

Arithmetic with Decimals

How much would you expect to pay if you were buying a bag of chips for 50 cents and a cola for 75 cents? \$1.25, right? Well, if you knew that one, you already know how to add decimals. Doing arithmetic with decimals is a lot like doing arithmetic with whole numbers. Read on to see how it's done.

Part 1: Adding and Subtracting Decimals

PROCEDURE: To add or subtract decimals, line up your numbers vertically so that the decimal points line up. Then add or subtract the columns from right to left, carrying or borrowing numbers when necessary.

SAMPLE PROBLEM: Add the following numbers: 3.1415 and 2.96.

Step 1: Line up the numbers vertically so that the decimal points line up.

$$\begin{array}{r} 3.1415 \\ +2.96 \\ \hline \end{array}$$

Step 2: Add the columns from right to left, carrying when necessary.

$$\begin{array}{r} ^1 ^1 \\ 3.1415 \\ +2.96 \\ \hline 6.1015 \end{array}$$

The sum is 6.1015.

Do Some Decimal Math!

1. Match the expressions on the left with the letter for their correct answer on the right.

- | | | |
|-------------------|-------|----------|
| a. $3.2 + 1.9$ | _____ | A. 55.11 |
| b. $8.91 - 0.891$ | _____ | B. 0.809 |
| c. $50.1 + 5.01$ | _____ | C. 5.1 |
| d. $0.999 - 0.19$ | _____ | D. 8.019 |

2. The distance indicator, or odometer, on Robyn's family car reads 32795.2 after a summer vacation. The family drove 631.4 km on the trip. What did the odometer read before the trip?

3. Sloane has \$12 to spend at the hobby shop. Does he have enough money to buy a 5 m rope for \$5.64, a bucket of paint for \$3.75, and a pack of construction paper for \$2.39?



Arithmetic with Decimals, continued

Part 2: Multiplying Decimal Numbers

PROCEDURE: To multiply decimal numbers, align the numbers vertically and put the number with the most digits on top. Multiply the top number by the bottom number, just like you would multiply whole numbers. Then count the total number of decimal places in both of the multipliers. In your product, move the decimal point to the left the same number of places as there are in the multipliers.

SAMPLE PROBLEM: What is 1.12×2.3 ?

Step 1: Align the numbers vertically, with the longer number on top, and multiply.

$$\begin{array}{r} 1.12 \\ \times 2.3 \\ \hline 336 \\ 2240 \\ \hline 2576 \end{array}$$

Step 2: Count the total number of decimal places in both numbers being multiplied.

$$\begin{array}{r} 1.12 \\ \times 2.3 \\ \hline \end{array}$$

There is a total of 3 decimal places.

Step 3: Because there is a total of 3 decimal places in your numbers, move the decimal point in your product 3 places to the left.

$$2,576 \rightarrow 2.576$$

The product of 1.12 and 2.3 is 2.576.

Produce Some Products!

4. Calculate the products. Remember to show all your work. If you need more space, use your ScienceLog or a separate sheet of paper.

a. $\begin{array}{r} 0.73 \\ \times 0.5 \\ \hline \end{array}$

b. $\begin{array}{r} 5.23 \\ \times 1.9 \\ \hline \end{array}$

c. $\begin{array}{r} 9.12 \\ \times 8 \\ \hline \end{array}$

d. $\begin{array}{r} 1.12 \\ \times 0.21 \\ \hline \end{array}$

e. $\begin{array}{r} 90.5 \\ \times 0.73 \\ \hline \end{array}$

f. $\begin{array}{r} 0.125 \\ \times 0.3 \\ \hline \end{array}$

5. A typical amoeba is 0.0008 m long. Placed end to end, how long would 150 amoebas be?

Challenge Yourself!

6. A hockey player has a career average of 0.9 goals per game during the regular season and 1.6 goals per game in the playoffs. How many goals would you expect him to score in 81 regular season games and 16 playoff games?

Arithmetic with Decimals, continued

Part 3: Dividing Decimal Numbers

PROCEDURE: To divide decimal numbers, move the decimal point in the divisor to the right until it is a whole number. Then move the decimal point in the dividend to the right the same number of places. Place a decimal point in the quotient directly above the decimal point in the dividend. Finally, divide as with whole numbers.

SAMPLE PROBLEM: $2.5 \overline{)8.625}$

Step 1: Move the decimal point in the divisor to the right until it is a whole number.

$$2.5 \overline{)8.625}$$

Step 2: Move the decimal point in the dividend to the right the same number of places, and place a decimal point above it in the quotient.

$$25 \overline{)8.625}$$

Step 3: Divide as with whole numbers.

$$\begin{array}{r} 3.45 \\ 25 \overline{)86.25} \\ \underline{-75} \\ 112 \\ \underline{-100} \\ 125 \\ \underline{-125} \\ 0 \end{array}$$

$$2.5 \overline{)8.625} = 3.45$$

Decimal Division

7. Find the quotients for the following division problems, showing all of your work. If you need more space, use your ScienceLog or a separate piece of paper.

a. $0.2 \overline{)4.6}$

b. $0.03 \overline{)99.6}$

c. $7 \overline{)36.4}$

d. $0.5 \overline{)95.5}$

e. $6 \overline{)240.18}$

f. $0.4 \overline{)6.24}$

8. The snowfall in a year in Peanut Valley was 74.76 cm. What was the average monthly snowfall?

9. After constructing a fence around your yard, you calculate that you used 234.5 m of fencing materials. Your yard has a perimeter of 26.8 m. How much fencing material did you use per meter of your yard?

