Multiplying by Whole Tens and Hundreds

1. **a.** Ten tens make a hundred. How about 20 tens or more?	**b.** Ten hundreds make a thousand. How about 20 hundreds or more?
10 tens = 10 × 10 = ____	10 hundreds = 10 × 100 = ____
13 tens = 13 × 10 = ____	12 hundreds = 12 × 100 = ____
20 tens = 20 × 10 = ____	15 hundreds = 15 × 100 = ____
21 tens = 21 × 10 = ____	18 hundreds = 18 × 100 = ____
37 tens = 37 × 10 = ____	20 hundreds = 20 × 100 = ____

56 × 10 is the same as 10 × 56. Both are 560.

92 × 100 is the same as 100 × 92. Both are 9,200.

To multiply a number by 10, just tag a zero on the end.
To multiply a number by 100, just tag two zeros on the end.

1**0** × 56 = 56**0**	1**00** × 47 = 47**00**
1**0** × 481 = 4,81**0**	1**00** × 2,043 = 204,3**00**

Note especially what happens when the number you multiply already ends in a zero. The rule works the same; you still have to tag a zero or two zeros.

1**0** × 60 = 60**0**	1**00** × 20 = 2,0**00**
1**0** × 500 = 5,00**0**	1**00** × 3,400 = 340,0**00**

2. Multiply.

a. 10 × 315 = ____

3,560 × 10 = ____

35 × 100 = ____

b. 100 × 62 = ____

10 × 1,200 = ____

100 × 130 = ____

c. 10 × 25,000 = ____

100 × 25,000 = ____

10 × 5,060 = ____

What is 20 × 14?

Imagine the problem without the zero. Then it becomes 2 × 14 = 28. Then, just tag a zero to the end result: 20 × 14 = 280.

Why does that work? It is based on the fact that 20 = 10 × 2. For example,

20 × 14 = 10 × 2 × 14

In that problem, first multiply 2 × 14 = 28. Then multiply by ten:

10 × (2 × 14) = 10 × 28 = 280.

What is 200 × 31?

Imagine the problem without the zeros. Then it becomes 2 × 31 = 62. Then, just tag *two* zeros to the result: 200 × 31 = 6,200.

Why does that work? It is based on the fact that 200 = 100 × 2. For example,

200 × 31 = 100 × 2 × 31

In that problem, you can multiply first 2 × 31 = 62. Then multiply by a hundred:

100 × (2 × 31) = 100 × 62 = 6,200.

3. Multiply by 20 and 200.

a. 20 × 8 = ____	**b.** 200 × 7 = ____	**c.** 20 × 12 = ____	**d.** 20 × 16 = ____
4 × 20 = ____	5 × 200 = ____	35 × 20 = ____	42 × 200 = ____
20 × 5 = ____	11 × 200 = ____	200 × 9 = ____	54 × 20 = ____

The same principle works if you multiply by 30, 40, 50, 60, 70, 80, or 90. You can imagine multiplying by 3, 4, 5, 6, 7, 8, or 9, and then tag a zero into the end result.

Similarly, if you multiply by some whole hundred, imagine multiplying without those two zeros, and tag the two zeros to the end result.

50 × 8 = 400	**90 × 11 = 990**	**300 × 8 = 2,400**	**12 × 800 = 9,600**

4. Multiply.

a. 40 × 3 = ____	**b.** 70 × 6 = ____	**c.** 80 × 9 = ____	**d.** 60 × 11 = ____
8 × 20 = ____	50 × 11 = ____	30 × 15 = ____	12 × 40 = ____
e. 200 × 9 = ____	**f.** 700 × 6 = ____	**g.** 200 × 12 = ____	**h.** 3 × 1100 = ____
7 × 400 = ____	600 × 11 = ____	15 × 300 = ____	8 × 900 = ____

It even works this way:

In a problem 40 × 70 you can just multiply

4 × 7, and tag two zeros to the result:

$$4\mathbf{0} \times 7\mathbf{0} = 2{,}8\mathbf{00}$$

In a problem 600 × 40 you can multiply 6 × 4, and tag three zeros to the result:

$$6\mathbf{00} \times 4\mathbf{0} = 24{,}\mathbf{000}$$

In a problem 700 × 800 you can multiply 7 × 8, and tag four zeros to the result.

$$7\mathbf{00} \times 8\mathbf{00} = 56\mathbf{0}{,}\mathbf{000}$$

5. Multiply.

a. 20 × 90 =

70 × 300 =

b. 60 × 80 =

30 × 900 =

c. 400 × 50 =

200 × 200 =

d. 80 × 800 =

200 × 500 =

e. 100 × 100 =

40 × 30 =

f. 800 × 300 =

90 × 1100 =

6. Write different factors for these products, using whole tens and whole hundreds.

Have you noticed? **7 × 80 = 560 and** **70 × 8 = 560 !!**	**a.** 6 × ___ = 420 and 60 × ___ = 420	**b.** ___ × ___ = 350 and ___ × ___ = 350
c. ___ × ___ = 280 and ___ × ___ = 280	**d.** ___ × ___ = 400 and ___ × ___ = 400	**e.** ___ × ___ = 990 and ___ × ___ = 990
Have you noticed? **6 × 400 = 2,400 and** **60 × 40 = 2,400 and** **600 × 4 = 2,400 !!**	**f.** 2 × ___ = 1,800 and 20 × ___ = 1,800 and 200 × ___ = 1,800	**g.** ___ × ____ = 5,400 and ___ × ____ = 5,400 and ____ × ___ = 5,400
h. ___ × ____ = 3,000 and ___ × ____ = 3,000 and ____ × ___ = 3,000	**i.** ___ × ____ = 3,600 and ___ × ____ = 3,600 and ____ × ___ = 3,600	**j.** ___ × ____ = 3,600 and ___ × ____ = 3,600 and ____ × ___ = 3,600