

Name \_\_\_\_\_

Date \_\_\_\_\_

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

<p>a. <math>23 \times 20</math></p> <p>Think: 23 ones <math>\times</math> 2 tens = _____ tens</p> <p><math>23 \times 20 =</math> _____</p>	<p>b. <math>230 \times 20</math></p> <p>Think: 23 tens <math>\times</math> 2 tens = _____</p> <p><math>230 \times 20 =</math> _____</p>
<p>c. <math>41 \times 4</math></p> <p>41 ones <math>\times</math> 4 ones = 164 _____</p> <p><math>41 \times 4 =</math> _____</p>	<p>d. <math>410 \times 400</math></p> <p>41 tens <math>\times</math> 4 hundreds = 164 _____</p> <p><math>410 \times 400 =</math> _____</p>
<p>e. <math>3,310 \times 300</math></p> <p>_____ tens <math>\times</math> _____ hundreds = 993 _____</p> <p><math>3,310 \times 300 =</math> _____</p>	<p>f. <math>500 \times 600</math></p> <p>_____ hundreds <math>\times</math> _____ hundreds = 30 _____</p> <p><math>500 \times 600 =</math> _____</p>

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.  $6 \text{ tens} = 2 \text{ tens} \times 3 \text{ tens}$

b.  $44 \times 20 \times 10 = 440 \times 2$

c.  $86 \text{ ones} \times 90 \text{ hundreds} = 86 \text{ ones} \times 900 \text{ tens}$

d.  $64 \times 8 \times 100 = 640 \times 8 \times 10$

e.  $57 \times 2 \times 10 \times 10 \times 10 = 570 \times 2 \times 10$

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

a.	$7 \times 9$ $= 63$	$7 \times 90$ $= 63 \times 10$ $= 630$	$70 \times 90$ $= (7 \times 10) \times (9 \times 10)$ $= (7 \times 9) \times 100$ $= 6,300$	$70 \times 900$ $= (7 \times 9) \times (10 \times 100)$ $= 63,000$
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b.	$45 \times 3$	$45 \times 30$	$450 \times 30$	$450 \times 300$
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c.	$40 \times 5$	$40 \times 50$	$40 \times 500$	$400 \times 5,000$
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d.	$718 \times 2$	$7,180 \times 20$	$7,180 \times 200$	$71,800 \times 2,000$
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4. Ripley told his mom that multiplying whole numbers by multiples of 10 was easy because you just count zeros in the factors and put them in the product. He used these two examples to explain his strategy.

$$\begin{array}{r} 7,000 \times 600 = 4,200,000 \\ (3 \text{ zeros}) \quad (2 \text{ zeros}) \quad (5 \text{ zeros}) \end{array}$$

$$\begin{array}{r} 800 \times 700 = 560,000 \\ (2 \text{ zeros}) \quad (2 \text{ zeros}) \quad (4 \text{ zeros}) \end{array}$$

Ripley's mom said his strategy will not always work. Why not? Give an example.

5. The Canadian side of Niagara Falls has a flow rate of 600,000 gallons per second. How many gallons of water flow over the falls in 1 minute?

6. Tickets to a baseball game are \$20 for an adult and \$15 for a student. A school buys tickets for 45 adults and 600 students. How much money will the school spend for the tickets?