

MULTIPLICATION

FACT FLUENCY

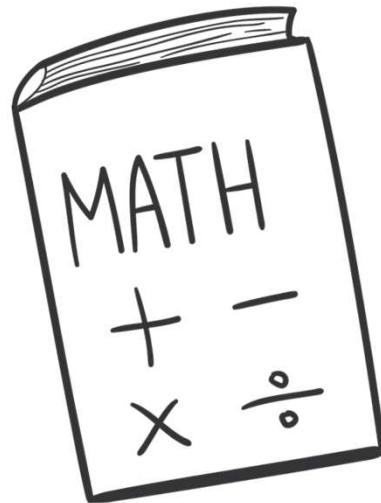
EXPLORE THE 6s TIMES TABLE

LESSON 9

TODAY'S OBJECTIVE

Today we will explore the distributive property as a strategy to solve the 6s times table.

TAKE OUT YOUR **MATH JOURNALS**





WATCH ME FIRST

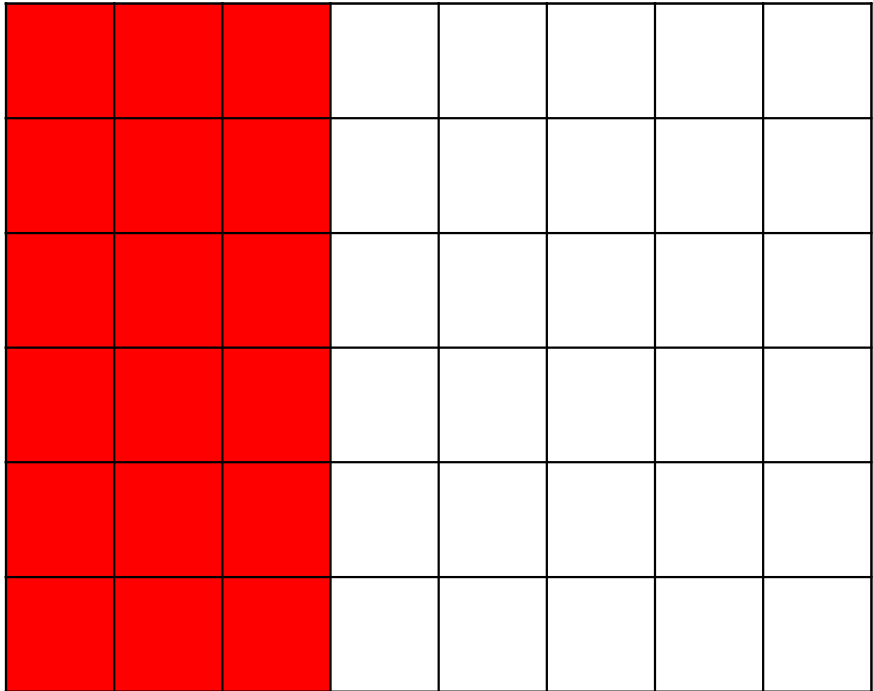


**Today we will use the 5s
and 1s times tables to find the
product of a 6s fact.**





I want to find the product of 6×3 .
I'll start by creating a model.



 WATCH ME FIRST

Here is 5×3 or
5 groups of 3

5×3

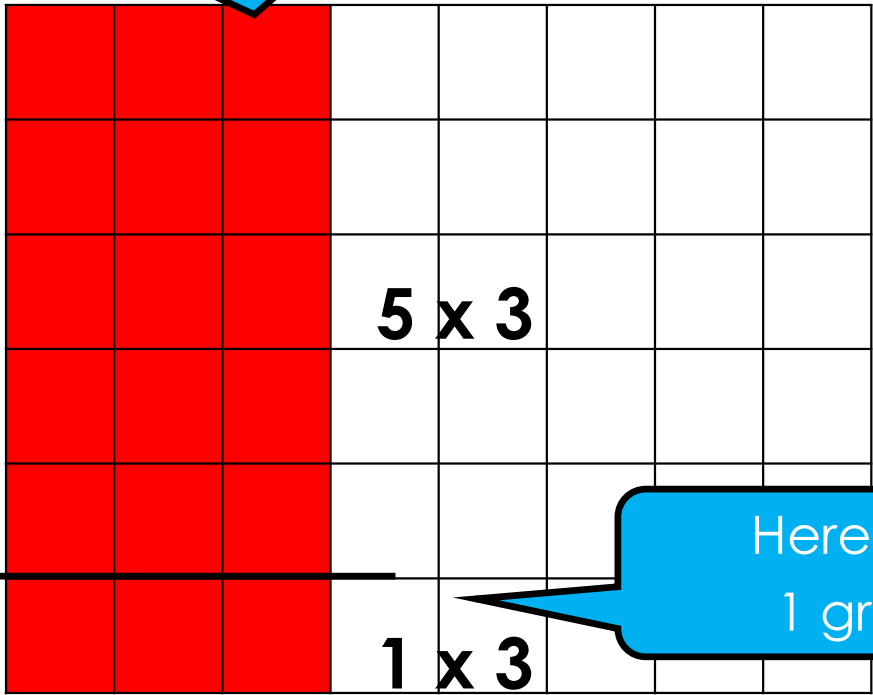
My model represents 6×3 . Inside 6×3 I see 5 groups of 3. 5×3 is a 5s fact. I'll draw a line to separate the 5s fact. This is called **decomposing**.

 **Decomposing is the act of breaking a quantity into parts.**



I also see one group of 3 inside the model.

Here is 5×3 or 5 groups of 3

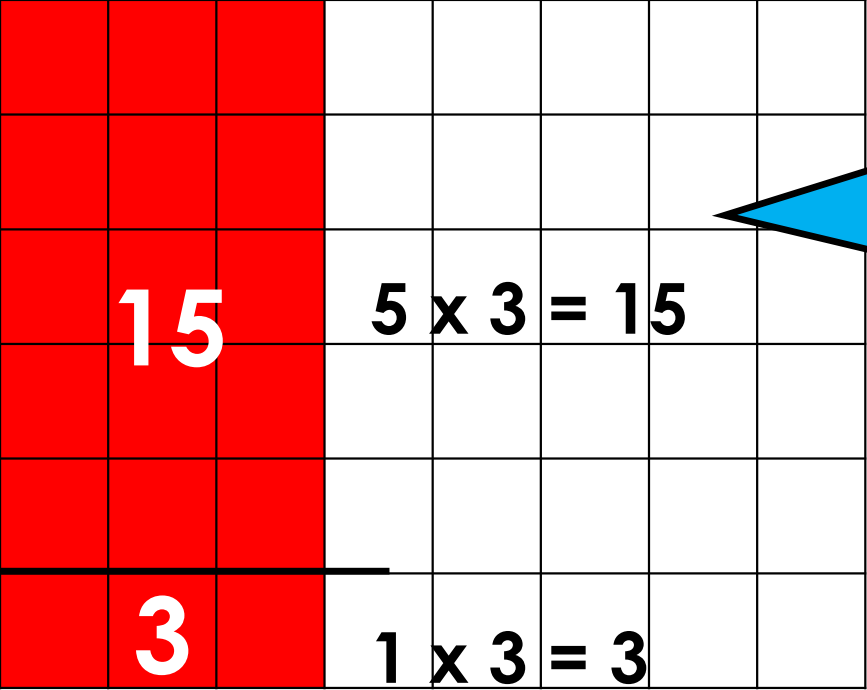


I decomposed 6×3 and found two multiplication facts inside. 5×3 and 1×3

Here is 1×3 or 1 group of 3



Next, I'll add both products to solve.



$15 + 3 = 18$
The total is 18, so...
 $6 \times 3 = 18$

	6s Facts
x1	
x2	
x3	6 x 3 = 18
x4	
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	



LET'S WORK TOGETHER



Let's Review!

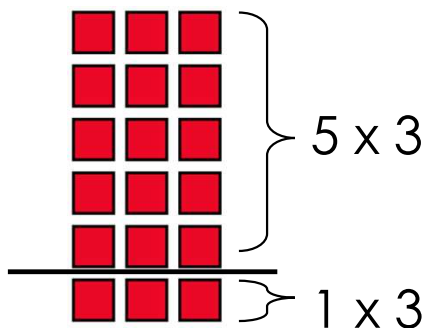
We can solve the 6s fact by using the related 5s and 1s facts:

- 1st – Decompose the 6s fact into the related 5s and 1s fact.
- 2nd – Find the product of both facts.
- 3rd – Solve the 6s fact by adding both products.

EXAMPLE: Find the product of 6×3 .

STEP 1

$$6 \times 3 = ?$$



STEP 2

$$6 \times 3 = (5 \times 3) + (1 \times 3)$$

15 3

STEP 3

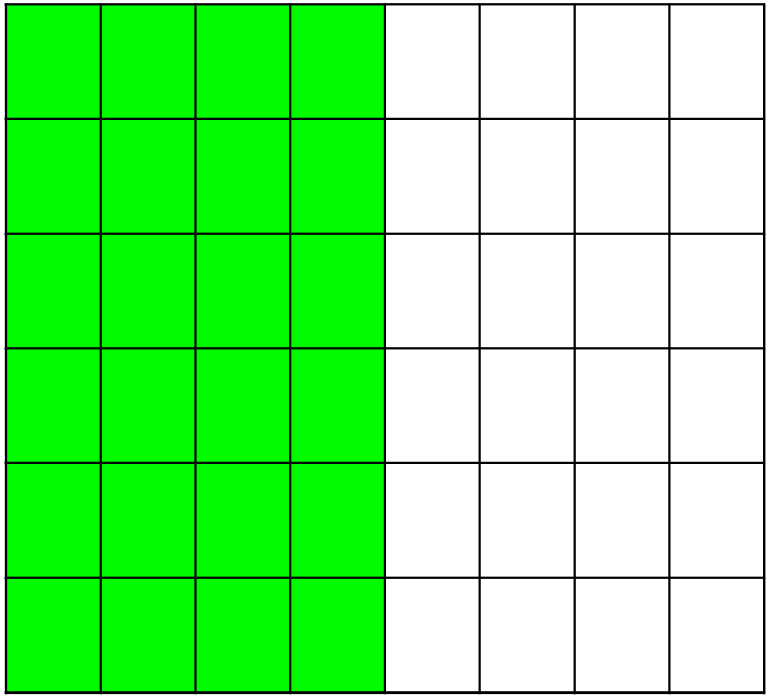
$$6 \times 3 = (5 \times 3) + (1 \times 3)$$

15 + 3

$$6 \times 3 = \mathbf{18}$$

 **Problem #1**
LET'S WORK TOGETHER

Find the product of 6×4 .
Draw a model in your math journal.



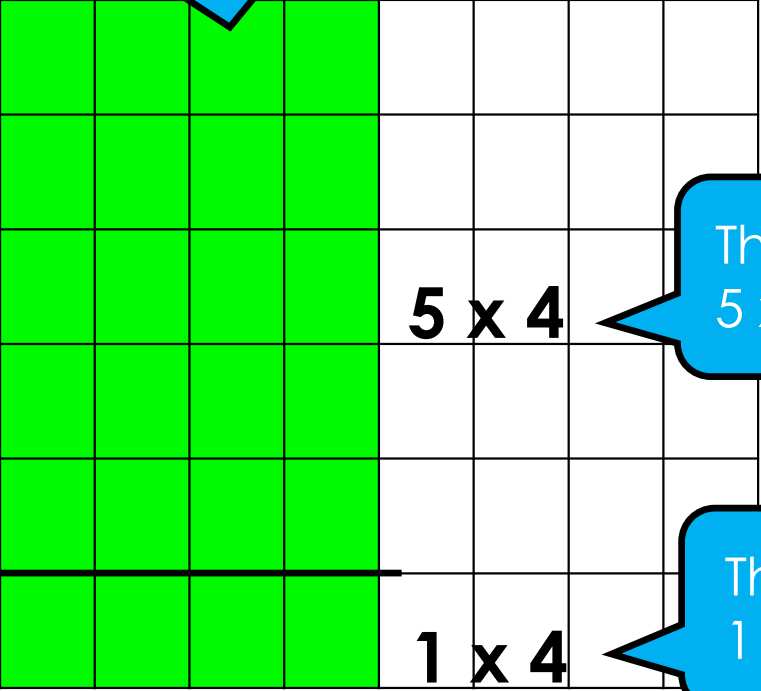
	6s Facts
x1	
x2	
x3	$6 \times 3 = 18$
x4	
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	

 **Problem #1**
LET'S WORK TOGETHER

What do we need to do first?
Record in your math journal.

STEP 1

We need to decompose to find the related 5s and 1s facts.



There are 5 groups of 4 or 5 x 4.

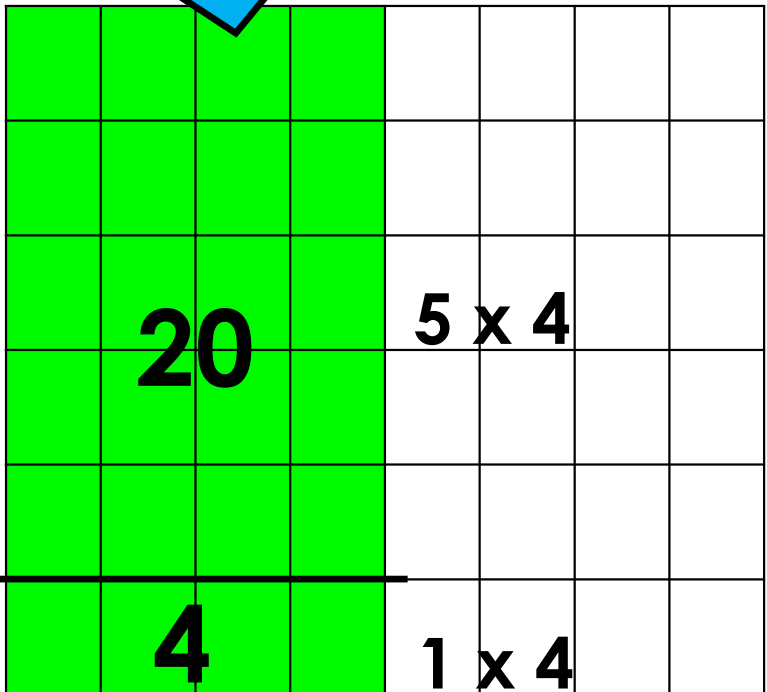
There is 1 group of 4 or 1 x 4.

	6s Facts
x1	
x2	
x3	6 x 3 = 18
x4	
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	

 **Problem #1**
LET'S WORK TOGETHER

STEP 1

We need to decompose to find the related 5s and 1s facts.



What should we do next?
Record in your math journal.

STEP 2

Find both products.

$$6 \times 4 = (5 \times 4) + (1 \times 4)$$

20

4

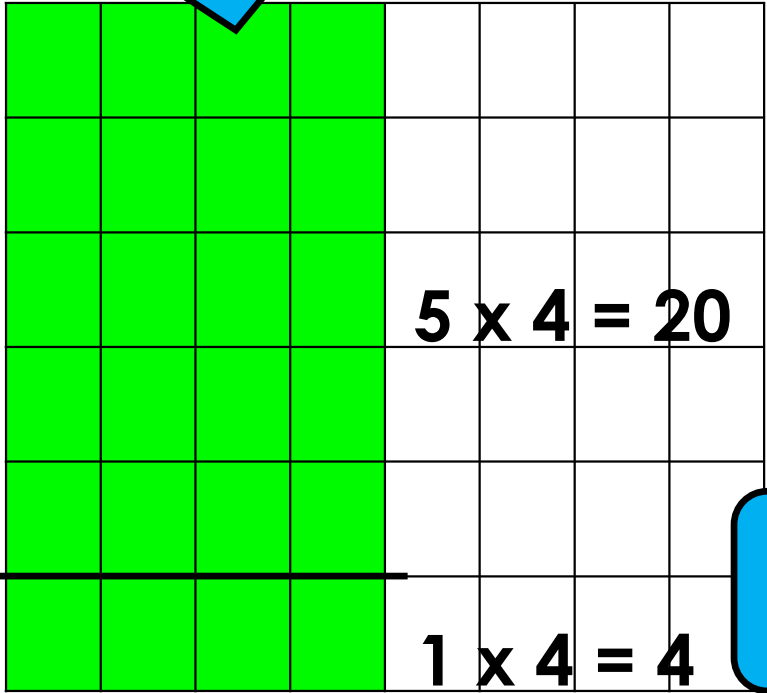
6s Facts

	6s Facts
x1	
x2	
x3	6 x 3 = 18
x4	
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	

 **Problem #1**
LET'S WORK TOGETHER

What should we do last?
Record in your math journal.

STEP 1
We need to decompose to find the related 5s and 1s facts.



STEP 2

$$6 \times 4 = (5 \times 4) + (1 \times 4)$$

$$20 + 4$$



$$6 \times 4 = 24$$

STEP 3

Add the products together to find 6×4 .

	6s Facts
x1	
x2	
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	

Did you know, when we decompose a multiplication fact into 2 separate facts and add the products, we are using the **distributive property**?

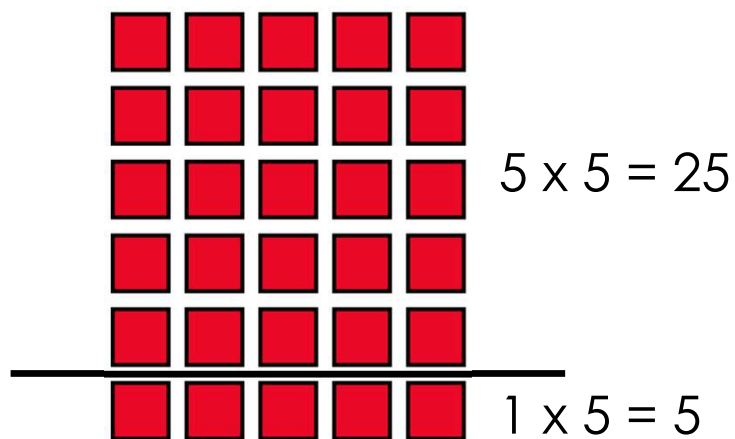




Vocabulary Highlight

The **distributive property** states, multiplying a sum by a given number is the same as multiplying each addend by the number and then adding the products.

EXAMPLE: SOLVE 6×5



$$6 \times 5 = (5 \times 5) + (1 \times 5)$$

$$25 + 5$$
$$6 \times 5 = 30$$

It's important to remember that **we can use different strategies to solve problems.**



 **Problem #1**
LET'S WORK TOGETHER

Based on previous lessons, what other strategy can we use to find the product of 6×4 ? Explain your answer.

We could also use the related 2s fact and then double the product. This is the strategy we learned to find the 4s fact.

STEP 1	STEP 2	STEP 3
$6 \times \underline{2}$ is related to $6 \times \underline{4}$ $6 \times 2 = 12$	Double 12. $12 + 12 = 24$	$6 \times 4 = 24$

6s Facts	
x1	
x2	
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	

Let's think of other strategies we learned in previous lessons, to solve 6×1 and 6×2 .



 **Problem #1**
LET'S WORK TOGETHER

Based on previous lessons, what strategy can we use to find the product of 6×1 ? Explain.

We can use the **identity property** of multiplication to solve. Any number multiplied by 1 equals that number. So... $6 \times 1 = 6$ and $1 \times 6 = 6$.

	6s Facts
x1	$6 \times 1 = 6$
x2	
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	

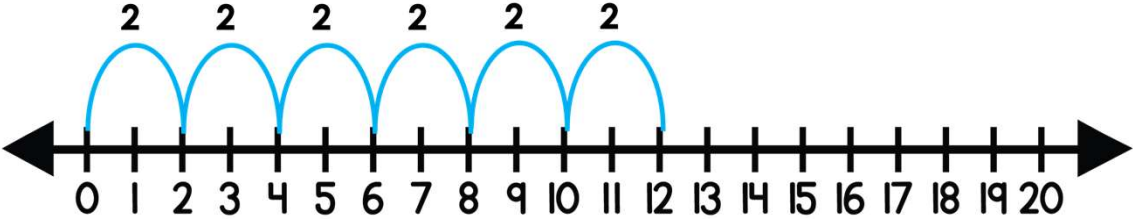
 **Problem #1**
LET'S WORK TOGETHER

Based on previous lessons, what strategy can we use to find the product of **6 x 2**? Explain.

We can use the doubling strategy we learned to find the 2s fact.

6 + 6 = 12 then, 6 x 2 = 12 and, 2 x 6 = 12

We can also skip count by 2s.



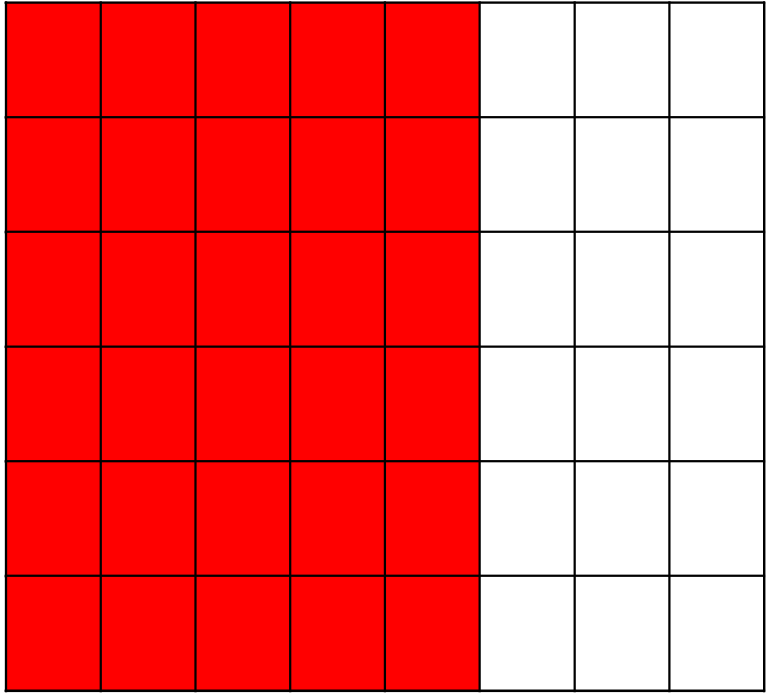
	6s Facts
x1	6 x 1 = 6
x2	6 x 2 = 12
x3	6 x 3 = 18
x4	6 x 4 = 24
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	

LET'S DO ONE MORE TOGETHER...



 **Problem #2**
LET'S WORK TOGETHER

Find the product of 6×5 using the **distributive property**.
Draw a model in your math journal.

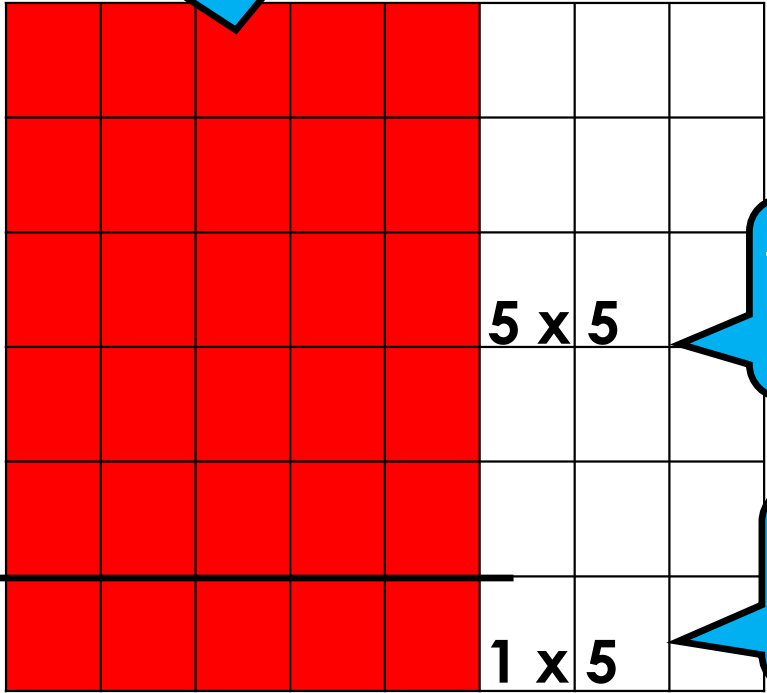


	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	

 **Problem #2**
LET'S WORK TOGETHER

What do we need to do first?
Record in your math journal.

STEP 1
We need to decompose to find the related 5s and 1s facts.



There are 5 groups of 5 or 5 x 5.

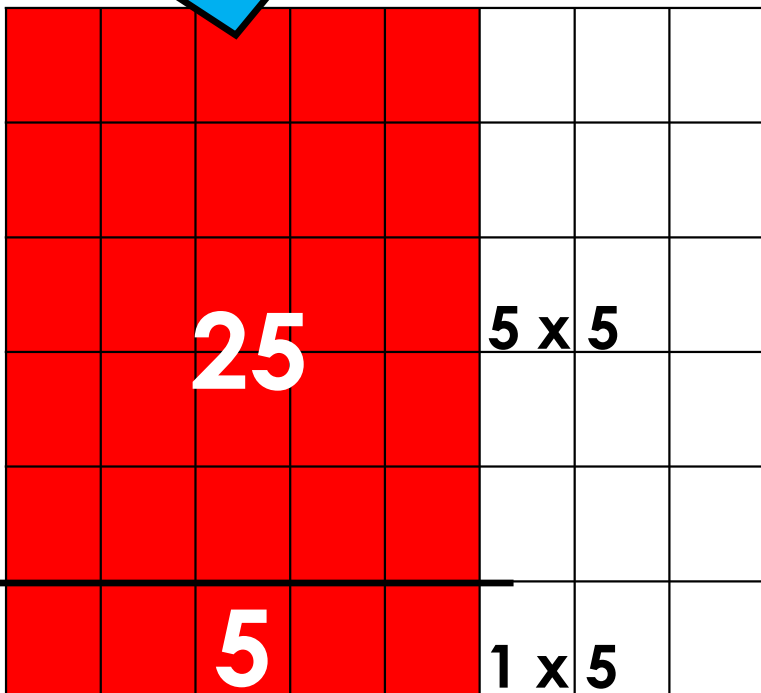
The extra group is 1 group of 5 or 1 x 5.

	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	

 **Problem #2**
LET'S WORK TOGETHER

STEP 1

We need to decompose to find the related 5s and 1s facts.



What should we do next?
Record in your math journal.

STEP 2

Find both products.

$$6 \times 5 = (5 \times 5) + (1 \times 5)$$

25

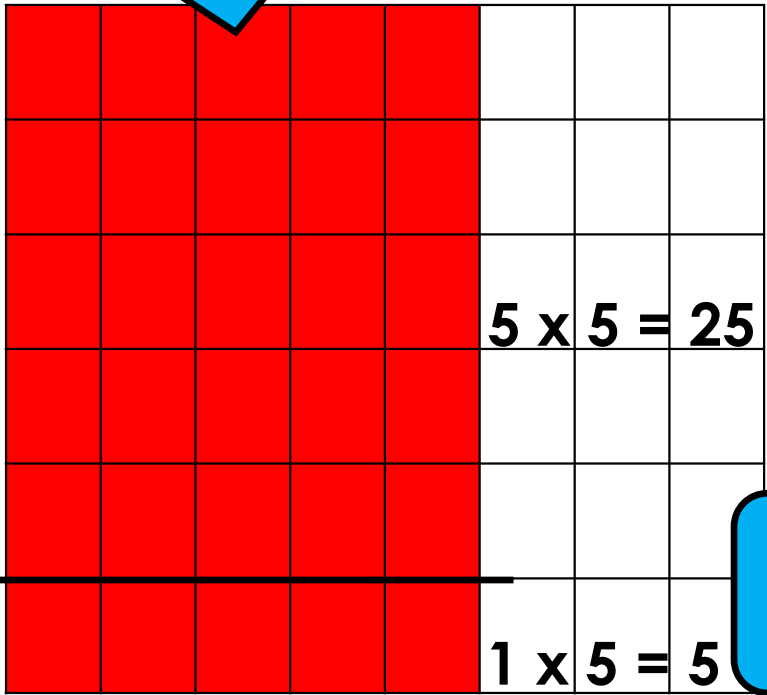
5

	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	
x6	
x7	
x8	
x9	
x10	
x11	
x12	

 **Problem #2**
LET'S WORK TOGETHER

What should we do last?
Record in your math journal.

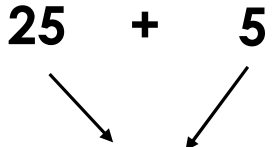
STEP 1
We need to decompose to find the related 5s and 1s facts.



STEP 2

Find both products.

$$6 \times 5 = (5 \times 5) + (1 \times 5)$$



$$6 \times 5 = 30$$

STEP 3

Add the products together to find 6×5 .

	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	$6 \times 5 = 30$
x6	
x7	
x8	
x9	
x10	
x11	
x12	

CHECK - IN

- What did you notice?
- Can you make a connection to anything else you already know? How?
- Do you have any questions?



IT'S YOUR TURN

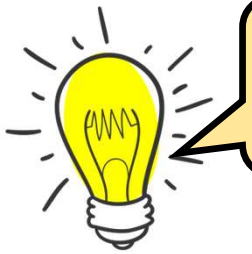
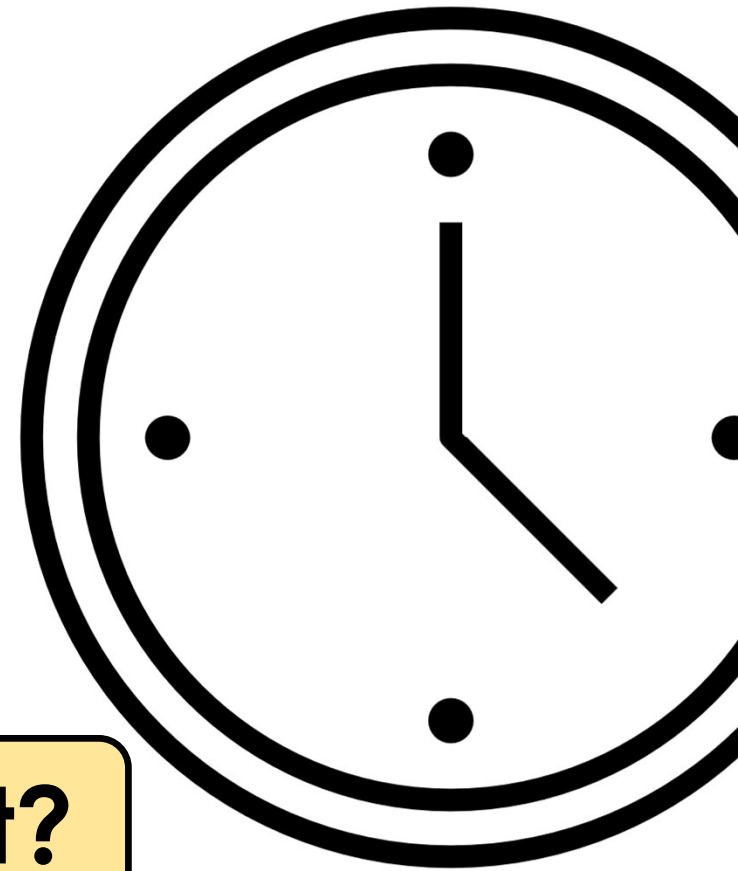


Now It's **“YOUR TURN”** to Solve



Don't forget to show your work!

Time to **Discuss** and **Check** Your Answers



How did you solve it?



Problem #1

YOUR TURN

Use the distributive property to find the product of 6×6 . Fill in the chart.





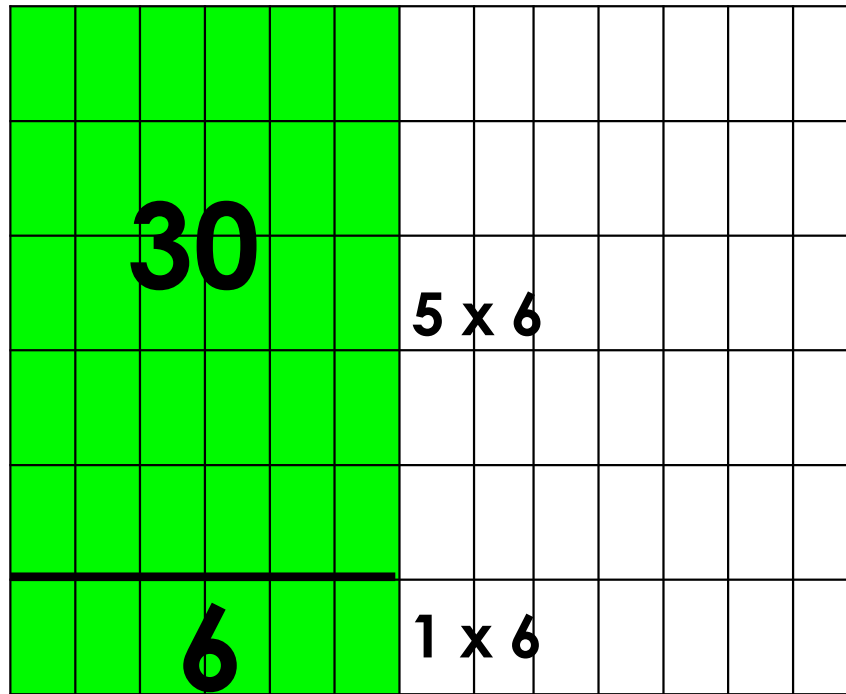
Problem #1

YOUR TURN

Use the distributive property to find the product of 6×6 . Fill in the chart.

	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	$6 \times 5 = 30$
x6	$6 \times 6 = 36$
x7	
x8	
x9	
x10	
x11	
x12	

DRAW



RECORD & SOLVE

$$6 \times 6 = (5 \times 6) + (1 \times 6)$$

$$30 + 6$$

$$6 \times 6 = 36$$



Problem #2

YOUR TURN

Use the distributive property to find the product of 6×7 . Fill in the chart.





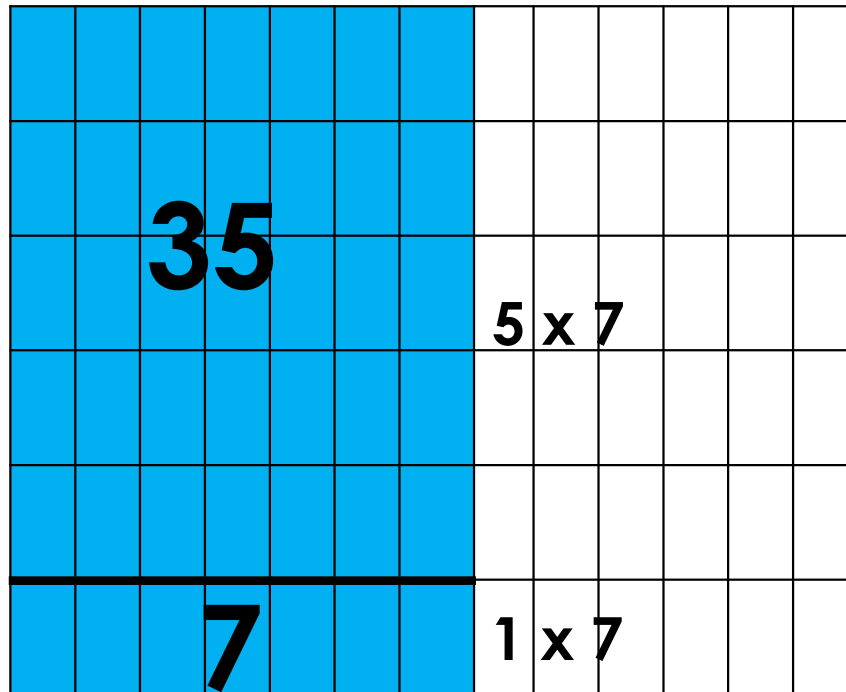
Problem #2

YOUR TURN

Use the distributive property to find the product of 6×7 . Fill in the chart.

	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	$6 \times 5 = 30$
x6	$6 \times 6 = 36$
x7	$6 \times 7 = 42$
x8	
x9	
x10	
x11	
x12	

DRAW



RECORD & SOLVE

$$6 \times 7 = (5 \times 7) + (1 \times 7)$$

$$35 + 7$$

$$6 \times 7 = 42$$



Problem #3

YOUR TURN

Use the distributive property to find the product of 6×8 . Fill in the chart.





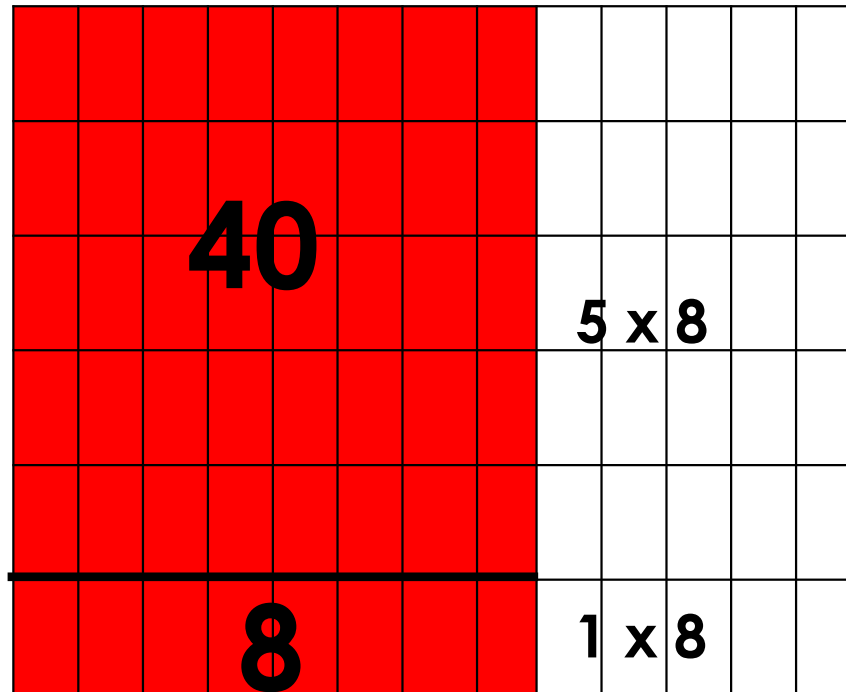
Problem #3

YOUR TURN

Use the distributive property to find the product of 6×8 . Fill in the chart.

	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	$6 \times 5 = 30$
x6	$6 \times 6 = 36$
x7	$6 \times 7 = 42$
x8	$6 \times 8 = 48$
x9	
x10	
x11	
x12	

DRAW



RECORD & SOLVE

$$6 \times 8 = (5 \times 8) + (1 \times 8)$$

$$40 + 8$$

$$6 \times 8 = 48$$



Problem #4

YOUR TURN

Use the distributive property to find the product of 6×9 . Fill in the chart.





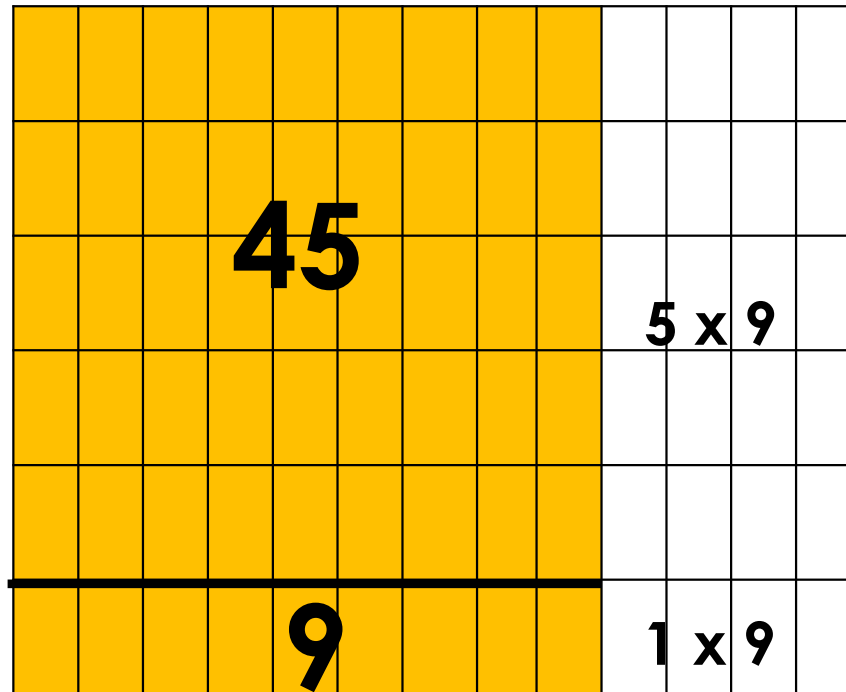
Problem #4

YOUR TURN

Use the distributive property to find the product of 6×9 . Fill in the chart.

	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	$6 \times 5 = 30$
x6	$6 \times 6 = 36$
x7	$6 \times 7 = 42$
x8	$6 \times 8 = 48$
x9	$6 \times 9 = 54$
x10	
x11	
x12	

DRAW



RECORD & SOLVE

$$6 \times 9 = (5 \times 9) + (1 \times 9)$$

$$45 + 9$$

$$6 \times 9 = 54$$



Problem #5

YOUR TURN

Use the distributive property to find the product of 6×10 . Fill in the chart.





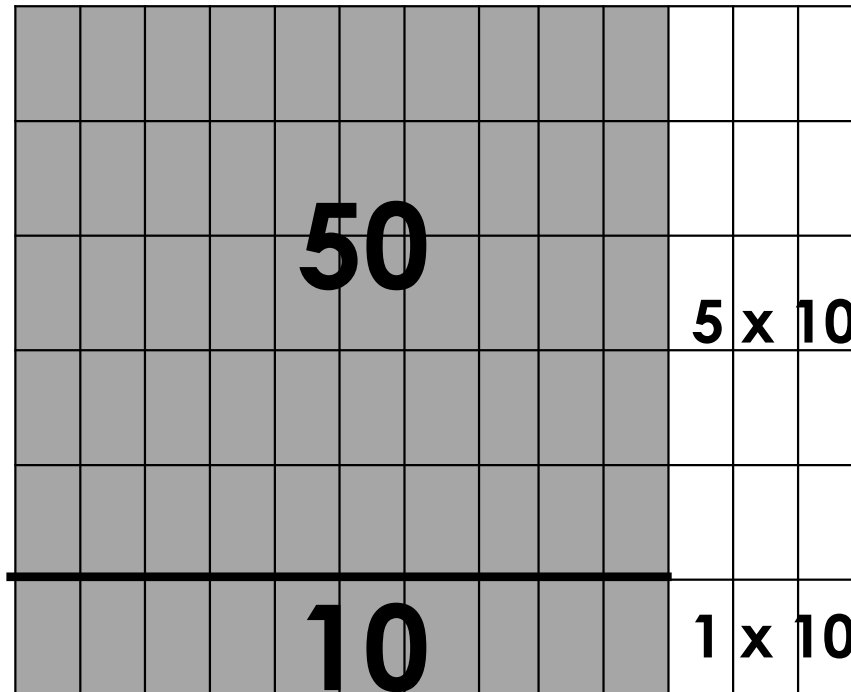
Problem #5

YOUR TURN

Use the distributive property to find the product of 6×10 . Fill in the chart.

	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	$6 \times 5 = 30$
x6	$6 \times 6 = 36$
x7	$6 \times 7 = 42$
x8	$6 \times 8 = 48$
x9	$6 \times 9 = 54$
x10	$6 \times 10 = 60$
x11	
x12	

DRAW



RECORD & SOLVE

$$6 \times 10 = (5 \times 10) + (1 \times 10)$$

$$50 + 10$$

$$6 \times 10 = 60$$



Problem #6

YOUR TURN

Use the distributive property to find the product of 6×11 . Fill in the chart.





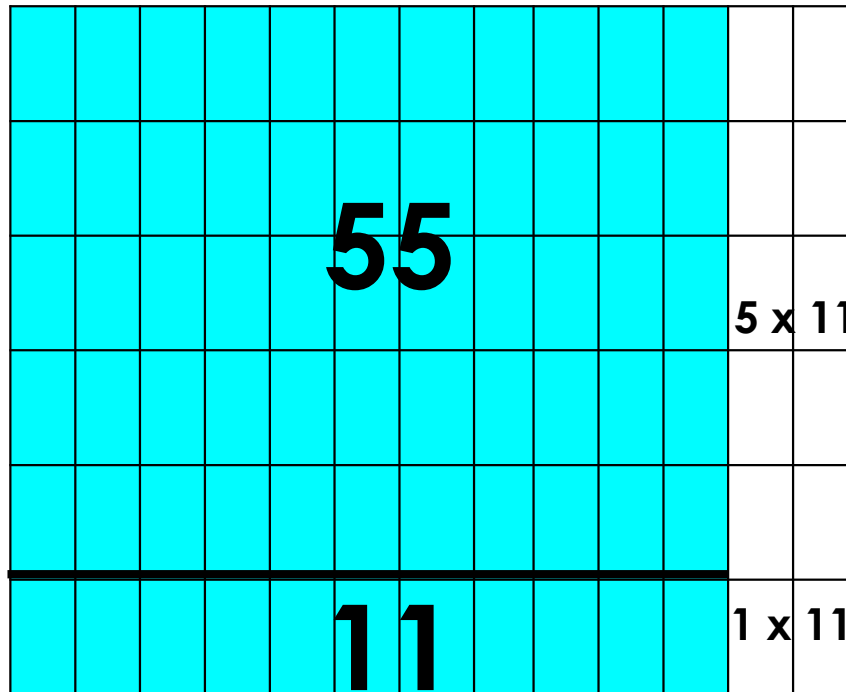
Problem #6

YOUR TURN

Use the distributive property to find the product of 6×11 . Fill in the chart.

	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	$6 \times 5 = 30$
x6	$6 \times 6 = 36$
x7	$6 \times 7 = 42$
x8	$6 \times 8 = 48$
x9	$6 \times 9 = 54$
x10	$6 \times 10 = 60$
x11	$6 \times 11 = 66$
x12	

DRAW



RECORD & SOLVE

$$6 \times 11 = (5 \times 11) + (1 \times 11)$$

$$55 + 11$$

$$6 \times 11 = 66$$



Problem #7

YOUR TURN

Use the distributive property to find the product of 6×12 . Fill in the chart.





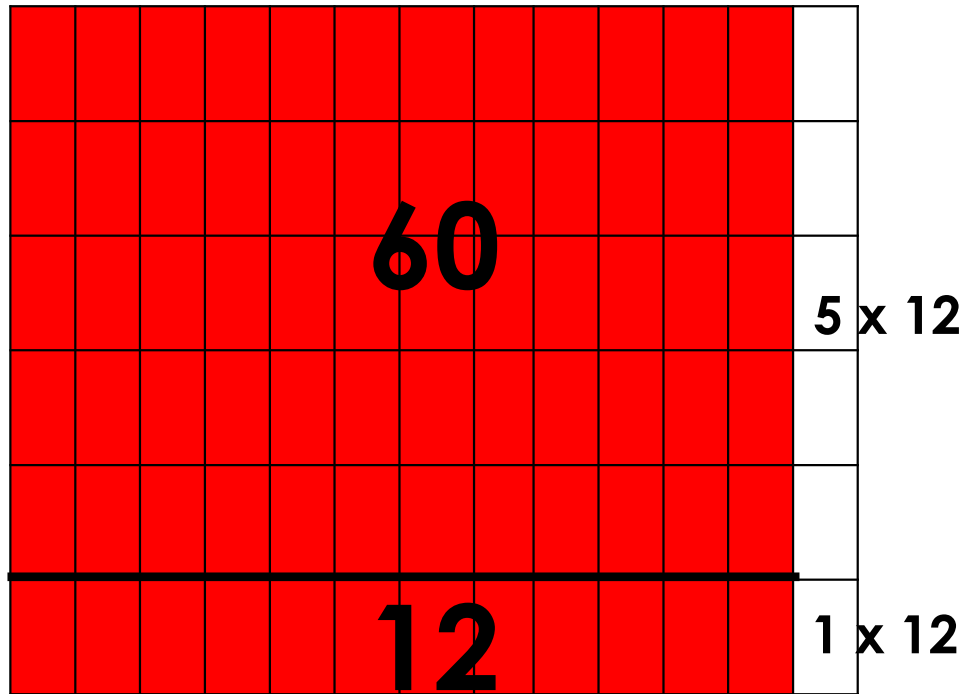
Problem #7

YOUR TURN

Use the distributive property to find the product of 6×12 . Fill in the chart.

	6s Facts
x1	$6 \times 1 = 6$
x2	$6 \times 2 = 12$
x3	$6 \times 3 = 18$
x4	$6 \times 4 = 24$
x5	$6 \times 5 = 30$
x6	$6 \times 6 = 36$
x7	$6 \times 7 = 42$
x8	$6 \times 8 = 48$
x9	$6 \times 9 = 54$
x10	$6 \times 10 = 60$
x11	$6 \times 11 = 66$
x12	$6 \times 12 = 72$

DRAW



RECORD & SOLVE

$$6 \times 12 = (5 \times 12) + (1 \times 12)$$

$$60 + 12$$

$$6 \times 12 = 72$$



Problem #8

YOUR TURN

Explain the strategy we used to solve the 6 times table.





Problem #8

YOUR TURN

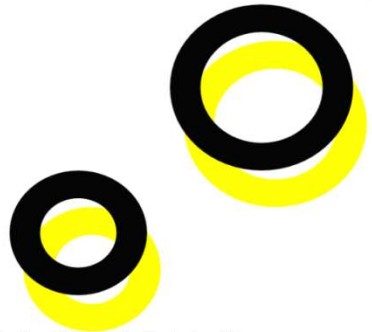
Explain the strategy we used to solve the 6 times table.

Answers May Vary

We can use the distributive property to solve problems. We can add the products of the related 5s and 1s facts. By adding these together, we will get the product of the 6s fact.



 **Let's Reflect**



It's reflection time!