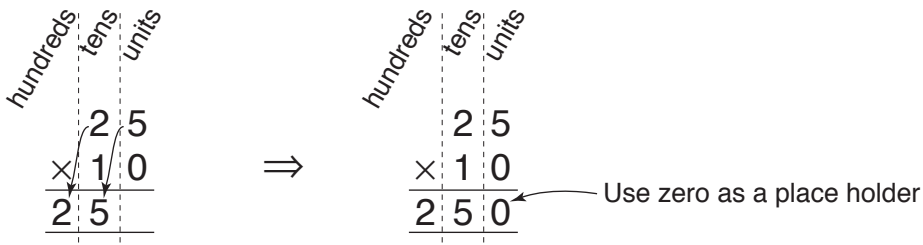


# 7. [Powers of 10 $\times, \div$ ]

**Skill 7.1** Multiplying a whole number by a power of 10 using zeros as place holders.

- When multiplying by 10 move each digit one place to the left, adding a zero at the end of the number.



*Hint: Multiplying by a power of 10 does not change the digits in the number.*  
*Example:  $25 \times 10 = 250$  the 2 and the 5 remain in the answer.*

- When multiplying by 100 move each digit two places to the left, adding two zeros at the end of the number.
- When multiplying by 1000 move each digit three places to the left, adding three zeros at the end of the number.

**Q.** 
$$\begin{array}{r} 59 \\ \times 100 \\ \hline \end{array}$$

**A.** 
$$\begin{array}{r} \text{thousands} & \text{hundreds} & \text{tens} & \text{units} \\ & 5 & 9 & \\ \times & 1 & 0 & 0 \\ \hline 5 & 9 & 0 & 0 \end{array}$$

59  $\times$  100 means 59 groups of 100.  
 Shift 5 and 9 two places to the left.  
 Use 0's as place holders in the vacated units and tens places.  
 (Units first!)

|  |  |  |   |
|--|--|--|---|
| <p><b>a)</b> <math display="block">\begin{array}{r} 70 \\ \times 10 \\ \hline \end{array}</math></p>   | <p><b>b)</b> <math display="block">\begin{array}{r} 20 \\ \times 10 \\ \hline \end{array}</math></p>   | <p><b>c)</b> <math display="block">\begin{array}{r} 224 \\ \times 10 \\ \hline \end{array}</math></p>  | <p><b>d)</b> <math display="block">\begin{array}{r} 376 \\ \times 10 \\ \hline \end{array}</math></p>   |
| <p><b>e)</b> <math display="block">\begin{array}{r} 25 \\ \times 100 \\ \hline \end{array}</math></p>  | <p><b>f)</b> <math display="block">\begin{array}{r} 73 \\ \times 100 \\ \hline \end{array}</math></p>  | <p><b>g)</b> <math display="block">\begin{array}{r} 80 \\ \times 100 \\ \hline \end{array}</math></p>  | <p><b>h)</b> <math display="block">\begin{array}{r} 50 \\ \times 100 \\ \hline \end{array}</math></p>   |
| <p><b>i)</b> <math display="block">\begin{array}{r} 24 \\ \times 1000 \\ \hline \end{array}</math></p> | <p><b>j)</b> <math display="block">\begin{array}{r} 39 \\ \times 1000 \\ \hline \end{array}</math></p> | <p><b>k)</b> <math display="block">\begin{array}{r} 10 \\ \times 1000 \\ \hline \end{array}</math></p> | <p><b>l)</b> <math display="block">\begin{array}{r} 800 \\ \times 1000 \\ \hline \end{array}</math></p> |

Q.

$$\begin{array}{r} 17 \\ \times 100 \\ \hline \end{array}$$

A.

**Units:**

$0 \times 17 = 0 \Rightarrow 0 \text{ units}$

**Tens:**

$0 \times 17 = 0 \Rightarrow 0 \text{ tens}$

**Hundreds:**

$1 \times 17 = 17$

17 hundreds = 1 thousand + 7 hundreds  
 $\Rightarrow 7 \text{ hundreds}$   
 $\Rightarrow 1 \text{ thousand}$

Hint: One thousand, seven hundred can also be called seventeen hundred.

a)

$$\begin{array}{r} 56 \\ \times 10 \\ \hline \end{array}$$

b)

$$\begin{array}{r} 43 \\ \times 10 \\ \hline \end{array}$$

c)

$$\begin{array}{r} 23 \\ \times 10 \\ \hline \end{array}$$

d)

$$\begin{array}{r} 68 \\ \times 10 \\ \hline \end{array}$$

e)

$$\begin{array}{r} 30 \\ \times 10 \\ \hline \end{array}$$

f)

$$\begin{array}{r} 40 \\ \times 10 \\ \hline \end{array}$$

g)

$$\begin{array}{r} 658 \\ \times 10 \\ \hline \end{array}$$

h)

$$\begin{array}{r} 854 \\ \times 10 \\ \hline \end{array}$$

i)

$$\begin{array}{r} 47 \\ \times 100 \\ \hline \end{array}$$

j)

$$\begin{array}{r} 75 \\ \times 100 \\ \hline \end{array}$$

k)

$$\begin{array}{r} 80 \\ \times 100 \\ \hline \end{array}$$

l)

$$\begin{array}{r} 50 \\ \times 100 \\ \hline \end{array}$$

m)

$$\begin{array}{r} 953 \\ \times 100 \\ \hline \end{array}$$

n)

$$\begin{array}{r} 98 \\ \times 1000 \\ \hline \end{array}$$

o)

$$\begin{array}{r} 70 \\ \times 1000 \\ \hline \end{array}$$

p)

$$\begin{array}{r} 500 \\ \times 1000 \\ \hline \end{array}$$

- Convert the division to a fraction and.....

EITHER

- Divide both the numerator and the denominator by the value of the denominator.

$$40 \div 10 = \frac{40}{10} = \frac{40 \div 10}{10 \div 10} = \frac{4}{1} = 4$$

$$600 \div 100 = \frac{600}{100} = \frac{600 \div 100}{100 \div 100} = \frac{6}{1} = 6$$

OR

- Cancel the zeros in the numerator against the zeros in the denominator.

$$\frac{40}{10} = \frac{4\cancel{0}}{1\cancel{0}} = \frac{4}{1} = 4$$

$$\frac{600}{100} = \frac{6\cancel{0}\cancel{0}}{1\cancel{0}\cancel{0}} = \frac{6}{1} = 6$$

Q.  $5400 \div 100 =$

A.  $5400 \div 100$

$$= \frac{5400 \div 100}{100 \div 100}$$

$$= \frac{54}{1}$$

$$= \mathbf{54}$$

How many groups of 100 make up 5400?

Convert the division to a fraction.

Divide the numerator and the denominator by 100.

54 groups of 100 make up 5400.

Hint: Five thousand, four hundred can also be called fifty-four hundred.

a)  $800 \div 100 =$

$$= \frac{8\cancel{0}\cancel{0}}{1\cancel{0}\cancel{0}} =$$

b)  $70 \div 10 =$

$$= \frac{\dots\dots\dots}{\dots\dots\dots}$$

c)  $850 \div 10 =$

$$= \frac{\dots\dots\dots}{\dots\dots\dots}$$

d)  $900 \div 100 =$

$$= \frac{\dots\dots\dots}{\dots\dots\dots}$$

e)  $500 \div 100 =$

$$= \frac{\dots\dots\dots}{\dots\dots\dots}$$

f)  $2400 \div 100 =$

$$= \frac{\dots\dots\dots}{\dots\dots\dots}$$

g)  $13,200 \div 100 =$

$$= \frac{\dots\dots\dots}{\dots\dots\dots}$$

h)  $9800 \div 10 =$

$$= \frac{\dots\dots\dots}{\dots\dots\dots}$$

i)  $15,000 \div 1000 =$

$$= \frac{\dots\dots\dots}{\dots\dots\dots}$$

## EITHER

- Remove the same number of zeros as in the divisor from the end of the whole number. (1 for 10, 2 for 100, 3 for 1000, etc.)  
Example:

$$98,000 \div 10 = 9800$$

$$98,000 \div 100 = 980$$

$$98,000 \div 1000 = 98$$

## OR

- Move the decimal point the same number of places to the left as there are zeros in the divisor.

*Hint: There is a decimal point and zeros which are not written, at the end of any whole number.*

$$1 \text{ zero} \Rightarrow 1 \text{ place left.}$$

$$2 \text{ zeros} \Rightarrow 2 \text{ places left.}$$

$$3 \text{ zeros} \Rightarrow 3 \text{ places left.}$$

$$98,000.0 \Rightarrow 9800$$

$$98,000.0 \Rightarrow 980$$

$$98,000.0 \Rightarrow 98$$

Q.  $44,000 \div 1000 =$

A.  $44,000 \div 1000$   
 $= 44,000 \div 1000$   
 $= 44$

1000 has 3 zeros.  
To divide by 1000 remove 3 zeros from both numbers.

Q.  $9500 \div 100 =$

A.  $9500 \div 100$   
 $= 9500.0 \div 100$   
 $= 95$

100 has 2 zeros.  
To divide by 100 move the decimal point 2 places to the left.

*Hint: Nine thousand, five hundred can also be called ninety-five hundred.*

a)  $600 \div 10 =$

$$= 600.0 \div 10$$

60

b)  $90 \div 10 =$

$$= \dots\dots\dots$$

c)  $330 \div 10 =$

$$= \dots\dots\dots$$

d)  $1600 \div 10 =$

$$= \dots\dots\dots$$

e)  $800 \div 100 =$

$$= \dots\dots\dots$$

f)  $7100 \div 100 =$

$$= \dots\dots\dots$$

g)  $45,900 \div 100 =$

$$= \dots\dots\dots$$

h)  $9000 \div 1000 =$

$$= \dots\dots\dots$$

i)  $74,000 \div 1000 =$

$$= \dots\dots\dots$$