1. Fill in the blanks using your knowledge of place value units and basic facts.

   a. 34×20

   Think: 34 ones $\times$ 2 tens $=$ **68 *tens***

   $34 \times 20 =$ **680**

   34 ones $\times$ 2 tens $= (34 \times 1) \times (2 \times 10)$.
   First, I did the mental math: $34 \times 2 = 68$.
   Then I thought about the units. *Ones times tens is tens*.
   68 tens is the same as 680 ones or 680.

   b. 420×20

   Think: 42 tens $\times$ 2 tens $=$ **84 *hundreds***

   $420 \times 20 =$ **$8,400$**

   First, I'll multiply 42 times 2 in my head because that's a basic fact: 84.
   Next, I have to think about the units. *Tens* times *tens* is *hundreds*.
   Therefore, my answer is 84 hundreds or $8{,}400$.

   Another way to think about this is $42 \times 10 \times 2 \times 10$.
   I can use the associative property to switch the order of the factors: $42 \times 2 \times 10 \times 10$.

   c. 400×500

   4 hundreds $\times$ 5 hundreds $=$ **20 *ten thousands***

   $400 \times 500 =$ **$200,000$**

   I have to be careful because the basic fact, $4 \times 5 = 20$, ends in a zero.

   Another way to think about this is
   $4 \times 100 \times 5 \times 100$
   $= 4 \times 5 \times 100 \times 100$
   $= 20 \times 100 \times 100$
   $= 20 \times 10{,}000$
   $= 200{,}000$

2. Determine if these equations are true or false. Defend your answer using knowledge of place value and the commutative, associate, and/or distributive properties.

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

   False. The basic fact is correct: $\mathbf{3 \times 3 = 9}$.

   However, the units are not correct: $\mathbf{10 \times 10}$ ***is*** $\mathbf{100}$.

   Correct answers could be $9 \text{ tens} = 3 \text{ tens} \times 3 \text{ ones}$, or $9 \text{ hundreds} = 3 \text{ tens} \times 3 \text{ tens}$.

   b. $93 \times 7 \times 100 = 930 \times 7 \times 10$

   True. I can rewrite the problem. $\mathbf{93 \times 7 \times (10 \times 10) = (93 \times 10) \times 7 \times 10}$

   The commutative property tells me that I can group the factors in any order without changing the product.

3. Find the products. Show your thinking.

60×5	60×50	$6{,}000 \times 5{,}000$
$= (\mathbf{6 \times 10}) \times \mathbf{5}$	$= (\mathbf{6 \times 10}) \times (\mathbf{5 \times 10})$	$= (\mathbf{6 \times 1{,}000}) \times (\mathbf{5 \times 1{,}000})$
$= (\mathbf{6 \times 5}) \times \mathbf{10}$	$= (\mathbf{6 \times 5}) \times (\mathbf{10 \times 10})$	$= (\mathbf{6 \times 5}) \times (\mathbf{1{,}000 \times 1{,}000})$
$= \mathbf{30 \times 10}$	$= \mathbf{30 \times 100}$	$= \mathbf{30 \times 1{,}000{,}000}$
$= \mathbf{300}$	$= \mathbf{3{,}000}$	$= \mathbf{30{,}000{,}000}$

I use the distributive property to decompose the factors.

Then, I use the associative property to regroup the factors.

I multiply the basic fact first. Then I think about the units.

I have to be careful because the basic fact, 6×5, has a zero in the product. I multiply the basic fact and then think about the units.

6 tens times 5 is 30 tens. 30 tens is the same as 300. I could get the wrong answer if I just counted zeros.

I can think of this in unit form: 6 thousands times 5 thousands. $6 \times 5 = 30$. The units are thousands times thousands. I can picture a place value chart in my head to solve a thousand times a thousand. A thousand times a thousand is a million. The answer is 30 million, or $30{,}000{,}000$.

Name _____ Date _____

1. Fill in the blanks using your knowledge of place value units and basic facts.
   a. 43 × 30

      Think: 43 ones × 3 tens = _____ tens

      43 × 30 =_____

   b. 430 × 30

      Think: 43 tens × 3 tens = _____ hundreds

      430 × 30 = _____

   c. 830 × 20

      Think: 83 tens × 2 tens = 166 _____

      830 × 20 = _____

   d. 4,400 × 400

      _____ hundreds × _____ hundreds = 176 _____

      4,400 × 400 = _____

   e. 80 × 5,000

      _____ tens × _____ thousands = 40 _____

      80 × 5,000 = _____

2. Determine if these equations are true or false. Defend your answer using your knowledge of place value and the commutative, associative, and/or distributive properties.
   a. 35 hundreds = 5 tens × 7 tens

   b. 770 × 6 = 77 × 6 × 100

   c. 50 tens × 4 hundreds = 40 tens × 5 hundreds

   d. 24 × 10 × 90 = 90 × 2,400

3. Find the products. Show your thinking. The first row gives some ideas for showing your thinking.

a.	5×5 $= 25$	5×50 $= 25 \times 10$ $= 250$	50×50 $= (5 \times 10) \times (5 \times 10)$ $= (5 \times 5) \times 100$ $= 2,500$	50×500 $= (5 \times 5) \times (10 \times 100)$ $= 25,000$
b.	80×5	80×50	800×500	$8,000 \times 50$
c.	637×3	$6,370 \times 30$	$6,370 \times 300$	$63,700 \times 300$

4. A concrete stepping-stone measures 20 square inches. What is the area of 30 such stones?

5. A number is 42,300 when multiplied by 10. Find the product of this number and 500.