# Lesson 10 Comparing Decimal Numbers

Monitoring Progress: Quiz 2

## Comparing Decimal Numbers

### How do we compare decimal numbers?

When we add or subtract decimal numbers, we have to make sense of our answer. It is easy to be confused by decimal numbers, so we need strategies for determining whether one decimal number is larger or smaller than another number.

A good example is racing. Runners are always comparing their times to what they have run before, their fastest time in an event, and how fast other runners are in the same event. Below are some times for Gail Johnson. Her main event is the 200-meter dash. At the end of the week she always compares how she did with her fastest time the week before.

**Example 1**

**Compare decimal numbers.**

Gail's fastest time the week before was 23.92 seconds.

| Practice Runs | Best Times (in seconds) |
|---|---|
| Monday | 24.5 |
| Tuesday | 24.2 |
| Wednesday | 23.83 |
| Thursday | 23.81 |
| Friday | 23.02 |

Compared to Gail's fastest time the week before, how much faster did Gail run . . .

- on Wednesday?
  **23.92 − 23.83 = 0.09 seconds**
- on Thursday?
  **23.92 − 23.81 = 0.11 seconds**
- on Friday?
  **23.92 − 23.02 = 0.9 seconds**

When we compare these numbers, they look different. But they are actually very close. Which one is a bigger decimal number: 0.09, 0.11, or 0.9? There are two strategies we use to understand the size of decimal numbers.

## Remember the Connection Between Decimal Numbers and Fractions

The first way is to remember the connection between decimal numbers and fractions. Example 2 shows how we convert the decimal numbers so that they have the same place value. Then we compare the two numbers as fractions.

**Example 2**

**Find out which is bigger: 0.09, 0.11, or 0.9.**

We make the comparison this way:

0.09 is the same as $\frac{9}{100}$ (read the decimal number "9 hundredths").

0.11 is the same as $\frac{11}{100}$ (read the decimal number "11 hundredths").

0.90 is the same as $\frac{90}{100}$ (read the decimal number "90 hundredths").

The three decimal numbers are ordered from smallest to biggest this way: 0.09, 0.11, and 0.90.

## Use a Decimal Ruler to Order Decimal Numbers

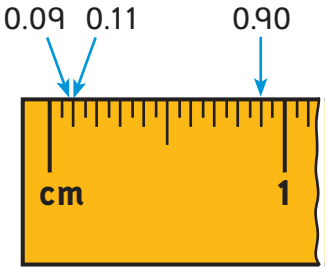
A second way to compare decimal numbers is to think about numbers on a decimal ruler. Once again, we see in Example 3 that we need to convert tenths to hundredths. We do that by adding a zero on the right. We convert 0.9 to 0.90. Then think about how we count on the number line.

**Example 3**

**Use a decimal ruler to order the decimal numbers 0.09, 0.11, and, 0.9.**

We begin by changing 0.9 to 0.90.

Where are 0.09, 0.11, and 0.90 on the decimal ruler?




These two strategies help us make sense of decimal numbers and make comparisons.

**Apply Skills**
Turn to ***Interactive Text***, page 27.

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Quiz 2

**Reinforce Understanding**
Use the ***mBook Study Guide*** to review lesson concepts.

# Homework

## Activity 1

**Add and subtract the decimal numbers. Round the answers to the nearest tenths place.**

1. 56.02 + 89.09
2. 99.63 – 89.87
3. 129.74 + 229.01
4. 506.06 – 317.12

## Activity 2

**Put the decimal numbers in order from smallest to largest.**

1. 0.1, 0.09, 0.19
2. 0.07, 0.005, 0.75
3. 1.23, 1.03, 0.031
4. 2.06, 2.6, 2.9
5. 0.09, 0.098, 0.089
6. 17.34, 17.04, 17.7

## Activity 3

**Answer the questions about data and statistics.**

1. What type of graph would be the most helpful if you were interested in finding the top $\frac{1}{4}$ of the data?
   **(a)** pie graph
   **(b)** scatter plot
   **(c)** box-and-whisker plot

2. What type of graph would be the most helpful if you were examining the relationship between date and temperature?
   **(a)** pie graph
   **(b)** scatter plot
   **(c)** box-and-whisker plot

## Homework

3. What is the mode of the data set?
   Data Set: 1, 2, 3, 4, 4, 4, 5, 6, 7, 8, 8, 9, 10, 11, 12
   **(a)** 4
   **(b)** 5
   **(c)** 6

4. What explains the large difference in the mean and median of the data set?
   Data Set: 10, 12, 14, 16, 21, 22, 66
   Median: 16 Mean: 23
   **(a)** Odd number of data in the set.
   **(b)** Extreme data in the set.
   **(c)** Not enough numbers in the set.

5. What is the range for the data set?
   Data Set: 1, 2, 2, 3, 4, 7, 8, 12, 12, 12, 12, 13, 17
   **(a)** 16
   **(b)** 17
   **(c)** 18

### Activity 4 • Distributed Practice

**Solve.**

1. $527 + 298$
2. $306 - 167$
3. $43 \cdot 7$
4. $356 \div 8$
5. $\frac{5}{4} + \frac{1}{2}$
6. $\frac{5}{3} - \frac{8}{9}$
7. $\frac{1}{3} + \frac{4}{2}$
8. $\frac{3}{4} \div \frac{4}{5}$
9. $\frac{8}{12} - \frac{1}{6}$
10. $\frac{3}{9} + \frac{7}{6}$