

# Adding and Subtracting Decimals: math lesson, Grade 5 – download the PDF

You already know how to add and subtract whole numbers. Decimals work the same way, with one new habit: you must always keep every digit in its own place value. In this chapter you will learn to estimate first, line up the decimal points, add, subtract, regroup, use zeros as placeholders, and solve word problems about money and measurement.

## 1. Why decimals follow the same rules

A decimal such as **12.35** has digits in the tens, ones, tenths and hundredths places. You can only add or subtract digits that have the **same place value**: tenths with tenths, hundredths with hundredths. Ten hundredths make one tenth, and ten tenths make one whole, so the regrouping you use with whole numbers works here too.

### **D** Definition: like place values

Two digits have like place values when they sit in the same position, for example both in the tenths place. Adding or subtracting always combines like place values.

## 2. Estimating sums and differences

Before you calculate, make a quick estimate. Round each number to the nearest whole number (or the nearest tenth when you want a closer guess), then add or subtract. The estimate tells you whether your exact answer is reasonable, and it catches misplaced decimal points.

**M****Method: estimate first**

1. Round each decimal to the nearest whole number.
2. Add or subtract the rounded numbers.
3. Calculate exactly, then check that the exact answer is close to the estimate.

**E****Example 1**

Estimate and then find  $7.86 + 4.12$ . Rounded:  $8 + 4 = 12$ . Exact:

$7.86 + 4.12 = 11.98$ , which is very close to **12**. The answer is reasonable.

**E****Example 2**

Estimate and then find  $18.47 - 9.6$ . Rounded:  $18 - 10 = 8$ . Exact:

$18.47 - 9.60 = 8.87$ , close to **8**. Reasonable.

**3. Lining up the decimal points**

To add or subtract in columns, write the numbers one under the other so that the **decimal points are in one straight line**. When the points are lined up, the ones sit under the ones, the tenths under the tenths, and the hundredths under the hundredths. The decimal point in the answer goes directly below the other points.

| tens  | ones |   | tenths | hundredths |
|-------|------|---|--------|------------|
| 1     | 2    | . | 3      | 5          |
| +     | 4    | . | 7      | 0          |
| <hr/> |      |   |        |            |
| 1     | 7    | . | 0      | 5          |

point under point



### Common mistake

Do not line up the right-hand digits as you do with whole numbers. For  $3.6 + 2.45$ , the wrong setup lines up the 6 and the 5 and gives **2.81**, which is far too small. Always line up the points, not the last digits.

## 4. Adding decimals to hundredths

Add from right to left, starting with the hundredths. When a column adds to ten or more, regroup: write the ones digit and carry one to the next column on the left. Bring the decimal point straight down.



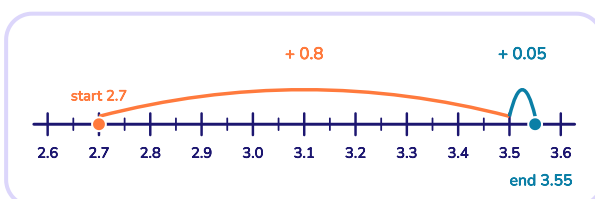
### Example 3

Find  $12.35 + 4.7$ . Write  $4.7$  as  $4.70$ . Hundredths:  $5 + 0 = 5$ . Tenths:  $3 + 7 = 10$ , write 0 and carry 1 to the ones. Ones:  $2 + 4 + 1 = 7$ . Tens: 1. So  $12.35 + 4.70 = 17.05$ . Check with the estimate:  $12 + 5 = 17$ .



### Example 4

Find  $0.68 + 0.57$ . Hundredths:  $8 + 7 = 15$ , write 5 and carry 1. Tenths:  $6 + 5 + 1 = 12$ , write 2 and carry 1. Ones: 1. So  $0.68 + 0.57 = 1.25$ .



A number line shows the same idea: to add  $2.7 + 0.85$ , jump **0.8** to reach **3.5**, then jump **0.05** more to land on **3.55**.

### **P** Property: zeros and the sum rule

Adding zeros to the end of the decimal part does not change a number, and the sum or difference of like place values keeps the same place value:  $0.3 + 0.4 = 0.7$  because 3 tenths plus 4 tenths is 7 tenths.

## **5. Subtracting decimals to hundredths**

Subtract from right to left, too. Write the larger number on top and line up the decimal points. If a digit on top is smaller than the digit below it, regroup by borrowing from the place to its left.

### **E** Example 5

Find  $9.5 - 3.27$ . Write  $9.5$  as  $9.50$ . Hundredths:  $0 - 7$  is not possible, so borrow one tenth (which is ten hundredths):  $10 - 7 = 3$ . Tenths:  $4 - 2 = 2$  (you borrowed 1 from 5). Ones:  $9 - 3 = 6$ . So  $9.50 - 3.27 = 6.23$ . Check by adding:  $6.23 + 3.27 = 9.50$ .

### **!** Tip from Zyro

Subtraction can always be checked with addition. If  $a - b = c$ , then  $c + b$  must give back  $a$ .

## **6. Regrouping across several places**

Sometimes the place to borrow from is a zero, so you have to keep going to the left. Regroup one place at a time: a ten becomes ten ones, a one becomes ten tenths, a tenth becomes ten hundredths.

$$\begin{array}{r}
 \begin{array}{ccccccc}
 & 0 & 13 & & 9 & 12 & \\
 \cancel{1} & \cancel{4} & . & \cancel{0} & \cancel{2} & & \\
 - & 5 & . & 6 & 8 & & \\
 \hline
 & 8 & . & 3 & 4 & & 
 \end{array}
 \end{array}$$

**E**

### Example 6

Find  $14.02 - 5.68$ . The hundredths need to borrow, but the tenths digit is 0, so borrow from the ones: 4 ones become 3 ones and 10 tenths, then 10 tenths become 9 tenths and 10 hundredths, giving 12 hundredths. Hundredths:  $12 - 8 = 4$ . Tenths:  $9 - 6 = 3$ . For the ones, borrow from the tens:  $13 - 5 = 8$ . Tens: 0. So  $14.02 - 5.68 = 8.34$ .

## 7. Adding zeros as placeholders

Writing a zero at the end of a decimal does not change its value:  $4.7 = 4.70 = 4.700$ . Use these zeros so every number has the same number of decimal places, and write a whole number with a decimal point and zeros when you subtract from it.

**E**

### Example 7

Find  $7 - 2.45$ . Write 7 as 7.00. Hundredths: borrow,  $10 - 5 = 5$ . Tenths:  $9 - 4 = 5$ . Ones:  $6 - 2 = 4$ . So  $7.00 - 2.45 = 4.55$ .



### Common mistake

A zero at the *end* of the decimal part can be added or removed, but a zero in the *middle* cannot: **6.05** is not the same number as **6.5**.

## 8. Money and measurement word problems

Money is the most familiar use of decimals: dollars are the ones and cents are the hundredths. Always write both cents digits, such as \$4.50 instead of \$4.5. Measurements work in the same way, whether you use meters and liters, or inches, pounds and gallons.



### Example 8

Carla buys a sketchbook for \$6.75, markers for \$4.89 and stickers for \$3.15. She pays with a \$20 bill. Total:  **$6.75 + 4.89 + 3.15 = 14.79$** . Change:  **$20.00 - 14.79 = 5.21$** . Carla gets \$5.21 back.

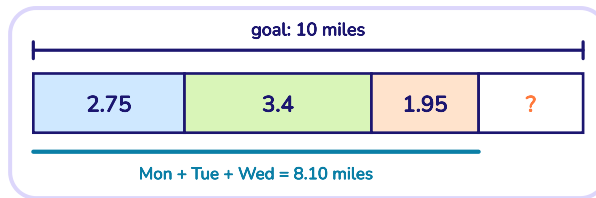


### Example 9

A recipe uses 2.75 pounds of flour for bread and 1.4 pounds for cookies. Together that is  **$2.75 + 1.40 = 4.15$**  pounds. A 5 pound bag leaves  **$5.00 - 4.15 = 0.85$**  pound.

## 9. Multi-step decimal problems

Many problems need two or more operations. Read the problem, decide what each step finds, and draw a bar model if it helps. Estimate at each step.



## M

### Method: multi-step problems

1. Read carefully and underline the question.
2. Find what you can calculate first.
3. Do each step, lining up the decimal points.
4. Check with an estimate and write a sentence with the unit.

## E

### Example 10

Maya wants to run 10 miles this week. She runs 2.75 miles on Monday, 3.4 miles on Tuesday and 1.95 miles on Wednesday. Step 1:  $2.75 + 3.40 + 1.95 = 8.10$  miles so far. Step 2:  $10.00 - 8.10 = 1.90$ . Maya still has to run 1.9 miles.

## Key takeaways

- Estimate first by rounding, then calculate exactly and compare.
- Line up the **decimal points**, not the last digits.
- Add or subtract from right to left and regroup when needed.
- Zeros at the end of a decimal can be added as placeholders:  $7 = 7.00$ .
- Check subtraction with addition.
- In money problems, write two decimal places and include the units in your answer.



## Test yourself: quick challenge for Grade 5

[Change level](#)

Level : **Grade 5**

6 random questions, instant feedback.



**Start the challenge**



## Speed drill for Grade 5: how many in 60 seconds?



## Keep exploring with Zyro



### Math practice

Adding and Subtracting Decimals: math practice, Grade 5



### Math tests

Adding and Subtracting Decimals: math test, Grade 5

 **Math quizzes**

Adding and Subtracting Decimals: math quiz, Grade 5

 **Math practice**

Place Value and Decimals: math practice, Grade 5

 **Math practice**

Multi-Digit Multiplication: math practice, Grade 5

 **Math tests**

Place Value and Decimals: math test, Grade 5

**Zyro vous emmène sur nos sites partenaires**

Embarquez pour d'autres planètes du savoir et leurs applis.

Décollage