

Student Guide

Workshop: Strategies for Multiplication Facts (SG pp. 237–242)

Questions 1–10

- Answers will vary. Possible response: My favorite strategy is skip counting for the 5s and 10s.
- A.*** Possible response: Skip counting with 5s and 10s is efficient when the numbers are small. Using 10s is also efficient because they are easy facts to remember.

B.* Possible response: Skip counting is not efficient if you are using big numbers because it would take too long and you could lose track of what you are trying to answer.
- Answers will vary. Possible response: I can easily use skip counting for my 2s. For my 3s it is easy to use my 2s and then one more group, for example for 3×4 , I can solve $2 \times 4 = 8$ and then add 4 more, $8 + 4 = 12$.
- A.** Possible response: Using doubles is an efficient strategy for the 2s. It is also efficient to use facts you know to figure out the answers.

B. Possible response: Skip counting is good for smaller numbers but takes too long with larger facts. Skip counting by 3s is not as easy as skip counting by 2s.

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Workshop: Strategies for Multiplication Facts

Strategies for Most Facts

- Look at the multiplication facts for the fives and tens. Tell your partner your favorite strategies to solve these facts.


		Fives and Tens										
x		0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	
2	0	2	4	6	8	10	12	14	16	18	20	
3	0	3	6	9	12	15	18	21	24	27	30	
4	0	4	8	12	16	20	24	28	32	36	40	
5	0	5	10	15	20	25	30	35	40	45	50	
6	0	6	12	18	24	30	36	42	48	54	60	
7	0	7	14	21	28	35	42	49	56	63	70	
8	0	8	16	24	32	40	48	56	64	72	80	
9	0	9	18	27	36	45	54	63	72	81	90	
10	0	10	20	30	40	50	60	70	80	90	100	

- Look at the following strategies.




Skip Count
5, 10, 15, 20

$5 \times 4 = 20$



10, 20, 30, 40, 50, 60

$10 \times 6 = 60$



Tens are easy so I use them. $10 \times 8 = 80$, so $5 \times 8 = 40$ because I know $40 + 40 = 80$.

$5 \times 8 = 40$

A. Which are efficient? Why?
B. Which are not? Why?


Workshop: Strategies for Multiplication Facts SG • Grade 3 • Unit 8 • Lesson 10 **237**

Student Guide - Page 237


- Look at the multiplication facts for the twos and threes. Tell your partner your favorite strategies to solve these facts.

		Twos and Threes										
x		0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	
2	0	2	4	6	8	10	12	14	16	18	20	
3	0	3	6	9	12	15	18	21	24	27	30	
4	0	4	8	12	16	20	24	28	32	36	40	
5	0	5	10	15	20	25	30	35	40	45	50	
6	0	6	12	18	24	30	36	42	48	54	60	
7	0	7	14	21	28	35	42	49	56	63	70	
8	0	8	16	24	32	40	48	56	64	72	80	
9	0	9	18	27	36	45	54	63	72	81	90	
10	0	10	20	30	40	50	60	70	80	90	100	


- Look at the following strategies.



I know my doubles.
 $7 + 7 = 14$ so
 $7 \times 2 = 14$



I skip count.
 $2 \times 8 = 16$
2, 4, 6, 8, 10, 12, 14, 16
 $3 \times 8 = 24$
3, 6, 9, 12, 15, 18, 21, 24



I skip count for the smaller facts.

I use the facts I know for the larger facts.

		4		4	
3	$3 \times 4 = 12$		$3 \times 4 = 12$		

I know $3 \times 4 = 12$, so $3 \times 8 = 24$.

A. Which are efficient? Why?
B. Which are not? Why?

238 SG • Grade 3 • Unit 8 • Lesson 10 Workshop: Strategies for Multiplication Facts

Student Guide - Page 238

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

5. Look at the multiplication facts for the nines. Tell your partner your favorite strategies to solve these facts.

		Nines										
x		0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	
2	0	2	4	6	8	10	12	14	16	18	20	
3	0	3	6	9	12	15	18	21	24	27	30	
4	0	4	8	12	16	20	24	28	32	36	40	
5	0	5	10	15	20	25	30	35	40	45	50	
6	0	6	12	18	24	30	36	42	48	54	60	
7	0	7	14	21	28	35	42	49	56	63	70	
8	0	8	16	24	32	40	48	56	64	72	80	
9	0	9	18	27	36	45	54	63	72	81	90	
10	0	10	20	30	40	50	60	70	80	90	100	

6. Look at the following strategies.



Josh

To solve 4×9 , I use 4×10 .
 $4 \times 10 = 40$
 $4 \times 9 = 4$ less or $40 - 4$
 $4 \times 9 = 36$

The sum of the digits is 9.



Puneesh

To solve 9×8 , I think $10 \times 8 = 80$. The product of 9×8 is more than 70 and less than 80.
 $7 + \square = 9$ $7 + \square = 9$ so $9 \times 8 = 72$

- A. Which are efficient? Why?
 B. Which are not? Why?

Student Guide - Page 239

7. Look at the multiplication facts for the square numbers. Tell your partner your favorite strategies to solve these facts.

		Square Numbers										
x		0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	
2	0	2	4	6	8	10	12	14	16	18	20	
3	0	3	6	9	12	15	18	21	24	27	30	
4	0	4	8	12	16	20	24	28	32	36	40	
5	0	5	10	15	20	25	30	35	40	45	50	
6	0	6	12	18	24	30	36	42	48	54	60	
7	0	7	14	21	28	35	42	49	56	63	70	
8	0	8	16	24	32	40	48	56	64	72	80	
9	0	9	18	27	36	45	54	63	72	81	90	
10	0	10	20	30	40	50	60	70	80	90	100	

8. Look at the following strategies.



Tanya

$3 \times 3 = 9$

$5 \times 7 = 35$
 $+ 14$
 49



Sam

I know 5×6 then add one more 6.
 $6 \times 6 = 36$



Peter

$7 \times 7 = 49$
 I know my 5s and 2s.

- A. Which are efficient? Why?
 B. Which are not? Why?

Student Guide - Page 240

5. Answers will vary. Possible response: I like to use facts I know to help me. Since I know my 10s I multiply a number by 10 and then subtract one group since I only want 9 groups not 10.
6. A. Possible response: I think it is more efficient to use the 10 facts to solve multiplication problems with 9 because I can quickly answer the 10s and can use mental math strategies to subtract. Or, I like to think about the pattern for 9s. I know the sum of the digits in the product will add up to 9 so I can use that to check my work.
- B. Using the patterns for the 9s is great for smaller numbers, but when you get to larger numbers it would be more difficult.
7. Answers will vary. Possible response: I use facts I already know to help me with the squares. I can use the 5 facts to help me with the bigger numbers and I can use the 2s to help me with smaller numbers.
8. A. Tanya's strategy works with smaller facts. Sam and Peter use facts they know which is better than skip counting for larger facts.
- B. Possible responses: Tanya's strategy of thinking about an array does not work well for larger numbers.

9. Stories will vary. Possible response: I have three friends. I gave each friend 1 piece of candy but 0 pieces of gum. How many pieces of candy did I share? $3 \times 1 = 3$. How many pieces of gum did I share? $3 \times 0 = 0$.
10. **A.** Possible response: I would start with the 5s and 10s because they are the easiest. I know the 2s already because I know my doubles (e.g., $7 + 7$). Then I would practice the 3s because I can use the 2s. After the 3s I would practice the 9s since I can use the 10s to help me. There are only a few square numbers to learn, and those I can figure out with the facts that I know. Finally I would practice the last six facts.
- B.** Answers will vary. Possible response for a strategy for the product 42; $6 \times 6 = 36$, $36 + 6 = 42$.

9. Frank wrote a story to solve 4×0 and 4×1 .
Each serving has 1 gram of salt and 0 grams of sugar.

1 gram salt 0 grams sugar	1 gram salt 0 grams sugar
1 gram salt 0 grams sugar	1 gram salt 0 grams sugar

4 servings have 4 grams of salt and 0 grams of sugar.

Write your own story to show ways to think about multiplying by zero and one.

Zero and One

\times	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

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Play Four in a Row in the *Student Activity Book* to test your multiplication fact strategies.

Use *Self-Check Questions: 1–8* and the Workshop Menu on the *Multiplication Fact Strategies* pages in the *Student Activity Book* to choose practice needed to develop strategies for the multiplication facts.

Student Guide - Page 241

The Last Six Facts

10. You are working on strategies for multiplying by 0, 1, 2, 3, 5, 10, 9, and the square numbers. These facts are shaded in the multiplication chart below.

\times	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

- A.** Since some facts help you solve other facts, in what order do you think you should practice the facts?

- B.** Find the facts that are not shaded in the multiplication chart. Work with a partner to find a strategy to solve one of the multiplication facts.

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Student Guide - Page 242