Student Activity Book

Moving Ahead with Multiplication

Questions 1–29 (SAB pp. 481–495)

1.

	60	4	
30	$30 \times 60 = 1800$	$30 \times 4 = 120$	1800 120 120 + 8
2	$2 \times 60 = 120$	8	2048

2. A.

$$
\begin{array}{r}
12 \\
\times\ 52 \\
\hline
500 \\
100 \\
20 \\
+\quad 4 \\
\hline
624
\end{array}
$$

B. $50 \times 10 = 500$

C. $10 \times 2 = 20$

Name _____ Date _____

Moving Ahead with Multiplication

Connecting Multiplication Methods

✓ **Self-Check: Question 1**

1. John solved 64×32 using all partials. Complete the same problem using the rectangle method. Fill in the blank boxes with the correct numbers.

All- Partials Method
$$
\begin{array}{r}
64 \\
\times\ 32 \\
\hline
1800 \\
120 \\
120 \\
+\quad 8 \\
\hline
2048
\end{array}
$$

Rectangle Method

	□	4	
30	$30 \times □ = 1800$	$□ \times □ = 120$	1800 120
2	$2 \times □ = 120$	8	+ 8 2048

Use the Self-Check Question and the menu to choose practice with multiplication methods.

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.
Make connections between methods.	★Q# 2–3	●Q# 3–4	■Q# 4
Use place value to multiply.	★●■ Multiplication Digits Game		

Student Activity Book - Page 481

Name _____ Date _____

★**2.** Irma solved 12 x 52 using rectangles.

	50	2	
10	$50 \times 10 = 500$	$10 \times 2 = 20$	500 100 20 + 4
2	$50 \times 2 = 100$	4	624

A. Use Irma's rectangle to fill in the blank boxes for the same problem using the all-partials method.

$$
\begin{array}{r}
12 \\
\times\ 52 \\
\hline
 \\
 \\
20 \\
+\quad 4 \\
\hline
624
\end{array}
$$

B. What numbers did Irma multiply in both methods to get 500?

C. What numbers did Irma multiply in both methods to get 20?

Student Activity Book - Page 482

Name _____ Date _____

★●3. Ana solved 38 x 24 using the expanded form method.

$$
\begin{array}{r}
38 = 30 + 8 \\
\times\ 24 = 20 + 4 \\
\hline
600 \\
160 \\
120 \\
+\ \ 32 \\
\hline
912
\end{array}
$$

A. Using the rectangle method, fill in the blank boxes for the same problem solved above.

	30	[ ]
20	[ ] × 30 = 600	20 × 8 = 160
4	4 × 30 = [ ]	

160
+ 32
912

$4 \times [\ ] = 32$

B. What numbers did Ana multiply in both problems to get 120?

Copyright © Kendall Hunt Publishing Company

Student Activity Book - **Page 483**

Name _____ Date _____

●■4. Professor Peabody's cat had muddy feet and walked across some problems. Fill in the missing spots to show each solution correctly.

A. 156 × 42

	100	50	6
40	40 × 100 = 4000	40 × 50 =	
2		2 ×	12

4000
+
6552

B. 64 × 18

$$
\begin{array}{r}
64 = \\
\times\ 18 \quad 10 + 8 \\
\hline
600 \\
40 \\
32 \\
\hline
1152
\end{array}
$$

C.
$$
\begin{array}{r}
89 \\
\times\ 46 \\
\hline
360 \\
480 \\
+\ \ 54 \\
\hline
\end{array}
$$

D. 185 × 103

	100	80	5
100		100 × 80 = 800	100 × 5 = 500
3		80 × 3 =	

+

Copyright © Kendall Hunt Publishing Company

Student Activity Book - **Page 484**

---

3. A.

	30	8
20	[20] × 30 = 600	20 × 8 = 160
4	4 × 30 = [120]	

600
160
[120]
+ 32
912

$4 \times [8] = 32$

B. $4 \times 30 = 120$

4. A.

	100	50	6
40	40 × 100 = 4000	40 × 50 = 2000	40 × 6 = 240
2	2 × 100 = 200	2 × 50 = 100	12

4000
2000
240
200
+ 100
12
6552

B.
$$
\begin{array}{r}
64 = 60 + 4 \\
\times\ 18 = 10 + 8 \\
\hline
600 \\
40 \\
480 \\
+\ \ 32 \\
\hline
1152
\end{array}
$$

C.
$$
\begin{array}{r}
89 \\
\times\ 46 \\
\hline
3200 \\
360 \\
480 \\
+\ \ 54 \\
\hline
4094
\end{array}
$$

D.

	100	80	5
100	100 × 100 = 10,000	100 × 80 = 800	100 × 5 = 500
3	100 × 3 = 300	80 × 3 = 240	15

10,000
800
500
300
250
+ 15
11,355

Copyright © Kendall Hunt Publishing Company

5. 819; 39×21 using a mental math strategy:
$40 \times 21 = 800 + 40$ because $40 \times 20 = 800$ and one more 40. But now I need to subtract one 21. $800 + 40 - 21 = 819$.
39×21 using all-partials:

$$
\begin{array}{r}
39 \\
\times\ 21 \\
\hline
600 \\
180 \\
30 \\
+\ \ \ 9 \\
\hline
819
\end{array}
$$

6. Yes, I agree with Michael. He made the multiplication problem easier by doing 90×46. He had one 46 too many, so he subtracted.

7.
$$
\begin{array}{r}
50 \\
\times\ 51 \\
\hline
2500 \\
+\ \ 50 \\
\hline
2550
\end{array}
\qquad
\begin{array}{r}
2550 \\
-\ \boxed{51} \\
\hline
\boxed{2499}
\end{array}
$$

Tanya needed to take away one 51 because she added in one too many when she did 50×51 for 49×51.

8. Double 50 to get $\boxed{100}$
$44 \times 100 = 4400$
$44 \times 50 = 4400 \div 2$
$44 \times 50 = 2200$

9. 924; $44 \times 20 = 880$
44×21 will be 44×1 or 44 more,
$880 + 44 = 924$
$44 \times 21 = 924$

10. 14,100; $100 \times 282 = 28,200$ so 50×282 is half of 28,200; $50 \times 282 = 14,100$

Student Activity Book - Page 485

Student Activity Book - Page 486

Student Activity Book - **Page 487**

11. You can think about 222×60 as
$222 \times 30 + 222 \times 30$
$6660 + 6660 = 13{,}320$

12. Strategies will vary. Possible responses:

A. 98×20 using a mental math strategy:
$100 \times 20 = 2000$ minus two 20s.
$2000 - 20 \times 2 = 1960$

98×20 using all-partials:

$$
\begin{array}{r}
98 \\
\times \quad 20 \\
\hline
1800 \\
+ \quad 160 \\
\hline
1960
\end{array}
$$

B. 51×22 using a mental math strategy:
$100 \times 22 = 2200$ so $50 \times 22 = 1100$.
$1100 + 22 = 1122$.

51×22 using rectangle method:

	50	1	
20	$50 \times 20 = 1000$	20	
2	$50 \times 2 = 100$	2	

$$
\begin{array}{r}
1000 \\
+ \quad 100 \\
20 \\
2 \\
\hline
1122
\end{array}
$$

C. 22×29 using a mental math strategy:
$22 \times 30 = 22 \times 3$ tens $= 66$ tens
66 tens $= 660$
$660 - 22 = 638$

22×29 using expanded form:

$$
\begin{array}{r}
22 \ = \ 20 + 2 \\
\times \ 29 \quad 20 + 9 \\
\hline
400 \\
40 \\
180 \\
18 \\
\hline
638
\end{array}
$$

13. **A.** Jessie did not use her estimate to check her answer. 690 is not between 1400 and 2400.

   B. No, Jessie's answer is not reasonable.

   C. Methods will vary.

     $26 \times 75 = 1950$

     Using all-partials:

$$
\begin{array}{r}
26 \\
\times\ 75 \\
\hline
1400 \\
420 \\
100 \\
30 \\
\hline
1950
\end{array}
$$

   D. I think my calculation is reasonable. 1950 is between 1400 and 2400.

14. **A.** Romesh did not use his estimate. His estimate was very different from his calculated answer.

   B. I do not agree with Romesh's estimate. $70 \times 40 = 2800$.

   C. Round 73 to 70 and 38 to 40. $70 \times 40 = 2800$.

   D. Yes, 2774 is close to 2800.

Student Activity Book - **Page 488**

Student Activity Book - **Page 489**

Name _____ Date _____

Choose your own strategies and methods to solve the problems below. Remember to estimate to check that your answers are reasonable.

★● **15.** 50 × 48

★● **16.** 40 × 502

●■ **17.** 278 × 90

●■ **18.** 72 × 38

●■ **19.** 46 × 38

■ **20.** 999 × 75

Copyright © Kendall Hunt Publishing Company

Student Activity Book - Page 490

Name _____ Date _____

★●■ **21.** Choose a problem from Questions 15–20 and show how you can solve it using mental math.

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

Copyright © Kendall Hunt Publishing Company

Student Activity Book - Page 491

Strategies will vary. One possible strategy is given for each.

15. 2400; $100 \times 48 = 4800$ so $50 \times 48 = 2400$.

16. 20,080; I multiplied 40 and 500 and then added two 40s. $40 \times 500 = 20,000$. $20,000 + 80 = 20,080$.

17. 25,020;
$$
\begin{array}{r}
278 \\
\times\ 90 \\
\hline
720 \\
6300 \\
18000 \\
\hline
25,020
\end{array}
$$

18. 2736;
$$
\begin{array}{r}
72 \\
\times\ 38 \\
\hline
2100 \\
60 \\
560 \\
16 \\
\hline
2736
\end{array}
$$

19. 1748;
$$
\begin{array}{rl}
46 & =\ 40 + 6 \\
\times\ 38 & \ \ \ 30 + 8 \\
\hline
& 1200 \\
& 180 \\
& 320 \\
& 48 \\
\hline
& 1748
\end{array}
$$

20. 74,925; $1000 \times 75 = 75,000$
$$
\begin{array}{r}
-\ \ \ 75 \\
\hline
74,925
\end{array}
$$

21. Responses will vary. See Questions 15 and 16 above.

22. Responses will vary.

Copyright © Kendall Hunt Publishing Company

23. A. Not reasonable; $5 \times 40 = 200$ and $5 \times 30 = 150$; 1525 is not between 200 and 150.

$$\begin{array}{r} 35 \\ \times\ 5 \\ \hline 25 \\ 150 \\ \hline 175 \end{array}$$

B. Reasonable; $30 \times 20 = 600$

C. Not reasonable; $30 \times 40 = 1200$ (low estimate); $40 \times 40 = 1600$, $40 \times 50 = 2000$ (high estimate); 180 is too low.

	30	5
40	1200	200
5	150	25

D. Not reasonable; $40 \times 30 = 1200$; the answer should be larger than 1200.

$$\begin{array}{r} 42 \\ \times\ 34 \\ \hline 1200 \\ 60 \\ 160 \\ +\ 8 \\ \hline 1428 \end{array}$$

E. Not reasonable; $60 \times 20 = 1200$; 444 is too small.

$$\begin{array}{r} 56\ =\ 50 + 6 \\ \times\ 24\ =\ 20 + 4 \\ \hline 1000 \\ 120 \\ 200 \\ +\ 24 \\ \hline 1344 \end{array}$$

F. Reasonable; $40 \times 30 = 1200$; 1073 is only about 125 less.

Name _____ Date _____

✓ **Check-In: Question 23**

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

★●■**23.** Estimate answers for each of Joe's and Moe's problems below.
- Just write down your estimates. You do not need to show your thinking.
- Use your estimates. Which of the answers make sense?
- Which answers do not make sense? Which problems should Joe and Moe recheck?
- For each answer that does not make sense, solve the problem correctly using the same method as Joe and Moe. (Hint: Do not do any more problems than you have to. Use your estimates to choose the problems you need to correct.)

A.
$$\begin{array}{r} 35 \\ \times\ 5 \\ \hline 1525 \end{array}$$

B. 33×21

$33 \times 20 = 660$, plus 33 makes 693.

C. 35×45

	30	5
40	120	20
5	15	25

$120 + 15 + 20 + 25 = 180$

Student Activity Book - Page 492

Name _____ Date _____

D.
$$\begin{array}{r} 42 \\ \times\ 34 \\ \hline 12 \\ 6 \\ 8 \\ 16 \\ \hline 42 \end{array}$$

E.
$$\begin{array}{r} 56\ =\ 50 + 6 \\ \times\ 24\ =\ 20 + 4 \\ \hline 100 \\ 120 \\ 200 \\ +\ 24 \\ \hline 444 \end{array}$$

F.
$$\begin{array}{r} 37 \\ \times\ 29 \\ \hline 600 \\ 270 \\ 140 \\ +\ 63 \\ \hline 1073 \end{array}$$

Student Activity Book - Page 493

Name _____ Date _____

Estimation Strategies

**Work with a partner to estimate answers for Questions 24–29.
For each problem:**

- Estimate an answer on your own. Use mental math if you can. Write your own estimate in the first box.
- Share your estimate with your partner and explain your reasoning. Write your partner's estimate in the box under his or her name.
- Discuss with your partner which estimate is the best and why you think so. Write your group's best estimate in the "Our Best" column.
- In the "Our Reasoning" column, show or tell why your group decided it was the best estimate.

The first problem is an example.

| Problem | ESTIMATES | | | Our Reasoning |
	Mine	Partner Name:	Our Best	
Example 18 × 27	600	500	500	This estimate is best because the friendly numbers we chose got us closest to original numbers. 20 × 25 = 500 is close to 486, the exact answer.
★●24. 38 × 52				
★●25. 98 × 19				

Workshop: Multiplication Methods

Copyright © Kendall Hunt Publishing Company

Student Activity Book - **Page 494**

For Questions 24–29, estimates and reasoning will vary. Possible estimates are given.

24. $40 \times 50 = 2000$

25. $100 \times 20 = 2000$

26. $90 \times 40 = 3600$

27. $80 \times 20 = 1600$

28. $50 \times 50 = 2500$

29. $62 \times 1000 = 62,000$

Name _____ Date _____

| Problem | ESTIMATES | | | Our Reasoning |
	Mine	Partner Name:	Our Best	
★●26. 89 × 38				
●■27. 75 × 25				
●■28. 46 × 51				
■29. 62 × 985				

Copyright © Kendall Hunt Publishing Company

Workshop: Multiplication Methods

Student Activity Book - **Page 495**