

Grade 5 - Multiplying and Dividing Decimals - Lesson

Common Core 5.NBT.B.7 · maths-pdf.fr/en/

To multiply decimals, multiply the numbers as whole numbers, then put the decimal point so the product has as many decimal places as both factors together. To divide by a decimal, multiply the dividend and divisor by 10, 100, or 1,000 until the divisor is whole, then divide as usual.

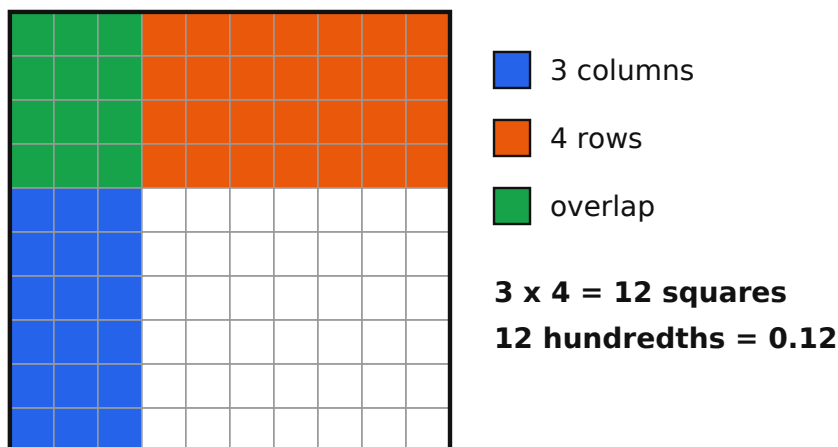
Grade 5 · Common Core State Standards: 5.NBT.B.7

Key facts

- The product of two decimals has as many decimal places as both factors together.
- A hundredths grid shows 0.3 times 0.4 as 12 squares, which is 0.12.
- When dividing by a whole number, keep the decimal point in line.
- Multiplying both numbers by 10, 100, or 1,000 does not change a quotient.
- Estimate first to check where the decimal point belongs.

How do you multiply decimals with a model?

A decimal is a part of a whole. On a hundredths grid, the whole grid is 1 and each small square is 0.01. To show 0.3×0.4 , shade 3 columns for 0.3 and 4 rows for 0.4. The squares where the colors overlap show the product.



Blue is 0.3 wide and orange is 0.4 tall. The green overlap is 12 of the 100 squares.

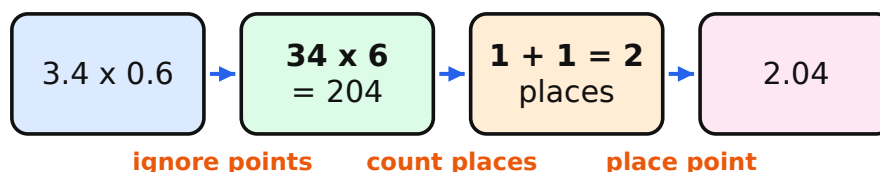
Multiplying decimals

Multiply the numbers as if they were whole numbers. Then count the decimal places in both factors. The product has that many decimal places in total.

What are the steps for multiplying decimals?

1. Estimate the product by rounding each factor.
2. Ignore the decimal points and multiply.
3. Add the decimal places of the two factors.
4. Place the decimal point in the product.
5. Compare with the estimate to check that the answer makes sense.

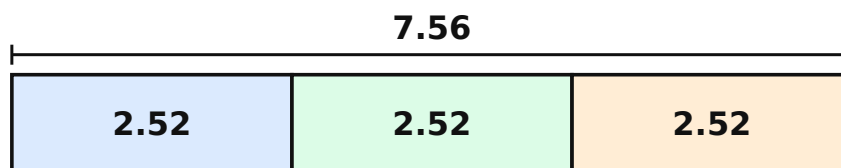
Worked example: Find 3.4×0.6 . The estimate is $3 \times 0.5 = 1.5$, so the answer should be a little more than 1.5. Then $34 \times 6 = 204$. Each factor has 1 decimal place, so the product has 2: 2.04. This matches the estimate.



Multiply the digits first, then place the decimal point.

How do you divide a decimal by a whole number?

Divide as with whole numbers, and keep the decimal point in the quotient right above the decimal point in the dividend. A tape diagram helps: 7.56 shared into 3 equal parts gives $7.56 \div 3 = 2.52$.



Share 7.56 equally into 3 parts: 756 divided by 3 is 252, so each part is 2.52.

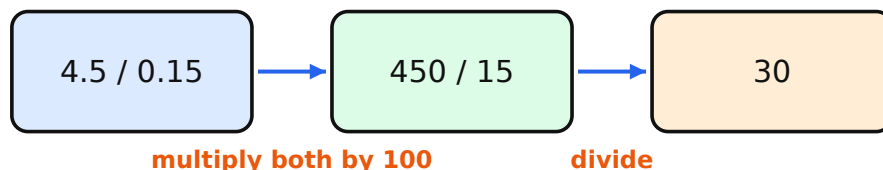
How do you divide by a decimal?

Dividing by a decimal

Multiply the dividend and the divisor by the same power of 10 (10, 100, 1,000) until the

divisor is a whole number. The quotient does not change.

For $4.5 \div 0.15$, the divisor 0.15 has 2 decimal places, so multiply both numbers by 100. This gives $450 \div 15 = 30$. Check: $0.15 \times 30 = 4.5$.



Multiplying both numbers by 100 keeps the quotient the same.

Operation	Key idea
Multiply	Add the decimal places of the factors
Divide by a whole number	Keep the decimal point lined up
Divide by a decimal	Multiply both numbers by 10, 100, or 1,000

Questions about multiplying and dividing decimals

Why is 0.3 times 0.4 equal to 0.12 and not 1.2?

Three tenths of four tenths is a small part of a whole. On a hundredths grid, 12 squares overlap out of 100, which is 0.12. The factors have $1 + 1 = 2$ decimal places, so the product has 2.

How do you know where to put the decimal point in a product?

Count the decimal places in both factors and add them. The product has that many decimal places. An estimate with rounded numbers also tells you if the answer is about the right size.

Does the quotient get smaller when you divide by a decimal less than 1?

No. Dividing by a number less than 1 makes the quotient larger. For example, 4.5 divided by 0.15 is 30, which is greater than 4.5.

Why can you multiply both numbers by 100 when dividing?

Multiplying the dividend and the divisor by the same number keeps their ratio the same. So 4.5 divided by 0.15 and 450 divided by 15 both equal 30.

What do you do when a decimal division does not come out evenly?

Add a zero to the end of the dividend and keep dividing. For example, 9.3 divided by 5

becomes 9.30 divided by 5, which is 1.86.