Lesson 1

# Add and Subtract Decimals

## Real-World Link

**Swimming** One event in competitive swimming is the women's 100-meter butterfly. The table shows the times of different swimmers at a recent Olympics.

Women's 100-Meter Butterfly

| Swimmer's | Time (s) |
|---|---|
| Lisbeth Trickett | 56.73 |
| Christine Magnuson | ? |
| Gabriella Silva | 58.10 |

**You can use place value charts to compare the results.**

1. It took Christine Magnuson 0.37 second longer to finish than Lisbeth Trickett. What was Magnuson's time, in seconds?

| | tens | ones | tenths | hundredths |
|---|---|---|---|---|
| | 5 | 6 | 7 | 3 |
| + | | 0 | 3 | 7 |
| | | | | |

2. At a high school meet, a swimmer swam the women's 100-meter butterfly in 72.34 seconds. How many seconds faster did Gabriella Silva swim her race?

| | tens | ones | tenths | hundredths |
|---|---|---|---|---|
| | 7 | 2 | 3 | 4 |
| − | 5 | 8 | 1 | 0 |
| | | | | |

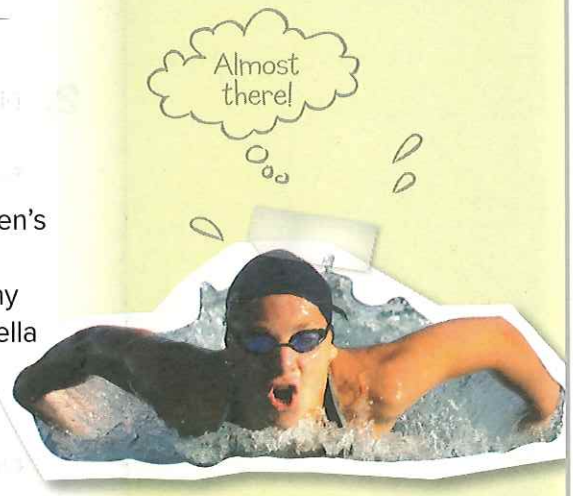
**Essential Question**

HOW can estimating be helpful?

**Common Core State Standards**

**Content Standards**
6.NS.3

**Mathematical Practices**
1, 2, 3, 4, 5, 6




**Which Mathematical Practices did you use? Shade the circle(s) that applies.**

1. Persevere with Problems
2. Reason Abstractly
3. Construct an Argument
4. Model with Mathematics
5. Use Math Tools
6. Attend to Precision
7. Make Use of Structure
8. Use Repeated Reasoning

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Work Zone

# Add Decimals

To add decimals, line up the decimal points. Then, add digits in the same place-value position.

## Examples

Tutor

**Accuracy**

To find an accurate sum or difference, line up the digits based on their place values. Use the decimal point to help align the correct digits before completing the operation.

**1. Find the sum of 23.1 and 5.8.**

**Estimate** $23.1 + 5.8 \approx 23 + 6$ or 29

$$\begin{array}{r} 23.1 \\ +\ 5.8 \\ \hline 28.9 \end{array}$$

Line up the decimal points.

Add as with whole numbers.

**Check for Reasonableness** $28.9 \approx 29$ ✓

The sum of 23.1 and 5.8 is 28.9.

**2. Find the sum of 29.6 and 14.7.**

**Estimate** $29.6 + 14.7 \approx$ ☐ + ☐ or ☐

$$\begin{array}{r} \square\ \square.\square \\ +\ \square\ \square.\square \\ \hline \square\ \square.\square \end{array}$$

Line up the decimal points.

Add as with whole numbers.

**Check for Reasonableness** ☐ ≈ ☐

The sum of 29.6 and 14.7 is ☐.

Show your work.

**Got it?** **Do these problems to find out.**

**Find each sum.**

**a.** 54.7 + 21.4 **b.** 14.2 + 23.5 **c.** 17.3 + 33.5

a. _____

b. _____

c. _____

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# Subtract Decimals

To subtract decimals, line up the decimal points. Then, subtract digits in the same place-value position. You may need to *annex,* or place zeros at the end of a decimal, in order to subtract.

## Examples

Tutor

**3. Find the difference of 5.774 and 2.371.**

**Estimate** $5.774 - 2.371 \approx 6 - 2$ or 4

$$\begin{array}{r} 5.774 \\ -\ 2.371 \\ \hline 3.403 \end{array}$$

Line up the decimal points.

Subtract as with whole numbers.

**Check for Reasonableness** $3.403 \approx 4$ ✓

So, $5.774 - 2.371 = 3.403$.

**4. Find 6 − 4.78.**

**Estimate** $6 - 4.78 \approx 6 - 5$ or 1

$$\begin{array}{r} 6.00 \\ -\ 4.78 \\ \hline 1.22 \end{array}$$

Annex zeros so that both numbers have the same number of decimal places.

**Check for Reasonableness** $1.22 \approx 1$ ✓

So, $6 - 4.78 = 1.22$.

**5. Find 23 − 4.216.**

$$\begin{array}{r} \square\square.\square\square\square \\ -\ \ \ \square.\square\square\square \\ \hline \square\square.\square\square\square \end{array}$$

Annex the zeros so that both numbers have the same number of decimal places.

Subtract as with whole numbers.

So, $23 - 4.216 =$ _____.

**Got it? Do these problems to find out.**

**Find each difference.**

**d.** 9.543 − 3.671 **e.** \$50.62 − \$39.81 **f.** 14 − 9.09

Show your work.

d. _____

e. _____

f. _____

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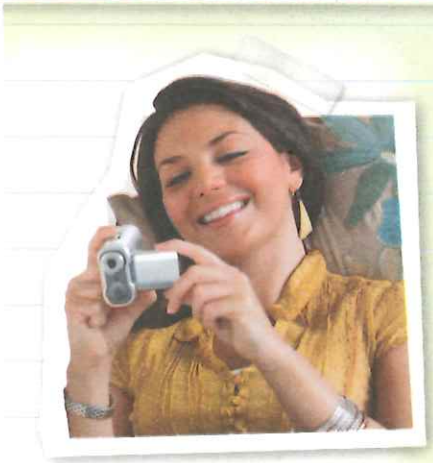

Real World

## Example

Tutor

**6.** **Reagan is creating a video. The first video clip was 22.36 minutes long. The second video clip was 17.03 minutes long. What is the total length of the video?**

**Estimate** $22.36 + 17.03 \approx 22 + 17$ or 39

$$\begin{array}{r} 22.36 \\ +\ 17.03 \\ \hline 39.39 \end{array}$$

Line up the decimal points.

Add as with whole numbers.

**Check for reasonableness** $39.39 \approx 39$ ✓

So, the video is 39.39 minutes long.

Show your work.

**Got it?** **Do this problem to find out.**

g. _____

**g.** Jonathan is traveling for work. This morning his GPS indicated that the total distance to his destination is 589.4 miles. Before lunch he drove 208.62 miles. How much farther does Jonathan need to travel?

## Guided Practice

Check

**Find each sum or difference.** (Examples 1–5)

**1.** $14.7 + 87.9 =$ _____

Show your work.

**2.** $66.5 - 24.1 =$ _____

**3.** $52.1 - 31.47 =$ _____

**4.** Grayson is making a snack mix for his family camping trip. He added 14.52 ounces of peanuts to 27.35 ounces of granola. How many ounces of snack mix does he have? (Example 6)

_____

_____

**5.** **Building on the Essential Question** How is estimation helpful when adding and subtracting decimals?

_____

_____

_____

### Rate Yourself!

☐ I understand how to add and subtract decimals.

Great! You're ready to move on!

☐ I still have questions about adding and subtracting decimals.

No Problem! Go online to access a Personal Tutor. Tutor

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Name _____ My Homework _____

## Independent Practice

Go online for Step-by-Step Solutions eHelp

**Find each sum.** (Examples 1 and 2)

**1.** 7.2 + 9.5 = _____

Show your work.

**2.** 1.34 + 2 = _____

**3** 54.5 + 48.51 = _____

**Find each difference.** (Examples 3–5)

**4.** 5.6 − 3.5 = _____

**5.** 97 − 16.98 = _____

**6.** 58.67 − 28.72 = _____

**7** The table shows the top three finishers in barrel racing. What is the time difference between Nicolas and Sancho? (Example 6)

_____

| Barrel Racing Results | |
|---|---|
| **Rider** | **Time (s)** |
| Nicolas | 14.67 |
| Becki | 15.98 |
| Sancho | 16.40 |

**8.** In two months, Mica spent a total of $305.43 on groceries. She spent $213.20 in the first month. How much did she spend in the second month? (Example 6)

_____

Show your work.

**9.** **Financial Literacy** A hat costs $10.95 and a T-shirt costs $14.20. How much change will you receive if you pay for both items with a $50 bill?

_____

**10.** MP **Use Math Tools** The 4-by-100 meter relay is a track and field event involving four runners on each team.

**a.** What is the combined time of Carter and Frater?

_____

**b.** How much faster did Powell run his leg of the race than Bolt?

_____

**c.** What is the combined time of all the runners?

_____

| 4 by 100 Meter Times | |
|---|---|
| **Runner** | **Time (s)** |
| Carter | 13.4 |
| Frater | 12 |
| Bolt | 12 |
| Powell | 11.7 |

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## H.O.T. Problems Higher Order Thinking

11. MP **Find the Error** Luis is finding 8.9 − 3.72. Find his mistake and correct it.

12. MP **Reason Abstractly** Write two different pairs of decimals whose sums are 14.1. One pair should involve regrouping.

13. MP **Reason Inductively** Explain how you know that the sum of 12.6, 3.1, and 5.4 is greater than 20.

14. MP **Persevere with Problems** Josie found that 3.28 + 3.28 + 3.28 = 9.84. What is the missing factor in the related multiplication problem 3.28 × ☐ = 9.84? Explain.

15. MP **Reason Abstractly** Without subtracting 8.5 − 4.64, determine what digit will be in the hundredths place. Explain.

16. MP **Reason Inductively** Kiera is buying the items shown at the right for her kitchen. Will $35 be enough to purchase all three items? Explain your reasoning.

| Item | Cost ($) |
|---|---|
| mixing bowl | 14.95 |
| spatula | 8.49 |
| measuring cups | 10.75 |

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Name _____ My Homework _____

# Extra Practice

**Find each sum.**

**17.** 4.9 + 3.0 = 7.9

Homework Help

4.9
+3.0
7.9

**18.** 0.796 + 13 = _____

**19.** 15.63 + 24.36 = _____

**Find each difference.**

**20.** 19.86 − 4.94 = _____

**21.** 82 − 67.18 = _____

**22.** 14.39 − 12.16 = _____

**23.** **Financial Literacy** The current balance of Tami's checking account is $237.80. Find the new balance after Tami writes a check for $29.95.

_____

Show your work.

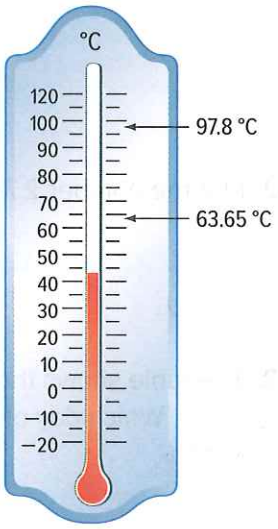
**24.** The annual rainfall for Kayston Falls was 50.38 inches in 2012. In 2013, the annual rainfall was 55.76 inches. What is the difference in rainfall between the two years?

_____

**25.** **STEM** The melting point of sodium is 97.8 degrees Celsius. The melting point of potassium is 63.65 degrees Celsius. How much higher is the melting point of sodium?

_____

_____




**26.** MP **Be Precise** Collin needs three wooden boards to repair his porch. The lengths he needs are 2.2 meters, 2.82 meters, and 4.25 meters. He purchases a board that is 10 meters long and cuts the three sections. How much of the board that Collin purchased will be left?

_____

_____

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## Power Up! Common Core Test Practice

**27.** Dominic is traveling through the state of Oregon. He drove 66.4 miles from Salem to Eugene and then continued to Medford. The total distance of his trip was 233.25 miles. What is the distance from Eugene to Medford?

**28.** The table shows the top four finishers at a swimming event.

| Boy's 50 Yard Freestyle | |
|---|---|
| **Swimmer** | **Time (s)** |
| Andrew | 22.63 |
| Kendrick | 22.20 |
| Ty | 22.58 |
| Will | 22.31 |

Determine if each statement is true or false.

**a.** Will swam 0.32 seconds faster than Andrew. ☐ True ☐ False

**b.** Ty swam 0.27 seconds faster than Will. ☐ True ☐ False

**c.** Andrew swam 0.5 seconds slower than Ty. ☐ True ☐ False

**d.** Will swam 0.11 seconds slower than Kendrick. ☐ True ☐ False

## Common Core Spiral Review

**Round each decimal to the nearest whole number.** 5.NBT.4

**29.** 4.75 ≈ _____

**30.** 34.1 ≈ _____

**31.** 22.48 ≈ _____

**32.** Plot the number 2.78 on the number line below. 4.NF.7

**33.** The table shows the distances Juliana biked several days this week. Which day of the week did she bike the greatest distance? 5.NBT.3b

_____

_____

| Day | Distance Biked (mi) |
|---|---|
| Monday | 9.34 |
| Wednesday | 9.47 |
| Thursday | 9.74 |
| Sunday | 9.32 |

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