

Grade 6 - Multi-Digit and Decimal Operations - Lesson

Common Core 6.NS.B.2, 6.NS.B.3 · maths-pdf.fr/en/

This **decimal operations lesson** for 6th Grade covers multi-digit and decimal operations (Common Core 6.NS.B.2, 6.NS.B.3), with a free PDF to print.

Multi-digit and decimal operations follow place value. Divide whole numbers with the standard algorithm or partial quotients, line up decimal points to add and subtract, multiply as whole numbers and then place the decimal point, and divide by a decimal by multiplying both numbers by a power of 10. Estimating first helps check the answer.

Grade 6 · Common Core State Standards: **6.NS.B.2, 6.NS.B.3**

Key facts in this decimal operations lesson

Key facts

- Line up decimal points to add or subtract.
- To multiply decimals, multiply as whole numbers and count the decimal places in both factors.
- To divide by a decimal, multiply the divisor and dividend by the same power of 10.
- Partial quotients subtract friendly multiples of the divisor.
- Estimate first to check the position of the decimal point.

How do you divide multi-digit numbers?

The standard algorithm for division divides one place at a time from the left. You can also use **partial quotients**: subtract friendly multiples of the divisor, then add the multiples you used. For $4,536 \div 18$, subtract $18 \times 200 = 3,600$, then $18 \times 50 = 900$, then $18 \times 2 = 36$. The quotient is $200 + 50 + 2 = 252$.

4,536	3,600	900	36
Quotient	200	50	2

Subtract friendly multiples of the divisor, then add the partial quotients to get 252.

How do you add and subtract decimals?

Line up the decimal points so each digit sits in the same place value, then add or subtract as with whole numbers. Fill empty places with zeros, as in $20 - 7.368 = 20.000 - 7.368 = 12.632$.

	Tens	Ones	.	Tenths	Hundredths
		3	.	7	5
+	1	2	.	4	0
=	1	6	.	1	5

Line up decimal points. $3.75 + 12.40 = 16.15$.

How do you multiply decimals?

Multiply as if there were no decimal points, then count the decimal places in both factors. The product has that many decimal places. An area model breaks each factor into whole and decimal parts.

x	4	0.2
6	24	1.2
0.3	1.2	0.06

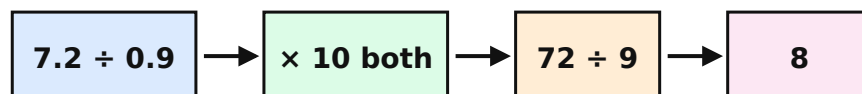
Partial products: $24 + 1.2 + 1.2 + 0.06 = 26.46$.

Example: 0.36×0.25 : $36 \times 25 = 900$. The factors have 4 decimal places in all, so the product is $0.0900 = 0.09$.

How do you divide by a decimal?

Dividing by a decimal

Multiply the divisor and the dividend by the same power of 10 until the divisor is a whole number. The quotient does not change.



Multiply both numbers by the same power of 10 to make the divisor a whole number.

For $18.9 \div 0.07$, multiply both by 100 to get $1,890 \div 7 = 270$. Decimal operations are the same skills you use with money: $\$3.45 \times 12 = \$41.40$. Estimate first so you can tell if the decimal point

is in the right place.

Decimal operations lesson: questions and answers

How do you divide a 4-digit number by a 2-digit number?

Use the standard algorithm or partial quotients. For 4,536 divided by 18, subtract 3,600, 900, and 36 to get $200 + 50 + 2 = 252$.

Why do you line up the decimal points when adding?

Lining up the points puts tenths with tenths and hundredths with hundredths, so you add digits of the same value.

How do you place the decimal point in a product?

Count the decimal places in both factors and give the product that many places. For 0.4 times 0.3, $4 \times 3 = 12$ with 2 places gives 0.12.

How do you divide by a decimal?

Multiply the divisor and the dividend by the same power of 10 until the divisor is a whole number. For 7.2 divided by 0.9, multiply by 10 to get 72 divided by 9.

How can you check a decimal answer?

Estimate with rounded numbers or multiply the quotient by the divisor. For 49.6 divided by 0.8, 50 divided by 0.8 is about 62, which matches 62.

How to use this decimal operations lesson

Read the definitions first, then follow the worked method line by line and redo the example on paper without looking. When every step makes sense, move on to the worksheet, then check yourself with the quiz.

Download the decimal operations lesson as a PDF with the button below and keep it with your notes.