1. [Long ×,÷]

Skill 1.1 Multiplying a large number by a multiple of 10.

- Consider the zeros as making groups of 10's or 100's and place them at the end.
- Then multiply by the remaining digit as though it was a unit.

Q. $589 \times 700 =$

A. ***412 300***

$$\begin{array}{r} {\scriptstyle 6}\ {\scriptstyle 6} \\ 5\ 8\ 9 \\ \times\quad 7\ 0\ 0 \\ \hline 4\ 1\ 2\ 3\ 0\ 0 \end{array}$$

Consider 700 as 7 groups of 100.

Multiply 589 by 7.

To show we want groups of 100, place two zeros after the 4123.

a) $67 \times 40 =$ 2680

$$\begin{array}{r} {\scriptstyle 2} \\ 6\ 7 \\ \times\quad 4\ 0 \\ \hline 2\ 6\ 8\ 0 \end{array}$$

b) $58 \times 90 =$

$$\begin{array}{r} {\scriptstyle 7} \\ 5\ 8 \\ \times\quad 9\ 0 \\ \hline 2\ 0 \end{array}$$

c) $74 \times 60 =$

$$\begin{array}{r} 7\ 4 \\ \times\quad 6\ 0 \\ \hline 0 \end{array}$$

d) $89 \times 70 =$

$$\begin{array}{r} 8\ 9 \\ \times\quad 7\ 0 \\ \hline \end{array}$$

e) $483 \times 50 =$

$$\begin{array}{r} 4\ 8\ 3 \\ \times\quad 5\ 0 \\ \hline \end{array}$$

f) $790 \times 80 =$

$$\begin{array}{r} 7\ 9\ 0 \\ \times\quad 8\ 0 \\ \hline \end{array}$$

g) $890 \times 200 =$

$$\begin{array}{r} {\scriptstyle 1} \\ 8\ 9\ 0 \\ \times\quad 2\ 0\ 0 \\ \hline 1\ 7\ 8\ 0\ 0\ 0 \end{array}$$

h) $647 \times 400 =$

$$\begin{array}{r} 6\ 4\ 7 \\ \times\quad 4\ 0\ 0 \\ \hline \end{array}$$

i) $2596 \times 200 =$

$$\begin{array}{r} 2\ 5\ 9\ 6 \\ \times\quad 2\ 0\ 0 \\ \hline \end{array}$$

j) $2596 \times 300 =$

$$\begin{array}{r} 2\ 5\ 9\ 6 \\ \times\quad 3\ 0\ 0 \\ \hline \end{array}$$

k) $310 \times 2000 =$

$$\begin{array}{r} 3\ 1\ 0 \\ \times\quad 2\ 0\ 0\ 0 \\ \hline \end{array}$$

l) $475 \times 2000 =$

$$\begin{array}{r} 4\ 7\ 5 \\ \times\quad 2\ 0\ 0\ 0 \\ \hline \end{array}$$

continues on page 3

Skill 1.2 Multiplying a large number by a two-digit number (1).

- Multiply by the units first.
- Then multiply by the tens.

Reminder: Put a zero in the units place before you start multiplying by the tens.

Q. $564 \times 18 =$ **A.** ***10 152***

$$\begin{array}{r} {\scriptstyle 5\ 3} \\ 564 \\ \times\ \ 18 \\ \hline {\scriptstyle 1}\ 4512 \\ +\ 5640 \\ \hline 10152 \end{array}$$

Multiply 564 by 8.

Then multiply 564 by 10.
Remember: Put a 0 in the units place.

Add the results.

This question can be thought of as:

$$\begin{array}{r} {\scriptstyle 5\ 3} \\ 564 \\ \times\ \ \ 8 \\ \hline 4512 \end{array} \quad \text{plus} \quad \begin{array}{r} 564 \\ \times\ \ 10 \\ \hline 5640 \end{array} = 10152$$

a) $19 \times 15 =$ 285

$$\begin{array}{r} {\scriptstyle 4} \\ 19 \\ \times\ 15 \\ \hline 95 \\ +\ 190 \\ \hline 285 \end{array}$$

b) $27 \times 13 =$

$$\begin{array}{r} {\scriptstyle 2} \\ 27 \\ \times\ 13 \\ \hline 81 \\ + \\ \hline \\ \hline \end{array}$$

c) $34 \times 18 =$

$$\begin{array}{r} 34 \\ \times\ 18 \\ \hline \\ \\ \hline \\ \hline \end{array}$$

d) $56 \times 14 =$

$$\begin{array}{r} 56 \\ \times\ 14 \\ \hline \\ \\ \hline \\ \hline \end{array}$$

e) $274 \times 17 =$

$$\begin{array}{r} 274 \\ \times\ 17 \\ \hline \\ \\ \hline \\ \hline \end{array}$$

f) $456 \times 19 =$

$$\begin{array}{r} 456 \\ \times\ 19 \\ \hline \\ \\ \hline \\ \hline \end{array}$$

g) $249 \times 36 =$

$$\begin{array}{r} 249 \\ \times\ 36 \\ \hline \\ \\ \hline \\ \hline \end{array}$$

h) $237 \times 28 =$

$$\begin{array}{r} 237 \\ \times\ 28 \\ \hline \\ \\ \hline \\ \hline \end{array}$$

i) $413 \times 56 =$

$$\begin{array}{r} 413 \\ \times\ 56 \\ \hline \\ \\ \hline \\ \hline \end{array}$$

continued from page 2

Skill 1.2 Multiplying a large number by a two-digit number (2).

j) $289 \times 47 =$ **13 583**

$$\begin{array}{r} {}^{6}2\,{}^{6}8\,9 \\ \times\ {}^{3}\,{}^{3}4\,7 \\ \hline 2\,0\,2\,3 \\ +\ 1\,1\,5\,6\,0 \\ \hline 1\,3\,5\,8\,3 \end{array}$$

k) $873 \times 35 =$

$$\begin{array}{r} 8\,7\,3 \\ \times\ \ 3\,5 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

l) $456 \times 64 =$

$$\begin{array}{r} 4\,5\,6 \\ \times\ \ 6\,4 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

m) $516 \times 33 =$

$$\begin{array}{r} 5\,1\,6 \\ \times\ \ 3\,3 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

n) $934 \times 78 =$

$$\begin{array}{r} 9\,3\,4 \\ \times\ \ 7\,8 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

o) $689 \times 56 =$

$$\begin{array}{r} 6\,8\,9 \\ \times\ \ 5\,6 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

p) $2009 \times 96 =$

$$\begin{array}{r} 2\,0\,0\,9 \\ \times\ \ 9\,6 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

q) $1087 \times 37 =$

$$\begin{array}{r} 1\,0\,8\,7 \\ \times\ \ 3\,7 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

r) $3265 \times 73 =$

$$\begin{array}{r} 3\,2\,6\,5 \\ \times\ \ 7\,3 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

s) $1989 \times 43 =$

$$\begin{array}{r} 1\,9\,8\,9 \\ \times\ \ 4\,3 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

t) $2701 \times 84 =$

$$\begin{array}{r} 2\,7\,0\,1 \\ \times\ \ 8\,4 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

u) $5678 \times 92 =$

$$\begin{array}{r} 5\,6\,7\,8 \\ \times\ \ 9\,2 \\ \hline \\ \\ \hline \\ \\ \hline \end{array}$$

Skill 1.3 Multiplying a large number by a large multiple of 10.

- Consider the zeros as making groups of 10's or 100's and place them at the end.
- Multiply by the units first, then by the tens.

Q. $382 \times 230 =$

A. ***87860***

$$\begin{array}{r} {\scriptstyle 2}\ 3\ 8\ 2 \\ \times\ \ 2\ 3\ 0 \\ \hline 1\ 1\ 4\ 6 \\ +\ 7\ 6\ 4\ 0 \\ \hline 8\ 7\ 8\ 6\ 0 \end{array}$$

Consider 230 as 23 groups of 10.

Work with the 23 first.
Multiply 382 by 3.
Then multiply 382 by 20.
Add these results.

To show we want groups of 10, place a 0 after the 8786.

a) $358 \times 130 =$ **46 540**

$$\begin{array}{r} {\scriptstyle 1\ 2}\ 3\ 5\ 8 \\ \times\ \ 1\ 3\ 0 \\ \hline {\scriptstyle 1}\ 0\ 7\ 4 \\ +\ 3\ 5\ 8\ 0 \\ \hline 4\ 6\ 5\ 4\ 0 \end{array}$$

b) $469 \times 210 =$

$$\begin{array}{r} 4\ 6\ 9 \\ \times\ \ 2\ 1\ 0 \\ \hline +\ \ \ \ 0 \\ \hline \ \ \ \ \ 0 \\ \hline \end{array}$$

c) $325 \times 180 =$

$$\begin{array}{r} 3\ 2\ 5 \\ \times\ \ 1\ 8\ 0 \\ \hline \\ \hline \\ \hline \end{array}$$

d) $637 \times 140 =$

$$\begin{array}{r} 6\ 3\ 7 \\ \times\ \ 1\ 4\ 0 \\ \hline \\ \hline \\ \hline \end{array}$$

e) $428 \times 230 =$

$$\begin{array}{r} 4\ 2\ 8 \\ \times\ \ 2\ 3\ 0 \\ \hline \\ \hline \\ \hline \end{array}$$

f) $1865 \times 390 =$

$$\begin{array}{r} 1\ 8\ 6\ 5 \\ \times\ \ 3\ 9\ 0 \\ \hline \\ \hline \\ \hline \end{array}$$

g) $2904 \times 420 =$

$$\begin{array}{r} 2\ 9\ 0\ 4 \\ \times\ \ 4\ 2\ 0 \\ \hline \\ \hline \\ \hline \end{array}$$

h) $263 \times 1500 =$

$$\begin{array}{r} 2\ 6\ 3 \\ \times\ \ 1\ 5\ 0\ 0 \\ \hline \\ \hline \\ \hline \end{array}$$

i) $457 \times 1800 =$

$$\begin{array}{r} 4\ 5\ 7 \\ \times\ \ 1\ 8\ 0\ 0 \\ \hline \\ \hline \\ \hline \end{array}$$

Skill 1.4 Dividing a large number by a single digit.

- Break down the division into smaller divisions.
- Work from left to right.

Q. 2835 ÷ 7 =

A. ***405***

$$7\overline{)2^{2}8^{3}3^{3}5} \quad 4\ 0\ 5$$

Starting at the left, divide 7 into 2. 7 doesn't divide into 2 at least once so 'carry over' the 2 groups of 1000 and make 28 groups of 100.

7 divides into 28 four times and 0 remainder. Write a 4 above the 8.

Then divide 7 into 3. 7 doesn't divide into 3 at least once so 'carry over' the 3 groups of 10 and make 35 groups of 1. Write a 0 above the 3.

7 divides into 35 five times and 0 remainder. Write a 5 above the 5.

a) 756 ÷ 9 = 84

$$9\overline{)7^{7}5^{3}6} \quad 8\ 4$$

b) 136 ÷ 8 =

$$8\overline{)1^{1}3\ 6} \quad 1$$

c) 390 ÷ 6 =

$$6\overline{)3\ 9\ 0}$$

d) 496 ÷ 4 =

$$4\overline{)4\ 9\ 6}$$

e) 792 ÷ 3 =

$$3\overline{)7\ 9\ 2}$$

f) 854 ÷ 7 =

$$7\overline{)8\ 5\ 4}$$

g) 3324 ÷ 4 = 831

$$4\overline{)3^{3}3^{1}2\ 4} \quad 8\ 3\ 1$$

h) 1491 ÷ 3 =

$$3\overline{)1\ 4\ 9\ 1}$$

i) 4135 ÷ 5 =

$$5\overline{)4\ 1\ 3\ 5}$$

j) 2384 ÷ 4 =

$$4\overline{)2\ 3\ 8\ 4}$$

k) 5670 ÷ 6 =

$$6\overline{)5\ 6\ 7\ 0}$$

l) 4383 ÷ 9 =

$$9\overline{)4\ 3\ 8\ 3}$$

m) 6013 ÷ 7 =

$$7\overline{)6\ 0\ 1\ 3}$$

n) 8560 ÷ 5 =

$$5\overline{)8\ 5\ 6\ 0}$$

o) 9048 ÷ 8 =

$$8\overline{)9\ 0\ 4\ 8}$$

Skill 1.5 Dividing a large number by a power of 10.

EITHER

When the whole number ends in the same number of zeros or more zeros than the power of 10:

- Take off as many zeros in the whole number as there are zeros in the power of 10.
  Example: 54 00Ø ÷ 1Ø = 5400
  54 0ØØ ÷ 1ØØ = 540
  54 ØØØ ÷ 1ØØØ = 54

OR

When the whole number ends in less zeros than the power of 10:

- Move the decimal place to the left as many places as there are zeros in the power of 10.
  Example: 3070 ÷ 100 = 30.7Ø = 30.7
  Hints: Any zero at the end of the number and to the right of the decimal point can be removed.
  A decimal point would be at the end of a whole number but is not written by convention, e.g. 3070 = 3070.0

Q. 48 670 ÷ 1000 =

A. *48 670 ÷ 1000*
= 48670.0 ÷ 1000
= 48.67Ø
= 48.67

There are 3 zeros in 1000 so move the decimal point 3 places to the left.

The zero on the right can be removed.

a) 12 000 ÷ 100 =
= *12 0ØØ ÷ 1ØØ* = 120

b) 15 000 ÷ 10 =
= ..... =

c) 13 500 ÷ 10 =
= ..... =

d) 98 200 ÷ 100 =
= ..... =

e) 3200 ÷ 100 =
= ..... =

f) 80 000 ÷ 100 =
= ..... =

g) 543 ÷ 10 =
= *54.3* = 54.3

h) 278 ÷ 10 =
= ..... =

i) 5466 ÷ 10 =
= ..... =

j) 6450 ÷ 100 =
= ..... =

k) 43 070 ÷ 100 =
= ..... =

l) 5507 ÷ 100 =
= ..... =

m) 19 034 ÷ 100 =
= ..... =

n) 23 790 ÷ 1000 =
= ..... =

o) 42 210 ÷ 1000 =
= ..... =

Skill 1.6 Dividing a large number by a multiple of 10.

- If both the dividend and the divisor end in 0 or 00 then divide both numbers by 10 or 100 to remove both zero endings.
- Then divide by the remaining digit as though it was a unit.

Q. 34 780 ÷ 20 =

A. *34 780 ÷ 20*
= 34 78Ø ÷ 2Ø
= 1739

$$2\overline{)3^{1}4\;7^{1}8}\quad 1739$$

Divide both numbers by 10 to remove the zeros.

Then complete the division.

a) 2460 ÷ 30 =

= 246Ø ÷ 3Ø = 82

$$3\overline{)2^{2}4\;6}\quad 82$$

b) 1760 ÷ 20 =

= 176Ø ÷ 2Ø =

$$2\overline{)1^{1}7\;6}$$

c) 6950 ÷ 50 =

=

$$5\overline{)6\;9\;5}$$

d) 5480 ÷ 40 =

=

$$4\overline{)\;\;\;}$$

e) 9660 ÷ 70 =

=

$$7\overline{)\;\;\;}$$

f) 8220 ÷ 30 =

=

$$\overline{)\;\;\;}$$

g) 39 120 ÷ 40 =

= 39 12Ø ÷ 4Ø = 978

$$4\overline{)3^{3}9^{3}1^{3}2}\quad 978$$

h) 75 980 ÷ 20 =

=

$$2\overline{)7\;5\;9\;8}$$

i) 37 550 ÷ 50 =

=

$$5\overline{)\;\;\;}$$

j) 21 420 ÷ 60 =

=

$$\overline{)\;\;\;}$$

k) 50 080 ÷ 80 =

=

$$\overline{)\;\;\;}$$

l) 52 380 ÷ 90 =

=

$$\overline{)\;\;\;}$$

m) 137 700 ÷ 300 =

=

$$\overline{)\;\;\;}$$

n) 450 400 ÷ 800 =

=

$$\overline{)\;\;\;}$$

o) 142 200 ÷ 600 =

=

$$\overline{)\;\;\;}$$

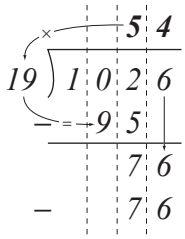
continues on page 9

Skill 1.7 Dividing a whole number by a two-digit number (1).

- Work from left to right.
- Break down the division into smaller divisions by dividing into only as many digits as you need to get an answer greater than 1.
- It may be difficult, so guess the number of divisions and multiply your guess to check.
- Subtract your answer from the original number to get the remainder, which must be less than the number you are dividing by.
- Continue in this way by bringing down the next digit to make the next number to divide into.
- Repeat until the result of the subtraction is zero.

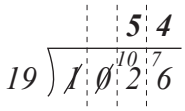
Q. $1026 \div 19 =$

A. ***54***



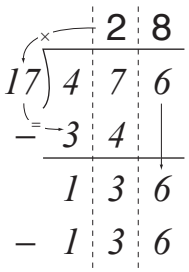
Start at the left.
1 and 10 are too small to divide 19 into and get a result greater than 1.
Divide $102 \div 19 = ?$
19 is nearly 20 so 5 is a good guess.
Check by multiplying $5 \times 19 = 95$
Subtract $102 - 95 = 7$
Write 5 above the 2.

Bring down the 6
Divide $76 \div 19 = ?$ (Guess 4)
Check by multiplying $4 \times 19 = 76$
Subtract $76 - 76 = 0$ (No remainder)
Write 4 above the 6.

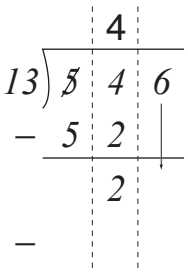


OR Work as a short division.

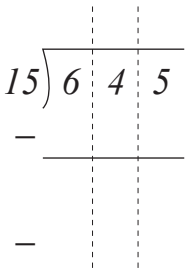
a) $476 \div 17 =$ **28**



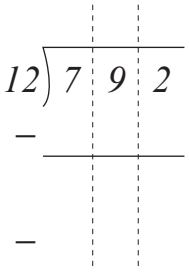
b) $546 \div 13 =$



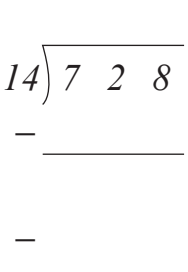
c) $645 \div 15 =$



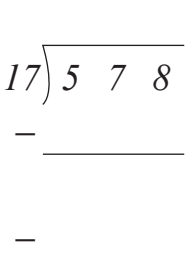
d) $792 \div 12 =$



e) $728 \div 14 =$



f) $578 \div 17 =$



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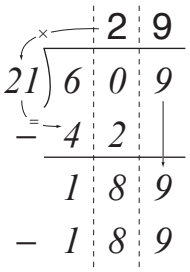
Skill 1.7 Dividing a whole number by a two-digit number (2).

g) 609 ÷ 21 =



h) 825 ÷ 25 =

3
25 8 2 5
–
–

i) 504 ÷ 14 =

14 5 0 4
–
–

j) 432 ÷ 18 =

18 4 3 2
–
–

k) 848 ÷ 16 =

16 8 4 8
–
–

l) 814 ÷ 22 =

22 8 1 4
–
–

m) 8055 ÷ 15 =

15 8 0 5 5
–
–
–

n) 1022 ÷ 14 =

14 1 0 2 2
–
–

o) 3870 ÷ 18 =

18 3 8 7 0
–
–
–

p) 2686 ÷ 17 =

17 2 6 8 6
–
–
–

q) 2337 ÷ 19 =

19 2 3 3 7
–
–
–

r) 2608 ÷ 16 =

16 2 6 0 8
–
–
–

Skill 1.8 Dividing whole numbers - remainder.

- Place a decimal point and more zeros at the end of the whole number.
- Divide into the whole number and continue until you get an exact division with no remainder.
- Line up the decimal point in your answer.

Q. 3948 ÷ 8 =

A. ***493.5***

$$8\overline{)3948.0} = 493.5$$

Divide 8 into 3948.0

Continue until you get an exact number with no remainder.

a) 639 ÷ 5 = 127.8

$$5\overline{)639.0} = 127.8$$

b) 315 ÷ 6 =

$$6\overline{)315.0} = 52.5$$

c) 366 ÷ 5 =

$$5\overline{)366.0} = 73.2$$

d) 1379 ÷ 2 =

$$2\overline{)1379.0} = 689.5$$

e) 4572 ÷ 8 =

$$8\overline{)4572.0} = 571.5$$

f) 835 ÷ 4 =

$$4\overline{)835.00} = 208.75$$

g) 233 ÷ 4 =

$$4\overline{)233.00} = 58.25$$

h) 590 ÷ 8 =

$$8\overline{)590.00} = 73.75$$

i) 2058 ÷ 12 =

$$12\overline{)2058.0} = 171.5$$

j) 1706 ÷ 20 =

$$20\overline{)1706.0} = 85.3$$

k) 5187 ÷ 15 =

$$15\overline{)5187.0} = 345.8$$

l) 988 ÷ 16 =

$$16\overline{)988.00} = 61.75$$

Skill 1.9 Dividing whole numbers - recurring remainder.

- Place a decimal point and more zeros at the end of the whole number.
- Divide into the whole number and continue until:
  The last digit keeps repeating - place a line above the recurring digit.
  Two or more digits repeat in a pattern - place a line above the pattern of recurring digits.
- Line up the decimal point in your answer.

Q. 698 ÷ 6 = **A.** $116.\overline{3}$

$$6\overline{)698.000} = 116.\overline{3}$$

Divide 6 into 698.000 using as many zeros as you like.

Continue until you are sure of the pattern of the remainder.

a) 650 ÷ 9 = $72.\overline{2}$

$$9\overline{)650.00} = 72.\overline{2}$$

b) 445 ÷ 3 = $148.\overline{3}$

$$3\overline{)445.00} = 148.\overline{3}$$

c) 370 ÷ 6 = $61.\overline{6}$

$$6\overline{)370.00} = 61.\overline{6}$$

d) 434 ÷ 3 = $144.\overline{6}$

$$3\overline{)434.} = 144.\overline{6}$$

e) 938 ÷ 6 = $156.\overline{3}$

$$6\overline{)938.} = 156.\overline{3}$$

f) 962 ÷ 9 = $106.\overline{8}$

$$9\overline{)962} = 106.\overline{8}$$

g) 5870 ÷ 6 = $978.\overline{3}$

$$6\overline{)5870} = 978.\overline{3}$$

h) 1304 ÷ 9 = $144.\overline{8}$

$$9\overline{)1304} = 144.\overline{8}$$

i) 985 ÷ 11 = $89.\overline{54}$

$$11\overline{)985.5454} = 89.\overline{54}$$

j) 1547 ÷ 21 = $73.\overline{6}$

$$21\overline{)1547} = 73.\overline{6}$$

k) 754 ÷ 22 = $34.\overline{27}$

$$22\overline{)754} = 34.\overline{27}$$

l) 4586 ÷ 15 = $305.\overline{86}$

$$15\overline{)4586} = 305.\overline{86}$$