square$
 $\times 3$ $\times 3$
 $1200 + \square + 15 = 1455$

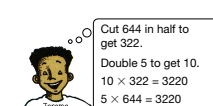

●7.
$$\begin{array}{r} 694 \\ \times 7 \\ \hline \square \\ \square \\ + 28 \\ \hline \square \end{array}$$

●8.
$$\begin{array}{r} 9876 \\ \times 2 \\ \hline 12 \\ \hline \square \\ 1600 \\ \hline \square \\ 19,752 \end{array}$$

★●9. Here is how Grace solved 298×4 . Show how Grace would solve 298×3 .

●10. Jerome knows that 5 is half of 10. Here is how he solved 5×644 . Show how Jerome would solve 5×486 .

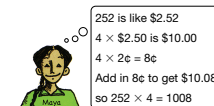

 

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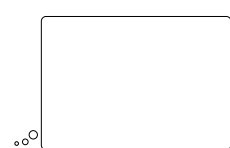
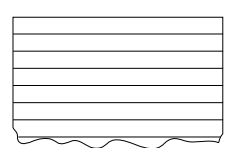
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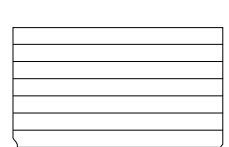
★11. Here is how Maya solved 252×4 . Show how Maya would solve 252×3 .

★12. Solve the problems. Solve at least one problem using mental math and at least one using paper and pencil. Show your mental math solutions in the thought bubbles. Show your paper-and-pencil solutions on the note pads with lines.

A. 467×8 B. 299×4 C. 204×5

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Using Different Methods

✓ **Self-Check: Question 13**

Use the *Multiplication Strategies Menu for Larger Numbers* in the *Student Guide* Reference section to help you.

13. Solve 324×8 using three different strategies or methods.

Use the Self-Check Question and the menu to check your progress and choose practice with multiplication strategies and methods.

Can I Do This?	Working On It! 	Getting It! 	Got It! 
Use different methods to multiply large numbers by 1-digit numbers.	★ Q# 14–16 Use each of these methods at least once: <ul style="list-style-type: none"> • rectangle • all-partials • expanded form 	● Q# 14–16 Use each of these methods at least once: <ul style="list-style-type: none"> • rectangle • all-partials • expanded form • compact method 	■ Q# 14–16 Use each of these methods at least once: <ul style="list-style-type: none"> • rectangle • all-partials • expanded form • compact method

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13. Strategies and methods will vary. Some possible responses:

	300	20	4
4	1200	80	16
4	1200	80	16

$$2400 + 160 + 32 = 2592$$

$$\begin{array}{r} 324 \\ \times 8 \\ \hline 2400 \\ 160 \\ + 32 \\ \hline 2592 \end{array}$$

$$\begin{array}{r} 300 + 20 + 4 \\ \times 8 \\ \hline 2400 + 160 + 32 = 2592 \end{array}$$

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Methods and strategies will vary. One possible method is given for each problem. Look for evidence that students are choosing strategies that “fit” the problem.

14. A. 240 ; $10 \times 48 = 480$
 $480 \div 2 = 240$

B. 2036 ; $500 \times 4 = 2000$;
 $9 \times 4 = 36$;
 $2000 + 36 = 2036$

C. 7578 ; 842

$$\begin{array}{r} 842 \\ \times 9 \\ \hline 18 \\ 360 \\ \hline 7200 \\ 7578 \end{array}$$

D. 3858 ;

$$\begin{array}{r} 600 + 40 + 3 \\ \times 6 \\ \hline 3600 + 240 + 18 = 3858 \end{array}$$

E. 2772 ; 924

$$\begin{array}{r} 924 \\ \times 3 \\ \hline 2772 \end{array}$$

F. 2784 ; $300 \times 8 = 2400$
 $50 \times 8 = 400$

$$\begin{array}{r} 2800 \\ - 16 \\ \hline 2784 \end{array}$$

$2 \times 8 = 16$

G. 1340 ; $268 \times 10 = 2680$
 $2680 \div 2 = 1340$

H. $49,448$; 7064

$$\begin{array}{r} 7064 \\ \times 7 \\ \hline 28 \\ 420 \\ \hline 49,000 \\ 49,448 \end{array}$$

15. Answers will vary. A possible solution for Question 14A:

$5 \times 50 = 250$;

$5 \times 2 = 10$;

$250 - 10 = 240$

16. Answers will vary. A possible solution for Question 14H:

$7 \times 7000 = 49,000$

The answer should be a few hundred more than 49,000.

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★●■14. Choose your own strategies and methods to solve the following problems. Remember to estimate to check that your answers are reasonable.

A. 5×48 B. 4×509

C. 842×9 D. 6×643

E. 3×924 F. 348×8

G. 268×5 H. 7064×7

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★●■15. Choose a problem from the ones you just solved and show how you could solve it using mental math.

★●■16. Choose a different problem and show your estimation strategy. Was your answer reasonable? Why or why not?

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Play the Multiplication Digits Game with a partner or family member to practice using place value concepts to multiply.

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