

MULTIPLICATION

FACT FLUENCY

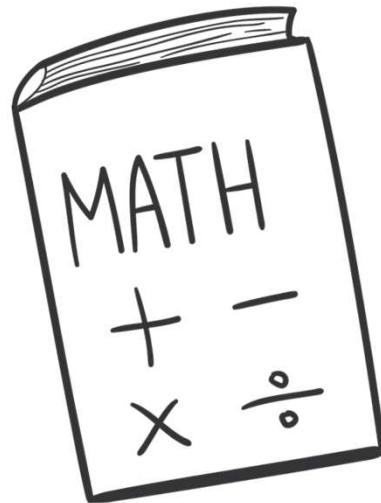
MULTIPLYING BY MULTIPLES OF 10

LESSON 14

TODAY'S OBJECTIVE

Today we will multiply one-digit whole numbers by multiples of 10.

TAKE OUT YOUR **MATH JOURNALS**





WATCH ME FIRST



What are multiples of 10?

Multiples of 10 are the result of multiplying 10 by any other whole number.

EXAMPLE:

$$\begin{array}{ccc} \boxed{10} & \times & \boxed{2} & = & \boxed{20} \\ \text{whole number} & & \text{whole number} & & \text{Multiple of 10} \end{array}$$



Let's see other **multiples of 10.**

$$10 \times 1 = 10$$

$$10 \times 2 = 20$$

$$10 \times 3 = 30$$

$$10 \times 4 = 40$$

$$10 \times 5 = 50$$

$$10 \times 6 = 60$$

$$10 \times 7 = 70$$

$$10 \times 8 = 80$$

$$10 \times 9 = 90$$

$$10 \times 10 = 100$$

$$10 \times 11 = 110$$

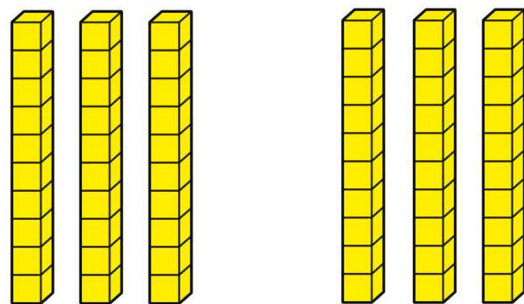
$$10 \times 12 = 120$$



I want to find the product of **2×30** .

2×30 is the same as
2 groups of 30

$$30 + 30$$



So... $2 \times 30 = 60$



Did You Know?

There are different ways to represent numbers.

Standard Form \longrightarrow **35**

Place Value Form \longrightarrow **3 tens 5 ones**

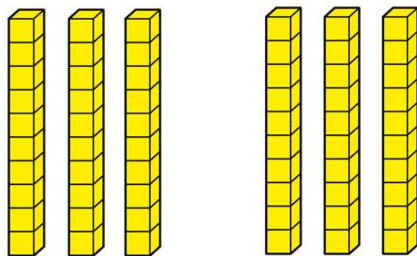
Expanded Form \longrightarrow **30 + 5**



I can also use basic multiplication facts to solve **2 x 30**.

2 x 30 is the same as 2 x 3 tens

$$2 \times 30$$



There are 3 tens in 30.

How does this work with basic facts?

I know that $2 \times 3 = 6$ So... $2 \times 3 \text{ tens} = 6 \text{ tens} = 60$

Now I'm going to do
another problem
with multiples of 10.





I want to find the product of **3 x 50**.

First, I'm going to write the multiple of 10 in place value form.

50 is the same as 5 tens

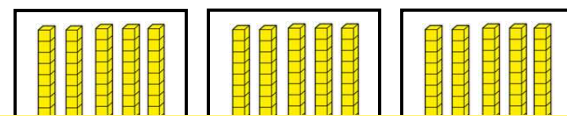
$$3 \times 50 = 3 \times \underline{5} \text{ tens}$$



Second, I'll use place value to find the product.

15 tens = 150

$$3 \times 50 = 3 \times \underline{5} \text{ tens} = \underline{15} \text{ tens}$$



So... $3 \times 50 = 150$

What would happen if we decomposed 3×50 into three factors?





WATCH ME FIRST

There are a few ways to decompose 3×50 into three factors. Let's look at one example.


$$3 \times 50 \rightarrow 3 \times 5 \times 10$$



Using 3 factors can make it easier to multiply different numbers.

Watch how this works.

$$3 \times 50 = (3 \times 5) \times 10$$
$$15 \times 10$$



150



Now I'll group it a different way.

The product is still 150!

$$3 \times 50 = 3 \times (5 \times 10)$$
$$3 \times 50$$





Did You Know?

When multiplying, changing the grouping of three or more factors does not change the product. This is called the **associative property of multiplication**.

EXAMPLE

$$\begin{array}{ccc} 3 \times (5 \times 10) & = & (3 \times 5) \times 10 \\ 3 \times 50 & & 15 \times 10 \\ \underbrace{\hspace{2cm}} & & \underbrace{\hspace{2cm}} \\ 150 & & 150 \end{array}$$



LET'S WORK TOGETHER



Let's Review!

We can use place value to solve multiples of 10 problems:

- 1st – Write the multiple of 10 in place value form.
- 2nd – Use place value to find the product.

EXAMPLE: Find the product of 2×30

STEP 1

$$2 \times 30 = 2 \times \underline{3} \text{ tens}$$

$$2 \times \begin{array}{|c|} \hline \text{30} \\ \hline \end{array}$$

STEP 2

$$2 \times \underline{3} \text{ tens} = \underline{6} \text{ tens} = \mathbf{60}$$

$$2 \times \begin{array}{|c|} \hline \text{30} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{60} \\ \hline \end{array}$$

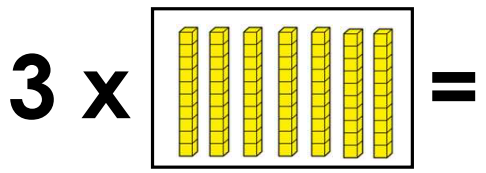
 **Problem #1**
LET'S WORK TOGETHER

Find the product of 3×70 .
How could we begin solving this problem?

STEP 1
Write the multiple of 10 in
place value form.

Record in your journal.

$$3 \times 70 = 3 \times \underline{7} \text{ tens}$$

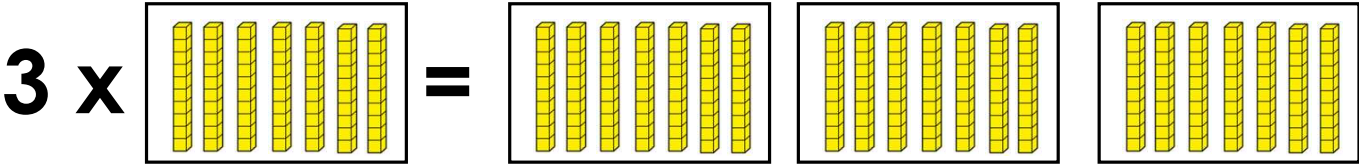


What should we do next?
Record in your journal.

STEP 1
Write the multiple of 10 in
place value form.

STEP 2
Find the product.

$$3 \times 70 = 3 \times \underline{7} \text{ tens} = \underline{21} \text{ tens} = \mathbf{210}$$



LET'S DO ONE MORE TOGETHER...



Now let's solve a **word problem** with multiples of 10.



We are going to use a 4-step process to solve.

STEP 1:

Think about the word problem.

STEP 2:

Create an equation based on the problem.

STEP 3:

Solve the equation.

STEP 4:

Answer the word problem.

1ST: Think about the word problem

Ms. Davis has 9 boxes of crayons. Each box has 20 crayons. How many crayons does she have?



What do the numbers represent?

What is this problem asking me to find?

1ST: Think about the word problem

Ms. Davis has **9** boxes of crayons. Each box has **20** crayons. How many crayons does she have?

9

of boxes

20

of crayons
in each box



What do the numbers in this problem represent?

1ST: Think about the word problem

Ms. Davis has 9 boxes of crayons. Each box has 20 crayons. How many crayons does she have?

9

of boxes

20

of crayons
in each box

?

Total number
of crayons



What are we are trying to find?

2nd: Create an equation

Ms. Davis has 9 boxes of crayons. Each box has 20 crayons. How many crayons does she have?

$$9 \times 20 = ?$$

of boxes

of crayons
in each box

Total number
of crayons



What equation can we use to solve the problem?

3rd: Solve the equation

Ms. Davis has 9 boxes of crayons. Each box has 20 crayons. How many crayons does she have?

$$9 \times 20 = 9 \times \underline{\underline{2}} \text{ tens} = 18 \text{ tens} = \mathbf{180}$$



How can we solve the problem?

4th: Answer the word problem

Ms. Davis has 9 boxes of crayons. Each box has 20 crayons. How many crayons does she have?

$$9 \times 20 = 180$$

of boxes

of crayons
in each box

Total number
of crayons

Ms. Davis has 180 crayons.



Finally, let's answer in a complete sentence.

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

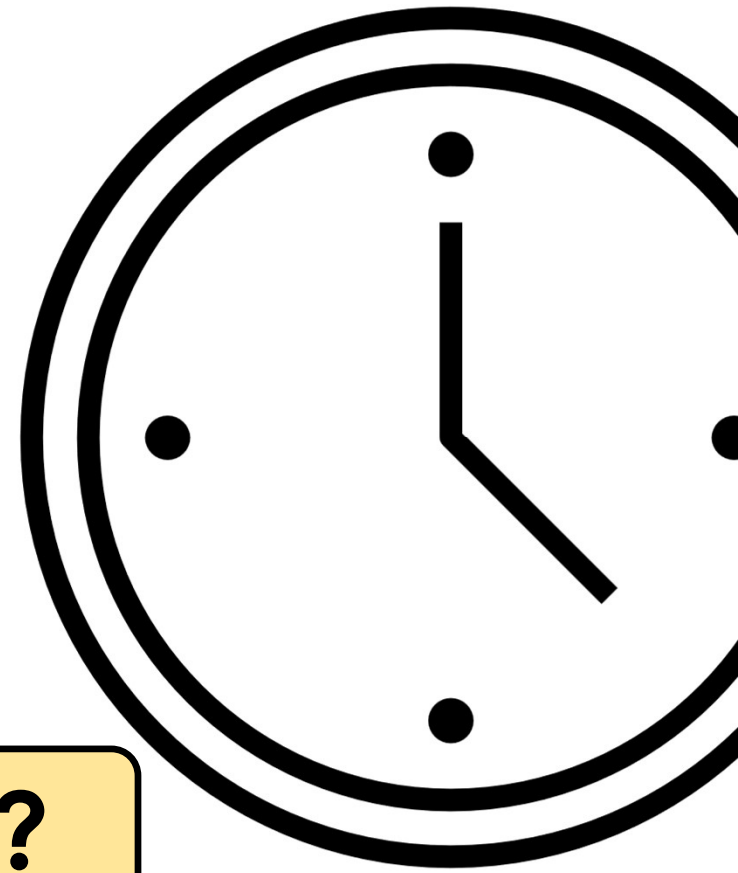


Now It's **“YOUR TURN”** to Solve



Don't forget to show your work!

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



How did you solve it?



Problem #1

YOUR TURN


Find the product of 4×80 . Show your work.





Problem #1
YOUR TURN

Find the product of 4×80 . Show your work.

$$4 \times 80 = 4 \times \underline{8} \text{ tens} = \underline{32} \text{ tens} = \mathbf{320}$$






Problem #2

YOUR TURN

Sharon bought 9 bags of candy from the store. Each bag had 60 pieces of candy. How many pieces of candy does she have in all?





Problem #2

YOUR TURN

Sharon bought 9 bags of candy from the store. Each bag had 60 pieces of candy. How many pieces of candy does she have in all?

$$9 \times 60 = 9 \times \underline{6} \text{ tens} = \underline{54} \text{ tens} = \mathbf{540}$$

There are 540 pieces of candy in all.





Problem #3

YOUR TURN

Find the product of 40×4 . Show your work.





Problem #3
YOUR TURN

Find the product of 40×4 . Show your work.

$$40 \times 4 = \underline{4} \text{ tens} \times 4 = \underline{16} \text{ tens} = \mathbf{160}$$





Problem #4

YOUR TURN

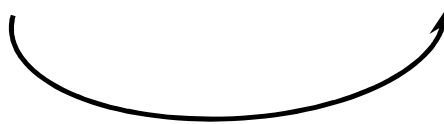
Find the product of 3×60 . Show your work.





Problem #4
YOUR TURN

Find the product of 3×60 . Show your work.

$$3 \times 60 = 3 \times \underline{6} \text{ tens} = \underline{18} \text{ tens} = \mathbf{180}$$






Problem #5

YOUR TURN

Maggie organized a trip for her family reunion. She rented 3 buses for her entire family to tour New York City. Each bus holds 40 people. If each bus is filled, how many family members can go on the tour?






Problem #5

YOUR TURN

Maggie organized a trip for her family reunion. She rented 3 buses for her entire family to tour New York City. Each bus holds 40 people. If each bus is filled, how many family members can go on the tour?

$$3 \times 40 = 3 \times \underline{4} \text{ tens} = \underline{12} \text{ tens} = \mathbf{120}$$


120 family members can go on the tour.





Problem #6

YOUR TURN

**Chris says that $(10 \times 5) \times 6$ equals 300.
Using the associative property, write
another way to group the 3 factors.**

$$\underline{\quad} \times \underline{\quad} \times \underline{\quad} = \underline{300}$$





Problem #6

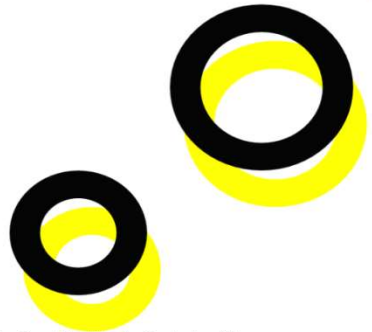
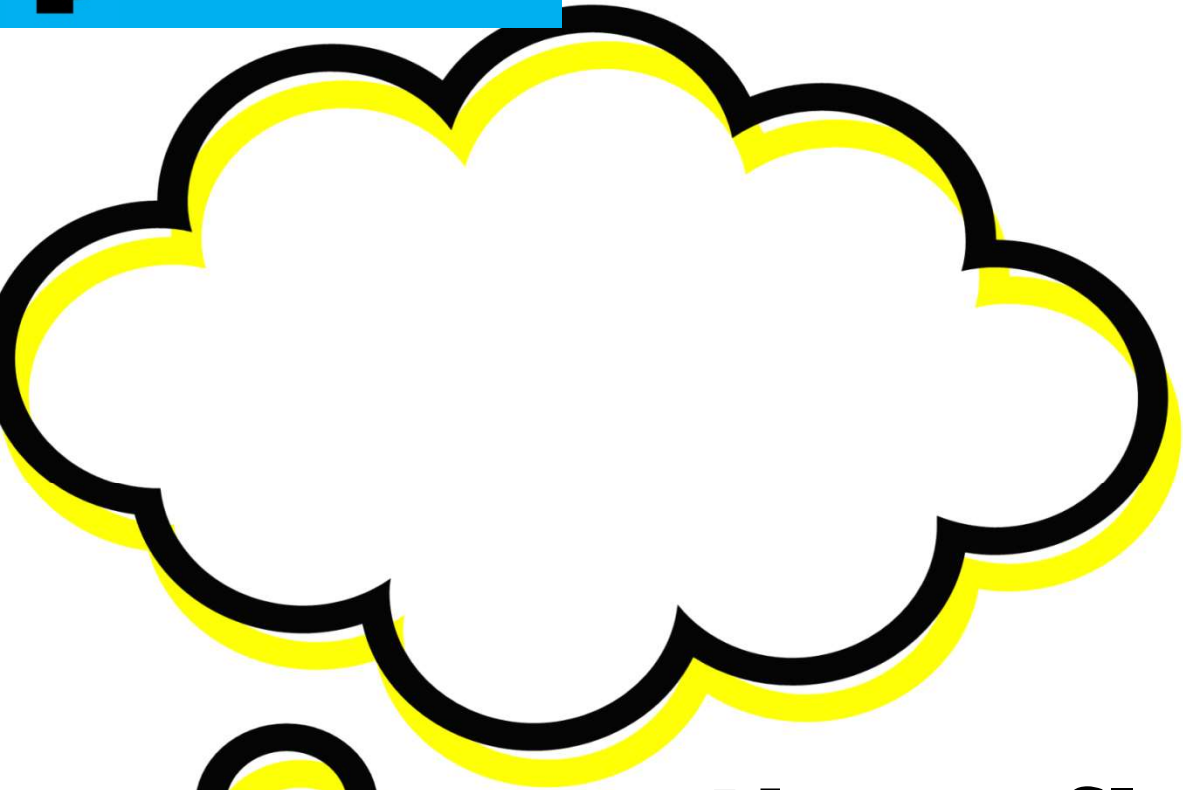
YOUR TURN

Chris says that $(10 \times 5) \times 6$ equals 300. Using the associative property, write another way to group the 3 factors.

$$\underline{10} \times (\underline{5} \times \underline{6}) = \underline{300}$$



 **Let's Reflect**



It's reflection time!