

Name: Teacher Copy

Unit 3: Multiplication Reasoning Study Guide

For 1-2, use the multiplication table below.

	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

1. Solve  $2 \times 8$ . Explain how to get your answer using the multiplication table above.

$$2 \times 8 = 16$$

I find the 2 factor going down and the 8 factor going across and slide my fingers until they meet.

2.  $4 \times 4 = n$

$$n = 16$$

3.  $7 \times 2 = n$

$$n = 14$$

4. Kerry sold 4 books of raffle tickets. Each book had 7 tickets. How many tickets did Kerry sell?

$$4 \times 7 = 28 \text{ tickets}$$

5. What doubles addition fact can help you solve  $2 \times 5$ ?

$$5 + 5 = 10$$

6. What doubles addition fact can help you solve  $2 \times 9$ ?

$$9 + 9 = 18$$

7. Write a multiplication equation. Show **and** explain one way that you can solve the problem.

$$\underline{6} \times \underline{8} = \underline{48}$$

Show One Way:

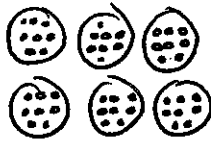
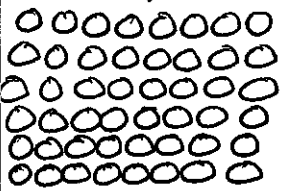
Array

or

Equal Groups

or

Repeated addition



$$\begin{array}{r} +6 \\ 12 \\ +6 \\ 18 \\ +6 \\ 24 \\ +6 \\ 30 \\ +6 \\ 36 \\ +6 \\ 42 \\ +6 \\ 48 \end{array}$$

Explain: First, I made 6  
rows. Next, I put 8 in  
each row. Then, I counted  
all the dots and got 48.

8.  $6 \times 5 = 30$ , so  $\underline{5} \times \underline{6} = \underline{30}$

$$\begin{array}{r} 36 \\ +6 \\ 42 \\ +6 \\ 48 \end{array}$$

For 9 – 10, write 2 equations that show the Commutative Property of Multiplication

9.  $\underline{2} \times \underline{5} = \underline{10}$

10.  $\underline{3} \times \underline{9} = \underline{27}$

$\underline{5} \times \underline{2} = \underline{10}$

$\underline{9} \times \underline{3} = \underline{27}$

For 11 – 13, find the product.

11.  $(2 \times 6) \times 3 = \underline{36}$

$$\begin{array}{r} \checkmark \\ 12 \times 3 = \\ +12 \\ \hline 36 \end{array}$$

12.  $4 \times 3 \times 1 = \underline{12}$

$$\begin{array}{r} \checkmark \\ 12 \times 1 = 12 \end{array}$$

13.  $5 \times 1 \times 2 = \underline{10}$

$$\begin{array}{r} \checkmark \\ 5 \times 2 = 10 \end{array}$$

14.  $2 \times 2 \times 4 = 16$

$\checkmark$   
 $4 \times 4 = 16$   
 a. True

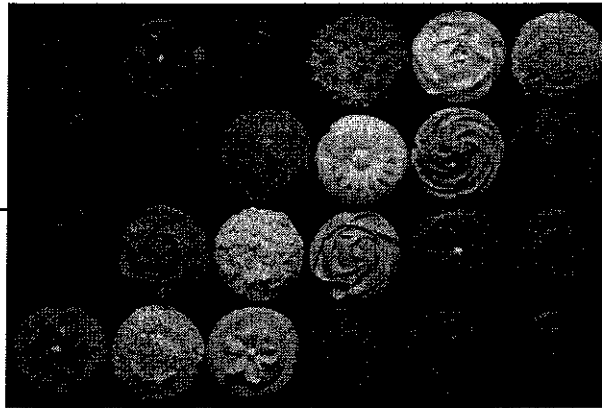
b. False

Explain your answer.

First, I multiplied  $2 \times 2 = 4$  and then I multiplied  $4 \times 4 = 16$

For numbers 15 – 16 use the story and array below.

Michelle brings in some cupcakes to the bake sale. The array below shows the number of plates and the number of cupcakes on each plate.



$4 \times 6 = 24$

15. Draw a line to break apart the array.

16. Write 2 equations that match each part of the array.

2 x 6 = 12 AND 2 x 6 = 12

17.  $\overset{48}{\frown} 8 \times 6 = (\overset{15}{\frown} 5 \times 3) + (\overset{15}{\frown} 5 \times 3) = 30$

a. True

$48 \neq 30$

b. False

18.  $\overset{35}{\frown} 5 \times 7 = (\overset{21}{\frown} 3 \times 7) + (\overset{14}{\frown} 2 \times 7) = 35$

a. True

b. False

19. Write the definition for each vocabulary word. (7 points)

a. Patterns: the rule that repeats.

b. Product: the answer to a multiplication equation

c. Variables: unknown number

d. Factor: 2 or more numbers being multiplied.

e. Distributive Property: break apart to make two equations out of one equation.

f. Associative Property: grouping factors to multiply.

g. Commutative Property: change the order of the factors and the product stays the same.