3. [Decimal ×,÷]

Skill 3.1 Multiplying a decimal number by a whole number.

- Ignore any decimal points and complete the multiplication from right to left.
- Count the number of decimal places in the question.
- Move the decimal point the same number of places from the right in the answer.

Q. $5.49 \times 6 =$

A. ***32.94***

$^{2}5 . ^{5}(4)(9)$ × 6 = 3 2 . 9 4

$6 \times 9 = 54$ carry 5, write 4

$6 \times 4 + \text{carry } 5 = 29$ carry 2, write 9

$6 \times 5 + \text{carry } 2 = 32$ write 32

2 decimal places in question so move decimal point 2 places from right

a) $0.7 \times 4 =$ **2.8**

$^{2}0 . (7)$ × 4 = 2 . 8

b) $0.9 \times 8 =$

$^{7}0 . (9)$ × 8 = . 2

c) $2.6 \times 7 =$

$^{4}2 . 6$ × 7 =

d) $4.8 \times 5 =$

4 . 8 × 5 =

e) $3.26 \times 7 =$

3 . 2 6 × 7 =

f) $2.08 \times 3 =$

2 . 0 8 × 3 =

g) $12.23 \times 6 =$

1 2 . 2 3 × 6 =

h) $1.507 \times 9 =$

1 . 5 0 7 × 9 =

i) $21.37 \times 7 =$

2 1 . 3 7 × 7 =

j) $14.3 \times 8 =$

1 4 . 3 × 8 =

k) $3.056 \times 9 =$

3 . 0 5 6 × 9 =

l) $48.27 \times 3 =$

4 8 . 2 7 × 3 =

© Maths Mate 5.2 Skill Builder 3

Skill 3.2 Multiplying a decimal number by powers and multiples of 10.

To multiply by a power of 10:

- Count the number of zeros in the power of 10.
- Move the decimal point to the right as many places as there are zeros in the power of 10.
- Add zeros as place holders, if necessary.

  Example: $4.5 \times 100 = 4.50 \times 100 = 450$

To multiply by a multiple of 10:

- Disregard the 0's in the multiple of 10 and multiply by the remaining digit.
  (see skill 3.1, page 21)
- Move the decimal point to the right as many places as there are zeros in the multiple of 10.

Q. $0.005 \times 80 =$

A.

$$\begin{array}{r} 0.\overset{4}{0}\overset{}{0}5 \\ \times \quad 8 \\ \hline 0.040 \end{array}$$

$8 \times 5 = 40$ carry 4, write 0
$8 \times 0 + \text{carry } 4 = 4$ write 4
$8 \times 0 = 0$ write 0
$8 \times 0 = 0$ write 0

0.005×80
$= 0.040 \times 10$ (1 zero in multiple so move decimal point 1 place right)
$= \mathbf{0.4}$

a) $6.37 \times 100 =$ (2 zeros, 2 places right)

$= 637. = 637$

b) $3.98 \times 10 =$

$= 39.8 =$

c) $0.03 \times 10 =$

$= \quad =$

d) $4.29 \times 100 =$

$= \quad =$

e) $100 \times 3.007 =$

$= \quad =$

f) $21.88 \times 100 =$

$= \quad =$

g) $100 \times 0.005 =$

$= \quad =$

h) $0.8 \times 100 =$

$= \quad =$

i) $100 \times 0.12 =$

$= \quad =$

j) $0.039 \times 10 =$

$= \quad =$

k) $0.73 \times 10 =$

$= \quad =$

l) $1000 \times 0.57 =$

$= 0.57 = 570$

(Add zeros as place holders)

m) $50 \times 8.6 =$

$= \quad =$

n) $0.0058 \times 40 =$

$= \quad =$

o) $0.64 \times 200 =$

$= \quad =$

p) $30 \times 0.0309 =$

$= \quad =$

q) $0.004 \times 200 =$

$= \quad =$

r) $60 \times 0.704 =$

$= \quad =$

© Maths Mate 5.2 Skill Builder 3

continues on page 24

Skill 3.3 Multiplying a decimal number by a negative power of 10 (e.g. 0.1)

- Move the decimal point to the right in the power of 10, as many places as you need to make 1.
  Example: In $0.\overset{\frown}{01}$ the decimal point must move two places to the right to make 1.
- Then move the decimal point the same number of places to the left in the dividend.
- Add zeros as place holders, if necessary.
  Example: $2.4 \times 0.01 = 0\overset{\frown}{02}.4 \times 0.\overset{\frown}{01} = 0.024 \times 1 = 0.024$
- If the result is less than 1, write a zero in the units place.
  Example: By convention 0.37 rather than .37

Q. $0.01 \times 3.9 =$

A. 0.01×3.9
$= 0.\overset{\frown}{01} \times 0\overset{\frown}{3}.9$ (2 places right makes 1 so move decimal point 2 places left)
$= 1 \times 0.039$
$= \mathbf{0.039}$ (< 1 so write zero in units place)

a) $\overset{\frown}{7}.84 \times 0.\overset{\frown}{1} =$
$= 0.784 \times 1 =$ 0.784

b) $\overset{\frown}{4}.2 \times 0.\overset{\frown}{1} =$
$=$ ..... $=$

c) $0.1 \times 68.5 =$
$=$ ..... $=$

d) $0.01 \times 593.2 =$
$=$ ..... $=$

e) $484.5 \times 0.01 =$
$=$ ..... $=$

f) $0.01 \times 223.7 =$
$=$ ..... $=$

g) $0.001 \times 31.3 =$
$= 0.\overset{\frown}{001} \times 0\overset{\frown}{031}.3$
$= 1 \times 0.0313 =$ 0.0313
(Use zeros as place holders)

h) $0.001 \times 9090.9 =$
$=$ .....
$=$ ..... $=$

i) $0.001 \times 1234.5 =$
$=$ .....
$=$ ..... $=$

j) $0.01 \times 12.8 =$
$=$ .....
$=$ ..... $=$

k) $32.5 \times 0.01 =$
$=$ .....
$=$ ..... $=$

l) $0.01 \times 13.9 =$
$=$ .....
$=$ ..... $=$

m) $530.8 \times 0.001 =$
$=$ .....
$=$ ..... $=$

n) $0.01 \times 1.02 =$
$=$ .....
$=$ ..... $=$

o) $5.4 \times 0.001 =$
$=$ .....
$=$ ..... $=$

© Maths Mate 5.2 Skill Builder 3

Skill 3.4 Multiplying a decimal number by a decimal number.

- Neglect any decimal points and complete the multiplication from right to left.
- Count the number of decimal places in the question.
- Move the decimal point the same number of places from the right in the answer.
- Use zeros as place holders, if necessary.
  Example: $0.02 \times 0.3 = 0.006$
- If the result is less than 1, write a zero in the units place.
  Example: By convention 0.37 not .37
- Remove any zeros at the end of the decimal number, after the decimal point, if necessary.
- Remove any zeros at the start of the decimal number, up to zero units, if necessary.

Q. $15.4 \times 0.03 =$

A. ***0.462***

$^{1}1\ ^{1}5.4$ × 0.03

0.462

$3 \times 4 = 12$ carry 1, write 2

$3 \times 5 + \text{carry } 1 = 16$ carry 1, write 6

$3 \times 1 + \text{carry } 1 = 4$ write 4

< 1 so write zero in units place

3 decimal places in question so move decimal point 3 places from right

a) $0.6 \times 0.7 =$ 0.42

$^{4}0.6$ × 0.7

0.42

2 decimal places

2 places from right

< 1 so write zero in units place

b) $0.8 \times 0.4 =$

$^{3}0.8$ × 0.4

2

c) $0.9 \times 0.5 =$

$^{4}0.9$ × 0.5

d) $3.6 \times 0.6 =$

3.6 × 0.6

e) $0.7 \times 4.58 =$

4.58 × 0.7

f) $0.17 \times 0.08 =$

0.17 × 0.08

g) $3.9 \times 0.09 =$

3.9 × 0.09

h) $0.03 \times 2.98 =$

2.98 × 0.03

i) $32.5 \times 0.09 =$

32.5 × 0.09

j) $2.75 \times 6.7 =$

2.75 × 6.7

k) $9.15 \times 2.3 =$

9.15 × 2.3

l) $12.8 \times 0.43 =$

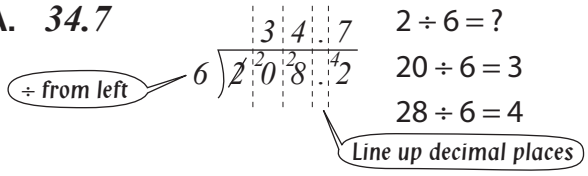
12.8 × 0.43

Skill 3.5 Dividing a decimal number by a whole number.

- Break down the division into smaller divisions.
- Divide from left to right.
- Line up the decimal point in your answer with the decimal point in the question.

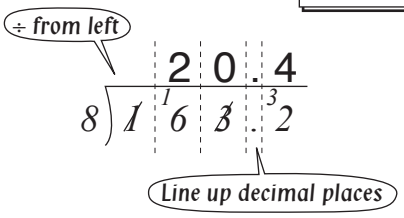
Q. 208.2 ÷ 6 =

A. ***34.7***

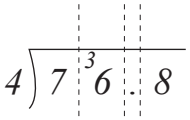


2 ÷ 6 = ?	carry 2	
20 ÷ 6 = 3	carry 2	write 3
28 ÷ 6 = 4	carry 4	write 4
42 ÷ 6 = 7		write 7

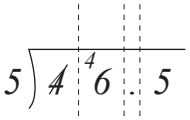
a) 163.2 ÷ 8 = 20.4



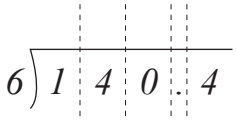
b) 76.8 ÷ 4 =



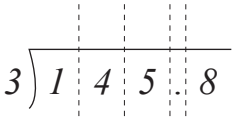
c) 46.5 ÷ 5 =



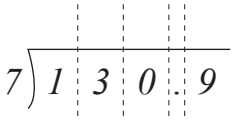
d) 140.4 ÷ 6 =



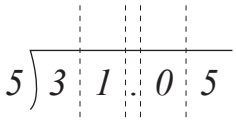
e) 145.8 ÷ 3 =



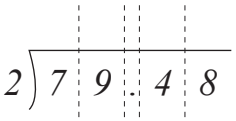
f) 130.9 ÷ 7 =



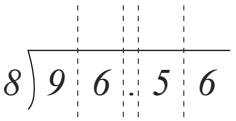
g) 31.05 ÷ 5 =



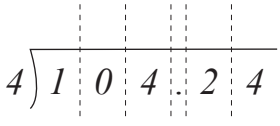
h) 79.48 ÷ 2 =



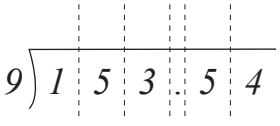
i) 96.56 ÷ 8 =



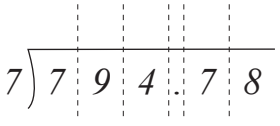
j) 104.24 ÷ 4 =



k) 153.54 ÷ 9 =



l) 794.78 ÷ 7 =



m) 201.12 ÷ 8 =

n) 391.26 ÷ 6 =

o) 150.625 ÷ 5 =

© Maths Mate 5.2 Skill Builder 3

Skill 3.6 Dividing a decimal number by a power of 10.

- Move the decimal place to the left as many places as there are zeros in the power of 10.
  Example: $30\overset{\frown}{72} \div 100 = 30.72$
- Add zeros as place holders, if necessary.
  Example: $4.5 \div 100 = 0\overset{\frown}{04}.5 \div 100 = 0.045$
- If the result is less than 1, write a zero in the units place.
  Example: By convention 0.37 not .37

Q. $0.97 \div 10 =$

A. $0.97 \div 10$ (1 zero, 1 place left)
$= \overset{\frown}{0}.97 \div 10$
$= \mathbf{0.097}$ (< 1 so write zero in units place)

a) $6.7 \div 100 =$ (2 zeros, 2 places left)
$= 0\overset{\frown}{0}6.7 \div 100 =$ 0.067 (Add zeros as place holders)

b) $230.6 \div 10 =$
$= \quad\quad =$

c) $15.3 \div 10 =$
$= \quad\quad =$

d) $3.35 \div 10 =$
$= \quad\quad =$

e) $800.9 \div 100 =$
$= \quad\quad =$

f) $32.4 \div 100 =$
$= \quad\quad =$

g) $0.36 \div 10 =$
$= 0\overset{\frown}{0}.36 \div 10 =$ (Add zeros as place holders)

h) $0.08 \div 10 =$
$= \quad\quad =$

i) $65.3 \div 100 =$
$= \quad\quad =$

j) $49.2 \div 100 =$
$= \quad\quad =$

k) $6.8 \div 100 =$
$= \quad\quad =$

l) $0.74 \div 100 =$
$= \quad\quad =$

m) $2972.5 \div 1000 =$
$= \quad\quad =$

n) $33.1 \div 1000 =$
$= \quad\quad =$

o) $0.5 \div 1000 =$
$= \quad\quad =$

p) $0.015 \div 10 =$
$= \quad\quad =$

q) $0.6 \div 100 =$
$= \quad\quad =$

r) $1.02 \div 100 =$
$= \quad\quad =$

s) $3.25 \div 1000 =$
$= \quad\quad =$

t) $42.6 \div 1000 =$
$= \quad\quad =$

u) $0.23 \div 100 =$
$= \quad\quad =$

Skill 3.7 Dividing a decimal number by a negative power of 10 (e.g. 0.1)

- Move the decimal point to the right in the power of 10, as many places as you need to make 1.
  Example: In $0.\overset{\frown}{01}$ the decimal point must move two places to the right to make 1.
- Move the decimal point the same number of places to the right in the dividend.
  Example: $4.\overset{\frown}{52} \div 0.\overset{\frown}{01} = 452 \div 1 = 452$
- Add zeros as place holders, if necessary.
  Example: $4.5 \div 0.01 = 4.\overset{\frown}{50} \div 0.\overset{\frown}{01} = 450 \div 1 = 450$

Q. $0.85 \div 0.01 =$

A. $0.85 \div 0.01$
$= 0.\overset{\frown}{85} \div 0.\overset{\frown}{01}$ (2 places right makes 1)
$= 85 \div 1$ (so 2 places right)
$= \mathbf{85}$

a) $5.\overset{\frown}{6} \div 0.\overset{\frown}{1} =$ (1 place right makes 1)
$= 56 \div 1 =$ 56

b) $3.03 \div 0.1 =$
$= \quad\quad =$

c) $2.4 \div 0.1 =$
$= \quad\quad =$

d) $0.058 \div 0.1 =$
$= \quad\quad =$

e) $42.7 \div 0.1 =$
$= \quad\quad =$

f) $0.38 \div 0.1 =$
$= \quad\quad =$

g) $0.76 \div 0.01 =$
$= \quad\quad =$

h) $0.09 \div 0.01 =$
$= \quad\quad =$

i) $65.3 \div 0.01 =$
$= \quad\quad =$

j) $0.005 \div 0.01 =$
$= \quad\quad =$

k) $0.89 \div 0.01 =$
$= \quad\quad =$

l) $7.153 \div 0.001 =$
$= \quad\quad =$

m) $0.048 \div 0.1 =$
$= \quad\quad =$

n) $12.4 \div 0.1 =$
$= \quad\quad =$

o) $0.75 \div 0.01 =$
$= \quad\quad =$

p) $1.2 \div 0.01 =$ (Add zeros as place holders)
$= 1.\overset{\frown}{20} \div 0.\overset{\frown}{01}$ (2 places right)
$= 120 \div 1 =$ 120

q) $23.2 \div 0.01 =$
$=$
$= \quad\quad =$

r) $3.58 \div 0.001 =$
$=$
$= \quad\quad =$

s) $0.4 \div 0.01 =$
$=$
$= \quad\quad =$

t) $0.03 \div 0.001 =$
$=$
$= \quad\quad =$

u) $8.04 \div 0.001 =$
$=$
$= \quad\quad =$

© Maths Mate 5.2 Skill Builder 3

Skill 3.8 Dividing a decimal number by a decimal number.

- Move the decimal point to the right in the divisor, as many places as you need to make it a whole number.
- Then move the decimal point the same number of places to the right in the dividend.
  Example: $4.\overset{\frown}{53} \div 0.\overset{\frown}{02} = 453.0 \div 2 = 226.5$
- Add zeros as place holders, if necessary.
  Example: $3.6 \div 0.06 = 3.\overset{\frown}{60} \div 0.\overset{\frown}{06} = 360 \div 6 = 60$ (See also example above.)
- Break down the division into smaller divisions.
- Divide from left to right.
- Line up the decimal point in your answer with the decimal point in the question.

Q. $3.68 \div 0.8 =$

A. $3.\overset{\frown}{68} \div 0.\overset{\frown}{8}$
$= 36.8 \div 8$
$= \mathbf{4.6}$

$$8\overline{)36.8} = 4.6$$

÷ from left

Line up decimal places

1 place right makes a whole number

a) $9.\overset{\frown}{84} \div 0.\overset{\frown}{8} =$ (so 1 place right)

$= 98.4 \div 8 =$ 12.3

$$8\overline{)98.4} = 12.3$$

b) $0.6 \div 0.2 =$

$= \quad = \square$

c) $2.8 \div 0.4 =$

$= \quad = \square$

d) $0.03 \div 0.003 =$

$= \quad = \square$

e) $4.68 \div 0.4 =$

$= \quad = \square$

f) $8.61 \div 0.7 =$

$= \quad = \square$

g) $35.6 \div 3.56 =$

$= \quad = \square$

h) $5.68 \div 0.8 =$

$= \quad = \square$

i) $13.35 \div 0.5 =$

$= \quad = \square$

j) $2.4 \div 0.06 =$

$= \quad = \square$

k) $0.4 \div 0.004 =$

$= \quad = \square$

l) $0.2 \div 0.25 =$

$= \quad = \square$

m) $3.675 \div 0.15 =$

$= \quad = \square$

n) $37.8 \div 1.2 =$

$= \quad = \square$

o) $1.75 \div 1.4 =$

$= \quad = \square$

Skill 3.9 Dividing a whole number by a decimal number.

- Move the decimal point to the right in the divisor, as many places as you need to make a whole number.
- Then move the decimal point the same number of places to the right in the dividend.
  Example: $45 \div 0.02 = 45.\overset{\frown}{00} \div 0.\overset{\frown}{02} = 4500 \div 2 = 2250$
- Add zeros as place holders, if necessary.
  Example: $36 \div 0.6 = 36.\overset{\frown}{0} \div 0.\overset{\frown}{6} = 360 \div 6 = 60$ (See also example above)
- Break down the division into smaller divisions.
- Divide from left to right.
- Line up the decimal point in your answer with the decimal point in the question.

Q. $60 \div 0.2 =$

A. $60 \div 0.2$
(1 place right makes a whole number)
$= 60.\overset{\frown}{0} \div 0.\overset{\frown}{2}$
(Add zeros as place holders)
$= 600 \div 2$
$= \mathbf{300}$

(÷ from left)

$$2\overline{)600} = 300$$

a) $9 \div 0.03 =$ (2 places right make a whole number)

$= 9.\overset{\frown}{00} \div 0.\overset{\frown}{03} =$ 300 (Add zeros as place holders)

$$3\overline{)900} = 300$$

b) $7 \div 0.02 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$2\overline{)\ \ \ }$

c) $80 \div 0.4 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$\overline{)\ \ \ }$

d) $27 \div 0.9 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$\overline{)\ \ \ }$

e) $18 \div 0.04 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$\overline{)\ \ \ }$

f) $32 \div 0.8 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$\overline{)\ \ \ }$

g) $45 \div 0.05 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$\overline{)\ \ \ \ }$

h) $50 \div 0.25 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$\overline{)\ \ \ \ }$

i) $60 \div 0.12 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$\overline{)\ \ \ \ }$

j) $30 \div 0.15 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$\overline{)\ \ \ \ }$

k) $96 \div 0.8 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$\overline{)\ \ \ \ }$

l) $14 \div 0.5 =$

$= \ldots\ldots\ldots\ldots\ldots\ldots =$ ☐

$\overline{)\ \ \ \ }$

© Maths Mate 5.2 Skill Builder 3