

Split Numbers to Multiply

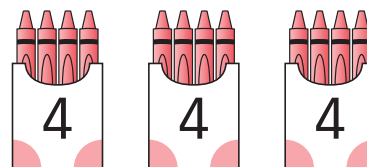
Name: _____

Prerequisite: Show Multiplication as Equal Groups

Study the example problem showing a multiplication sentence for a picture of equal groups. Then solve problems 1–10.

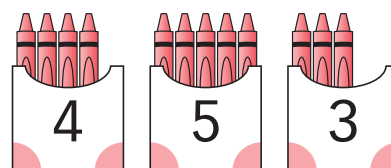
Example

Elmo has 3 boxes of crayons.
Each box has 4 crayons.
Elmo's boxes show equal groups.
He can write a multiplication sentence to find the total.



$$3 \times 4 = 12 \text{ crayons}$$

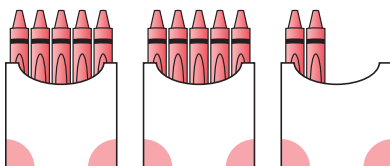
Shelly has 3 boxes of crayons.
The boxes have 4, 5, and 3 crayons.
Shelly's boxes do not show equal groups.
She cannot write a multiplication sentence to find the total. She has to add.



$$4 + 5 + 3 = 12 \text{ crayons}$$

Use the picture below to answer problems 1–3.

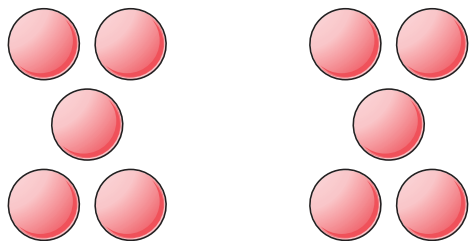
Angie's crayons



- 1 How many boxes of crayons does Angie have? _____
- 2 How many crayons are in each box? _____
- 3 How many crayons does Angie have altogether? Can you write a multiplication sentence to find the total? Explain.

Solve.

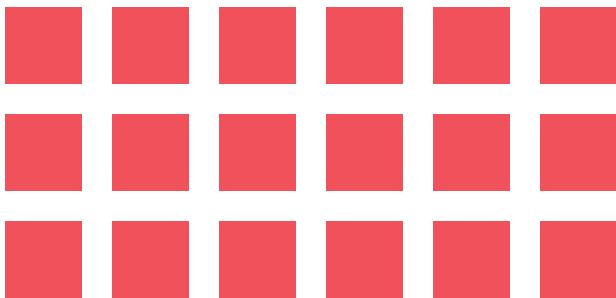
Use the picture below to answer problems 4–6.



- 4** How many groups are there? _____
- 5** How many balls are there in each group? _____
- 6** Write a multiplication sentence to show how many balls there are altogether.

_____ \times _____ = _____

Use the picture below to answer problems 7–9.



- 7** How many rows are in this array? _____
- 8** How many squares are in each row? _____
- 9** Write a multiplication sentence to show how many squares there are altogether.

_____ \times _____ = _____

- 10** Draw an array for the multiplication sentence
 $2 \times 4 = 8$.

Break Apart Numbers to Multiply

Study the example problem showing how to break apart a number to multiply. Then solve problems 1–7.

Example

Owen has 8 bags of plums. There are 3 plums in each bag. How many plums does Owen have altogether?

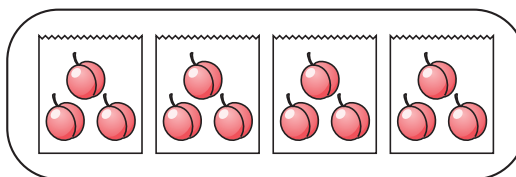
$$8 \times 3 = ?$$

You might break apart the 8 into 4 and 4.

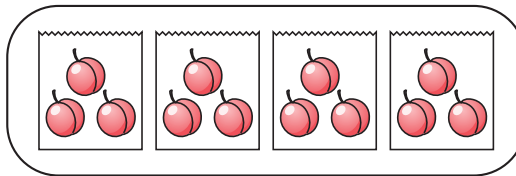
Multiply each part by 3.

Then, add the two products.
 $12 + 12 = 24$.

$$\text{So } 8 \times 3 = 24.$$



$$4 \times 3 = 12$$



$$4 \times 3 = 12$$

- 1** How many rows and columns are in the array? Fill in the blanks.

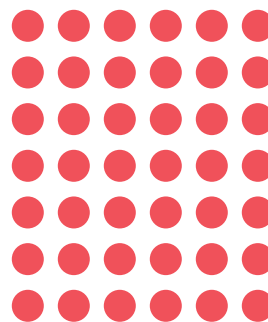
_____ rows and _____ columns.

- 2** Circle rows to break apart the array into two parts.

- 3** Write multiplication sentences to show the total for each part of the array.

_____ \times _____ = _____ _____ \times _____ = _____

- 4** How can you use your answer to problem 3 to find the product of 7×6 ? Explain.



Solve.

- 5 Draw a line to the pair of multiplication sentences that can be used to solve each problem.

$8 \times 4 = ?$

$5 \times 7 = 35$

$3 \times 7 = 21$

$3 \times 9 = ?$

$6 \times 5 = 30$

$6 \times 2 = 12$

$6 \times 7 = ?$

$3 \times 5 = 15$

$3 \times 4 = 12$

$8 \times 7 = ?$

$5 \times 8 = 40$

$4 \times 8 = 32$

$9 \times 8 = ?$

$5 \times 4 = 20$

$3 \times 4 = 12$

- 6 Draw an array to show 6×4 .

- 7 Circle rows to break the array in two parts. Show how to use the parts to find 6×4 .

Use Grouping to Multiply

Study the example showing how to break apart a factor to multiply. Then solve problems 1–7.

Example

Grace gives grapes to 6 friends. She gives each friend 7 grapes. How many grapes does Grace share altogether?

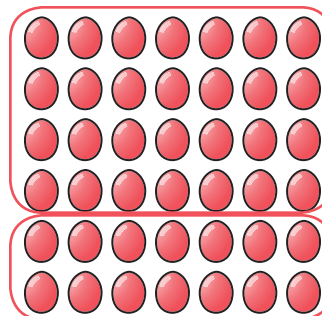
$$6 \times 7 = ?$$

You might break apart the 6 into $4 + 2$.

Multiply each part by 7. $(4 \times 7) + (2 \times 7) = ?$

Then, add the two products. $28 + 14 = 42$.

So $6 \times 7 = 42$.



$$4 \times 7 = 28$$

$$2 \times 7 = 14$$

Tony has 8 boxes of toy cars. Each box has 6 cars in it.

- 1** Write a multiplication sentence for this story.

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = ?$$

- 2** To help you find 8×6 , you might break apart the 8 into 5 and 3. Write the two multiplication problems this would give you.

$$\underline{\hspace{2cm}} \times 6 = \underline{\hspace{2cm}}$$

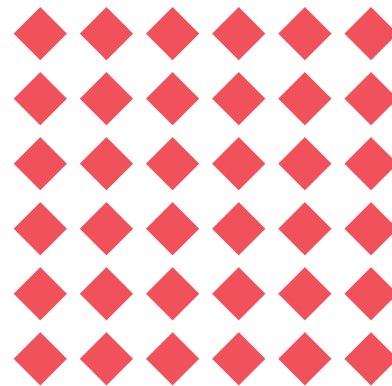
$$\underline{\hspace{2cm}} \times 6 = \underline{\hspace{2cm}}$$

- 3** Add the two products in problem 2. How many toy cars does Tony have?

Solve.

- 4 Ron drew this array. What multiplication sentence can he solve using this array?

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = ?$$



- 5 Circle rows or columns to break the array into 2 parts. Then fill in the blanks to show how to use the parts to find the answer to problem 4.

$$6 \times 6 = (\underline{\hspace{2cm}} \times 6) + (\underline{\hspace{2cm}} \times 6).$$

$$\text{So, } 6 \times 6 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}.$$

$$\text{So, } 6 \times 6 = \underline{\hspace{2cm}}.$$

- 6 Write the multiplication sentence you solved in problems 4 and 5. How can you use that answer to find the product of 6×9 ? Explain.

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

- 7 Draw a line from each box to the multiplication fact it could help you find.

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

$$(2 \times 8) + (5 \times 8)$$

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

$$7 \times 7 = 49$$

$$8 \times 5 = 40$$

$$6 \times 8 = 48$$

$$7 \times 8 = 56$$

Break Apart Numbers to Multiply**Solve the problems.**

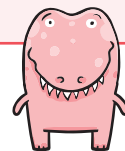
- 1** Finn has 7 bags of marbles. Each bag has 3 marbles. Show one way to break apart the 7 to multiply. Then find the total number of marbles.

I think there is more than one way to break apart the bags.



- 2** Tawny breaks apart 9 to solve 9×5 . Show one way Tawny can do this. Then solve the problem.

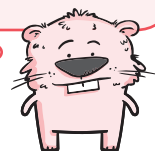
What are different ways to break apart 9?



- 3** Which of these are ways you can break apart a factor to solve 6×3 ? Circle all the correct answers.

- A** $3 \times 3 = 9$ and $3 \times 3 = 9$
- B** $4 \times 3 = 12$ and $2 \times 3 = 6$
- C** $6 \times 2 = 12$ and $4 \times 3 = 12$
- D** $6 \times 1 = 6$ and $6 \times 2 = 12$

You can break apart either factor.



Solve.

- 4 Sandy wants to multiply 7×5 . She breaks apart the 7 into 4 and 3. What is Sandy's next step? Circle the letter of the correct answer.

- A $7 \times 4 = 28$ and $7 \times 3 = 21$
B $7 \times 5 = 35$ and $5 \times 4 = 20$
C $4 \times 5 = 20$ and $3 \times 5 = 15$
D $4 \times 3 = 12$ and $7 \times 5 = 35$

Mitch chose **A** as the correct answer. How did he get that answer?

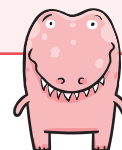
Look back at the first multiplication problem to check your answer.



- 5 Tia solved 9×7 by breaking apart 7 into 5 and 2. Fill in the blanks to show how she did it.

$$\begin{array}{ccc} & 9 \times 7 & \\ & \swarrow \quad \searrow & \\ 9 \times 5 & & 9 \times 2 \\ \downarrow & & \downarrow \\ 45 & + & \underline{\quad\quad} = \underline{\quad\quad} \end{array}$$

What do the red arrows show you?



- 6 Look at problem 5. Show a different way to break apart factors to solve the problem.

Can you break apart 7 in a different way? Can you break apart 9?

