

Reteaching 3-1 Rounding and Estimating

Estimate $\$3.85 + \$2.79 + \$3.06$ by three methods.
Round all numbers to the same place value.

$$\begin{array}{r} \text{Estimate} \\ \$3.85 \approx \$4 \\ \$2.79 \approx \$3 \\ \underline{\$3.06} \approx \underline{\$3} \\ \$10 \end{array}$$

Use front-end estimation.

$$\begin{array}{r} \$3.85 \rightarrow .9 \\ \$2.79 \rightarrow .8 \\ \underline{\$3.06} \rightarrow .1 \end{array} \quad \text{Estimate by rounding}$$

$$\$8 + 1.8 = \$9.80$$

Use clustering.

The values cluster around $\$3$. $\rightarrow 3 \cdot 3 = \9

Estimate by rounding each number in an exercise to the same place value.

1. $5.743 \approx$
 $+ 8.216 \approx$ _____

2. $73.85 \approx$
 $- 27.41 \approx$ _____

Estimate using front-end estimation.

3. $7.532 \approx$
 $+ 4.859 \approx$ _____
+ = _____

4. $26.52 \approx$
 $+ 38.46 \approx$ _____
+ = _____

5. $11.2 \approx$
 $+ 16.7 \approx$ _____
+ = _____

6. $0.153 \approx$
 $+ 0.479 \approx$ _____
+ = _____

Estimate by clustering.

7. $\$9.85 + \$10.26 + \$9.07 + 11.01$ _____
8. $\$48.02 + \$53.17 + \$46.89$ _____
9. $121.7 + 112.6 + 130.2$ _____
10. $6.3 + 5.9 + 8.2 + 7.1 + 7.7$ _____

Practice 3-1 Rounding and Estimating

Estimate using front-end estimation.

1. $6.3 + 8.55$

2. $345 + 682$

3. $4.60 + 5.53$

4. $\$6.14 + \9.38

5. $\$39.65 + \25.84

6. $9.71 + 3.94$

Estimate by clustering.

7. $\$7.04 + \$5.95 + \$6.08 + \$5.06 + \$6.12$

8. $9.3 + 8.7 + 8.91 + 9.052$

9. $37.6 + 44.91 + 41 + 39.1$

10. $2.357 + 1.874 + 1.956$

Estimate by rounding each number to the same place value.

11. $14.66 + 25.19$ _____

12. $8.7 + 3.21 + 3.899$ _____

13. $194.78 - 12.31$ _____

14. $\$289 - \67.20 _____

15. $800 - 301.47$ _____

16. $0.06 + 19.41$ _____

Round to the underlined place value.

17. $6.\underline{7}39$ _____

18. $52.\underline{1}92$ _____

19. $\underline{0}.61$ _____

20. $348.\underline{5}08$ _____

Estimate. State your method (rounding, front-end, or clustering).

21. $91.7 + 88.6 + 89.1 + 92.5 + 90.6$ _____

22. $3.9 + 8.1 + 2.06$ _____

23. $\$1.08 + \$0.95 + \$0.89 + \1.14 _____

24. $11.56 + 19.43 + 13.40 + 14.39$ _____

25. $0.015 + 0.039 + 0.0266$ _____

Reteaching 3-2 Estimating Decimal Products and Quotients

Estimate $\$3.14 \div \0.75 .

Round 0.75. Since 5 is 5 or greater, add one to the 7, so $0.75 \approx 0.8$.

Round 3.14 to a compatible number, one that is easy to divide by 0.8. Since $8 \cdot 4 = 32$, round 3.14 to 3.2.

Mentally divide $3.2 \div 0.8 = 4$.

Thus $\$3.14 \div 0.75 \approx \4 .

Estimate each quotient using compatible numbers.

1. $15.831 \div 7.87 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

2. $163.7 \div 0.46 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

3. $-472 \div 78.6 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

4. $11.45 \div 3.2 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

5. $549.7 \div 51.4 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

6. $-9.6 \div (-1.854) \approx \underline{\hspace{2cm}} \div (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$

7. $6.39 \div (-0.82) \approx \underline{\hspace{2cm}} \div (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$

8. $-31.8 \div 0.56 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

9. $336.4 \div (-4.23) \approx \underline{\hspace{2cm}} \div (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$

10. $82.56 \div 8.72 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

11. $-62.31 \div 14.89 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

12. $25.8 \div 6.72 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

13. $131 \div 42.1 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

14. $1.53 \div 0.28 \approx \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

15. $6,243 \div (-75) \approx \underline{\hspace{2cm}} \div (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$

Practice 3-2 Estimating Decimal Products and Quotients

Determine whether each product or quotient is reasonable. If it is not reasonable, find a reasonable result.

1. $62.77(29.8) = 187.0546$

2. $16.132 \div 2.96 = 54.5$

3. $(47.89)(6.193) = 296.5828$

4. $318.274 \div 4.07 = 78.2$

5. $2.65(-0.84) = -0.2226$

6. $-38.6(-1.89) = 7.2954$

7. $6,355 \div 775 = 8.2$

8. $1,444.14 \div 67.8 = 213$

9. $1.839(6.3) = 115.857$

10. $3.276 \div 0.63 = 5.2$

Estimate each product or quotient.

11. $8.73 \cdot 6.01$ _____

12. $11.042(4.56)$ _____

13. $197.4 \cdot 2.85$ _____

14. $675.1 \cdot 0.051$ _____

15. $479.2(3.2)$ _____

16. $712.9 \cdot 0.41$ _____

17. $11.57 \div 3.09$ _____

18. $43.68 \div 8.7$ _____

19. $29.5 \div 5.1$ _____

20. $\$41.09 \div \6.88 _____

21. $148.8 \div 9.8$ _____

22. $\$76.77 \div \24.19 _____

23. Apples cost \$.89 per lb. Estimate the cost of three 5-lb bags. _____

24. You buy 3 dinners that are \$6.85 each. Before tax and tip, the total is \$25.42. Is this total correct? Explain.

25. You worked 18 hours last week and received \$92.70 in your paycheck. Estimate your hourly pay.

Reteaching 3-3 Mean, Median, and Mode

In 1995, eight states had pupil-teacher ratios that were close to the U.S. average of 17.3. Use the table at the right. Find the **a)** mean, **b)** median, and **c)** mode.

State	Pupils per Teacher
Arkansas	17.1
Illinois	17.1
Indiana	17.5
Louisiana	17.0
Mississippi	17.5
New Mexico	17.0
Ohio	17.1
Pennsylvania	17.0

a. Mean: $\frac{\text{sum of data items}}{\text{number of data items}}$
 $= \frac{17.1 + 17.1 + 17.5 + 17.0 + 17.5 + 17.0 + 17.1 + 17.0}{8}$
 $= \frac{137.3}{8} = 17.1625$

Rounded to the nearest tenth, the mean is 17.2.

b. Median: Write the data in order.
 17.0, 17.0, 17.0, 17.1, 17.1, 17.1, 17.5, 17.5
 $\frac{17.1 + 17.1}{2} = 17.1$ Find the mean of the two middle numbers. The median is 17.1.

c. Mode: Find the data item that occurs most often.
 Both 17.0 and 17.1 occur 3 times. The modes are 17.0 and 17.1.

Find the mean, median, and mode. Round to the nearest tenth where necessary.

	mean	median	mode
1. 14.2 14.7 14.3 14.6	_____	_____	_____
2. 8 7 3 5 9 2 4 7	_____	_____	_____
3. 37 42 51 28 36	_____	_____	_____
4. 1.1 1.8 2.6 1.8 1.9 2.6	_____	_____	_____

The world's largest body of freshwater is formed by the Great Lakes of North America. Use the table of depths at the right. Find the following statistics. Round to the nearest tenth where necessary.

Lake	Depth (in ft)
Superior	1,333
Michigan	923
Huron	750
Erie	210
Ontario	802

- 5. mean: _____
- 6. median: _____
- 7. mode: _____

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Practice 3-3 Mean, Median, and Mode

1. There were 8 judges at a gymnastics competition. Kathleen received these scores for her performance on the uneven parallel bars:
8.9, 8.7, 8.9, 9.2, 8.8, 8.2, 8.9, 8.8

- a. Find these statistics: mean _____ median _____ mode _____
b. Which measure of central tendency best describes the data? Explain.

- c. Why do you think that the highest and lowest judge's scores are disregarded in tallying the total score in a gymnastics competition?

Find the mean, median, and mode. Round to the nearest tenth where necessary. Identify any outliers.

Data	Mean	Median	Mode	Outliers
2. 8, 15, 9, 7, 4, 5, 9, 11	_____	_____	_____	_____
3. 70, 61, 28, 40, 60, 72, 25, 31, 64, 63	_____	_____	_____	_____
4. 4.9, 5.7, 6.0, 5.3, 4.8, 4.9, 5.3, 4.7, 4.9, 5.6, 5.1	_____	_____	_____	_____
5. 271, 221, 234, 240, 271, 234, 213, 253, 155	_____	_____	_____	_____
6. 0, 2, 3, 3, 3, 4, 4, 5	_____	_____	_____	_____

Use the data in the table. Round to the nearest tenth where necessary.

7. What is the mean height of the five highest European mountains? _____
8. What is the median height? _____
9. Is any of the heights an outlier? Explain.

Peak	Height (ft)
Mont Blanc	15,771
Monte Rosa	15,203
Dom	14,911
Liskamm	14,852
Weisshorn	14,780

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Reteaching 3-4 Using Formulas

Given that C is the temperature in degrees Celsius, use the formula $F = 1.8C + 32$ to find the temperature F in degrees Fahrenheit. What is the temperature in degrees Fahrenheit for a temperature of 18° in Celsius?

$$F = 1.8C + 32 \quad \text{Write the formula.}$$

$$F = 1.8(18) + 32 \quad \text{Substitute 18 for } C.$$

$$F = 32.4 + 32 \quad \text{Simplify.}$$

$$F = 64.4^\circ$$

The temperature is 64.4° Fahrenheit, or 64.4°F .

Find the temperature in degrees Fahrenheit for each temperature in degrees Celsius.

1. $C = 4^\circ$ $F = 1.8(\underline{\hspace{2cm}}) + 32 = \underline{\hspace{2cm}} + 32 = \underline{\hspace{2cm}}$
2. $C = 40^\circ$ $F = 1.8(\underline{\hspace{2cm}}) + 32 = \underline{\hspace{2cm}} + 32 = \underline{\hspace{2cm}}$
3. $C = 22^\circ$ $F = 1.8(\underline{\hspace{2cm}}) + 32 = \underline{\hspace{2cm}} + 32 = \underline{\hspace{2cm}}$
4. $C = 35^\circ$ $F = 1.8(\underline{\hspace{2cm}}) + 32 = \underline{\hspace{2cm}} + 32 = \underline{\hspace{2cm}}$
5. $C = -6^\circ$ $F = 1.8(\underline{\hspace{2cm}}) + 32 = \underline{\hspace{2cm}} + 32 = \underline{\hspace{2cm}}$
6. $C = -24^\circ$ $F = 1.8(\underline{\hspace{2cm}}) + 32 = \underline{\hspace{2cm}} + 32 = \underline{\hspace{2cm}}$

Given that F is the temperature in degrees Fahrenheit, the formula $C = (F - 32) \div 1.8$ is the temperature C in degrees Celsius. Find the temperature in degrees Celsius for each temperature in degrees Fahrenheit.

7. $F = 68^\circ$ $C = (\underline{\hspace{2cm}} - 32) \div 1.8 = \underline{\hspace{2cm}} \div 1.8 = \underline{\hspace{2cm}}$
8. $F = 17.6^\circ$ $C = (\underline{\hspace{2cm}} - 32) \div 1.8 = \underline{\hspace{2cm}} \div 1.8 = \underline{\hspace{2cm}}$
9. $F = 5^\circ$ $C = (\underline{\hspace{2cm}} - 32) \div 1.8 = \underline{\hspace{2cm}} \div 1.8 = \underline{\hspace{2cm}}$
10. $F = 57.2^\circ$ $C = (\underline{\hspace{2cm}} - 32) \div 1.8 = \underline{\hspace{2cm}} \div 1.8 = \underline{\hspace{2cm}}$
11. $F = 32^\circ$ $C = (\underline{\hspace{2cm}} - 32) \div 1.8 = \underline{\hspace{2cm}} \div 1.8 = \underline{\hspace{2cm}}$
12. $F = 212^\circ$ $C = (\underline{\hspace{2cm}} - 32) \div 1.8 = \underline{\hspace{2cm}} \div 1.8 = \underline{\hspace{2cm}}$

Practice 3-4 Using Formulas

Use the formula $P = 2l + 2w$. Find the perimeter of each rectangle.

1. _____ 2. _____ 3. _____
-

Use the formula $A = lw$. Find the area of each rectangle above.

4. _____ 5. _____ 6. _____

7. Use the formula $d = rt$ to find how far each animal in the table can travel in 5 seconds.

Animal	Speed (ft/s)	Distance in 5 s (ft)
Pronghorn antelope	89.5	
Wildebeest	73.3	
Gray fox	61.6	
Wart hog	44.0	
Wild turkey	22.0	
Chicken	13.2	

8. While vacationing on the Mediterranean Sea, Angie recorded the temperature several times during a 24-hour period. She used a thermometer in the lobby of her hotel. It was a beautiful day. Use the formula $F = 1.8C + 32$ to change the temperatures Angie recorded from Celsius to Fahrenheit.

Time	Temperature (°C)	Temperature (°F)
4:00 A.M.	19	
8:00 A.M.	22	
12:00 P.M.	30	
4:00 P.M.	28	
8:00 P.M.	24	
12:00 A.M.	20	

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Reteaching 3-5 Solving Equations by Adding or Subtracting Decimals

Solve the equation $n + 3.2 = -4.7$.

$$n + 3.2 = -4.7$$

$$n + 3.2 - 3.2 = -4.7 - 3.2 \quad \text{Subtract 3.2 from each side.}$$

$$n = -7.9 \quad \text{Simplify.}$$

Solve each equation.

1. $n - 17.9 = -31.05$

2. $h + (-8.5) = -0.6$

$$n = \underline{\hspace{2cm}}$$

$$h = \underline{\hspace{2cm}}$$

3. $y - 33.4 = 81.9$

4. $t + 18.5 = -41$

$$y = \underline{\hspace{2cm}}$$

$$t = \underline{\hspace{2cm}}$$

5. $h + 20.4 = -15.7$

6. $p - 1.1 = 4.4$

$$h = \underline{\hspace{2cm}}$$

$$p = \underline{\hspace{2cm}}$$

7. $a + 106.7 = 62.3$

8. $z - 241.6 = 32.7$

$$a = \underline{\hspace{2cm}}$$

$$z = \underline{\hspace{2cm}}$$

Practice 3-5 Solving Equations by Adding or Subtracting Decimals**Solve each equation.**

1. $3.8 = n - 3.62$

2. $x - 19.7 = -17.48$

3. $12.5 = t - 3.55$

4. $k - 263.48 = -381.09$

5. $9.36 + k = 14.8$

6. $-22 = p + 13.7$

7. $y + 3.85 = 2.46$

8. $-13.8 = h + 15.603$

9. $y - 48.763 = 0$

10. $6.21 = e + (-3.48)$

11. $x + (-0.0025) = 0.0024$

12. $-58.109 = v - 47.736$

13. $x + 82.7 = 63.5$

14. $-0.08 = f + 0.07$

15. $0 = a + 27.98$

16. $117.345 + m = 200$

17. $z - 81.6 = -81.6$

18. $5.4 = t + (-6.1)$

19. $-4.095 + b = 18.665$

20. $4.87 = n + 0.87$

Use mental math to solve each equation.

21. $k + 23.7 = 23.7$

22. $5.63 = n + 1.63$

23. $x - 3.2 = 4.1$

24. $p - 0.7 = 9.3$

25. $6.75 + c = 12.95$

26. $-1.09 = j - 4.99$

Reteaching 3-6 Solving Equations by Multiplying or Dividing Decimals

Solve the equations $0.7x = -2.8$ and $\frac{x}{1.5} = 0.2$.

$$0.7x = -2.8$$

Write the equation.

$$\frac{0.7x}{0.7} = \frac{-2.8}{0.7}$$

Divide each side by 0.7.

$$x = -4$$

Simplify.

$$\frac{x}{1.5} = 0.2$$

Write the equation.

$$\frac{x}{1.5}(1.5) = 0.2(1.5)$$

Multiply each side by 1.5.

$$x = 0.3$$

Simplify.

Solve each equation.

1. $4x = -2.44$

2. $1.8x = 5.76$

$x =$ _____

$x =$ _____

3. $\frac{h}{-1.05} = -0.36$

4. $\frac{z}{-0.02} = 5.9$

$h =$ _____

$z =$ _____

5. $4.25y = 0.85$

6. $\frac{n}{-1.9} = 24.6$

$y =$ _____

$n =$ _____

7. $\frac{r}{8.04} = 1.55$

8. $11.32a = -39.62$

$r =$ _____

$a =$ _____

Practice 3-6 Solving Equations by Multiplying or Dividing Decimals

Use mental math to solve each equation.

1. $0.7h = 4.2$ _____

2. $\frac{x}{2.5} = -3$ _____

3. $38.7 = -100k$ _____

4. $-45.6e = -4.56$ _____

Solve each equation.

5. $\frac{p}{2.9} = 0.55$ _____

6. $9.1 = \frac{x}{-0.7}$ _____

7. $-6.4 = \frac{y}{8.5}$ _____

8. $\frac{k}{-1.2} = -0.07$ _____

9. $277.4 = \frac{n}{3.5}$ _____

10. $\frac{e}{-0.76} = 2,809$ _____

11. $\frac{a}{27} = -32.3$ _____

12. $\frac{p}{-1.52} = -3,600$ _____

13. $-9k = 2.34$ _____

14. $-12.42 = 0.03p$ _____

15. $-7.2y = 61.2$ _____

16. $-0.1035 = 0.23n$ _____

17. $1.5m = 3.03$ _____

18. $-0.007h = 0.2002$ _____

19. $8.13t = -100.812$ _____

20. $0.546 = 0.42y$ _____

Write an equation for each sentence. Solve for the variable.

21. The opposite of seventy-five hundredths times some number n equals twenty-four thousandths. Find the value of n .

22. A number n divided by -3.88 equals negative two thousand. Find the value of n .

23. Four hundredths times some number n equals thirty-three and four tenths. Find the value of n .

24. The product of some number n and -0.26 equals 169.39 . Find the value of n .
