

6. [Large Number \times, \div]

Skill 6.1 Dividing a large number by a single digit - no remainder.

MM7 1 1 2 2 3 3 4 4
MM8 1 1 2 2 3 3 4 4

Q. $3 \overline{)72}$

A. $3 \overline{)72} \begin{array}{r} 24 \\ \underline{6} \\ 12 \\ \underline{12} \\ 0 \end{array}$

Read as:
72 divided by 3
OR (because division is really just lots of subtractions)
How many times can 3 be taken from 72.

Break down the division question into smaller division questions, a digit at a time. Work from left to right.

First divide 3 into the left most digit, 7.
3 will divide into 7 two times, with 1 remainder.
Write a 2 above the 7 and "carry over" the 1 ten as 10 units to the units column. Now $10 + 2$ equals 12 units.

Divide 3 into the 12. It goes exactly four times.
Write a 4 above the 2.

Q. $316 \div 4 =$

A. $4 \overline{)316} \begin{array}{r} 79 \\ \underline{28} \\ 36 \\ \underline{36} \\ 0 \end{array}$

Read as:
316 divided by 4
OR (because division is really just lots of subtractions)
How many times can 4 be taken from 316.

4 doesn't divide into 3, so carry over the 3 groups of 100 and make 31 groups of 10.

4 divides into 31 seven times, with 3 remainder.
Write a 7 above the 1 and carry the remaining 3 groups of 10 to the tens column to make 36 units.

Divide 4 into 36.
4 divides into 36 exactly nine times.
Write a 9 above the 6.

a) $3 \overline{)48}$

b) $5 \overline{)75}$

c) $6 \overline{)96}$

d) $4 \overline{)92}$

e) $2 \overline{)74}$

f) $8 \overline{)96}$

g) $7 \overline{)84}$

h) $5 \overline{)90}$

i) $2 \overline{)42}$

j) $7 \overline{)189}$

k) $4 \overline{)172}$

l) $5 \overline{)315}$

m) $4 \overline{)568}$

n) $3 \overline{)762}$

o) $6 \overline{)1146}$

p) $9 \overline{)2349}$

q) $4 \overline{)2524}$

r) $8 \overline{)1712}$

s) $3 \overline{)2616}$

t) $2 \overline{)14326}$

Q. $43 \times 2 =$

A.
$$\begin{array}{r} 43 \\ \times 2 \\ \hline 86 \end{array}$$
 ← 2 lots of 3 units
 ← 2 lots of 4 tens

This question can be thought of as:

$$\begin{array}{r} 40 + 3 \\ \times 2 \\ \hline 80 + 6 \\ \hline = 86 \end{array}$$

Q. $54 \times 6 =$

A.
$$\begin{array}{r} 54 \\ \times 6 \\ \hline 324 \end{array}$$
 This is the 2 groups of ten
 "carried over" from
 $6 \times 4 = 24$.
 Then, add these 2 tens to
 $6 \times 5 = 30$ to give
 32 groups of ten.

This question can be thought of as:

$$\begin{array}{r} 50 + 4 \\ \times 6 \\ \hline 300 + 24 \\ \hline = 324 \end{array}$$

a) $24 \times 3 =$

$$\begin{array}{r} 24 \\ \times 3 \\ \hline 72 \end{array}$$

b) $52 \times 4 =$

$$\begin{array}{r} 52 \\ \times 4 \\ \hline \end{array}$$

c) $67 \times 5 =$

$$\begin{array}{r} 67 \\ \times 5 \\ \hline \end{array}$$

d) $39 \times 5 =$

$$\begin{array}{r} 39 \\ \times 5 \\ \hline \end{array}$$

e) $86 \times 4 =$

$$\begin{array}{r} 86 \\ \times 4 \\ \hline \end{array}$$

f) $913 \times 2 =$

$$\begin{array}{r} 913 \\ \times 2 \\ \hline \end{array}$$

g) $248 \times 6 =$

$$\begin{array}{r} 248 \\ \times 6 \\ \hline \end{array}$$

h) $375 \times 6 =$

$$\begin{array}{r} 375 \\ \times 6 \\ \hline \end{array}$$

i) $705 \times 4 =$

$$\begin{array}{r} 705 \\ \times 4 \\ \hline \end{array}$$

j) $608 \times 3 =$

$$\begin{array}{r} 608 \\ \times 3 \\ \hline \end{array}$$

k) $429 \times 5 =$

$$\begin{array}{r} 429 \\ \times 5 \\ \hline \end{array}$$

l) $1153 \times 2 =$

$$\begin{array}{r} 1153 \\ \times 2 \\ \hline \end{array}$$

m) $2402 \times 4 =$

$$\begin{array}{r} 2402 \\ \times 4 \\ \hline \end{array}$$

n) $1060 \times 3 =$

$$\begin{array}{r} 1060 \\ \times 3 \\ \hline \end{array}$$

o) $3007 \times 5 =$

$$\begin{array}{r} 3007 \\ \times 5 \\ \hline \end{array}$$

p) $6042 \times 3 =$

$$\begin{array}{r} 6042 \\ \times 3 \\ \hline \end{array}$$

Q. $725 \times 21 =$

A.

$$\begin{array}{r}
 \begin{array}{|c|c|c|} \hline 7 & 2 & 5 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 2 & 1 \\ \hline \end{array} \\
 \hline
 \begin{array}{|c|c|c|} \hline 7 & 2 & 5 \\ \hline \end{array} \leftarrow 1 \times 725 = 725 \\
 \begin{array}{|c|c|c|c|c|} \hline 1 & 4 & 5 & 0 & 0 \\ \hline \end{array} \leftarrow 20 \times 725 = 14500 \\
 \hline
 \begin{array}{|c|c|c|c|} \hline 1 & 5 & 2 & 2 & 5 \\ \hline \end{array}
 \end{array}$$

Multiply the 725 by 1 unit and 2 groups of ten:

2 groups of ten means 20. To show we want groups of ten we place a 0 in the units column. Multiplying 725 by 2 gives 1450. We want 1450 groups of ten, so we place the 1450 in front of the 0.

This question can be thought of as:

$$\begin{array}{r}
 \begin{array}{|c|c|c|} \hline 7 & 2 & 5 \\ \hline \end{array} \times \begin{array}{|c|} \hline 1 \\ \hline \end{array} \\
 \hline
 \begin{array}{|c|c|c|} \hline 7 & 2 & 5 \\ \hline \end{array}
 \end{array}
 \text{ plus }
 \begin{array}{r}
 \begin{array}{|c|c|c|} \hline 7 & 2 & 5 \\ \hline \end{array} \times \begin{array}{|c|c|} \hline 2 & 0 \\ \hline \end{array} \\
 \hline
 \begin{array}{|c|c|c|c|c|} \hline 1 & 4 & 5 & 0 & 0 \\ \hline \end{array}
 \end{array}
 = 15225$$

a) $214 \times 53 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|} \hline 2 & 1 & 4 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 5 & 3 \\ \hline \end{array} \\
 \hline
 \begin{array}{|c|c|c|} \hline 6 & 4 & 2 \\ \hline \end{array} \\
 \begin{array}{|c|c|c|c|} \hline 1 & 0 & 7 & 0 & 0 \\ \hline \end{array} \\
 \hline
 \begin{array}{|c|c|c|c|} \hline 1 & 1 & 3 & 4 & 2 \\ \hline \end{array}
 \end{array}$$

b) $604 \times 83 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|} \hline 6 & 0 & 4 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 8 & 3 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

c) $362 \times 16 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|} \hline 3 & 6 & 2 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 1 & 6 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

d) $1275 \times 43 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|c|} \hline 1 & 2 & 7 & 5 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 4 & 3 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

e) $269 \times 52 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|} \hline 2 & 6 & 9 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 5 & 2 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

f) $3082 \times 19 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|c|} \hline 3 & 0 & 8 & 2 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 1 & 9 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

g) $4201 \times 17 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|c|} \hline 4 & 2 & 0 & 1 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 1 & 7 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

h) $1090 \times 81 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|c|} \hline 1 & 0 & 9 & 0 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 8 & 1 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

i) $2450 \times 15 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|c|} \hline 2 & 4 & 5 & 0 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 1 & 5 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

j) $1601 \times 32 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|c|} \hline 1 & 6 & 0 & 1 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 3 & 2 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

k) $5267 \times 24 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|c|} \hline 5 & 2 & 6 & 7 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 2 & 4 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

l) $6820 \times 25 =$

$$\begin{array}{r}
 \begin{array}{|c|c|c|c|} \hline 6 & 8 & 2 & 0 \\ \hline \end{array} \\
 \times \begin{array}{|c|c|} \hline 2 & 5 \\ \hline \end{array} \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots \\
 \hline
 \dots\dots\dots
 \end{array}$$

Q. $2616 \div 12 =$ A. $12 \overline{) \cancel{2} \cancel{6} \cancel{1} \cancel{6}}$

12 won't go into 2 and give a whole number, so carry over the 2 groups of 1000 and make 26 groups of 100. 12 divides into 26 two times, with 2 remainder. Write a 2 above the 6 and carry the remaining 2 groups of 100 to the tens column to make 21 groups of 10.

Divide 12 into 21.

12 divides into 21 once, with 9 remainder.

Write a 1 in the tens column and carry the remaining 9 tens to the units column, to make 96 units.

Divide 12 into 96. It goes exactly 8 times.

Write an 8 in the units column.

Q. $83400 \div 40 =$ A. $40 \overline{) 83400}$

$= 4 \overline{) \cancel{8} \cancel{3} \cancel{4} \cancel{0}}$

As a fraction, $\frac{83400}{40}$ can be simplified by dividing both the numerator and denominator by 10.

Start by crossing off a zero from both 40 and 83400.

The division becomes $8340 \div 4$.

4 divides into 8 twice. Write a 2 above the 8.

Because 4 doesn't divide into 3 and give a whole number, write a 0 above the 3. Carry over these 3 groups of 100 to the tens column to make 34 groups of 10.

Divide 4 into 34. It goes 8 times, with 2 remainder.

Write an 8 in the tens column. Carry over these 2 groups of 10 to the units column to make 20 units.

Divide 4 into 20. It goes exactly 5 times.

Write a 5 above the 0.

a) $1488 \div 12 =$

$$12 \overline{) \cancel{1} \cancel{4} \cancel{8} \cancel{8}}$$

b) $7832 \div 11 =$

$$11 \overline{) 7832}$$

c) $3510 \div 15 =$

$$15 \overline{) 3510}$$

d) $4225 \div 25 =$

$$25 \overline{) 4225}$$

e) $36840 \div 12 =$

$$12 \overline{) 36840}$$

f) $25740 \div 11 =$

$$11 \overline{) 25740}$$

g) $37200 \div 15 =$

$$15 \overline{) 37200}$$

h) $20350 \div 25 =$

$$25 \overline{) 20350}$$

i) $6480 \div 20 =$

$$20 \overline{) \cancel{6} \cancel{4} \cancel{8} \cancel{0}}$$

j) $1400 \div 40 =$

$$40 \overline{) 1400}$$

k) $5310 \div 30 =$

$$30 \overline{) 5310}$$

l) $4900 \div 50 =$

$$50 \overline{) 4900}$$

$$= 2 \overline{) \cancel{6} \cancel{4} \cancel{8}}$$

$$= 4 \overline{) 1400}$$

$$= 3 \overline{) \dots\dots\dots}$$

$$= 5 \overline{) \dots\dots\dots}$$

Q. $168 \times 120 =$

A. **20160**

$$\begin{array}{r} \overset{1}{1} \overset{1}{6} 8 \\ \times \quad 120 \\ \hline 1680 \\ 3360 \\ \hline 20160 \end{array}$$

Consider 120 as 12 groups of 10.
First, multiply 168 by 12.
 $168 \times 12 = 2016$

To show we want groups of ten, add a 0 after 2016 to make 20160.

a) $206 \times 150 =$
= 30900

b) $135 \times 140 =$
=

c) $340 \times 160 =$
=

d) $507 \times 1200 =$
=

$$\begin{array}{r} \overset{3}{2} 06 \\ \times \quad 150 \\ \hline 1030 \\ 2060 \\ \hline 30900 \end{array}$$

$$\begin{array}{r} 135 \\ \times \quad 140 \\ \hline \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 340 \\ \times \quad 160 \\ \hline \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 507 \\ \times \quad 1200 \\ \hline \\ \hline \\ \hline \end{array}$$

e) $423 \times 110 =$
=

f) $605 \times 130 =$
=

g) $280 \times 150 =$
=

h) $306 \times 180 =$
=

$$\begin{array}{r} 423 \\ \times \quad 110 \\ \hline \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 605 \\ \times \quad 130 \\ \hline \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 280 \\ \times \quad 150 \\ \hline \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 306 \\ \times \quad 180 \\ \hline \\ \hline \\ \hline \end{array}$$

i) $704 \times 140 =$
=

j) $409 \times 1100 =$
=

k) $207 \times 1400 =$
=

l) $152 \times 1500 =$
=

$$\begin{array}{r} 704 \\ \times \quad 140 \\ \hline \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 409 \\ \times \quad 1100 \\ \hline \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 207 \\ \times \quad 1400 \\ \hline \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 152 \\ \times \quad 1500 \\ \hline \\ \hline \\ \hline \end{array}$$

When a single digit doesn't divide evenly into a whole number, you can continue the division by placing more zeros after the decimal point at the end of the whole number.

Q. $167 \div 2 =$

A.
$$2 \overline{)167}$$

$$= 2 \overline{)167.0}$$

$$= 2 \overline{)167.0} \begin{array}{r} 83.5 \\ \hline \end{array}$$

When no decimal point is shown it is always placed on the far right of the number.

167 can also be written as 167.0

Divide 2 into 1. Because 2 doesn't divide into 1 and make a whole number, carry over this 1 group of 100 to the tens column as 10 groups of 10. Add them to the 6 to make 16 groups of 10.

Divide 2 into 16. It goes exactly 8 times. Write an 8 in the tens column.

Divide 2 into 7. It goes 3 times with 1 remainder. Write a 3 above the 7. Carry over the 1 unit as 10 tenths to the tenths column. Add the 10 to the 0 to make 10 tenths.

Divide 2 into 10. It goes exactly 5 times. Place a decimal point in the answer and write a 5 above the tenths column.

a) $774 \div 5 =$

$$5 \overline{)774.0} \begin{array}{r} 154.8 \\ \hline \end{array}$$

b) $650 \div 4 =$

$$4 \overline{)650.0}$$

c) $1843 \div 2 =$

$$2 \overline{)1843.0}$$

d) $2084 \div 8 =$

$$8 \overline{)2084.0}$$

e) $606 \div 4 =$

$$4 \overline{)606.0}$$

f) $927 \div 2 =$

$$2 \overline{)927.0}$$

g) $5624 \div 5 =$

$$5 \overline{)5624.0}$$

h) $3156 \div 8 =$

$$8 \overline{)3156.0}$$

i) $354 \div 4 =$

$$4 \overline{)354.0}$$

j) $268 \div 5 =$

$$5 \overline{)268.0}$$

k) $4564 \div 8 =$

$$8 \overline{)4564.0}$$

l) $9851 \div 2 =$

$$2 \overline{)9851.0}$$

m) $357 \div 6 =$

$$6 \overline{)357.0}$$

n) $4791 \div 6 =$

$$6 \overline{)4791.0}$$

o) $8046 \div 8 =$

$$8 \overline{)8046.0}$$

p) $6345 \div 4 =$

$$4 \overline{)6345.0}$$