

## What is decomposing then distributing?

To recall, the distributive property of multiplication is a strategy to **break down a big problem into smaller solutions** in order to derive the answer. The distributive property of multiplication states that **one number, A, multiplied to 2 numbers with a sum of a bigger number, B, will have the same answer to the product of A and B**. The first step before distributing a multiplier is decomposing the multiplicand into two or more smaller numbers. Decomposing means having smaller numbers that will have the sum of the decomposed number. **Once the multiplicand is decomposed into two smaller values, the multiplier is multiplied to the two addends respectively.**

That means, decomposing is actually the step before applying the distributive property. Decomposing produces **two smaller numbers to easily be multiplied by the same multiplier**.

For example,  $7 \times 2$ .

We know that 7 is a big number that can be decomposed into two smaller numbers like 2 and 5.

Now that we have two smaller values, we can distribute the multiplier 2 to the two values:

$$7 \times 2 = (2 + 5) \times 2 = (2 \times 2) + (5 \times 2) = 4 + 10 = 14$$

**Decomposing by Distributing**

For example:

$$7 \times 2$$

**Number to be decomposed**                      **Multiplier to be distributed**

**7 is the bigger number to be decomposed**

Think of two addends that add up to 7:

$$(1 + 6), (2 + 5), (3 + 4)$$

Once you have chosen a pair of addends, that means you decomposed 7 into those smaller values:

Here, we choose the values 2 and 5 as the decomposed values.

Now, distribute the multiplier 2 to the decomposed values:

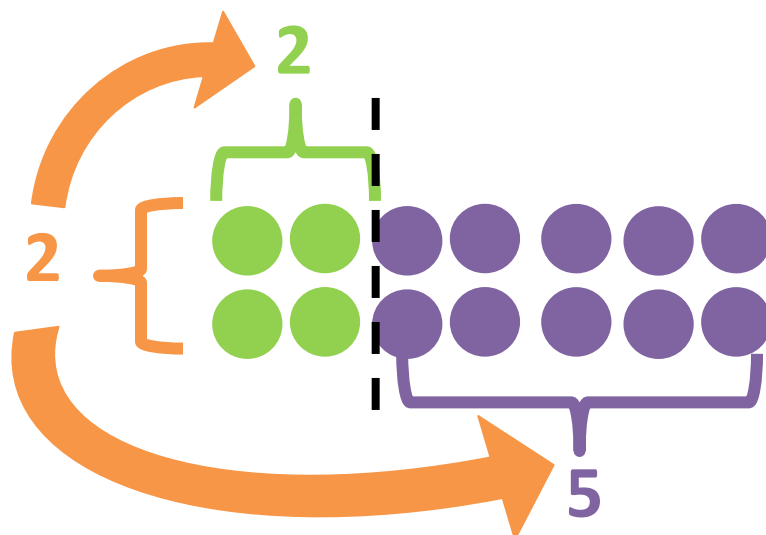
This means that we multiply 2 to 2 and to 5 respectively.

$$2 \times 2 = 4$$

$$2 \times 5 = 10$$

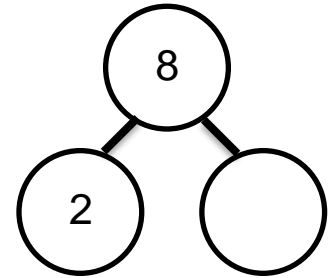
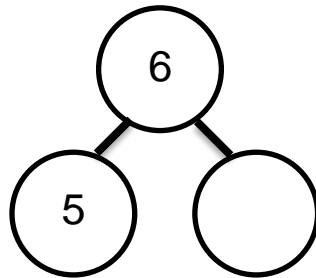
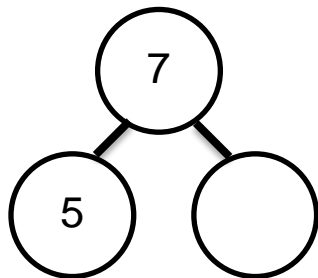
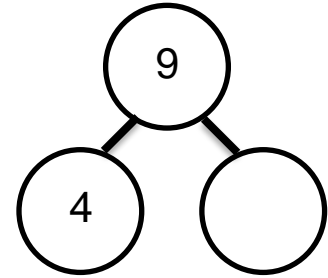
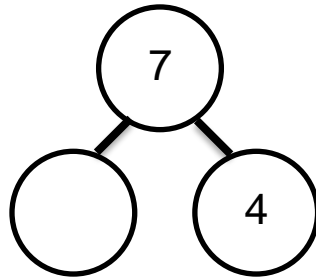
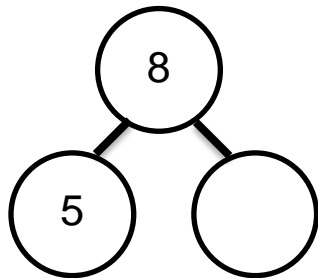
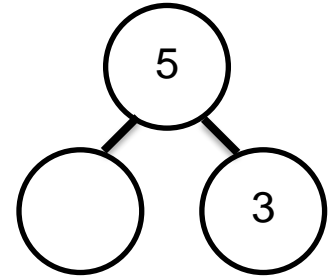
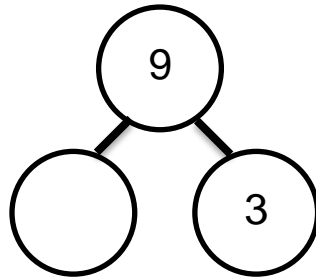
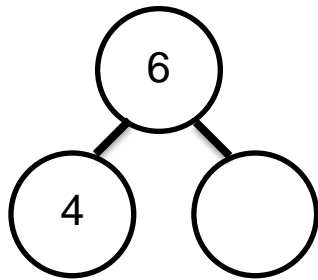
Now that we know the products of the two small numbers, we add them to get the product of  $7 \times 2$ :

$$4 + 10 = \mathbf{14} = 7 \times 2$$



# Decomposing by Distributing

Complete the number bonds with the appropriate addend.

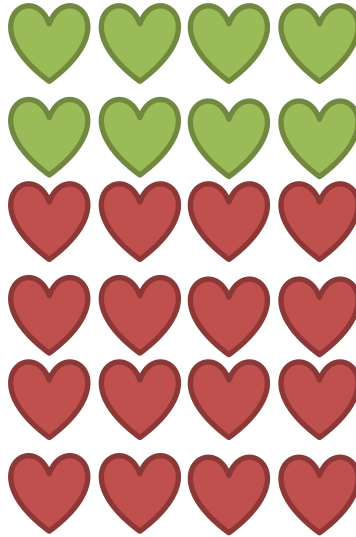


## Time to think

1. What does decomposing mean? How do you decompose a number?
  
2. How do we distribute factors to decomposed units?

# Decomposing by Distributing

Fill in the blanks for the following array models.



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

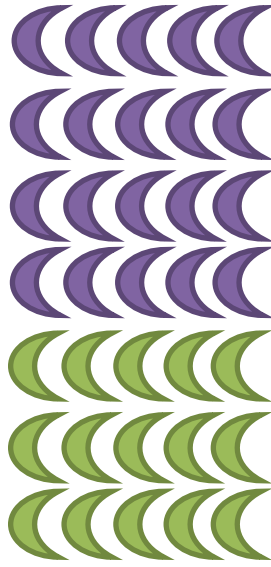


$$\underline{\quad} \times 3 = (\underline{\quad} \times 3) + (\underline{\quad} \times 3) = \underline{\quad} + \underline{\quad} = \underline{\quad}$$

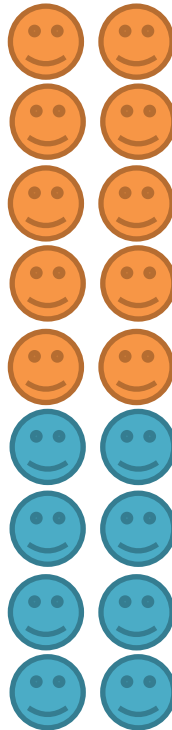
# Decomposing by Distributing

Guided Notes

Math 3



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



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

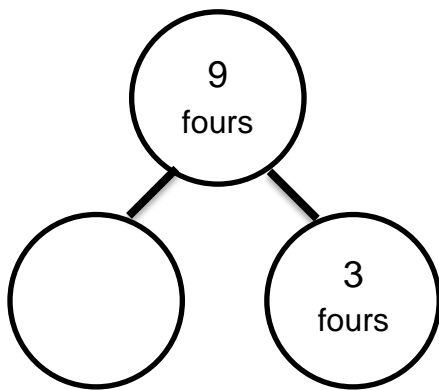
# Decomposing by Distributing

## Time to Think

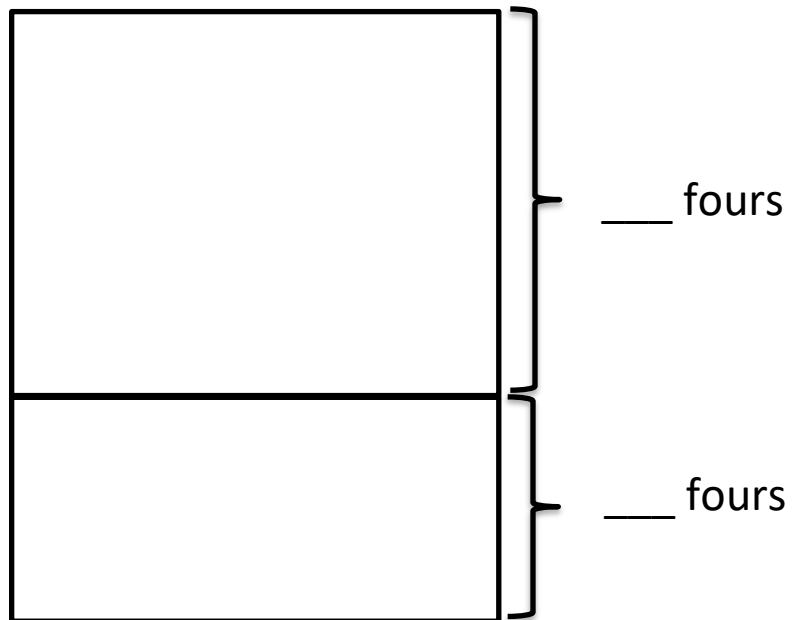
1. List down all the possible decomposed expressions for  $9 \times 5$ :

2. Decompose  $7 \times 4$  wherein the difference of the two smaller numbers is only 1.

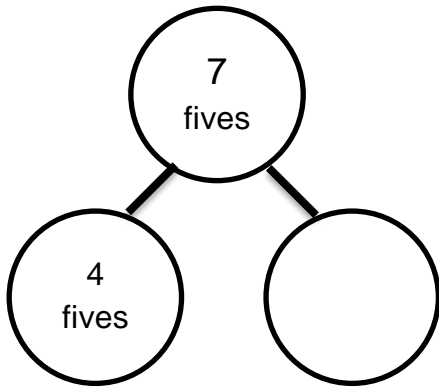
Complete the following number bonds and draw them into their equivalent arrays.



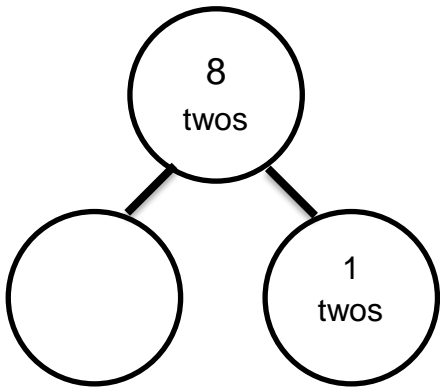
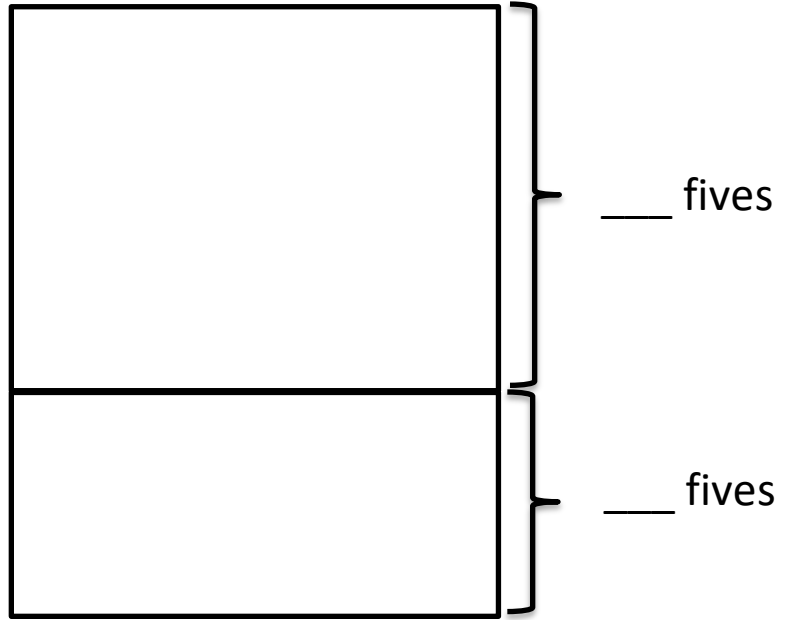
9 fours = \_\_\_\_\_



# Decomposing by Distributing



7 fives = \_\_\_\_\_



8 twos = \_\_\_\_\_

