Questions

1. **Multiple Choice** Which shows the correct computation for $75.89 - 1.4$?

   A. $75.89 - 1.4 = 75.75$
   
   B. $75.89 - 1.4 = 74.49$
   
   C. $75.89 - 1.4 = 61.89$
   
   D. $75.89 - 1.4 = 6.189$

2. In the problem below, the correct digits in the difference are given, but the decimal point is missing. Use estimation to determine where the decimal point should be written.

   $333.3333 - 29.44444 = \underline{3} \underline{0} \underline{3} \underline{8} \underline{8} \underline{8} \underline{6}$

3. Andre makes a purchase at a store in the amount of $13.62. As he hands the clerk a $20 bill, he estimates how much change he should get back.
   
   a. To the nearest dime, about how much should Andre get back in change?
   
   b. Exactly how much should Andre get back in change?

4. George made the fact triangle at the right to help him solve and check the equation $0.5432 + x = 0.6789$. Use the fact triangle for Parts a and b.

   a. **Fill in the Blanks** $\underline{?} - 0.5432 = \underline{?}$

   b. What is the value of $x$?

   c. **Fill in the Blanks** Check your answer for Part b.

   $0.5432 + \underline{?} = \underline{?}$

5. When finding the difference $39 - 1.867$, explain why it is helpful to rewrite $39$ as $39.000$.

6. **Fill in the Blanks**

   a. $8.5 = 7 + \underline{?}$ tenths

   b. $26$ hundredths $= \underline{?}$ tenths + $6$ hundredths

   c. $5.00 = 4$ ones + $\underline{?}$ tenths + $0$ hundredths $= 4$ ones + $\underline{?}$ tenths + $10$ hundredths

7. A student performed the subtraction shown at the right.

   a. Describe the error the student made.

   b. What is the correct answer?
8. The difference between two numbers is 3.999. One of the numbers is 8. There are two possibilities for the other number. What are they?

9. The 2008 Summer Olympics results of the top four finishers in the men’s 200-m backstroke are given in the table below. A time such as 1:53.94 means that the swimmer completed the event in 1 minute, 53.94 seconds.

<table>
<thead>
<tr>
<th>Place</th>
<th>Name</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Ryan Lochte, United States</td>
<td>1:53.94*</td>
</tr>
<tr>
<td>Silver</td>
<td>Aaron Peirsol, United States</td>
<td>1:54.33</td>
</tr>
<tr>
<td>Bronze</td>
<td>Arkady Vyatchanin, Russia</td>
<td>1:54.93</td>
</tr>
<tr>
<td>4th place</td>
<td>Markus Rogan, Austria</td>
<td>1:55.49</td>
</tr>
</tbody>
</table>

*Olympic Record

a. How much faster was Ryan Lochte’s time than Markus Rogan’s?
b. Of the four times in the table, which two times are closest to each other? What is the difference between those two times?

10. **Multiple Choice** Which of the following is true?
    
    A. \(25.92 - 15.8 = 15.8 - 25.92\)
    
    B. \(25.92 - (15.8 - 6) = (25.92 - 15.8) - 6\)
    
    C. \(25.92 - 15.8 - 6 = 25.92 - (15.8 - 6)\)
    
    D. \(25.92 - 15.8 = -(15.8 - 25.92)\)

11. Alice would like to purchase a video game console that costs $177.88. She currently has $99.02 saved. Later this week she expects to earn $18 babysitting, and she will receive $75 in birthday presents. However, before she buys the console, she must repay her brother $18.90 that she had borrowed. By the end of the week, will she have enough money to buy the console? Explain your answer.

12. A school bake sale has a goal of raising $150. The food is sold at three tables. So far, the three tables have taken in $39.25, $52.89, and $47.19, respectively.
    
    a. Use estimation to determine about how close the school is to achieving its goal.
    
    b. Compute to determine exactly how close the school is to achieving its goal.
13. Scientists often measure distances in space in **astronomical units** (AU). The distance from Earth to the sun is about 93,000,000 mi, and that distance is defined to be 1 AU. Halley’s comet, visible from Earth about every 75 or 76 years, comes as close as 0.58270 AU to the sun (inside the orbit of Venus). The comet’s greatest distance from the sun is 35.33 AU (beyond Neptune). See the diagram at the right.


a. For Halley’s comet, what is the distance, in AU, between its farthest point from the sun and its closest point to the sun?

b. In AU, how much closer does Halley’s comet get to the sun than Earth does?

c. Estimate, in miles, about how close Halley’s comet gets to the sun.

14. Find each result using fractions. Then check each result using decimals.

a. \( \frac{9}{10} - \frac{7}{100} \)

b. \( 1\frac{3}{8} - \frac{1}{2} \)

15. Think of using each of these cards exactly once in each problem.

a. With the cards, what is the **greatest** difference that can be found by subtracting two numbers that are each less than 100?

b. With the cards, what is the **least** positive difference that can be found by subtracting two numbers?

16. A student used a calculator and claimed that \( 2000 - 14.547 = 1854.53 \). Explain how you can tell if the obtained answer is reasonable. If the answer is not reasonable, try to figure out what the student entered into the calculator.

17. a. Copy the number line below, and label the tick marks to show the decimals that are not marked.

b. Picture \( 2.13 - 0.045 \) on your number line.

c. Write a number sentence to represent the result.
18. At a manufacturer of small machine parts, the accepted tolerance of round parts, such as screws, is plus/minus 0.0005 in. This means that a particular part whose diameter is designed to be 0.4230 in. will be rejected if its actual diameter is greater than $0.4230 + 0.0005$ in. or less than $0.4230 - 0.0005$ in.


The following measurements were taken from a sample of five of those particular parts. Which measurements are from parts that should be rejected?

0.4235 in. 0.4250 in. 0.4228 in. 0.4234 in. 0.4224 in.

19. The Global Positioning System (GPS) is a space-based satellite system that performs many functions—including providing extremely accurate location information anywhere in the world. The information is given in degrees latitude (north/south) and longitude (east/west). For example, the GPS coordinates for the location where these questions were written at the University of Chicago is 41.7853531º latitude, –87.601188º longitude. The GPS coordinates for a point one block due north of this location are 41.787232º latitude, –87.601188º longitude.

Source: http://itouchmap.com/latlong.html

a. What is the difference between the two latitude coordinates given above?

b. What is the difference between the two longitude coordinates given above?