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INTERVENTION

FACTS AND PATTERNS:
MULTIPLICATION AND DIVISION
Lesson 8: 6s and 12s

H
Handouts

Cumulative Review

1. Draw and divide an array to show the doubling strategy for 3 x 10.

2. Divide the array model to represent taking apart an unknown fact to find 5 x 3.

3. Take apart the unknown fact to find 9 x 4. Use the graphic organizer below if needed. _____

X	4	5	4s + 5s	9
4				

4. What multiplication fact is shown by the array below? _____

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H

Handouts
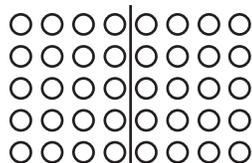
6 x 12 Array

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
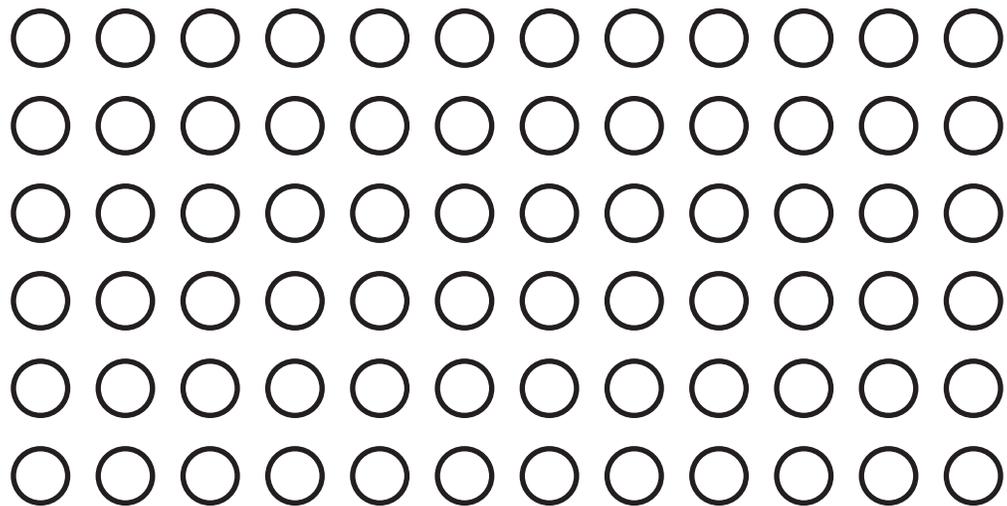
Partially Completed Multiplication Table

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5		7	8	9	10	11	
2	2	4	6	8	10		14	16	18	20	22	
3	3	6	9	12	15		21	24	27	30	33	
4	4	8	12	16	20		28	32	36	40	44	
5	5	10	15	20	25		35	40	45	50	55	
6												
7	7	14	21	28	35		49	56	63	70	77	
8	8	16	24	32	40		56	64	72	80	88	
9	9	18	27	36	45		63	72	81	90	99	
10	10	20	30	40	50		70	80	90	100	110	
11	11	22	33	44	55		77	88	99	110	121	
12												

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The 3s Doubled Are the 6s

X	3	3 Doubled	6
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

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MULTIPLICATION AND DIVISION
Lesson 8: 6s and 12s

H

Handouts

The 6s Doubled Are the 12s

X	6	6 Doubled	12
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

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FACTS AND PATTERNS:
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H
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Practice 1

1. What multiplication fact is shown by the array below?

   _____

   ○○○○○○○○
   ○○○○○○○○
   ○○○○○○○○
   ○○○○○○○○
   ○○○○○○○○
   ○○○○○○○○
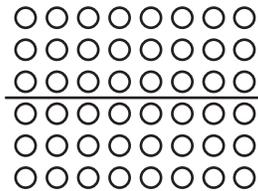
2. Divide the array to model the doubling strategy for 12 x 7, and then solve. _____

   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
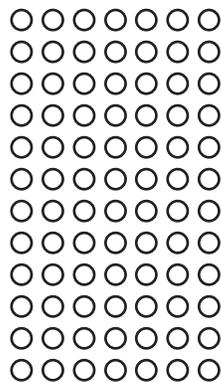
3. Draw and divide an array to show the doubling strategy for 12 x 6, and then solve. _____

Practice 1 (cont.)

4. Use the doubling strategy and part of the multiplication table below to find 6 x 6. _____

X	3	3 Doubled	6
1	3		
2	6		
3	9		
4	12		
5	15		
6	18		
7	21		
8	24		
9	27		
10	30		
11	33		
12	36		

Practice 2

Part 1: Complete the 6s and 12s rows and columns on the multiplication table.

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5		7	8	9	10	11	
2	2	4	6	8	10		14	16	18	20	22	
3	3	6	9	12	15		21	24	27	30	33	
4	4	8	12	16	20		28	32	36	40	44	
5	5	10	15	20	25		35	40	45	50	55	
6												
7	7	14	21	28	35		49	56	63	70	77	
8	8	16	24	32	40		56	64	72	80	88	
9	9	18	27	36	45		63	72	81	90	99	
10	10	20	30	40	50		70	80	90	100	110	
11	11	22	33	44	55		77	88	99	110	121	
12												

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FACTS AND PATTERNS:
MULTIPLICATION AND DIVISION
Lesson 8: 6s and 12s **H**
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Practice 2 (cont.)

Part 2: Answer each question.

1. What multiplication fact is shown by the array below?

_____

○○○○○○○○○
○○○○○○○○○
○○○○○○○○○
○○○○○○○○○
○○○○○○○○○
○○○○○○○○○

2. Divide the array to model the doubling strategy for 12 x 5, and then solve. _____

○○○○○
○○○○○
○○○○○
○○○○○
○○○○○
○○○○○
○○○○○
○○○○○
○○○○○
○○○○○
○○○○○
○○○○○

3. Draw and divide an array to show the doubling strategy for 8 x 12, and then solve. _____

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FACTS AND PATTERNS:
MULTIPLICATION AND DIVISION
Lesson 8: 6s and 12s

H
Handouts

Name: _____

Independent Practice

Part 1: Solve each fact.

6 x 6 = _____

12 x 6 = _____

9 x 6 = _____

12 x 12 = _____

8 x 6 = _____

12 x 9 = _____

Part 2: Fill in the blank for each sentence.

1. What multiplication fact is shown by the array below?

_____

2. Divide the array to model the doubling strategy for 12 x 8, and then solve.

_____

Independent Practice (cont.)

3. Draw and divide an array to show the doubling strategy for 6 x 9, and then solve. _____

4. Use the doubling strategy and part of the multiplication table below to find 12 x 12. _____

X	3	6	6 Doubled	12
12	36			

Answer Key: Cumulative Review
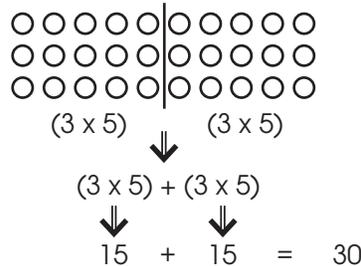
1. Draw and divide an array to show the doubling strategy for 3 x 10.

$$\begin{matrix}
\circ\circ\circ\circ\circ & | & \circ\circ\circ\circ\circ \\
\circ\circ\circ\circ\circ & | & \circ\circ\circ\circ\circ \\
\circ\circ\circ\circ\circ & | & \circ\circ\circ\circ\circ
\end{matrix}$$

(3 x 5)   (3 x 5)

⇓

(3 x 5) + (3 x 5)

⇓   ⇓

15   +   15   =   30

2. Divide the array model to represent taking apart an unknown fact to find 5 x 3.

$$\begin{matrix}
\circ & | & \circ\ \circ \\
\circ & | & \circ\ \circ \\
\circ & | & \circ\ \circ \\
\circ & | & \circ\ \circ \\
\circ & | & \circ\ \circ \\
\circ & | & \circ\ \circ \\
\circ & | & \circ\ \circ \\
\circ & | & \circ\ \circ \\
\circ & | & \circ\ \circ
\end{matrix}$$

(5 x 1)   (5 x 2)

⇓

(5 x 1) + (5 x 2)

⇓   ⇓

5   +   10   =   15
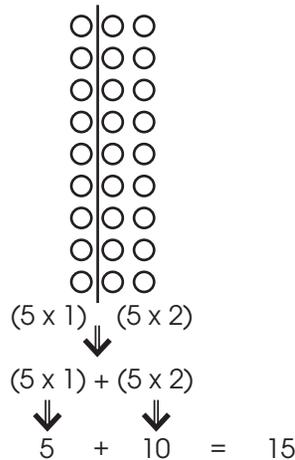
3. Take apart the unknown fact to find 9 x 4. Use the graphic organizer below if needed.   9 x 4 = (4 x 4) + (4 x 4) = 36

X	4	5	4s + 5s	9
4	16	20	16 + 20	36

4. What multiplication fact is shown by the array below?
    (5 x 4) + (5 x 4) = 5 x 8 = 40

$$\begin{matrix}
\circ\circ\circ\circ & | & \circ\circ\circ\circ \\
\circ\circ\circ\circ & | & \circ\circ\circ\circ \\
\circ\circ\circ\circ & | & \circ\circ\circ\circ \\
\circ\circ\circ\circ & | & \circ\circ\circ\circ \\
\circ\circ\circ\circ & | & \circ\circ\circ\circ
\end{matrix}$$

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H
Handouts
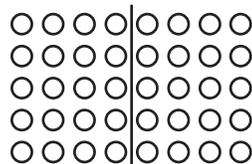
Answer Key: Practice 1

1. What multiplication fact is shown by the array below?

   $6 \times 8 = (3 \times 8) + (3 \times 8) = 48$

   ○○○○○○○○
   ○○○○○○○○
   ○○○○○○○○
   ○○○○○○○○
   ○○○○○○○○
   ○○○○○○○○
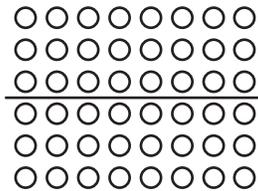
2. Divide the array to model the doubling strategy for 12 x 7, and then solve. $12 \times 7 = (6 \times 7) + (6 \times 7) = 84$

   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○ (6 x 7)
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○
   ○○○○○○○ (6 x 7)
   ○○○○○○○
   ○○○○○○○

   → (6 x 7) + (6 x 7)
   ⇓   ⇓
   42   +   42   =   84
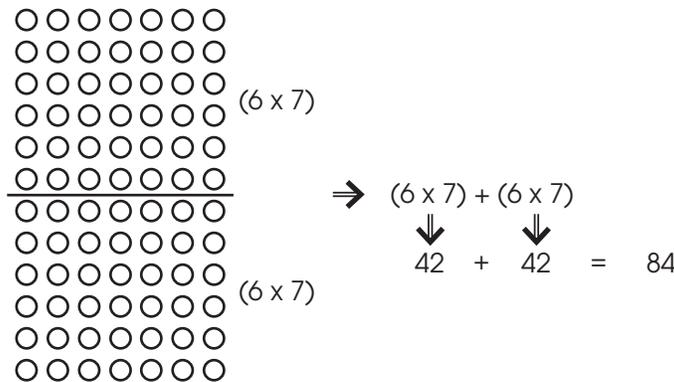
3. Draw and divide an array to show the doubling strategy for 12 x 6, and then solve. $12 \times 6 = (6 \times 6) + (6 \times 6) = 72$

   ○○○○○○
   ○○○○○○
   ○○○○○○
   ○○○○○○ (6 x 6)
   ○○○○○○
   ○○○○○○
   ○○○○○○
   ○○○○○○
   ○○○○○○ (6 x 6)
   ○○○○○○
   ○○○○○○

   → (6 x 6) + (6 x 7)
   ⇓   ⇓
   36   +   36   =   72

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Lesson 8: 6s and 12s

H

Handouts
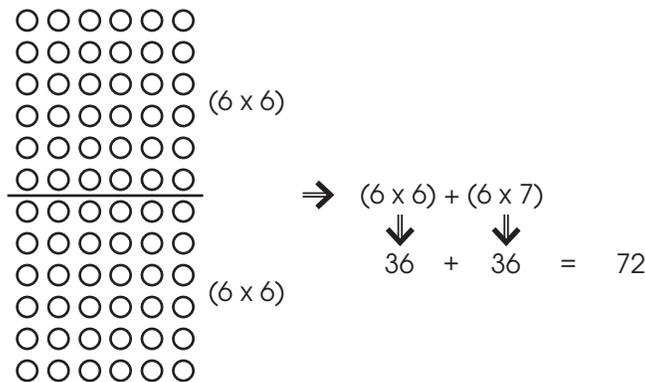
Answer Key: Practice 1 (cont.)

4. Use the doubling strategy and part of the multiplication table below to find 6 x 6. __36__

X	3	3 Doubled	6
1	3	3 + 3	6
2	6	6 + 6	12
3	9	9 + 9	18
4	12	12 + 12	24
5	15	15 + 15	30
6	**18**	**18 + 18**	**36**
7	21	21 + 21	42
8	24	24 + 24	48
9	27	27 + 27	54
10	30	30 + 30	60
11	33	33 + 33	66
12	36	36 + 36	72

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Answer Key: Practice 2

Part 1: Complete the 6s and12s rows and columns on the multiplication table.

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

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Answer Key: Practice 2 (cont.)

Part 2: Answer each question.

1. What multiplication fact is shown by the array below?
   $6 \times 7 = (3 \times 9) + (3 \times 9) = 54$
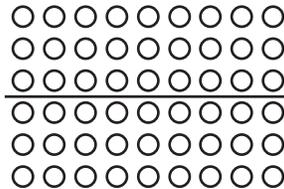
2. Divide the array to model the doubling strategy for 12 x 5, and then solve. $12 \times 5 = (6 \times 5) + (6 \times 5) = 60$

(6 x 5)
(6 x 5) → (6 x 5) + (6 x 5)

30 + 30 = 60
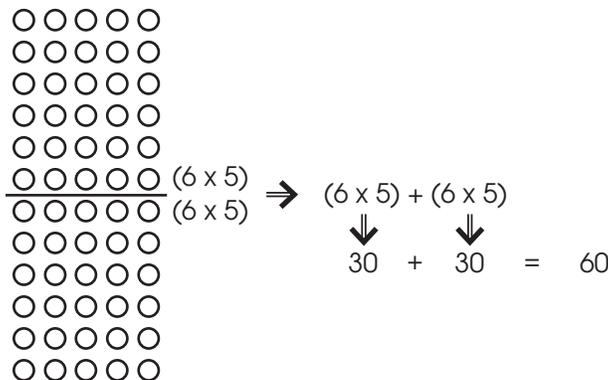
3. Draw and divide an array to show the doubling strategy for 8 x 12, and then solve. $8 \times 12 = (8 \times 6) + (8 \times 6) = 96$

(8 x 6)   (8 x 6)

(8 x 6) + (8 x 6)

48 + 48 = 96

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H
Handouts
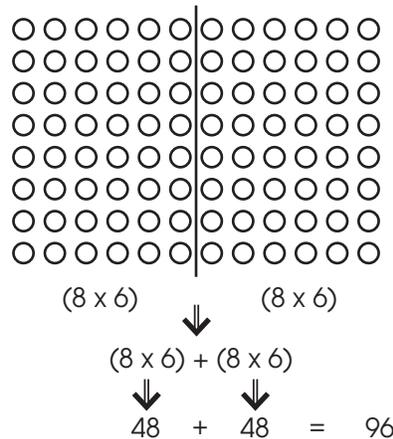
Answer Key: Independent Practice

Part 1: Solve each fact.

$6 \times 6 =$ __36__

$12 \times 6 =$ __72__

$9 \times 6 =$ __54__

$12 \times 12 =$ __144__

$8 \times 6 =$ __48__

$12 \times 9 =$ __108__

Part 2: Fill in the blank for each sentence.

1. What multiplication fact is shown by the array below?

__$12 \times 4 = (6 \times 4) + (6 \times 4) = 48$__
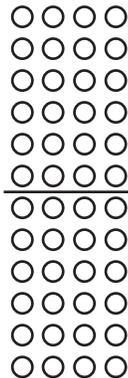
2. Divide the array to model the doubling strategy for 12×8, and then solve.

__$12 \times 8 = (6 \times 8) + (6 \times 8) = 96$__
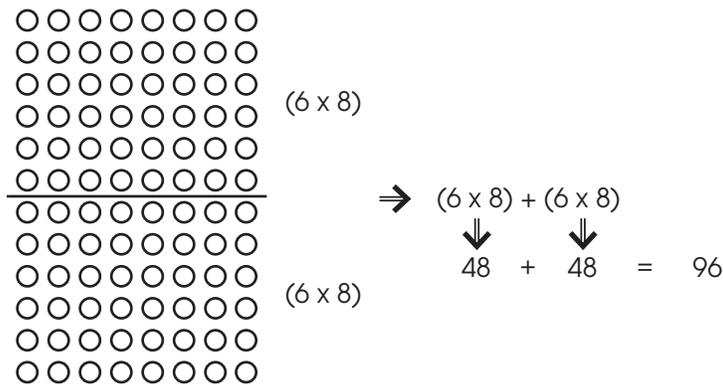
(6 x 8)

$\Rightarrow$ (6 x 8) + (6 x 8)

(6 x 8)

48 + 48 = 96

Answer Key: Independent Practice (cont.)

3. Draw and divide an array to show the doubling strategy for 6 x 9, and then solve. <u>6 x 9 = (3 x 9) + (3 x 9) = 54</u>

```
OOOOOOOOO
OOOOOOOOO (3 x 9)
OOOOOOOOO            →    (3 x 9) + (3 x 9)
OOOOOOOOO                     ⇓        ⇓
OOOOOOOOO (3 x 9)           27   +   27   =   54
OOOOOOOOO
```
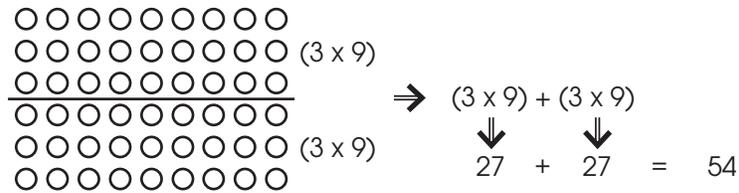
4. Use the doubling strategy and part of the multiplication table below to find 12 x 12. <u>144</u>

X	3	6	6 Doubled	12
12	36	72	72 + 72	144