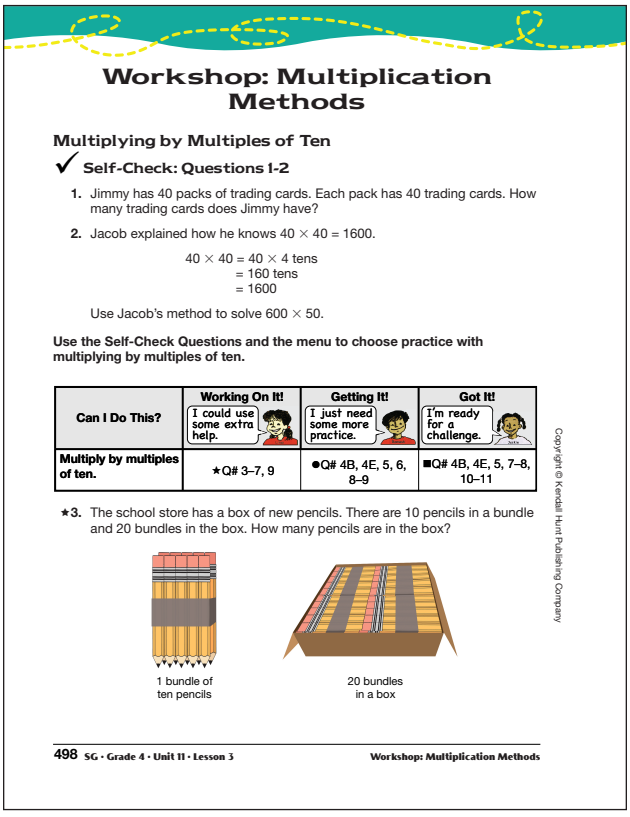
## Student Guide

### Workshop: Multiplication Methods

### Questions 1–11 (SG pp. 498–500)

1. 1600 trading cards
2. $600 \times 50 = 600 \times 5$ tens
   $= 3000$ tens
   $= 30{,}000$
3. 200 pencils; 20 bundles $\times$ 10 pencils per bundle = 200 pencils
4. Responses may vary. Possible reponse:
   - **A.** I understand Lee Yah's strategy best.
   - **B.** Nicholas's is most efficient. It's very quick.
   - **C.** 1200; I used Jacob's strategy.
     $30 \times 40 = 30 \times 4$ tens
     $= 120$ tens
     $= 1200$
   - **D.** 4000; I used Lee Yah's strategy, skip counting. I counted 200 twenty times, 200, 400, 600, 800, 1000, 1200, 1400, 1600, 1800, 2000, 2200, 2400, 2600, 2800, 3000, 3200, 3400, 3600, 3800, 4000.
   - **E.** 16,000; $8 \times 2 = 16$. 16,000 because there are three zeros in the problem.
5. Responses may vary.



Workshop: Multiplication Methods

Multiplying by Multiples of Ten

✓ Self-Check: Questions 1-2

1. Jimmy has 40 packs of trading cards. Each pack has 40 trading cards. How many trading cards does Jimmy have?
2. Jacob explained how he knows $40 \times 40 = 1600$.

$40 \times 40 = 40 \times 4$ tens
$= 160$ tens
$= 1600$

Use Jacob's method to solve $600 \times 50$.

**Use the Self-Check Questions and the menu to choose practice with multiplying by multiples of ten.**

| 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. |
|---|---|---|---|
| Multiply by multiples of ten. | ★Q# 3–7, 9 | ●Q# 4B, 4E, 5, 6, 8–9 | ■Q# 4B, 4E, 5, 7–8, 10–11 |

★3. The school store has a box of new pencils. There are 10 pencils in a bundle and 20 bundles in the box. How many pencils are in the box?

1 bundle of ten pencils

20 bundles in a box

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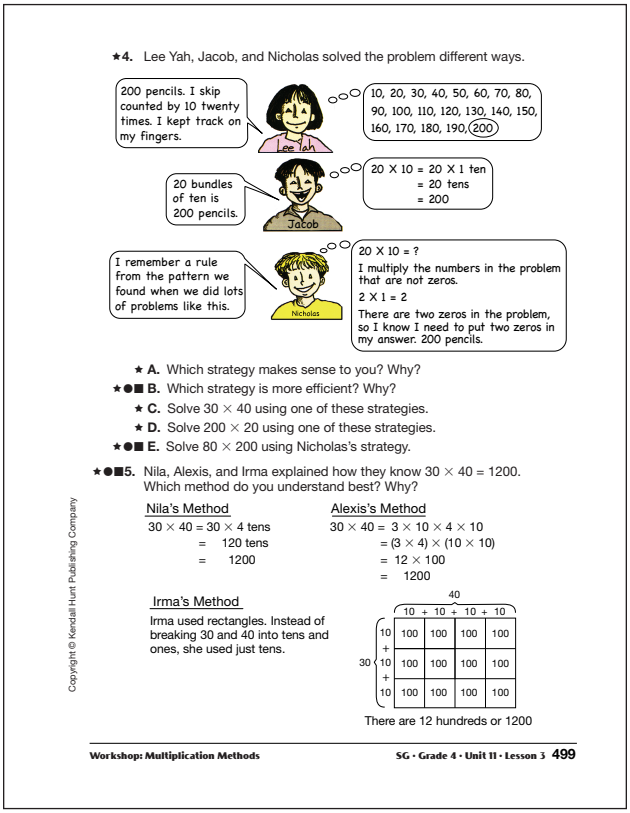

★4. Lee Yah, Jacob, and Nicholas solved the problem different ways.

Lee Yah: 200 pencils. I skip counted by 10 twenty times. I kept track on my fingers.
10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200

Jacob: 20 bundles of ten is 200 pencils.
$20 \times 10 = 20 \times 1$ ten
$= 20$ tens
$= 200$

Nicholas: I remember a rule from the pattern we found when we did lots of problems like this.
$20 \times 10 = ?$
I multiply the numbers in the problem that are not zeros.
$2 \times 1 = 2$
There are two zeros in the problem, so I know I need to put two zeros in my answer. 200 pencils.

★ A. Which strategy makes sense to you? Why?
★●■ B. Which strategy is more efficient? Why?
★ C. Solve $30 \times 40$ using one of these strategies.
★ D. Solve $200 \times 20$ using one of these strategies.
★●■ E. Solve $80 \times 200$ using Nicholas's strategy.

★●■5. Nila, Alexis, and Irma explained how they know $30 \times 40 = 1200$. Which method do you understand best? Why?

Nila's Method
$30 \times 40 = 30 \times 4$ tens
$= 120$ tens
$= 1200$

Alexis's Method
$30 \times 40 = 3 \times 10 \times 4 \times 10$
$= (3 \times 4) \times (10 \times 10)$
$= 12 \times 100$
$= 1200$

Irma's Method
Irma used rectangles. Instead of breaking 30 and 40 into tens and ones, she used just tens.

| 30 \ 40 | 10 + 10 + 10 + 10 |
|---|---|
| 10 + 10 + 10 | 100 100 100 100 |
| | 100 100 100 100 |
| | 100 100 100 100 |

There are 12 hundreds or 1200

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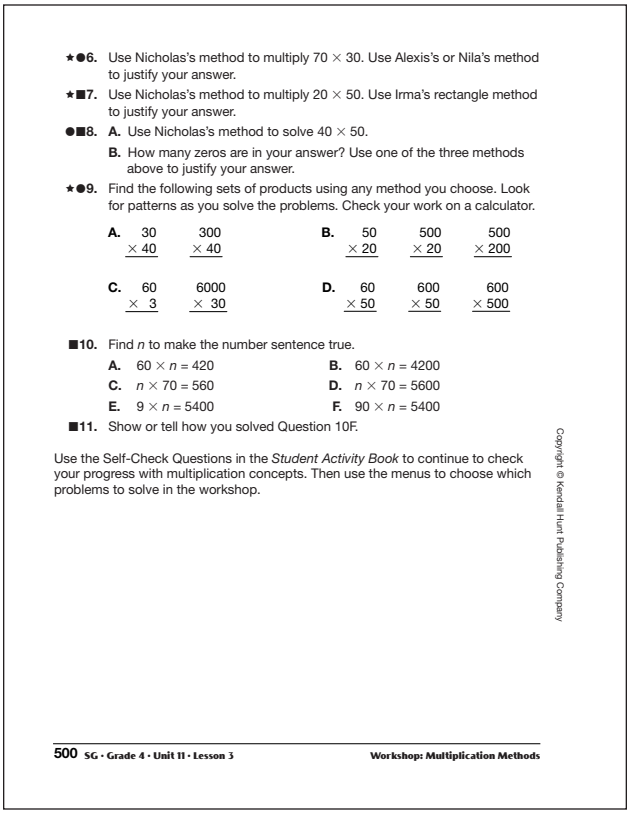

★●6. Use Nicholas's method to multiply 70 × 30. Use Alexis's or Nila's method to justify your answer.

★■7. Use Nicholas's method to multiply 20 × 50. Use Irma's rectangle method to justify your answer.

●■8. **A.** Use Nicholas's method to solve 40 × 50.

**B.** How many zeros are in your answer? Use one of the three methods above to justify your answer.

★●9. Find the following sets of products using any method you choose. Look for patterns as you solve the problems. Check your work on a calculator.

**A.** 30 × 40 = 300 × 40 =

**B.** 50 × 20 = 500 × 20 = 500 × 200 =

**C.** 60 × 3 = 6000 × 30 =

**D.** 60 × 50 = 600 × 50 = 600 × 500 =

■10. Find *n* to make the number sentence true.

**A.** 60 × *n* = 420 **B.** 60 × *n* = 4200

**C.** *n* × 70 = 560 **D.** *n* × 70 = 5600

**E.** 9 × *n* = 5400 **F.** 90 × *n* = 5400

■11. Show or tell how you solved Question 10F.

Use the Self-Check Questions in the *Student Activity Book* to continue to check your progress with multiplication concepts. Then use the menus to choose which problems to solve in the workshop.





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**6.** $7 \times 3 = 21$. 2100 because there are 2 zeros in the problem.

Using Alexis's method:

$70 \times 30 = 7 \times 10 \times 3 \times 10$
$= (7 \times 3) \times (10 \times 10)$
$= 21 \times 100$
$= 2100$

Using Nila's method:

$70 \times 30 = 70 \times 3$ tens
$= 210$ tens
$= 2100$

**7.** $2 \times 5 = 10$. 1000 because I add the 2 zeros in the problem to the answer.

| | 10 | +10 | +10 | +10 | +10 |
|---|---|---|---|---|---|
| 10 | 100 | 100 | 100 | 100 | 100 |
| + 10 | 100 | 100 | 100 | 100 | 100 |

$20 \times 50 =$ 2 rows of 500
$=$ 2 500 ×
$=$ 1000

**8. A.** $4 \times 5 = 20$, and I add the 2 zeros in the problem to the answer to get 2000.

**B.** 3 zeros. Possible response:

$40 \times 50 = 4 \times 10 \times 5 \times 10$
$= (4 \times 5) \times (10 \times 10)$
$= 20 \times 100$
$= 2000$

**9. A.** 1200; 12,000

**B.** 1000; 10,000; 100,000

**C.** 180; 180,000

**D.** 3000; 30,000; 300,000

**10. A.** $n = 7$ **B.** $n = 70$

**C.** $n = 8$ **D.** $n = 80$

**E.** $n = 600$ **F.** $n = 60$

**11.** Possible response: First I thought $9 \times 6 = 54$. Then I thought about zeros. There are 2 zeros in 5400 and one in 90. $90 \times ? = 5400$
$90 \times 60 = 5400$