Lesson 5

Objective: Multiply multiples of 10, 100, and 1,000 by single digits, recognizing patterns.

Group Count by Multiples of 10 and 100

- Sevens, stopping to convert at 14 tens, 35 tens, 63 tens, and 70 tens
- Eights, stopping to convert at 24 hundreds, 40 hundreds, 64 hundreds, and 80 hundreds
- Nines, stopping to convert at 27 hundreds, 45 hundreds, 63 hundreds, and 90 hundreds

Multiply Units

3 × 2 = ____ Say the multiplication sentence in unit form.

Write the answer in standard form.

30 × 2 = ____ Say the multiplication sentence in unit form.

Write the answer in standard form.

300 × 2 = 600

3,000 × 2 = 6,000

5 × 3 = 15

50 × 3 = 150

5,000 × 3 = 15,000

5,000 × 4 = 20,000

50 × 4 = 200

5 × 8 = 40

500 × 8 = 4,000

90 × 7 = 630

Concept Development

Problem 1: Use number disks to represent multiplication patterns.

2 ones × 4 2 tens × 4 2 hundreds × 4 2 thousands × 4

Show 2 ones × 4 on your place value chart.
Circle each group of 2 ones.

Show 2 tens × 4 on your place value chart.
Circle each group of 2 tens.

2 ones × 4 is? 8 ones

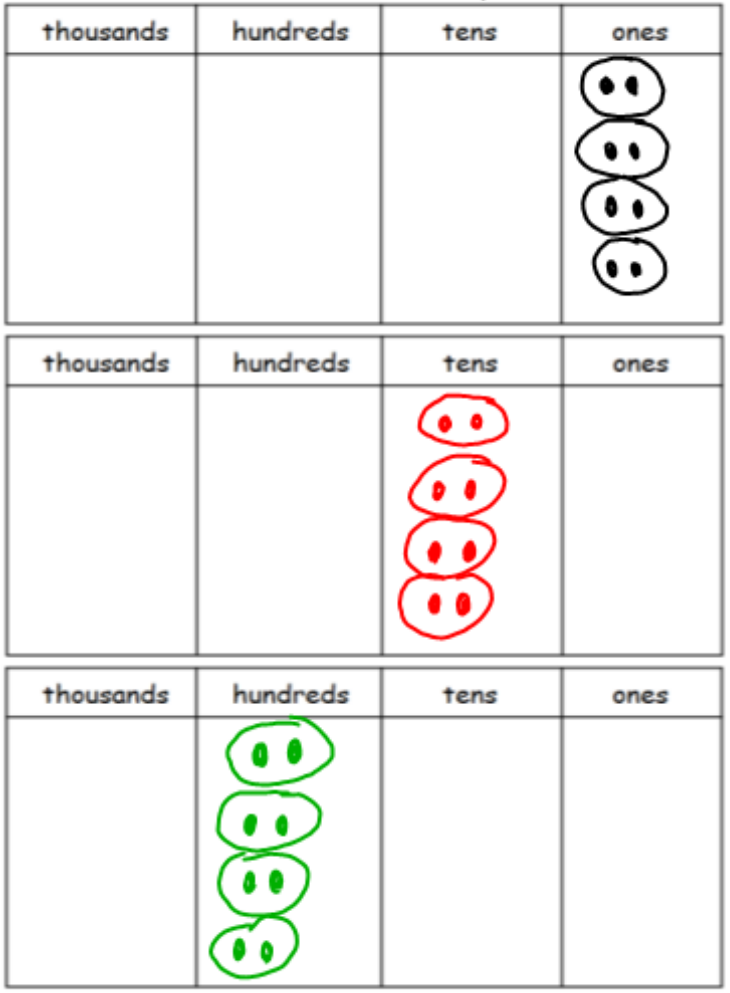
2 tens × 4 is? 8 tens

With your partner, represent 2 hundreds × 4.
Circle each group of 2 hundreds.

What did you notice about multiplying 2 hundreds × 4 compared to 2 tens × 4?

What do you think would happen if we multiplied 2 thousands × 4?

2 ones × 4 = 8



thousands	hundreds	tens	ones
			9

3 ones x 3

thousands	hundreds	tens	ones

3 tens x 3 = 9 tens

30 x 3 = 90

thousands	hundreds	tens	ones

3 hundreds x 3 = 900

thousands	hundreds	tens	ones

3 thousands x 3 = 9,000

Problem 2: Numerically represent single-digit numbers times a multiple of 10.

8×2 8×20 8×200 $8 \times 2{,}000$

With your partner, solve these multiplication problems in unit form.

8 x 2 ones = 16 ones = 16

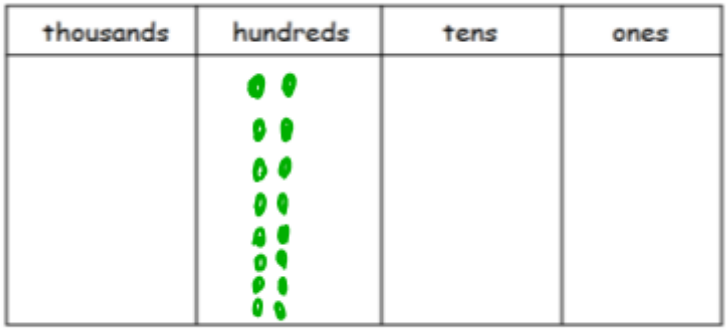
8 x 2 tens = 16 tens = 160

8 x 2 hundreds = 16 hundreds = 1,600

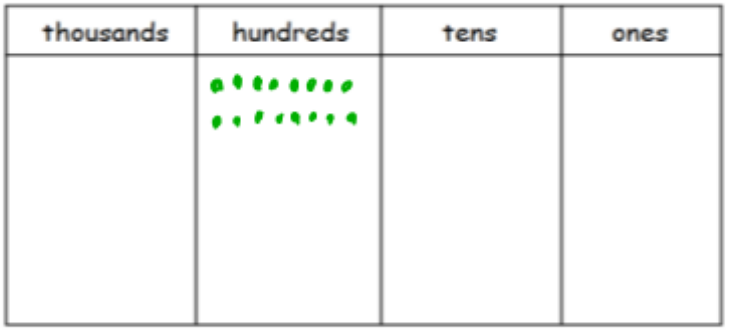
8 x 2 thousands = 16 thousands = 16,000

What patterns do you notice?

What happens if we change the unit from 8 × 2 hundreds to 8 hundreds × 2? Does the answer change?



16 hundreds



16 hundreds

5×2 5×20 5×200 $5 \times 2{,}000$

5×2 ones = 10 ones = 10

0

5×2 tens = 10 tens = 100

1

5×2 hundreds = 10 hundreds = 1,000

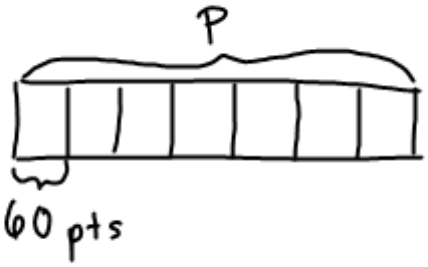
2

5×2 thousands = 10 thousands = 10,000

3

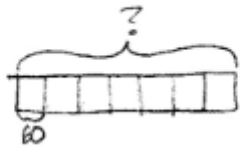
Problem 3: Solve a word problem involving finding the sum of two different products of a single-digit number by a two- and three-digit multiple of 10.

1. Francisco plays a video game and earns 60 points for every coin he collects. He collected 7 coins. How many points did he earn for the coins that he collected?



$7 \times 60 = P$

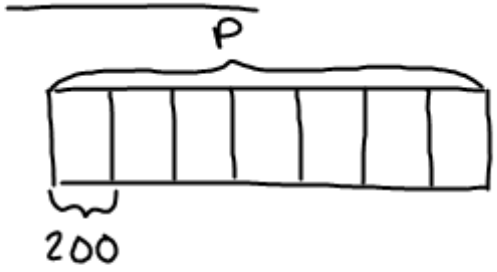
$7 \times 6 \text{ tens} = 42 \text{ tens} = 420$



$= 7 \times 60$
$= 7 \times 6 \times 10$
$= 42 \times 10$
$= 420$

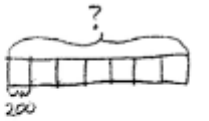
Francisco earned 420 points for the coins he collected.

2. Francisco also earns 200 points for every level he completes in the game. He completed 7 levels. How many points did he earn for the levels that he completed?



$200 \times 7 = 1{,}400$

$2 \text{ hundreds} \times 7 = 14 \text{ hundreds}$



$= 7 \times 200$
$= 7 \times 2 \times 100$
$= 14 \times 100$
$= 1400$

Francisco earned 1400 points for the levels he completed.

3. What was the total number of points that Francisco earned?

$$\begin{array}{r} 1{,}400 \\ +\ \ 420 \\ \hline 1{,}820 \end{array}$$

$$\begin{array}{r} {}^{1}1{,}400 \\ +\ {}^{1}420 \\ \hline 1{,}820 \end{array}$$

Francisco earned a total of 1,820 points.

Problem 4: Solve a word problem involving *1,000 times as many.*

At a concert, there were 5,000 people in the audience. That was 1,000 times the number of performers. How many performers were at the concert?

- Write an equation to solve for how many performers were at the concert.

$5{,}000 = p \times 1{,}000$ $\qquad$ $5{,}000 \div 1{,}000 = p$

- Solve using a method of your choice.

$p \times 1{,}000 = 5{,}000$

$p = 5$

$5{,}000 = p \times 1{,}000$

thousands	hundreds	tens	ones
○○○○○ ×10	×10	×10	○○○○○

thousands	hundreds	tens	ones
○○○○○	÷1000		○○○○○

$5000 \div 1000 = 5$

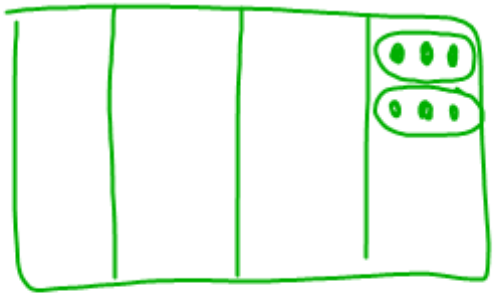
There were 5 performers.

Name _____ Date _____

Draw number disks to represent the value of the following expressions.

1. $2 \times 3 =$ 6

   2 times 3 ones is 6 ones.



$$\begin{array}{r} 2 \\ \times\ 3 \\ \hline 6 \end{array}$$

2. $2 \times 30 =$ 60

   2 times 3 tens is 6 tens.

$$\begin{array}{r} 30 \\ \times\ 2 \\ \hline 60 \end{array}$$

3. $2 \times 300 =$ 600

2 times 3 hundreds is 6 hundreds.

$$\begin{array}{r} 300 \\ \times \quad 2 \\ \hline 600 \end{array}$$

4. $2 \times 3{,}000 =$ 6,000

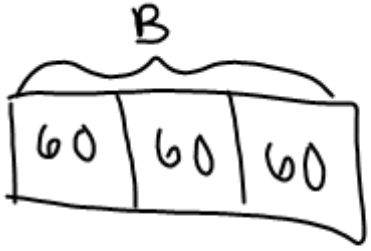
2 times 3 thousands is 6 thousands.

$$\begin{array}{r} 3{,}000 \\ \times \quad 2 \\ \hline 6{,}000 \end{array}$$

5. Find the product.

a. $20 \times 7 =$ 140	b. $3 \times 60 =$ 180	c. $3 \times 400 =$ 1,200	d. $2 \times 800 =$ 1,600
e. $7 \times 30 =$ 210	f. $60 \times 6 =$ 360	g. $400 \times 4 =$ 1,600	h. $4 \times 8{,}000 =$ 32,000
i. $5 \times 30 =$ 150	j. $5 \times 60 =$ 300	k. $5 \times 400 =$ 2,000	l. $8{,}000 \times 5 =$ 40,000

6. Brianna buys 3 packs of balloons for a party. Each pack has 60 balloons. How many balloons does Brianna have?



60 x 3 = B

180 balloons

7. Jordan has twenty times as many baseball cards as his brother. His brother has 9 cards. How many cards does Jordan have?

$9 \times 20 = 180$ cards

$9 \times 2\text{tens} = 18\text{tens}$

8. The aquarium has 30 times as many fish in one tank as Jacob has. The aquarium has 90 fish. How many fish does Jacob have?

$90 = J \times 30$

$9\text{tens} = 3 \times 3\text{tens}$

Jacob has 3 fish.

Name _____ Date _____

Draw number disks to represent the value of the following expressions.

1. $5 \times 2 =$ _____

   5 times _____ ones is _____ ones.

$$\begin{array}{r} 2 \\ \times \quad 5 \\ \hline \end{array}$$

2. $5 \times 20 =$ _____

   5 times _____ tens is _____ _____.

$$\begin{array}{r} 2\,0 \\ \times \quad 5 \\ \hline \end{array}$$

3. $5 \times 200 =$ _____

5 times _____ _____ is _____ _____ .

$$\begin{array}{r} 200 \\ \times \quad 5 \\ \hline \end{array}$$

4. $5 \times 2{,}000 =$ _____

____ times _____ _____ is _____ _____ .

$$\begin{array}{r} 2,000 \\ \times \quad 5 \\ \hline \end{array}$$

5. Find the product.

a. $20 \times 9 =$	b. $6 \times 70 =$	c. $7 \times 700 =$	d. $3 \times 900 =$
e. $9 \times 90 =$	f. $40 \times 7 =$	g. $600 \times 6 =$	h. $8 \times 6{,}000 =$
i. $5 \times 70 =$	j. $5 \times 80 =$	k. $5 \times 200 =$	l. $6{,}000 \times 5 =$

6. At the school cafeteria, each student who ordered lunch gets 6 chicken nuggets. The cafeteria staff prepares enough for 300 kids. How many chicken nuggets does the cafeteria staff prepare altogether?

7. Jaelynn has thirty times as many stickers as her brother. Her brother has 8 stickers. How many stickers does Jaelynn have?

8. The flower shop has 40 times as many flowers in one cooler as Julia has in her bouquet. The cooler has 120 flowers. How many flowers are in Julia's bouquet?