

3rd Grade Common Core

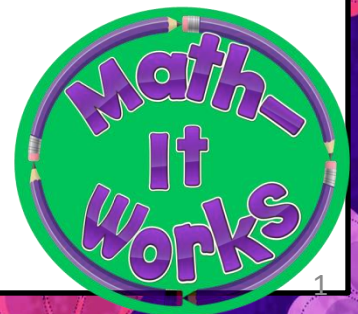
3.OA.5

One of the most
important
foundational
concepts of
multiplication!

The Distributive Property of Multiplication

Written by: Math – It Works

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About This Unit

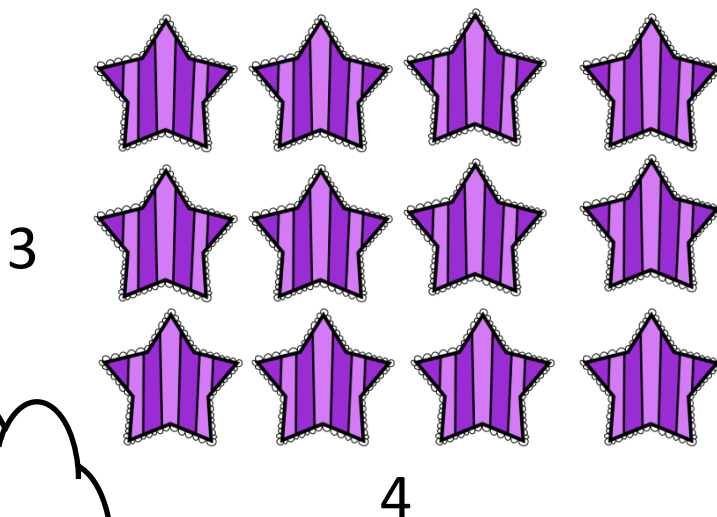
Help your 3rd graders master the concept of the distributive property of multiplication. By understanding the distributive property, students can break down more difficult facts, become adept at mental math and easily multiply two-digit by one-digit problems without using the standard algorithm.

Starting with **Splitting Up Arrays**, students use a model to understand the basics about the distributive property.

Students fill in the missing number in **Break it Apart. How Could You Solve It?** has students working with decomposing a two-digit number for an easy way to multiply.

All the Ways and **Match it Up** gives students practice with distributing multiplication. 24 **Match Up Cards** included - great activity for pairs or fast finishers! Answer key is provided.

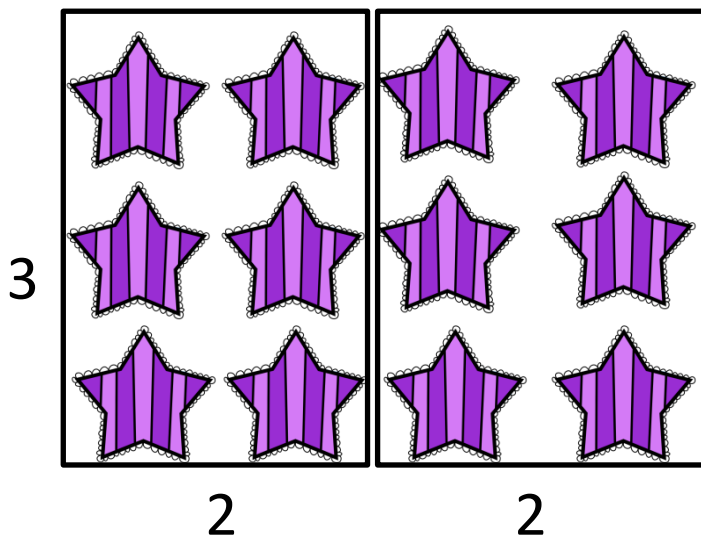
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$$3 \times 4 = 12$$

We know that there are 12 stars in the array because $3 \times 4 = 12$.

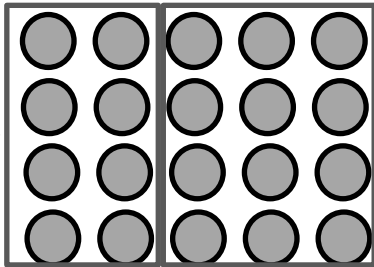
We can also think of it as 3×2 plus another 3×2 .



$$(3 \times 2) + (3 \times 2)$$

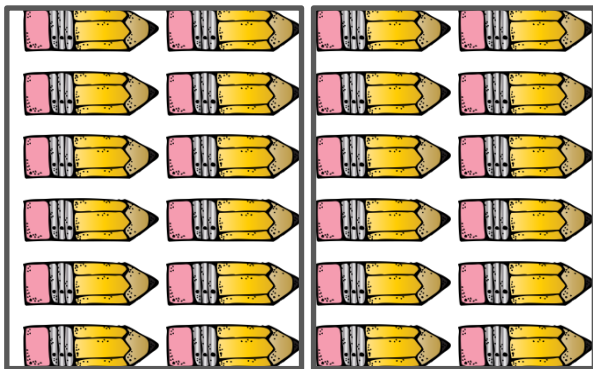
$$6 + 6 = 12$$

For each array below, write the number sentence that shows both groups.

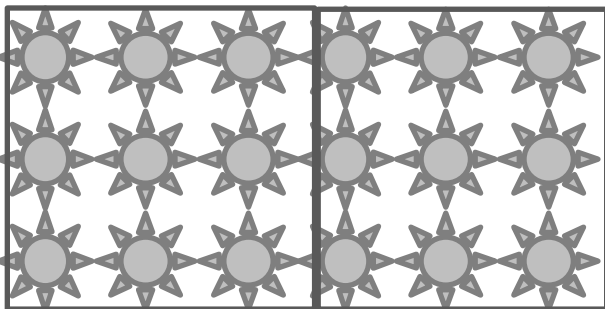


$$(4 \times 2) + (4 \times 3) = 20$$

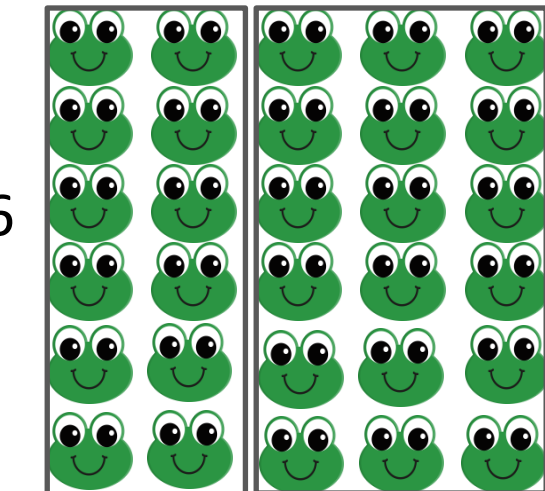
$$4 \times 5 = 20$$



$$(\quad) + (\quad) = \quad$$



$$(\quad) + (\quad) = \quad$$

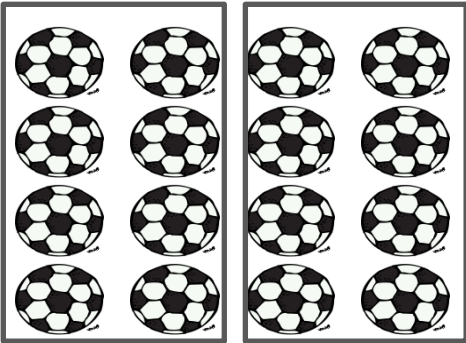


$$(\quad) + (\quad) = \quad$$

More Arrays

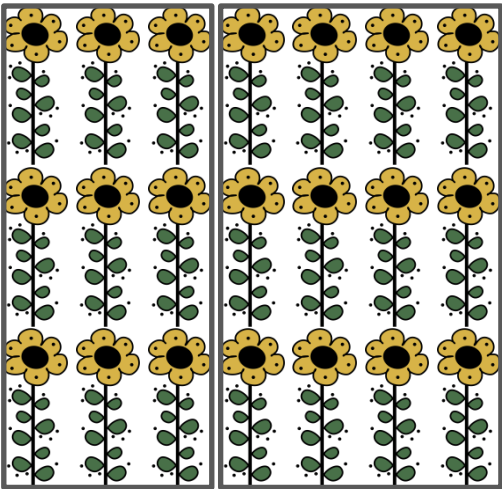
Name _____

4



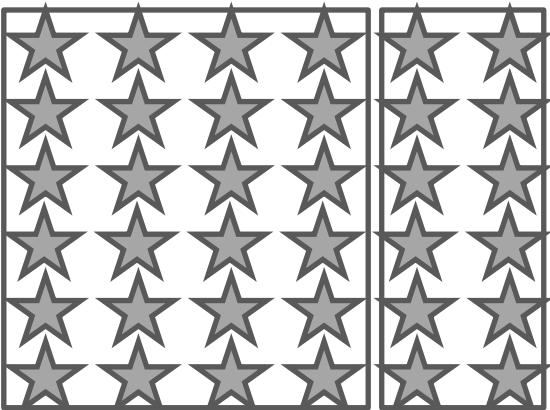
$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$

3



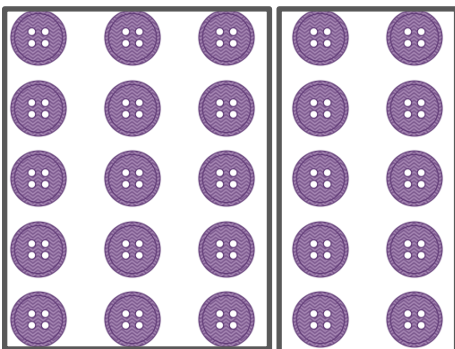
$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$

6



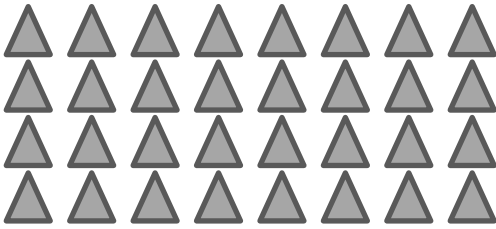
$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$

5

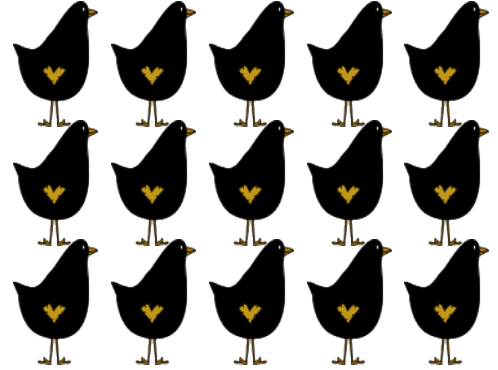


$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$

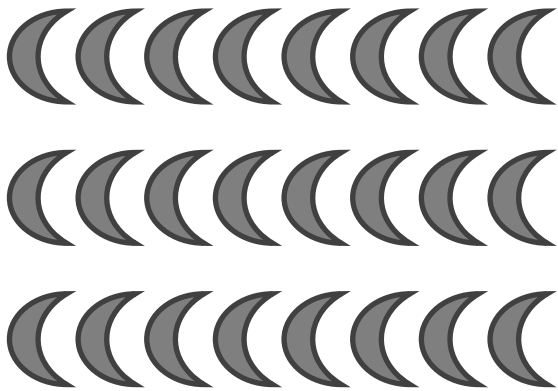
For each array below, split it into two groups and write the number sentence that matches both groups.



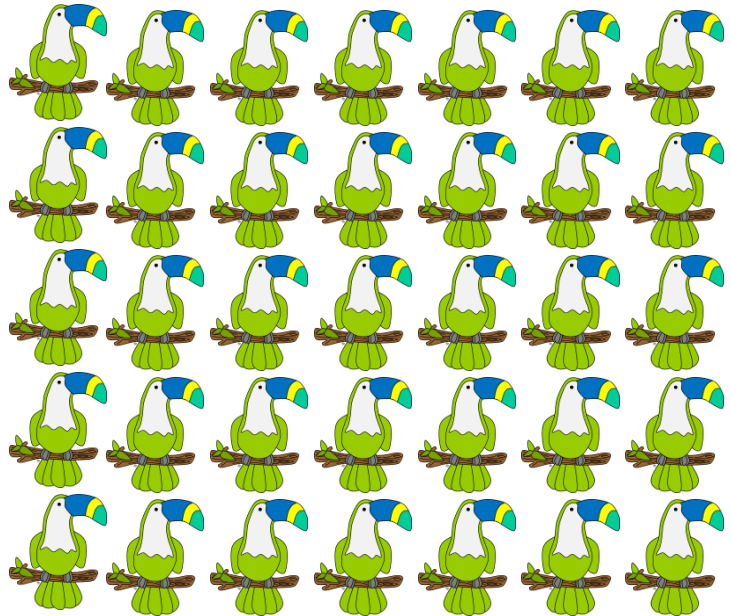
$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$



$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$

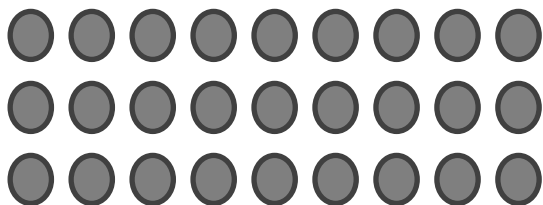


$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$

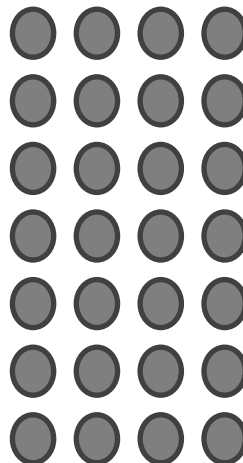


$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$

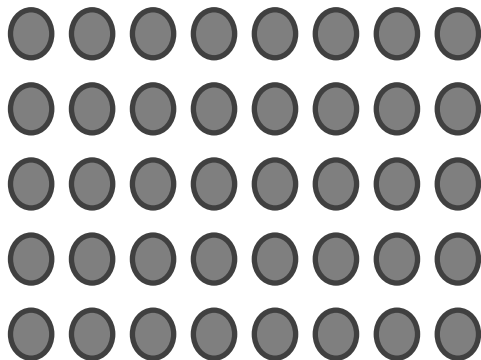
For each array below, split it into two groups and write the number sentence that matches both groups.



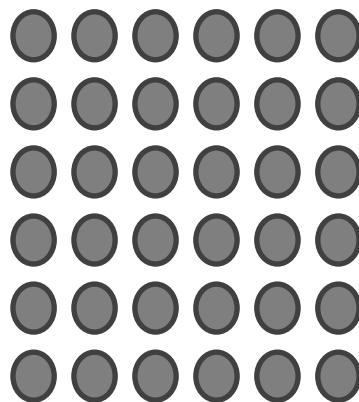
$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$



$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$



$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$

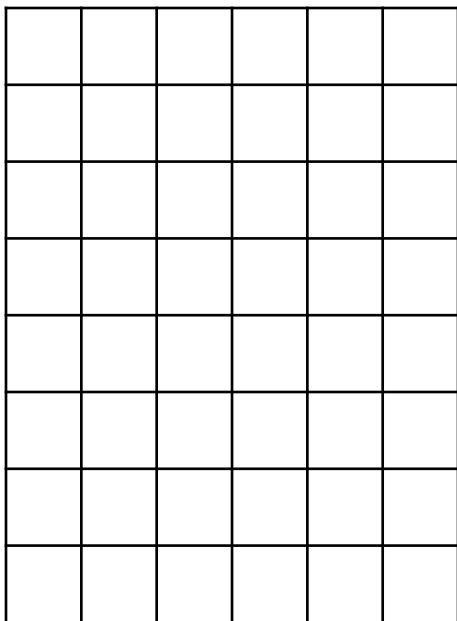


$$(\underline{\quad}) + (\underline{\quad}) = \underline{\quad}$$

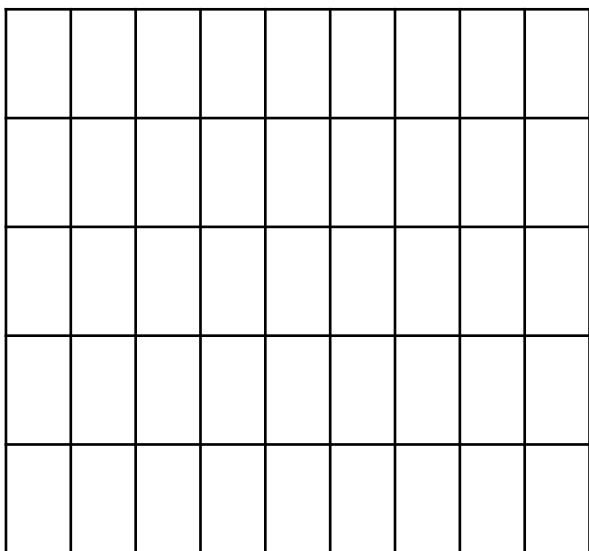
Box Arrays

Name _____

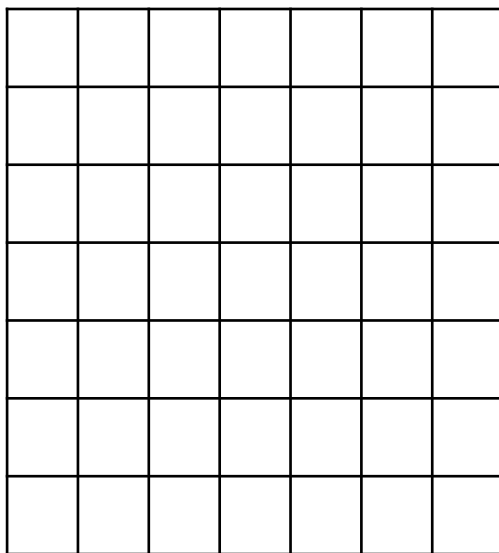
For each array below, split it into two groups and write the number sentence that matches both groups.



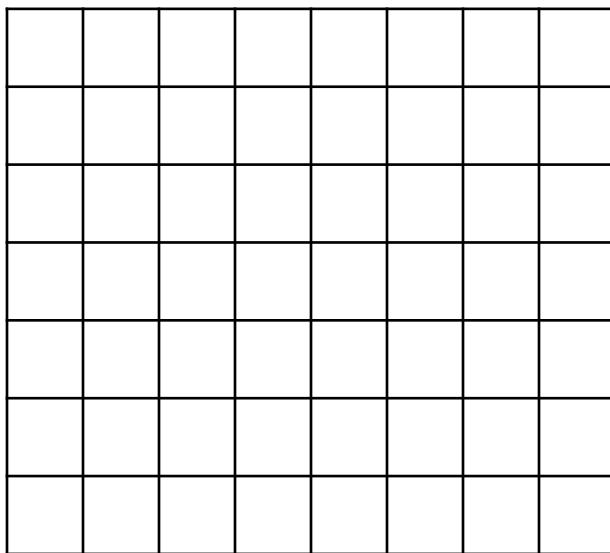
$$(\text{---}) + (\text{---}) = \text{---}$$



$$(\text{---}) + (\text{---}) = \text{---}$$



$$(\text{---}) + (\text{---}) = \text{---}$$



$$(\text{---}) + (\text{---}) = \text{---}$$

Draw the array that matches the number sentences below.



$$(4 \times 2) + (4 \times 4) = 24$$



$$(6 \times 2) + (6 \times 1) = 18$$



$$(5 \times 4) + (5 \times 3) = 35$$

Fill in the missing number and find the product.

$$5 \times 6 = \underline{\quad}$$

$$(5 \times 2) + (5 \times \underline{\quad})$$

$$6 \times 7 = \underline{\quad}$$

$$(5 \times 7) + (\underline{\quad} \times 7)$$

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

$$(4 \times 6) + (\underline{\quad} \times 6)$$

$$9 \times 7 = \underline{\quad}$$

$$(\underline{\quad} \times 7) + (5 \times 7)$$

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

$$(5 \times 3) + (\underline{\quad} \times 3)$$

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

$$(5 \times 6) + (\underline{\quad} \times 6)$$

$$5 \times 5 = \underline{\quad}$$

$$(5 \times 3) + (5 \times \underline{\quad})$$

$$9 \times 8 = \underline{\quad}$$

$$(5 \times 8) + (\underline{\quad} \times 8)$$

$$9 \times 6 = \underline{\quad}$$

$$(\underline{\quad} \times 6) + (6 \times 6)$$

$$9 \times 7 = \underline{\quad}$$

$$(5 \times 7) + (\underline{\quad} \times 7)$$

$$8 \times 4 = \underline{\quad}$$

$$(4 \times 4) + (\underline{\quad} \times 4)$$

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

$$(6 \times \underline{\quad}) + (6 \times 4)$$

Fill in the missing number and find the product.

$$4 \times 6 = \underline{\quad}$$

$$(4 \times 3) + (4 \times \underline{\quad})$$

$$5 \times 7 = \underline{\quad}$$

$$(3 \times 7) + (\underline{\quad} \times 7)$$

$$7 \times 6 = \underline{\quad}$$

$$(4 \times 6) + (\underline{\quad} \times 6)$$

$$9 \times 6 = \underline{\quad}$$

$$(\underline{\quad} \times 6) + (5 \times 6)$$

$$9 \times 4 = \underline{\quad}$$

$$(5 \times 4) + (\underline{\quad} \times 4)$$

$$8 \times 3 = \underline{\quad}$$

$$(5 \times 3) + (\underline{\quad} \times 3)$$

$$6 \times 5 = \underline{\quad}$$

$$(6 \times 3) + (6 \times \underline{\quad})$$

$$9 \times 9 = \underline{\quad}$$

$$(5 \times 9) + (\underline{\quad} \times 9)$$

$$9 \times 5 = \underline{\quad}$$

$$(\underline{\quad} \times 5) + (4 \times 5)$$

$$8 \times 8 = \underline{\quad}$$

$$(5 \times 8) + (\underline{\quad} \times 8)$$

$$7 \times 4 = \underline{\quad}$$

$$(4 \times 4) + (\underline{\quad} \times 4)$$

$$7 \times 7 = \underline{\quad}$$

$$(7 \times \underline{\quad}) + (7 \times 4)$$

Using the Distributive Property for Multiplying Two-Digit Numbers

$$\begin{array}{r} 24 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 20 \\ \times 5 \\ \hline 100 \end{array}$$

$$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$$

We can break apart the 24 into 20 and 4, then multiply both by 5 and add the products together.

$$100 + 20 = 120$$

Always break a two-digit number into a multiple of ten and the additional ones.



How Could You Solve It?

Name _____

Rewrite each expression as 2 separate number sentences.

example

36×4

30×4

6×4

24×6

48×8

19×8

7×15

22×9

28×7

39×5

Separate the two-digit number into tens and ones, then solve for the product.

example

$$\begin{array}{r} 21 \\ \times 5 \\ \hline 105 \end{array}$$

$$\begin{array}{r} 20 \\ \times 5 \\ \hline 100 \end{array} \quad \begin{array}{r} 1 \\ \times 5 \\ \hline 5 \end{array}$$

$100 + 5 = 105$

$$\begin{array}{r} 42 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 28 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 45 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 25 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 51 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 67 \\ \times 3 \\ \hline \end{array}$$

More Practice

Name _____

Separate the two-digit number into tens and ones, then solve for the product.

$$\begin{array}{r} 26 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 61 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 38 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 57 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 29 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 43 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 48 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ \times 7 \\ \hline \end{array}$$

Put a **check** next to all the number sentences that will give you the correct product.
Circle the one you would use to help you find the answer.

7 x 4

$(6 \times 4) + (1 \times 4)$ _____

$(3 \times 4) + (4 \times 4)$ _____

$(5 \times 4) + (2 \times 4)$ _____

12 x 7

$(8 \times 7) + (5 \times 7)$ _____

$(6 \times 7) + (6 \times 7)$ _____

$(3 \times 7) + (8 \times 7)$ _____

9 x 6

$(3 \times 6) + (6 \times 6)$ _____

$(5 \times 6) + (4 \times 6)$ _____

$(8 \times 6) + (2 \times 6)$ _____

11 x 9

$(5 \times 9) + (6 \times 9)$ _____

$(10 \times 9) + (1 \times 9)$ _____

$(8 \times 9) + (3 \times 9)$ _____

8 x 5

$(5 \times 5) + (3 \times 5)$ _____

$(6 \times 5) + (4 \times 5)$ _____

$(2 \times 5) + (6 \times 5)$ _____

25 x 7

$(25 \times 3) + (25 \times 4)$ _____

$(20 \times 7) + (5 \times 7)$ _____

$(2 \times 7) + (5 \times 7)$ _____

10 x 12

$(10 \times 6) + (10 \times 6)$ _____

$(10 \times 2) + (10 \times 10)$ _____

$(10 \times 5) + (10 \times 5)$ _____

18 x 9

$(8 \times 9) + (9 \times 9)$ _____

$(10 \times 9) + (8 \times 9)$ _____

$(8 \times 9) + (8 \times 9)$ _____

16 x 8

$(10 \times 8) + (8 \times 8)$ _____

$(8 \times 8) + (8 \times 8)$ _____

$(10 \times 5) + (10 \times 5)$ _____

40 x 8

$(20 \times 8) + (20 \times 8)$ _____

$(4 \times 8) + (10 \times 8)$ _____

$(10 \times 8) + (30 \times 8)$ _____

Match It Up

Name _____

Match the expression in Column A to a number sentence in both Column B and C. Use a different color for each trio.

A

36×5
9×7
11×10
13×9
27×4
6×18
42×6
8×63

B

$(20 \times 4) + (7 \times 4)$
$(8 \times 30) + (8 \times 30) + (8 \times 3)$
$(30 \times 5) + (6 \times 5)$
$(10 \times 9) + (3 \times 9)$
$(4 \times 7) + (5 \times 7)$
$(10 \times 10) + (1 \times 10)$
$(20 \times 6) + (20 \times 6) + (2 \times 6)$
$(6 \times 9) + (6 \times 9)$

C

$28 + 35 = 63$
$150 + 30 = 180$
$120 + 120 + 12 = 252$
$100 + 10 = 110$
$80 + 28 = 108$
$54 + 54 = 108$
$240 + 240 + 24 = 504$
$90 + 27 = 117$

$$8 \times 9$$

$$5 \times 7$$

$$12 \times 9$$

$$13 \times 7$$

$$22 \times 8$$

$$47 \times 6$$

$$12 \times 5$$

$$17 \times 7$$

$$18 \times 8$$

$$14 \times 9$$

$$25 \times 7$$

$$9 \times 8$$

$$(8 \times 4) + (8 \times 5)$$

$$(5 \times 3) + (5 \times 4)$$

$$(6 \times 9) + (6 \times 9)$$

$$(10 \times 7) + (3 \times 7)$$

$$(10 \times 8) + (10 \times 8) + (2 \times 8)$$

$$(40 \times 6) + (7 \times 6)$$

$$(6 \times 5) + (6 \times 5)$$

$$(10 \times 7) + (7 \times 7)$$

$$(9 \times 8) + (9 \times 8)$$

$$(7 \times 9) + (7 \times 9)$$

$$(10 \times 7) + (10 \times 7) + (5 \times 7)$$

$$(8 \times 8) + (1 \times 8)$$

$$5 \times 13$$

$$7 \times 14$$

$$12 \times 7$$

$$15 \times 5$$

$$26 \times 7$$

$$42 \times 8$$

$$11 \times 7$$

$$18 \times 4$$

$$21 \times 9$$

$$14 \times 5$$

$$25 \times 6$$

$$9 \times 9$$

$$(5 \times 7) + (5 \times 6)$$

$$(7 \times 7) + (7 \times 7)$$

$$(10 \times 7) + (2 \times 7)$$

$$(10 \times 5) + (5 \times 5)$$

$$(10 \times 7) + (10 \times 7) + (6 \times 7)$$

$$(20 \times 8) + (20 \times 8) + (2 \times 8)$$

$$(5 \times 7) + (6 \times 7)$$

$$(9 \times 4) + (9 \times 4)$$

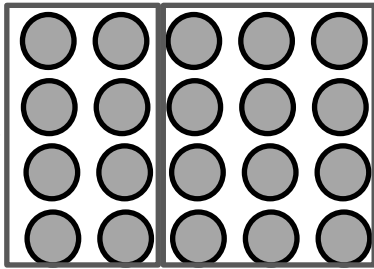
$$(20 \times 9) + (1 \times 9)$$

$$(7 \times 5) + (7 \times 5)$$

$$(20 \times 6) + (5 \times 6)$$

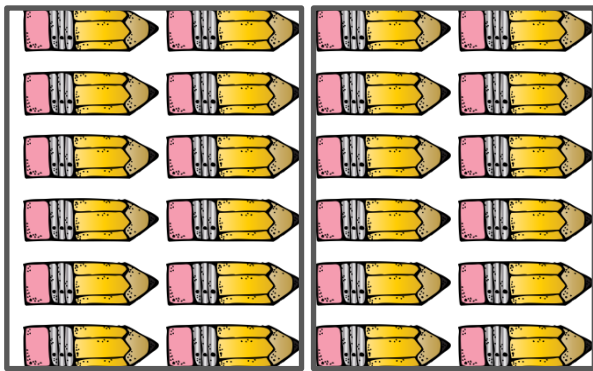
$$(3 \times 9) + (6 \times 9)$$

For each array below, write the number sentence that shows both groups.



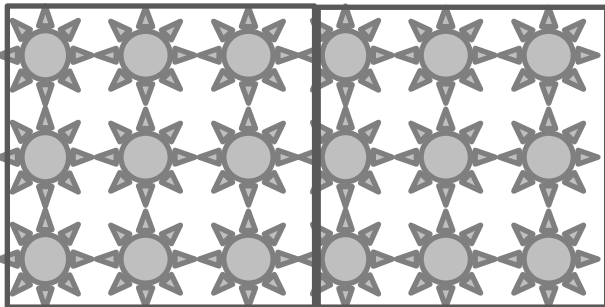
$$(4 \times 2) + (4 \times 3) = 20$$

$$4 \times 5 = 20$$



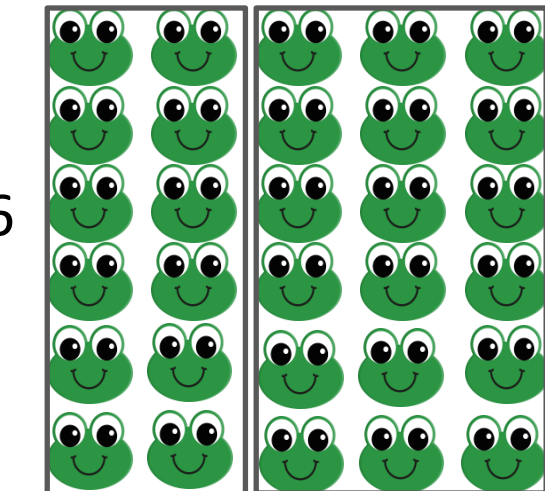
$$(6 \times 2) + (6 \times 2) = 24$$

$$6 \times 4 = 24$$



$$(3 \times 3) + (3 \times 3) = 18$$

$$3 \times 6 = 18$$



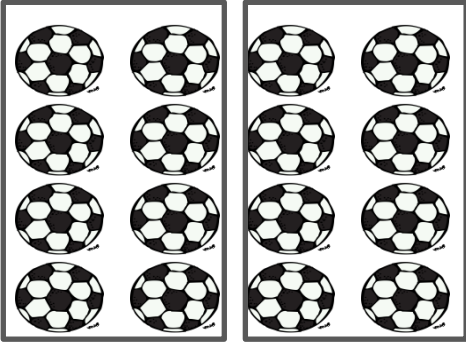
$$(6 \times 2) + (6 \times 3) = 30$$

$$6 \times 5 = 30$$

More Arrays

ANSWER KEY

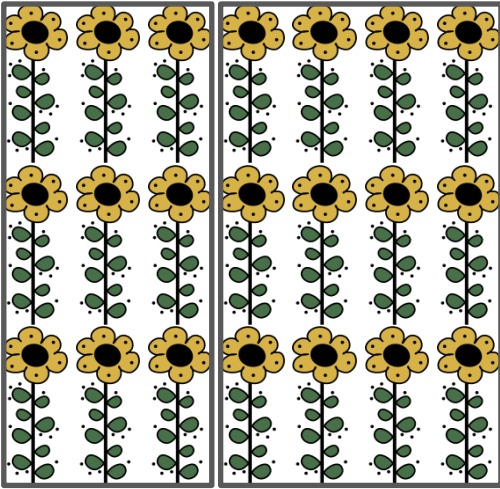
4



$$\left(\underline{4 \times 2} \right) + \left(\underline{4 \times 2} \right) = \underline{16}$$

$$\underline{4 \times 4 = 16}$$

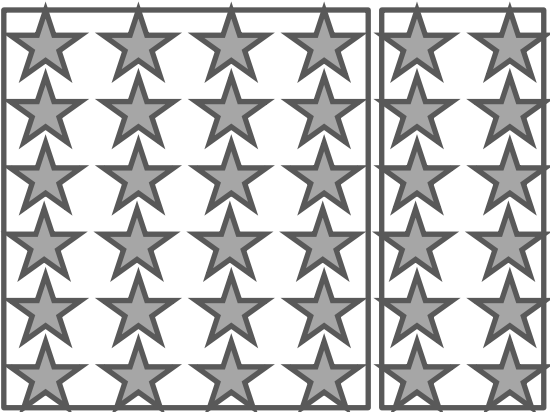
3



$$\left(\underline{3 \times 3} \right) + \left(\underline{3 \times 4} \right) = \underline{21}$$

$$\underline{3 \times 7 = 21}$$

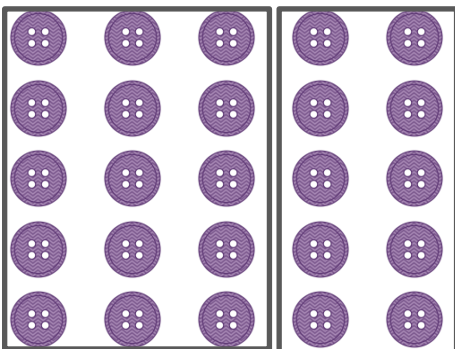
6



$$\left(\underline{6 \times 4} \right) + \left(\underline{6 \times 2} \right) = \underline{36}$$

$$\underline{6 \times 6 = 36}$$

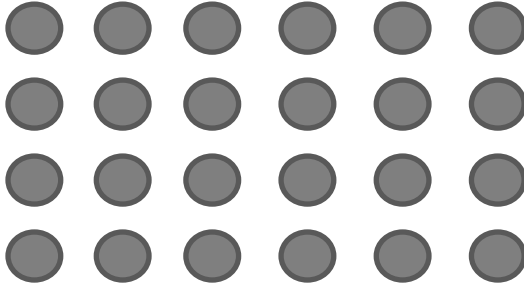
5



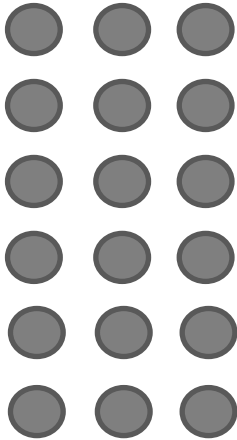
$$\left(\underline{5 \times 3} \right) + \left(\underline{5 \times 2} \right) = \underline{25}$$

$$\underline{5 \times 5 = 25}$$

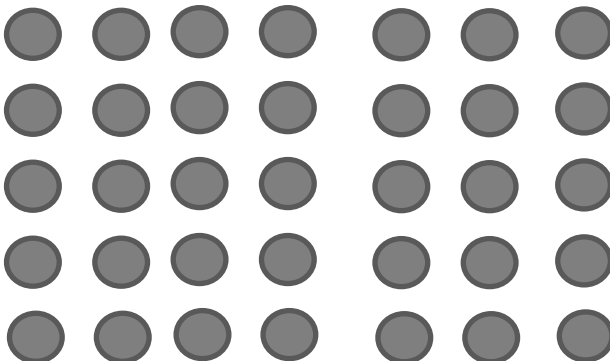
Draw the array that matches the number sentences below.



$$(4 \times 2) + (4 \times 4) = 24$$



$$(6 \times 2) + (6 \times 1) = 18$$



$$(5 \times 4) + (5 \times 3) = 35$$

Fill in the missing number and find the product.

$$5 \times 6 = \underline{30}$$

$$(5 \times 2) + (5 \times \underline{4})$$

$$6 \times 7 = \underline{42}$$

$$(5 \times 7) + (\underline{1} \times 7)$$

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

$$(5 \times 6) + (\underline{3} \times 6)$$

$$9 \times 7 = \underline{63}$$

$$(\underline{4} \times 7) + (5 \times 7)$$

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

$$(5 \times 3) + (\underline{4} \times 3)$$

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

$$(5 \times 6) + (\underline{3} \times 6)$$

$$5 \times 5 = \underline{25}$$

$$(5 \times 3) + (5 \times \underline{2})$$

$$9 \times 8 = \underline{72}$$

$$(5 \times 8) + (\underline{4} \times 8)$$

$$9 \times 6 = \underline{54}$$

$$(\underline{3} \times 6) + (6 \times 6)$$

$$9 \times 7 = \underline{63}$$

$$(5 \times 7) + (\underline{4} \times 7)$$

$$8 \times 4 = \underline{32}$$

$$(4 \times 4) + (\underline{4} \times 4)$$

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

$$(6 \times \underline{5}) + (6 \times 3)$$

Fill in the missing number and find the product.

$$4 \times 6 = \underline{24}$$

$$(4 \times 3) + (4 \times \underline{3})$$

$$5 \times 7 = \underline{35}$$

$$(3 \times 7) + (\underline{2} \times 7)$$

$$7 \times 6 = \underline{42}$$

$$(4 \times 6) + (\underline{3} \times 6)$$

$$9 \times 6 = \underline{54}$$

$$(\underline{4} \times 6) + (5 \times 6)$$

$$9 \times 4 = \underline{36}$$

$$(5 \times 4) + (\underline{4} \times 4)$$

$$8 \times 3 = \underline{24}$$

$$(5 \times 3) + (\underline{3} \times 3)$$

$$6 \times 5 = \underline{30}$$

$$(6 \times 3) + (6 \times \underline{2})$$

$$9 \times 9 = \underline{81}$$

$$(5 \times 9) + (\underline{4} \times 9)$$

$$9 \times 5 = \underline{45}$$

$$(\underline{5} \times 5) + (4 \times 5)$$

$$8 \times 8 = \underline{64}$$

$$(5 \times 8) + (\underline{3} \times 8)$$

$$7 \times 4 = \underline{28}$$

$$(4 \times 4) + (\underline{3} \times 4)$$

$$7 \times 7 = \underline{49}$$

$$(7 \times \underline{3}) + (7 \times 4)$$

Rewrite each expression as 2 separate number sentences.

example

36×4

30×4

6×4

24×6

20×6

4×6

48×8

40×8

8×8

19×8

10×8

9×8

7×15

7×10

7×5

22×9

20×9

2×9

28×7

20×7

8×7

39×5

30×5

9×5

Separate the two-digit number into tens and ones, then solve for the product.

example

$$\begin{array}{r} 21 \\ \times 5 \\ \hline 105 \end{array}$$

$$\begin{array}{r} 20 \quad 1 \\ \times 5 \quad \times 5 \\ \hline 100 \quad 5 \\ 100 + 5 = 105 \end{array}$$

$$\begin{array}{r} 42 \\ \times 5 \\ \hline 210 \end{array}$$

$$\begin{array}{r} 28 \\ \times 4 \\ \hline 112 \end{array}$$

$$\begin{array}{r} 45 \\ \times 3 \\ \hline 135 \end{array}$$

$$\begin{array}{r} 25 \\ \times 6 \\ \hline 150 \end{array}$$

$$\begin{array}{r} 51 \\ \times 6 \\ \hline 306 \end{array}$$

$$\begin{array}{r} 32 \\ \times 3 \\ \hline 96 \end{array}$$

$$\begin{array}{r} 67 \\ \times 3 \\ \hline 201 \end{array}$$

Separate the two-digit number into tens and ones, then solve for the product.

$$\begin{array}{r} 26 \\ \times 7 \\ \hline 182 \end{array}$$

$$\begin{array}{r} 61 \\ \times 6 \\ \hline 366 \end{array}$$

$$\begin{array}{r} 38 \\ \times 5 \\ \hline 190 \end{array}$$

$$\begin{array}{r} 57 \\ \times 8 \\ \hline 456 \end{array}$$

$$\begin{array}{r} 29 \\ \times 6 \\ \hline 174 \end{array}$$

$$\begin{array}{r} 43 \\ \times 9 \\ \hline 387 \end{array}$$

$$\begin{array}{r} 48 \\ \times 4 \\ \hline 192 \end{array}$$

$$\begin{array}{r} 54 \\ \times 7 \\ \hline 378 \end{array}$$

Put a **check** next to all the number sentences that will give you the correct product.

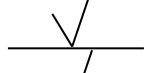
Circle the one you would use to help you find the answer.

7 x 4

$(6 \times 4) + (1 \times 4)$



$(3 \times 4) + (4 \times 4)$



$(5 \times 4) + (2 \times 4)$

**12 x 7**

$(8 \times 7) + (5 \times 7)$



$(6 \times 7) + (6 \times 7)$



$(3 \times 7) + (8 \times 7)$

**9 x 6**

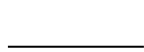
$(3 \times 6) + (6 \times 6)$



$(5 \times 6) + (4 \times 6)$



$(8 \times 6) + (2 \times 6)$

**11 x 9**

$(5 \times 9) + (6 \times 9)$



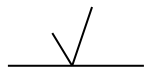
$(10 \times 9) + (1 \times 9)$



$(8 \times 9) + (3 \times 9)$

**8 x 5**

$(5 \times 5) + (3 \times 5)$



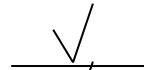
$(6 \times 5) + (4 \times 5)$



$(2 \times 5) + (6 \times 5)$

**25 x 7**

$(25 \times 3) + (25 \times 4)$



$(20 \times 7) + (5 \times 7)$



$(2 \times 7) + (5 \times 7)$

**10 x 12**

$(10 \times 6) + (10 \times 6)$



$(10 \times 2) + (10 \times 10)$



$(10 \times 5) + (10 \times 5)$

**18 x 9**

$(8 \times 9) + (9 \times 9)$



$(10 \times 9) + (8 \times 9)$



$(8 \times 9) + (8 \times 9)$

**16 x 8**

$(10 \times 8) + (8 \times 8)$



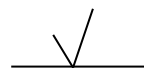
$(8 \times 8) + (8 \times 8)$



$(10 \times 5) + (10 \times 5)$

**40 x 8**

$(20 \times 8) + (20 \times 8)$



$(4 \times 8) + (10 \times 8)$



$(10 \times 8) + (30 \times 8)$



Match It Up

ANSWER KEY

Match the expression in Column A to a number sentence in both Column B and C. Use a different color for each trio.

A

36×5
9×7
11×10
13×9
27×4
6×18
42×6
8×63

B

$(30 \times 5) + (6 \times 5)$
$(4 \times 7) + (5 \times 7)$
$(10 \times 10) + (1 \times 10)$
$(10 \times 9) + (3 \times 9)$
$(20 \times 4) + (7 \times 4)$
$(6 \times 9) + (6 \times 9)$
$(20 \times 6) + (20 \times 6) + (2 \times 6)$
$(8 \times 30) + (8 \times 30) + (8 \times 3)$

C

$150 + 30 = 180$
$28 + 35 = 63$
$100 + 10 = 110$
$90 + 27 = 117$
$80 + 28 = 108$
$54 + 54 = 108$
$120 + 120 + 12 = 252$
$240 + 240 + 24 = 504$

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