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THE FUTURE OF LEARNING

Today we will review
"Multiplying & Dividing Decimals"



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Multiplying Decimals by Whole Numbers

✦ Example: Find 14.2×6

Method 1:
– Use estimation
Round 14.2 to 14
 $14.2 \times 6 \rightarrow 14 \times 6$ or 84

$$\begin{array}{r} 14.2 \\ \times 6 \\ \hline 85.2 \end{array}$$

(Since the estimate is 84, place the decimal point after the 5)



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Let us warm up with some practice

$$10^5 =$$

$$2 \times 14 + 2 \times 6 =$$

$$2 \times 1 + 2 \times 1 =$$

$$6.8 + 6.8 + 10.2 + 10.2 =$$


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Multiplying Decimals by Whole Numbers

✦ Example: Find 14.2×6

Method 2:
– Count decimal places

$$\begin{array}{r} 14.2 \\ \times 6 \\ \hline 85.2 \end{array}$$

← There is one place to the right of the decimal point.
← Count the same number of places from right to left.

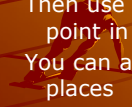



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Multiplying Decimals by Whole Numbers

When multiplying a decimal by a whole number, multiply as with whole numbers. Then use estimation to place the decimal point in the product.
You can also count the number of decimal places





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Multiplying Decimals by Whole Numbers

✦ Your turn! Find 11.4×8



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If there are not enough decimal places in the product, you need to add zero to the left.

For example:
 Find 2×0.018

$$\begin{array}{r} 0.018 \\ \times 2 \\ \hline 0.036 \end{array}$$
 There are three decimal places.

Annex a zero to the left of 36 to make three decimal places.

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Multiplying Decimals

For example: Find 4.2×6.7

4.2 ← One decimal place Estimate $4.2 \times 6.7 \rightarrow 4 \times 7$ or 28

$\times 6.7$ ← One decimal place

$$\begin{array}{r} 294 \\ 252 \\ \hline 28.14 \end{array}$$
 Two decimal places

The product is 28.14. Compared to the estimate, the product is reasonable.

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Multiplying Decimals by Whole Numbers

Your turn! Multiply 3×0.02

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Multiplying Decimals

Your turn! Multiply 0.014×3.7

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Multiplying Decimals

When multiplying a decimal by a decimal, multiply as with whole numbers.
 To place the decimal point, find the sum of the number of decimal places in each factor.
 The product has the same number of decimal places.

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Dividing Decimals by Whole Numbers

Dividing a decimal by a whole number is similar to dividing whole numbers

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Dividing Decimals by Whole Numbers

Divide a decimal by a 1-Digit Number
– Find $6.8 \div 2$. Estimate $6 \div 3 = 3$

$$\begin{array}{r} 3.4 \\ 2 \overline{)6.8} \\ \underline{6} \\ 08 \\ \underline{08} \\ 00 \end{array}$$

$6.8 \div 2 = 3.4$ Compared to the estimate, the quotient is reasonable.

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Dividing Decimals by Whole Numbers

Your turn! Find $1087.9 \div 46$

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Your turn! Find $3.49 \div 4$

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Dividing Decimals by Whole Numbers

Round a Quotient:

- Usually, when you divide decimals the answer does not come out evenly.
- You need to round the quotient to a specified place-value position.
- Always divide to one more place-value position than the place to which you are rounding.

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Dividing Decimals by Whole Numbers

Divide a decimal by a 2-Digit Number
– Find $7.49 \div 14$. Estimate $10 \div 10 = 1$

$$\begin{array}{r} 0.535 \\ 14 \overline{)7.490} \\ \underline{70} \\ 049 \\ \underline{042} \\ 070 \\ \underline{070} \\ 000 \end{array}$$

Place the decimal point

Annex a zero and continue dividing

$7.49 \div 14 = 0.535$ Compared to the estimate, the quotient is reasonable.

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Round a Quotient:

- Example: Seth purchased 3 video games for \$51.79, including tax. If each game costs the same amount, what was the price of each game in dollars?

$$\begin{array}{r} 17.263 \\ 3 \overline{)51.790} \\ \underline{3} \\ 21 \\ \underline{21} \\ 007 \\ \underline{006} \\ 0019 \\ \underline{0018} \\ 00010 \\ \underline{00009} \\ 00001 \end{array}$$

Place the decimal point

Divide as with whole numbers

Divide until you place a digit in the thousandths place.

To the nearest cent, the cost in dollars is 17.26

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Your turn!

- The table shows how much money Halley made in one week for a variety of jobs. To the nearest cent, what was her average pay for these three jobs?

| Jobs | Pay in a week |
|--------------|---------------|
| Baby-sitting | \$50.00 |
| Pet-sitting | \$10.50 |
| Lawn work | \$22.50 |

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Dividing by Decimals

Your turn!

- Divide $0.4 \div 0.0025$

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When dividing by decimals, change the divisor into a whole number.
To do this, multiply both the divisor and the dividend by the same power of 10.
Then divide as with whole numbers.

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Let us take a short break!

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Example: Find $14.19 \div 2.2$

Multiply by 10 to make a whole number

Multiply by the same number, 10

Place the decimal point

Divide as with whole numbers

Annex a zero to continue

$$\begin{array}{r}
 6.45 \\
 2.2 \overline{) 14.19} \\
 \underline{132} \\
 0099 \\
 \underline{0088} \\
 00110 \\
 \underline{00110} \\
 00000
 \end{array}$$

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How about a jig-saw puzzle?!

Let us see how fast you can do this...

<http://www.thekidzpage.com/onlinejigsawpuzzles/jigsaw-puzzles/12-piece-jigsaw/2pinkflower.html>

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Let us practice!

Find 12.9×7

Find 0.82×4

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Let us practice!

Divide $0.08 \overline{)5.2}$

Divide $0.25 \overline{)0.155}$

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Let us practice!

Find 0.04×5.1

Find 0.04×0.0063

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Let us practice!

Choose the correct term to complete each sentence.

To check your answer for a division problem, you can multiply the quotient by the (dividend, divisor)

When dividing a decimal by a whole number, place the decimal point in the quotient directly (below, above) the decimal point found in the dividend.

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Let us practice!

Find $203.84 \div 32$

Find $136.5 \div 35$

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Good Job!

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