Multiplying Decimals by a Whole Number

At Home
At School

Quick Review

You can use what you know about multiplying whole numbers to multiply a decimal by a whole number.

Multiply: 2.936×4

➤ First estimate.
   Since 2.936 is closer to 3 than to 2, write 2.936 as 3.
   Multiply: $3 \times 4 = 12$
   So, 2.936×4 is about 12.

➤ Record the numbers without the decimal point.
   Multiply as you would with whole numbers.

➤ Use the estimate to place the decimal point in the product.
   11.744 is close to 12, so
   2.936×4 is 11.744.

```
  2936
×    4
────────
    24
   120
  3600
  8000
────────
11.744
```

Try These

Multiply.

1. a) 5.18
$\times\ 5$

b) 1.734
$\times\ 8$

c) 0.143
$\times\ 4$

d) 9.431
$\times\ 2$

1. Use paper and pencil to find each product.

Record the products on the lines.

Then use the letters next to the products to solve this riddle.

Why did the jellybean
go to school?

$0.396 \times 5 =$ _____ (S) $1.637 \times 3 =$ _____ (A)

$0.148 \times 5 =$ _____ (O) $1.004 \times 7 =$ _____ (T)

$0.176 \times 4 =$ _____ (B) $8.145 \times 6 =$ _____ (C)

$2.534 \times 2 =$ _____ (D) $0.941 \times 9 =$ _____ (W)

$1.935 \times 4 =$ _____ (M) $2.123 \times 4 =$ _____ (N)

$0.132 \times 2 =$ _____ (E) $4.113 \times 2 =$ _____ (R)
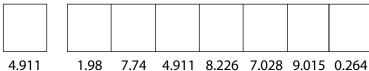
$3.005 \times 3 =$ _____ (I) $1.254 \times 3 =$ _____ (U)

$0.524 \times 6 =$ _____ (H)

0.704 0.264 48.87 4.911 3.762 1.98 0.264   1.98 3.144 0.264

8.469 4.911 8.492 7.028 0.264 5.068   7.028 0.74   0.704 0.264

4.911   1.98 7.74 4.911 8.226 7.028 9.015 0.264

Stretch Your Thinking

What whole number would you multiply 6.374 by
to get the product 25.496? _____

Multiplying a Decimal Less than 1 by a Whole Number

Quick Review

At Home
At School

When you multiply a decimal less than 1 by a whole number, the product is less than the whole number.

➤ To multiply 0.0295 by 7, multiply the whole numbers: 295×7

$$
\begin{array}{r}
295 \\
\times \ 7 \\
\hline
35 \\
630 \\
\underline{1400} \\
2065
\end{array}
$$

Estimate to place the decimal point:
0.0295 is close to 0.03, or 3 hundredths.
3 hundredths multiplied by 7 is 21 hundredths.
21 hundredths are close to 20 hundredths, or 2 tenths.
Place the decimal point so the product is close to 2 tenths: 0.2065

So, $0.0295 \times 7 = 0.2065$

Try These

1. Multiply.

   a) $0.7 \times 5 =$ _____   **b)** $0.25 \times 3 =$ _____   **c)** $0.12 \times 5 =$ _____

2. Multiply as you would whole numbers. Estimate to place the decimal point.

   a) 0.467×8 **b)** 0.086×9 **c)** 0.7634×7

3. Multiply.

   a) 0.7×4 _____

   0.07×4 _____

   0.007×4 _____

   b) 0.35×6 _____

   0.035×6 _____

   0.0035×6 _____

Play this game with a partner.
You will need 2 colours of counters, paper, and pencils.

Number Box	
2	0.032
3	0.148
4	0.675
5	0.009
6	0.253

➤ Take turns to choose one number from each column in the Number Box.

➤ Multiply the numbers. Cover the product on the game board with a counter.

➤ The first player to cover 5 products in a row, column, or diagonal wins.

0.192	0.506	1.012	0.027	0.128
0.592	2.025	0.296	2.7	0.036
3.375	0.064	4.05	0.444	1.35
0.16	0.74	0.018	0.759	0.045
0.888	1.265	0.054	0.096	1.518

Stretch Your Thinking

The product of a single-digit whole number and a decimal less than 1 is 0.24.
Find the factors.
Give as many answers as you can.

Dividing Decimals by a Whole Number

Quick Review

At Home
At School

Here is one way to divide a decimal by a whole number.
Divide: $7.938 \div 2$

➤ Record the numbers without the decimal point.
  Divide as you would with whole numbers.

➤ Estimate to place the decimal point.
  7.938 is close to 8.
  $8 \div 2$ is 4.
  The answer must be a little less than 4.
  So, $7.938 \div 2 = 3.969$

➤ Check by multiplying:
  $3.969 \times 2 = 7.938$
  So, the answer is correct.

$$
\begin{array}{r}
3\ 9\ 6\ 9 \\
2\overline{)\ 7\ 9\ 3\ 8} \\
-\ 6 \\
\hline
1\ 9 \\
-\ 1\ 8 \\
\hline
1\ 3 \\
-\ 1\ 2 \\
\hline
1\ 8 \\
-\ 1\ 8 \\
\hline
0
\end{array}
$$

Try These

1. Divide.

   a) $0.924 \div 3$ **b)** $5.138 \div 2$ **c)** $3.045 \div 5$ **d)** $7.896 \div 4$

1. Divide.

   a) 5.335 ÷ 5   **b)** 6.148 ÷ 4   **c)** 0.315 ÷ 7   **d)** 4.738 ÷ 2

2. Multiply to check each answer in question 1.

3. Renee paid $12.96 for 6 bags of chips.
   How much did each bag cost? _____

4. Asmaa paid $9.96 for 3 pairs of socks.

   Jagdeep paid $14.75 for 5 pairs of socks.

   Which person got the better deal? Explain.

   _____

   _____

Stretch Your Thinking

What whole number would you divide 2.049 by
to get the quotient 0.683? _____

Dividing Decimals

At Home
At School

Quick Review

➤ Divide: $9.784 \div 5$

Estimate first: Write 9.784 as 10.

$10 \div 5 = 2$

So, $9.784 \div 5$ is a little less than 2.

Divide.

Use short division.

$$5 \overline{) 9^4 . 7^2\ 8^3\ 4^4\ 0} \\ 1\ .\ 9\ \ 5\ \ 6\ \ 8$$

Sometimes you need to write zeros in the dividend so you can continue to divide until the remainder is 0.

Write the quotient to the nearest thousandth: $9.784 \div 5$ is about 1.957.

➤ Divide: $18.4 \div 3$

Divide as whole numbers. Use short division. Write zeros in the dividend.

$$3 \overline{) 1\ 8\ \ 4^1\ 0^1\ 0^1\ 0^1} \\ 6\ \ 1\ \ 3\ \ 3\ \ 3$$

Sometimes you never get a remainder of zero.

Estimate to place the decimal point.

18.4 is close to 18.

$18 \div 3$ is 6.

So, $18.4 \div 3 = 6.1333 \ldots$

The dots indicate that the decimal places go on forever.

Try These

1. Divide until the remainder is zero.

a)

$$4 \overline{) 6\ .\ 3\ \ 7\ \ 4}$$

b)

$$2 \overline{) 4\ 9\ .\ 6\ \ 7}$$

c)

$$5 \overline{) 0\ .\ 4\ \ 7\ \ 3}$$

d)

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

e)

$$5 \overline{) 4\ .\ 5\ \ 7\ \ 3}$$

f)

$$8 \overline{) 0\ .\ 1\ \ 2\ \ 4}$$

1. Divide until the remainder is zero.

a)
$$6 \overline{)4.275}$$

b)
$$8 \overline{)45}$$

c)
$$5 \overline{)234}$$

d)
$$2 \overline{)0.007}$$

e)
$$2 \overline{)0.5}$$

f)
$$4 \overline{)27}$$

2. Divide.

a)
$$3 \overline{)7.37}$$

b)
$$9 \overline{)8.4}$$

c)
$$3 \overline{)2.14}$$

3. Four students buy a box of popsicles for $4.29 and a bag of pretzels for $3.97. How much should each person contribute to the total cost?

_____

_____

4. Nataliya jogged 1.367 km in 6 min.
About how far did she jog each minute?
Give your answer in as many different units as you can.

_____

_____

5. Twelve friends shared 8 small pizzas equally.
How many pizzas did each person get?

_____

_____

Write a story problem you can solve by dividing 11 by 7.

_____

_____

_____

_____