Name _____

3.1 Estimate Sums and Differences

Learning Target: Use rounding or compatible numbers to estimate sums and differences of decimals.

Success Criteria:

- I can use rounding to estimate a sum or difference.
- I can use compatible numbers to estimate a sum or difference.

Explore and Grow

Estimate each sum or difference.

$$\begin{array}{rcl} 23.08 & \longrightarrow & \boxed{23} \\ +\ 59.55 & \longrightarrow & +\ \boxed{60} \\ \hline & & \boxed{83} \end{array} \qquad \begin{array}{rcl} 98.82 & \longrightarrow & \boxed{99} \\ -\ 76.47 & \longrightarrow & -\ \boxed{76} \\ \hline & & \boxed{23} \end{array}$$

MP **Construct Arguments** Compare your answers to your partner's answers. Explain why they are the same or why they are different.

Think and Grow: Estimate Sums and Differences

You can use rounding or compatible numbers to estimate sums and differences of decimals.

Example Estimate 27.21 + 48.73.

One Way: Use rounding. Round each addend to the nearest whole number. Then find the sum of the rounded numbers.

$$\begin{array}{rcl} 27.21 & \longrightarrow & 27 \\ +\ 48.73 & \longrightarrow & +\ 49 \\ \hline & & 76 \end{array}$$

So, 27.21 + 48.73 is about 76.

Another Way: Use compatible numbers.

$$\begin{array}{rcl} 27.21 & \longrightarrow & 30 \\ +\ 48.73 & \longrightarrow & +\ 50 \\ \hline & & 80 \end{array}$$

So, 27.21 + 48.73 is about 80.

Example Estimate 388.5 − 103.2.

One Way: Use rounding. Round each number to the nearest ten. Then find the difference of the rounded numbers.

$$\begin{array}{rcl} 388.5 & \longrightarrow & 389 \\ -\ 103.2 & \longrightarrow & -\ 103 \\ \hline & & 286 \end{array}$$

So, 388.5 − 103.2 is about 286.

Another Way: Use compatible numbers.

$$\begin{array}{rcl} 388.5 & \longrightarrow & 400 \\ -\ 103.2 & \longrightarrow & -\ 100 \\ \hline & & 300 \end{array}$$

So, 388.5 − 103.2 is about 300.

Show and Grow

Estimate the sum or difference.

1.
$$\begin{array}{rcl} 112.18 & \longrightarrow & 110 \\ +\ 47.99 & \longrightarrow & 50 \\ \hline & & 160 \end{array}$$

2.
$$\begin{array}{rcl} 68.8 & \longrightarrow & 70 \\ -\ 29.7 & \longrightarrow & 30 \\ \hline & & 40 \end{array}$$

Name _____

Apply and Grow: Practice

Estimate the sum or difference.

3. $7.95 \rightarrow 8$
$- 1.72 \rightarrow -2$
6

4. $237.5 \rightarrow 200$
$+ 345.1 \rightarrow + 350$
550

5. $67.5 + 15.1$
$70 + 15 = 85$

6. $418.9 - 14.7$
$420 - 15 = 405$

7. $13.9 - 8.21$
$14 - 8 = 6$

8. $208.6 + 56.9$
$210 + 60 = 270$

9. MP **Number Sense** Descartes estimates a sum by rounding each number to the nearest ten. His estimate is 140. Which sums could he have estimated?

83.6 + 59.8 (circled) ~~106.92 + 44.68~~ ~~130.8 + 4.68~~ 73.5 + 67.4 (circled)

10. MP **Precision** Does rounding $209.11 - 104.53$ to the nearest ten or to the nearest hundred give an estimate that is closer to the actual difference? Explain.

$200 - 100 = 100$
$210 - 100 = 110$ (circled)

11. DIG DEEPER! Newton packs a suitcase to fly on a plane. His suitcase needs to weigh less than 50.0 pounds. Should Newton overestimate or underestimate the weight of his suitcase? Explain.

Overestimate so he doesn't go over weight limit

Think and Grow: Modeling Real Life

Example About how many feet taller is One World Trade Center than the Empire State Building?

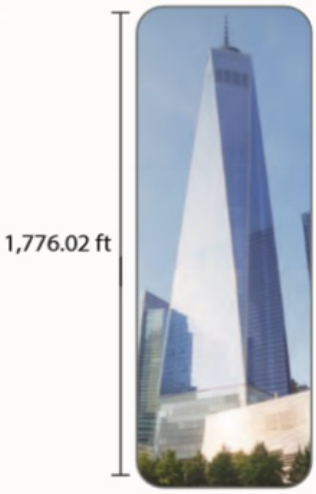
Round the height of each building to the nearest hundred because you do not need a precise answer.

One World Trade Center: 1,800 feet

Empire State Building: 1,500 feet

Subtract the estimated height of the Empire State Building from the estimated height of One World Trade Center.

$$\begin{array}{r} 1{,}800 \\ -\ 1{,}500 \\ \hline \end{array}$$



One World Trade Center

Empire State Building

One World Trade Center is about 300 feet taller than the Empire State Building.

Show and Grow


African elephant: 5.7 tons


Hippopotamus: 2.3 tons

12. About how many more tons does the African elephant weigh than the hippopotamus?

$$\begin{array}{r} 5.7 \\ -\ 2.3 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ -\ 2 \\ \hline \end{array}$$

4 tons

13. One cup of wild rice has 6.5 grams of protein. One cup of shredded chicken has 36.9 more grams of protein than 1 cup of wild rice. About how many grams of protein are in 1 cup of chicken?

$$\begin{array}{r} 36.9 \\ +\ 6.5 \\ \hline \end{array} \qquad \begin{array}{r} 37 \\ +\ 7 \\ \hline \end{array}$$

44 grams

14. The speed Earth orbits the Sun is 18.5 miles per second. This speed is 3.3 miles per second slower than the speed Venus orbits the Sun. About how fast does Venus orbit the Sun?

$$\begin{array}{r} 18.5 \\ +\ 3.3 \\ \hline \end{array} \qquad \begin{array}{r} 19 \\ +\ 3 \\ \hline \end{array}$$

22 miles per second

Name _____

Homework & Practice 3.1

Learning Target: Use rounding or compatible numbers to estimate sums and differences of decimals.

Example Estimate 734.6 − 285.3.

One Way: Use rounding. Round each number to the nearest ten. Then find the difference of the rounded numbers.

$$\begin{array}{rcr} 734.6 & \longrightarrow & 730 \\ -\ 285.3 & \longrightarrow & -\ 290 \\ & & \boxed{440} \end{array}$$

So, 734.6 − 285.3 is about 440 .

Another Way: Use compatible numbers.

$$\begin{array}{rcr} 734.6 & \longrightarrow & 750 \\ -\ 285.3 & \longrightarrow & -\ 300 \\ & & \boxed{450} \end{array}$$

So, 734.6 − 285.3 is about 450 .

Estimate the sum or difference.

1. $\begin{array}{r} 76.81 \\ +\ 2.17 \end{array}$

2. $\begin{array}{r} 79.1 \\ -\ 32.8 \end{array}$

3. 418.44 − 23.61

4. 90.7 + 2.3

5. 6.24 − 3.8

6. 837.51 + 149.27

7. **Open-Ended** Write a decimal addition problem that has an estimated sum of 35.

8. **Reasoning** Describe a situation when you would estimate the difference of 25.4 and 19.8 to the nearest whole number.

9. **Modeling Real Life** Your friend participates in a 3.1-mile race. She walks for 1.4 miles of the race and runs the rest. About how many miles does your friend run?

10. **DIG DEEPER!** Your phone has 16,000 megabytes of total storage space. About how much storage space is free?

Review & Refresh

Find the sum.

11. $\frac{2}{8} + \frac{4}{8} =$ _____

12. $\frac{1}{2} + \frac{5}{2} =$ _____

13. $1 + \frac{1}{4} =$ _____