

# 8. [Large Number $\times, \div$ ]

**Skill 8.1** Multiplying a large number by a single digit without carry over, using columns.

MM3.2 1 2 2 3 3 4 4  
MM4.1 1 1 2 2 3 3 4 4

- Multiply the units, tens, hundreds and thousands by the single digit.
- Multiply from right to left.

**Q.**

$$\begin{array}{r} 312 \\ \times 3 \\ \hline \end{array}$$

**A.**

$$\begin{array}{r} \text{hundreds} \\ \text{tens} \\ \text{units} \\ 312 \\ \times 3 \\ \hline 936 \end{array}$$

*Units first!*

**Units:**

$$3 \times 2 = 6 \Rightarrow 6 \text{ units}$$

**Tens:**

$$3 \times 1 = 3 \Rightarrow 3 \text{ tens}$$

**Hundreds:**

$$3 \times 3 = 9 \Rightarrow 9 \text{ hundreds}$$

**a)**

$$\begin{array}{r} 97 \\ \times 1 \\ \hline \end{array}$$

*Units first!*

**b)**

$$\begin{array}{r} 22 \\ \times 4 \\ \hline \end{array}$$

**c)**

$$\begin{array}{r} 23 \\ \times 3 \\ \hline \end{array}$$

**d)**

$$\begin{array}{r} 13 \\ \times 2 \\ \hline \end{array}$$

**e)**

$$\begin{array}{r} 30 \\ \times 3 \\ \hline \end{array}$$

**f)**

$$\begin{array}{r} 41 \\ \times 2 \\ \hline \end{array}$$

**g)**

$$\begin{array}{r} 43 \\ \times 2 \\ \hline \end{array}$$

**h)**

$$\begin{array}{r} 32 \\ \times 2 \\ \hline \end{array}$$

**i)**

$$\begin{array}{r} 123 \\ \times 3 \\ \hline \end{array}$$

**j)**

$$\begin{array}{r} 332 \\ \times 2 \\ \hline \end{array}$$

**k)**

$$\begin{array}{r} 808 \\ \times 1 \\ \hline \end{array}$$

**l)**

$$\begin{array}{r} 112 \\ \times 3 \\ \hline \end{array}$$

**m)**

$$\begin{array}{r} 340 \\ \times 2 \\ \hline \end{array}$$

**n)**

$$\begin{array}{r} 131 \\ \times 3 \\ \hline \end{array}$$

**o)**

$$\begin{array}{r} 423 \\ \times 2 \\ \hline \end{array}$$

**p)**

$$\begin{array}{r} 322 \\ \times 3 \\ \hline \end{array}$$

**Skill 8.2** Multiplying a large number by a single digit with carry over, using columns.

MM3.2 1 1 2 2 3 3 4 4  
MM4.1 1 1 2 2 3 3 4 4

- Multiply the units, tens, hundreds and thousands by the single digit.
- Multiply from right to left.
- If there is a 'carry over': First multiply. Then add on the carry over.

**Q.**

$$\begin{array}{r} 119 \\ \times 8 \\ \hline \end{array}$$

**A.**

$$\begin{array}{r} \text{hundreds} \\ \text{tens} \\ \text{units} \\ 119 \\ \times 8 \\ \hline 952 \end{array}$$

Units first!

**Units:**

$$8 \times 9 = 72$$

$$72 \text{ units} = 7 \text{ tens and } 2 \text{ units} \Rightarrow 2 \text{ units}$$

Carry over the 7 tens to the tens column.

**Tens:**

$$8 \times 1 = 8$$

$$8 + 7 \text{ (carry over)} = 15$$

$$15 \text{ tens} = 1 \text{ hundred and } 5 \text{ tens} \Rightarrow 5 \text{ tens}$$

Carry over the 1 hundred to the hundreds column.

**Hundreds:**

$$8 \times 1 = 8$$

$$8 + 1 \text{ (carry over)} = 9 \Rightarrow 9 \text{ hundreds}$$

**a)**

$$\begin{array}{r} 4 \\ 80 \\ \times 5 \\ \hline 400 \end{array}$$

Units first!

**b)**

$$\begin{array}{r} 90 \\ \times 4 \\ \hline \end{array}$$

**c)**

$$\begin{array}{r} 94 \\ \times 2 \\ \hline \end{array}$$

**d)**

$$\begin{array}{r} 65 \\ \times 3 \\ \hline \end{array}$$

**e)**

$$\begin{array}{r} 36 \\ \times 3 \\ \hline \end{array}$$

**f)**

$$\begin{array}{r} 23 \\ \times 7 \\ \hline \end{array}$$

**g)**

$$\begin{array}{r} 48 \\ \times 6 \\ \hline \end{array}$$

**h)**

$$\begin{array}{r} 82 \\ \times 6 \\ \hline \end{array}$$

**i)**

$$\begin{array}{r} 7 \\ 164 \\ \times 2 \\ \hline \end{array}$$

**j)**

$$\begin{array}{r} 207 \\ \times 5 \\ \hline \end{array}$$

**k)**

$$\begin{array}{r} 409 \\ \times 7 \\ \hline \end{array}$$

**l)**

$$\begin{array}{r} 803 \\ \times 4 \\ \hline \end{array}$$

**m)**

$$\begin{array}{r} 180 \\ \times 6 \\ \hline \end{array}$$

**n)**

$$\begin{array}{r} 567 \\ \times 3 \\ \hline \end{array}$$

**o)**

$$\begin{array}{r} 410 \\ \times 9 \\ \hline \end{array}$$

**p)**

$$\begin{array}{r} 522 \\ \times 5 \\ \hline \end{array}$$

- Multiply by the unit digit first, working from right to left.  
*Reminder: Put a zero in the units place before you start multiplying by the tens.*
- Then multiply by the ten digit, working from right to left.
- Add the results last.

Q.

$$\begin{array}{r} 85 \\ \times 14 \\ \hline \\ \hline \end{array}$$

A.

$$\begin{array}{r} \text{thousands} \quad \text{hundreds} \quad \text{tens} \quad \text{units} \\ 85 \\ \times 14 \\ \hline 340 \end{array}$$

First multiply 85 by the 4 units.

**Units:**

$4 \times 5 = 20$

20 units = 2 tens and 0 units  $\Rightarrow$  0 units

Carry over the 2 tens to the tens column.

**Tens:**

$4 \times 8 = 32$

32 + 2 (carry over) = 34

34 tens = 3 hundreds and 4 tens  $\Rightarrow$  4 tens

**Hundreds:**

$\Rightarrow$  3 hundreds

Then multiply 85 by the 1 ten.

**Units:**

Write 0 as a place holder for the ten.

$\Rightarrow$  0 units

**Tens:**

$1 \times 5 = 5$

$\Rightarrow$  5 tens

**Hundreds:**

$1 \times 8 = 8$

$\Rightarrow$  8 hundreds

Add these results:  $340 + 850 = 1190$

$$\begin{array}{r} 2 \quad 85 \\ \times 14 \\ \hline 340 \\ 850 \\ \hline 1190 \end{array}$$

a)

$$\begin{array}{r} 34 \\ \times 21 \\ \hline 680 \\ \hline 714 \end{array}$$

b)

$$\begin{array}{r} 15 \\ \times 32 \\ \hline 30 \\ \hline \end{array}$$

c)

$$\begin{array}{r} 24 \\ \times 43 \\ \hline \\ \hline \end{array}$$

d)

$$\begin{array}{r} 71 \\ \times 62 \\ \hline \\ \hline \end{array}$$

e)

$$\begin{array}{r} 58 \\ \times 45 \\ \hline \\ \hline \end{array}$$

f)

$$\begin{array}{r} 92 \\ \times 73 \\ \hline \\ \hline \end{array}$$

g)

$$\begin{array}{r} 46 \\ \times 38 \\ \hline \\ \hline \end{array}$$

h)

$$\begin{array}{r} 33 \\ \times 96 \\ \hline \\ \hline \end{array}$$

# Skill 8.4 Dividing a large number by a single digit, without carry over.

MM3.2 1 1 2 2 3 3 4 4  
MM4.1 1 1 2 2 3 3 4 4

- Divide from left to right across the digits, one at a time.

Q. 
$$\begin{array}{r} \boxed{\phantom{000}} \\ 2 \overline{) 486} \end{array}$$

A. 
$$\begin{array}{r} \boxed{243} \\ 2 \overline{) 486} \end{array}$$
  
*hundreds first!*  
*hundreds*  
*tens*  
*units*

**Hundreds:**

$4 \div 2 = 2 \Rightarrow 2 \text{ hundreds}$

**Tens:**

$8 \div 2 = 4 \Rightarrow 4 \text{ tens}$

**Units:**

$6 \div 2 = 3 \Rightarrow 3 \text{ units}$

Read as: 486 divided by 2 equals?  
 OR How many 2's go into 486?  
 OR 486 divides by 2 how many times?

Consider:  $486 \div 2 = 243$   
 $2 \times 243 = 486$

a) 
$$\begin{array}{r} \boxed{20} \\ 4 \overline{) 80} \end{array}$$

b) 
$$\begin{array}{r} \boxed{\phantom{00}} \\ 3 \overline{) 69} \end{array}$$

c) 
$$\begin{array}{r} \boxed{\phantom{00}} \\ 2 \overline{) 46} \end{array}$$

d) 
$$\begin{array}{r} \boxed{\phantom{00}} \\ 4 \overline{) 48} \end{array}$$

e) 
$$\begin{array}{r} \boxed{\phantom{000}} \\ 2 \overline{) 200} \end{array}$$
  
*hundreds first!*

f) 
$$\begin{array}{r} \boxed{\phantom{000}} \\ 2 \overline{) 800} \end{array}$$

g) 
$$\begin{array}{r} \boxed{\phantom{000}} \\ 3 \overline{) 909} \end{array}$$

h) 
$$\begin{array}{r} \boxed{\phantom{000}} \\ 7 \overline{) 770} \end{array}$$

i) 
$$\begin{array}{r} \boxed{\phantom{000}} \\ 4 \overline{) 408} \end{array}$$

j) 
$$\begin{array}{r} \boxed{\phantom{000}} \\ 3 \overline{) 396} \end{array}$$

k) 
$$\begin{array}{r} \boxed{\phantom{000}} \\ 2 \overline{) 284} \end{array}$$

l) 
$$\begin{array}{r} \boxed{\phantom{000}} \\ 3 \overline{) 366} \end{array}$$

m) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 3 \overline{) 6000} \end{array}$$
  
*thousands first!*

n) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 2 \overline{) 8000} \end{array}$$

o) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 2 \overline{) 2860} \end{array}$$

p) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 3 \overline{) 9063} \end{array}$$

q) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 2 \overline{) 8864} \end{array}$$

r) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 2 \overline{) 4806} \end{array}$$

s) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 3 \overline{) 3009} \end{array}$$

t) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 4 \overline{) 4048} \end{array}$$

u) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 3 \overline{) 3966} \end{array}$$

v) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 2 \overline{) 8204} \end{array}$$

w) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 4 \overline{) 8408} \end{array}$$

x) 
$$\begin{array}{r} \boxed{\phantom{0000}} \\ 3 \overline{) 3699} \end{array}$$

**Skill 8.5** Dividing a large number by a single digit, with carry over - no remainder.

MM3.2 1 1 2 2 3 3 4 4  
MM4.1 1 1 2 2 3 3 4 4

- Divide from left to right across the digits one at a time.
- If any result is less than 1: Break down the number being divided into. 'Carry over' this amount to the next column. Add on the carry. Then try dividing again.

**Q.**

$$\begin{array}{r} \boxed{\phantom{00}} \\ 4 \overline{) 128} \end{array}$$

**A.**

$$\begin{array}{r} \boxed{32} \\ 4 \overline{) 128} \end{array}$$

*hundreds first!*

*hundreds tens units*

**Hundreds:**

$$1 \div 4 = ?$$

The result is  $< 1$ .

Break down the 1 hundred into 10 tens and carry them to the tens column.

**Tens:**

$$2 + 10 \text{ (carry over)} = 12$$

$$12 \div 4 = 3$$

$\Rightarrow 3$  tens

**Units:**

$$8 \div 4 = 2$$

$\Rightarrow 2$  units

Read as: 128 divided by 4 equals?  
OR How many 4's go into 128?  
OR 128 divides by 4 how many times?

Consider:  $128 \div 4 = 32$   
 $4 \times 32 = 128$

**a)**

$$\begin{array}{r} \boxed{51} \\ 5 \overline{) 255} \end{array}$$

*hundreds first!*

**b)**

$$\begin{array}{r} \boxed{\phantom{00}} \\ 3 \overline{) 216} \end{array}$$

**c)**

$$\begin{array}{r} \boxed{\phantom{00}} \\ 2 \overline{) 148} \end{array}$$

**d)**

$$\begin{array}{r} \boxed{\phantom{00}} \\ 4 \overline{) 320} \end{array}$$

**e)**

$$\begin{array}{r} \boxed{\phantom{00}} \\ 4 \overline{) 212} \end{array}$$

**f)**

$$\begin{array}{r} \boxed{\phantom{00}} \\ 8 \overline{) 592} \end{array}$$

**g)**

$$\begin{array}{r} \boxed{\phantom{00}} \\ 6 \overline{) 204} \end{array}$$

**h)**

$$\begin{array}{r} \boxed{\phantom{00}} \\ 7 \overline{) 336} \end{array}$$

**i)**

$$\begin{array}{r} \boxed{\phantom{000}} \\ 6 \overline{) 1800} \end{array}$$

*thousands first!*

**j)**

$$\begin{array}{r} \boxed{\phantom{000}} \\ 5 \overline{) 4500} \end{array}$$

**k)**

$$\begin{array}{r} \boxed{\phantom{000}} \\ 4 \overline{) 1060} \end{array}$$

**l)**

$$\begin{array}{r} \boxed{\phantom{000}} \\ 2 \overline{) 1734} \end{array}$$

**m)**

$$\begin{array}{r} \boxed{\phantom{0000}} \\ 3 \overline{) 6081} \end{array}$$

**n)**

$$\begin{array}{r} \boxed{\phantom{0000}} \\ 3 \overline{) 4125} \end{array}$$

**o)**

$$\begin{array}{r} \boxed{\phantom{0000}} \\ 6 \overline{) 7218} \end{array}$$

**p)**

$$\begin{array}{r} \boxed{\phantom{0000}} \\ 5 \overline{) 5150} \end{array}$$

