

Teaching Tools:

Business Math Activity Masters

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Comparing and Rounding Numbers

Name: _____

Class: _____

Date: _____

To compare whole numbers, look at the number of digits in each number. The number with more digits is the greater number. For numbers with the same number of digits, compare digits with the same place value from left to right.

Example 1 The Forrest Bank requires a minimum balance of \$750 to avoid a service fee on checking accounts. Heather has \$1,085 in her account. Anthony has \$746 in his account. Will either person have to pay a service fee?

Compare 750 and 1,085. 1,085 has more digits than 750, so 1,085 is greater than 750. Heather does not have to pay a service fee.

Compare 750 and 746. The 7s are the same. 5 is greater than 4, so 750 is greater than 746. Anthony will have to pay a service fee.

When rounding numbers, you can round so there is one or two non-zero numbers or to a specific place value. In either case, when rounding to any place value, check the digit to the right of that place-value position, and round up if that digit is 5 or more, round down if the that digit is less than 5.

Example 2 The Morrison Company had sales of \$16,285,739 last year. How could that month's sales be reported if rounded to the nearest ten million dollars? To the nearest million dollars? To the nearest ten thousand dollars?

\$16,285,739 To round to the nearest ten million, look at the digit in the millions place. Since 6 is greater than 5, round 1 up to 2 and write all zeros after the 2.
\$20,000,000

\$16,285,739 To round to the nearest million, look at the hundred thousands digit. Since 2 is less than 5, do not change the 6 and write all zeros after the 6.
\$16,000,000

\$16,285,739 To round the nearest ten thousand, look at the thousands digit. Since the digit is 5, round the 8 up to 9 and write zeros after the 9.
\$16,290,000

Practice

Circle the greater number in each pair of numbers.

1. 42,536; 646,375 2. 1,533,724; 1,034,942 3. 525,623; 525,693

Circle the least number in each group.

4. 362; 93,644; 1,634 5. 935; 930; 931 6. 1,326; 972; 909; 1,340

Round each number to the stated place value.

7. 3,938
nearest hundred _____
8. 256,928
nearest hundred thousand _____
9. 65,359
nearest thousand _____
10. 935,235,264
nearest ten million _____

Adding and Subtracting Whole Numbers

Name: _____

Class: _____

Date: _____

When adding and subtracting whole numbers, write numbers in a column so the ones digits are aligned.

Example 1 Systems Solutions provides computer service for IBM and Macintosh computers. One month their income was \$30,263 from IBMs and \$19,927 from Macintoshes. What was their total income?

Add to find total income:	Align ones column. ↓	Start at the right and add. 1		Continue adding from right to left. 1 1 1
	\$ 30,263	\$30,263	3 + 7 = 10	\$30,263
	<u>+ 19,927</u>	<u>+19,927</u>	Notice how the 10 is recorded.	<u>+19,927</u>
		0		\$50,190

Their total income was \$50,190.

Example 2 Systems Solutions had expenses of \$20,153. What was their profit after expenses were subtracted from income?

Subtract to find profit:	Align ones column. ↓	Start at the right and subtract. 8 10		Continue subtracting from right to left. 8 10
	\$ 50,190	\$ 50,190	10 - 3 = 7	\$ 50,190
	<u>- 20,153</u>	<u>- 20,153</u>	Notice how renaming is used.	<u>- 20,153</u>
		7		\$ 30,037

Their profit was \$30,037.

Practice

Find each answer.

1. $23,604 + 10,425 =$ _____
2. $392,367 - 51,032 =$ _____
3. $564,062 - 133,748 =$ _____
4. $276,463 + 953,284 =$ _____
5. $4,749 + 2,294 + 9,287 =$ _____
6. $248,932,000 - 13,962,028 =$ _____
7. Ken's Krafts had sales of \$39,059. They had \$1,938 in merchandise returned. Find their net sales after returns are deducted. _____
8. For the first 3 months of the year Glenda's Gifts had sales of \$23,253, \$19,098, and \$25,634. Find the total sales for those three months. _____
9. Carol's Construction Company the following income: June, \$49,938; July, \$90,492; August, \$91,324; and September, \$89,205. The company had these construction expenses: June, \$10,353; July, \$59,023; August, \$38,093; and September, \$23,030.
 - a. What was the company income for those months? _____
 - b. What was the company expenses for those months? _____
 - c. What was the company income after construction expenses? _____

Estimating Sums and Differences

Name: _____

Class: _____

Date: _____

When an exact answer is not needed, you can use an estimate. Other times, estimation can be used to check mathematical calculations, especially when using a calculator.

Example 1 January sales were \$16,203,498 and February sales were \$8,500,293. Estimate the total sales for those two months.

$$\begin{array}{r} 16,203,498 \\ + 8,500,293 \\ \hline \end{array}$$

Option 1:
Round to the nearest million.

$$\begin{array}{r} 16,000,000 \\ +9,000,000 \\ \hline 25,000,000 \end{array}$$

Option 2:
Round to the nearest ten million.

$$\begin{array}{r} 20,000,000 \\ +10,000,000 \\ \hline 30,000,000 \end{array}$$

Either answer is acceptable, depending on the needed accuracy.

Example 2 Marley & Company had sales of \$136,296 and Scrooge Sounds had sales of \$98,525. Estimate how much greater Marley & Company's sales were.

$$\begin{array}{r} 136,296 \\ - 98,525 \\ \hline \end{array}$$

Option 1:
Round to the nearest hundred thousand.

$$\begin{array}{r} 100,000 \\ -100,000 \\ \hline 0 \end{array}$$

Option 2:
Round to the nearest ten thousand.

$$\begin{array}{r} 140,000 \\ -100,000 \\ \hline 40,000 \end{array}$$

This answer does not help, round to a smaller place value. →

So, $136,296 - 98,525 \approx 40,000$
 \approx means "is approximately equal to" or "is about"

Practice

Estimate each answer.

- $425 + 932 \approx$ _____
- $949 - 592 \approx$ _____
- $235,763 - 75,726 \approx$ _____
- $77,394,025 + 59,753,028 \approx$ _____
- $33,492 + 82,928 + 29,478 \approx$ _____
- $758,493,326 - 572,340,027 \approx$ _____

Melissa used a calculator. The answer shown on her calculator is given. Use estimation to decide whether the answer is reasonable. When checking for a reasonable answer, you can choose what place value to use to round numbers.

- | | | | | |
|---------------------------|---|---------------------------|-----|----|
| 7. $3,938 + 9,392 + 950$ | 14280 | Is the answer reasonable? | Yes | No |
| 8. $993,253 - 535,252$ | 1528505 | Is the answer reasonable? | Yes | No |
| 9. $659,293 + 592,572$ | 1251885 | Is the answer reasonable? | Yes | No |
| 10. $1,092,592 - 8,935$ | 183657 | Is the answer reasonable? | Yes | No |
| 11. $82 + 928 + 648 + 39$ | 16970 | Is the answer reasonable? | Yes | No |

Multiplying Numbers Ending in Zeros

Name: _____

Class: _____

Date: _____

When you multiply numbers that have *final zeros*, you can use this shortcut:

Multiply the numbers by using only the digits that are not zeros. Then write as many final zeros in the product as there are zeros in the numbers being multiplied.

Example 1 Juan sold an average of \$8,000 in merchandise each week. How much merchandise would he sell in 50 weeks?

Think $8 \times 5 = 40$

$$\underline{8000} \times \underline{50} = \underline{400,000}$$

3 zeros + 1 zero = 4 zeros

Juan sold \$400,000 in merchandise in 50 weeks.

Example 2 Better Builders, Inc. had 32,000 crates of parts. Each crate held 1,600 parts. How many parts did Better Builder have?

32	000	3 zeros
× 16	00	2 zeros
192		3 + 2 = 5 zeros
32		
512	00000	5 zeros

The Better Builders, Inc. had 51,200,000 parts.

Practice

Find each product.

1. $900 \times 70 =$ _____

2. $18,000 \times 20 =$ _____

3. $9,300 \times 500 =$ _____

4. $12,000 \times 600 =$ _____

5. $70,000 \times 160 =$ _____

6. $810,000 \times 4,200 =$ _____

7. Metro Bagels sold an average of 1,800 bagels every day in June. How many bagels did they sell in June? _____

8. A car dealership sold 120 new cars last month. The average price was \$ 21,000. What was the total dollar value of car sales last month? _____

9. When Gloria started her business, her gross sales in 2005 were \$8,300. Gloria expanded her business and advertised on the Internet. In 2009 her gross sales were 300 times the 2005 gross sales. What were Gloria's gross sales in 2009? _____

10. The Williams Corporation paid \$1,500,000 in salaries last year. The company's gross sales were 40 times the salaries paid. What were the company's gross sales last year? _____

Estimating Products

Name: _____

Class: _____

Date: _____

When an exact answer is not needed, you can use an estimate. Other times, estimation can be used to check mathematical calculations, especially when using a calculator.

The most common method of estimating products is to round each number to the **nearest** unit with one non-zero digit. The estimate will be close to the actual product. However, there are two more options:

- Option 2: Round both numbers **up**. Estimate will be greater than the actual product. (See Example 2 below.)
- Option 3: Round both numbers **down**. Estimate will be less than the actual product. (See Example 3 below.)

Example 1 Jeff earns \$3,935 per month. Estimate how much Jeff earns in 12 months.
Estimate $\$3,935 \times 12$. Round each to the nearest 1-digit number.
Then multiply. $\$4,000 \times 10 = \$40,000$ Jeff earns about \$40,000 per year.

Example 2 Angel's Art Studio has fixed monthly expenses of \$2,620. Angel wants to estimate how much to put in her yearly budget for fixed expenses. She knows these fixed expenses will go up as costs increase.
Estimate $\$2,620 \times 12$. The estimate needs to be greater than the actual product, so round each number up.
 $\$3,000 \times 20 = \$60,000$ She should budget \$60,000 for fixed expenses.

Example 3 Last year Victory Movers earned \$61,294 for each truck they owned. They have bought more trucks and now have 328 trucks. They know the earnings per truck may go down slightly with the additional trucks. They need to estimate their total earnings next year.
Estimate $\$61,294 \times 328$. The estimate needs to be less than the actual product, so round each number down.
 $\$60,000 \times 300 = \$18,000,000$
They should estimate \$18,000,000 in earnings.

Practice

An accountant used a calculator for each multiplication. The answer shown on the calculator is given. Use estimation to decide whether the answer is reasonable.

1. $28,453 \times 290$ 825370 Is the answer reasonable? Yes No

2. $9,529 \times 2,092$ 199346680 Is the answer reasonable? Yes No

3. Park-Ho's gas gauge is broken. He knows his car gets about 35 miles per gallon. His car has a 12-gallon gas tank. He filled up the gas tank before starting on a trip. Which is the best estimate of how far he should drive before filling his gas tank up again?

- a. 800 miles b. 420 miles c. 400 miles d. 300 miles

4. BeeCo sold 16,370 kits. The average price of each kit sold was \$612. Estimate income from kit sales last year. Is the estimate greater than or less than the actual income?

Estimate: _____ Greater than actual income Less than actual income

Dividing Whole Numbers

Name: _____

Class: _____

Date: _____

Division is the opposite of multiplication and can be shown in several ways. To show that 18 divided by 3 is 6, you may use any of these forms:

$$18 \div 3 = 6$$

$$\frac{18}{3} = 6$$

$$\begin{array}{r} 6 \\ 3 \overline{)18} \end{array}$$

In each case, 18 is the dividend, 3 is the divisor, and 6 is the quotient.

$$\text{dividend} \div \text{divisor} = \text{quotient} \qquad \frac{\text{dividend}}{\text{divisor}} = \text{quotient} \qquad \begin{array}{r} \text{quotient} \\ \text{divisor} \overline{) \text{dividend}} \end{array}$$

You can use multiplication to check division. If you multiply the quotient by the divisor and get the dividend, the division is correct.

Example 1 Last year Pierre DePuy worked 48 weeks. He worked 1,728 hours in all. Assume that he worked the same number of hours each week. How many hours per week did he work?

$$\begin{array}{r} 36 \\ 48 \overline{)1728} \\ \underline{144} \\ 288 \\ \underline{288} \\ 0 \end{array}$$

Check:
$$\begin{array}{r} 48 \\ \times 36 \\ \hline 288 \\ 144 \\ \hline 1728 \checkmark \end{array}$$

Pierre worked 36 per week.

Practice

Find each quotient.

1. $1,341 \div 9 =$ _____

2. $4,080 \div 8 =$ _____

3. $14,240 \div 5 =$ _____

4. $2,232 \div 12 =$ _____

5. $6,162 \div 26 =$ _____

6. $314,208 \div 144 =$ _____

7. Kempson's Kwick Mart sold 2,128 AA batteries. The batteries were sold in packages of 8 each. How many packages of AA batteries were sold? _____

8. Smith's Grocery sold 42,492 eggs last year. How many dozen eggs was that? Remember, there are 12 items in a dozen. _____

9. Mr. Smith said that he sold 126,000 cans of vegetables last year. The cans of vegetables were ordered in cases of 24 cans each. How many cases of vegetables did Mr. Smith order last year? _____

10. The Dickson family drove their car 21,000 miles last year. They purchased 750 gallons of gasoline for their car last year. How many miles did they get per gallon of gasoline? _____

Dividing Numbers Ending in Zeros

Name: _____

Class: _____

Date: _____

When you divide multiples of 10, you can use either of these shortcuts:

- Write the numbers as a fraction. Cross out the same number of zeros in both the numerator and denominator of the fraction. (See Example 1.)
- Move the decimal point in the dividend and the divisor to the **left** the same number of places as there are zeros in the divisor. (See Example 2.)

Example 1 Divide 90,000,000 by 10,000.

$$90,000,000 \div 10,000 = \frac{90,000,000}{10,000} = \frac{9000}{1} = 9,000$$

Example 2 Find the quotient of $700,000,000 \div 1,000$.

$$700,000,000 \div 1,000 = 700000.000 \div 1.000 = 700,000 \div 1 = 700,000$$

← ←

Move the decimal point in the dividend
and the divisor to the left 3 places.

Practice

Find each quotient.

1. $50,000 \div 100 =$ _____
2. $50,000 \div 1,000 =$ _____
3. $50,000 \div 10,000 =$ _____
4. $2,000,000,000 \div 10,000 =$ _____
5. $8,000,000,000 \div 100,000 =$ _____
6. $3,000,000,000 \div 10,000,000 =$ _____
7. Shayna bought \$2,000 in traveler's checks. Each traveler's check is worth \$100. How many traveler's checks did Shayna buy? _____
8. A semi-trailer truck was driven 100,000 miles. The truck used 10,000 gallons of gasoline to drive that distance. How many miles did the travel on each gallon of gasoline? _____
9. A case of copier paper contains 5,000 sheets of paper. There are 10 packages of paper in a case. How many sheets of paper are in each package? _____
10. The Sulu Scientific Corporation sold \$7,000,000 in stock last year. Each share of stock was worth \$100. How many shares of stock did they sell? _____
11. The Karosotis Plastic Corporation sold \$300,000 in stock last year. Each share of stock was worth \$1,000. How many shares of stock did they sell? _____
12. After 1,000 days a Web site had 90,000 visitors. Assume the same number of visitors went to the Web site each day. How many visitors went to the Web site each day? _____

Estimating Quotients

Name: _____

Class: _____

Date: _____

One way to estimate the answer to a division problem is to start by rounding the divisor to a number with one non-zero number followed by all zeros. Then round the dividend to a multiple of that rounded divisor.

Example 1 A seminar room has 790 seats in 38 rows. About how many seats are in each row?

The problem says "about how many," so estimate $790 \div 38$.

Round the divisor so it has one non-zero number. $38 \rightarrow 40$
Round the dividend to a multiple of the **rounded** dividend.
Multiples of 4 are 4, 8, 12, 16, and so on. So, round 790 to 800.

$790 \div 38 \approx 800 \div 40 = 20$ There are about 20 seats in each row.

Example 2 A national company sold 63,253 units for a total of \$22,534,325. Approximately how much did each unit sell for?

The problem says "approximately," so estimate $22,534,325 \div 63,253$.

Round the divisor so it has one non-zero number. $63,253 \rightarrow 60,000$
Round the dividend to a multiple of the **rounded** dividend.
Multiples of 6 are 6, 12, 18, 24, 30, and so on. Round 22,534,325 to 24,000,000.

$22,534,325 \div 63,253 \approx 24,000,000 \div 60,000 = 400$

Each unit sold for about \$400.

Practice

Estimate each quotient.

1. $9,152 \div 31 \approx$ _____

2. $59,235 \div 18 \approx$ _____

3. $13,423 \div 383 \approx$ _____

4. $243,839 \div 49 \approx$ _____

5. $80,434 \div 910 \approx$ _____

6. $5,642,982 \div 82,011 \approx$ _____

7. Acme Company made 34,323 machines. These were sent to 493 different stores. If each store received about the same number of machines, estimate how many each store got. _____

8. Powell Printing Company bound 392,636 books in 809 hours. About how many books were bound each hour? _____

9. One year a company sold \$15,754,754 in merchandise. Assume they sold the same amount of merchandise each week. About how much merchandise did they sell each week? (A year has 52 weeks.) _____

10. Marc used a calculator to divide 63,252 by 21. The calculator display is at the right. Is his answer reasonable? Yes No

30120

Tables and Charts

Name: _____

Class: _____

Date: _____

Tables and charts are ways to organize information, or *data*. Schedules, inventory sheets, price lists, and checkbook registers are types of tables or charts.

Most tables are organized in *rows* and *columns*. Rows go across and columns go up and down. The title of a row or column is called its *label*. Labels tell you what information that row or column contains.

Queen's Quick Mart
Monthly Sales, January–June

	2008	2009
January	\$18,392	\$21,034
February	\$21,930	\$23,093
March	\$18,390	\$24,593
April	\$22,443	\$26,432
May	\$25,342	\$24,955
June	\$23,536	\$27,543

Example 1 Which of the given months in 2009 had the greatest sales?

June had the greatest sales because the greatest number in the 2009 column is in the row for June.

Example 2 During which of the given months were the sales greater in 2008 than they were in the same month in 2009? How much greater?

May is the only month in which sales were greater in 2008 than in 2009.

\$387 greater; $\$25,342 - \$24,955 = \$387$

Practice

Use the table at the right to answer these questions.

Center High School
Enrollment

1. How many freshmen boys are there? _____

2. To find the total number of juniors, add the number of boys and girls. What is that total? _____

3. What is the total number of seniors? _____

4. Add the four numbers in the "Girls" column to find the total number of girls in Center High. _____

5. How many students in all are there at Center High? _____

6. In which classes are there more boys than girls at Center High? _____

7. a. Are there more boys or girls at Center High? _____

b. How many more? _____

	Boys	Girls	Total
Freshmen	136	123	259
Sophomores	120	112	232
Juniors	112	121	_____
Seniors	106	114	_____
School Total	474	_____	_____

Large Numbers in Tables and Charts

Name: _____

Class: _____

Date: _____

Some tables include data or information that is given to the nearest thousand, million, or billion. It is important when reading information in tables to be sure to note what actual values are being shown in the table.

Livestock on Farms in U.S.
(in thousands)

Year	Cattle	Sheep	Hogs
1900	59,739	48,105	51,055
1920	70,400	40,743	60,159
1940	68,309	52,107	61,165
1960	96,236	33,170	59,026
1980	111,242	12,699	67,318
2000*	100,000	9,000	61,000

*estimated

Example 1 How many cattle were there in 1900?

The table shows 59,739 *in thousands*, so there are $59,739 \times 1,000$, or 59,739,000 cattle in 1900.

Example 2 How many more hogs than sheep were there on U.S. farms in 1980?

Solution Option 1: Change data to numbers in standard form.
 $67,318,000 - 12,699,000 = 54,619,000$
 There were 54,619,000 more hogs than sheep in 1980.

Solution Option 2: Use data as given, but label it thousands.
 In thousands: $67,318 - 12,699 = 54,619$
 There were 54,619 thousand more hogs than sheep in 1980.

Practice

Use the table at the right for the following.

Egg Production, Price, & Value
in U. S. in 2006–2007

1. Write the number of eggs produced in 2006 in standard form.

2. Write the price of one dozen eggs in 2007 in standard \$0.00 form, rounding the price to the nearest cent.

3. Write the value of production in 2007 in standard form.

4. How much more did a dozen eggs cost in 2007 than in 2006. Round your answer to the nearest cent.

5. How many more eggs were produced in 2006 than in 2007?

6. How much more was the value of eggs produced in 2007 than in 2006?

	2006	2007
Production (million eggs)	78,264	77,220
Price per dozen (in dollars)	0.718	1.144
Value of production (1,000 dollars)	4,682,796	7,361,640

Pictographs

Name: _____

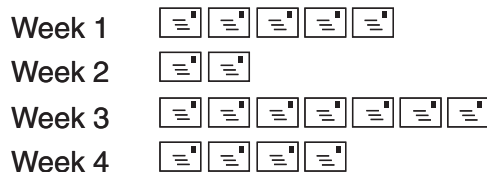
Class: _____

Date: _____

Pictographs are a quick, easy way to show information. Each symbol in a pictograph stands for a certain number of items.

In the graph at the right, each envelope stands for 10 letters sent to prospective customers.

Letters Sent To Potential Customers in June



Example 1 How many letters were sent during Week 2?

There are 2 envelopes, so 2×10 , or 20 letters were sent during Week 2.

Key: = 10 letters

Example 2 How many more letters were sent during Week 3 than during Week 4?

Solution Option 1: Change data to numbers in standard form.
 $7 \times 10 = 70$; $4 \times 10 = 40$; $70 - 40 = 30$

Thirty more letters were sent during Week 3 than during Week 4.

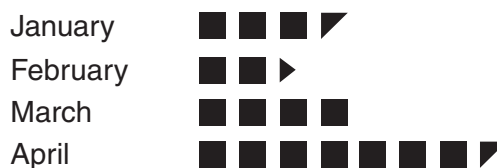
Solution Option 2: Work with the symbols first.
 $7 \text{ envelopes} - 4 \text{ envelopes} = 3 \text{ envelopes}$; $3 \times 10 = 30$

Thirty more letters were sent during Week 3 than during Week 4.

Practice

Sometimes part of a symbol is used. In the graph at the right, represents 50 shipments and represents 25 shipments.

Arejay Archers
January to April Shipments



Use the pictograph at the right to answer these questions.

1. How many shipments were made in January? _____

2. How many shipments were made in March? _____

= 100 shipments

3. How many more shipments were made in April than were made in February? _____

4. Find the total number of shipments made in January through April. _____

5. Show the symbols you would use to show that there were 425 shipments in May. _____

Bar Graphs

Name: _____

Class: _____

Date: _____

Bar graphs are used to compare quantities.

The title tells what the graph is about. The graph at the right is a *horizontal* bar graph. The graph on the bottom of the page is a *vertical* bar graph.

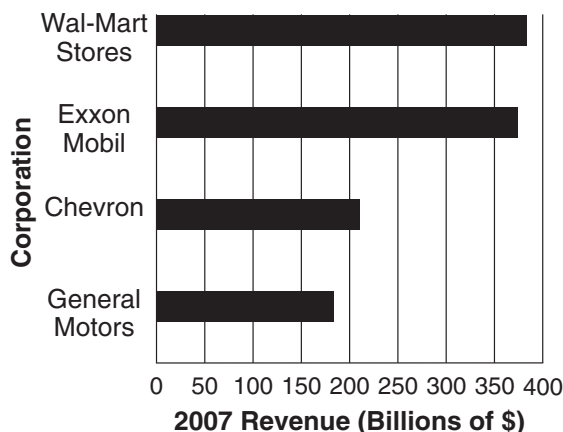
Example 1 In 2007, which two companies had approximately the same revenue?

Wal-Mart Stores and Exxon Mobil

Example 1 In 2007, what was the approximate revenue for Chevron?

About \$210 billion or \$210,000,000,000

Leading U.S. Businesses



Practice

1. To the nearest million dollars, about how much were ABC Corporation's sales in the 1st quarter of 2009?

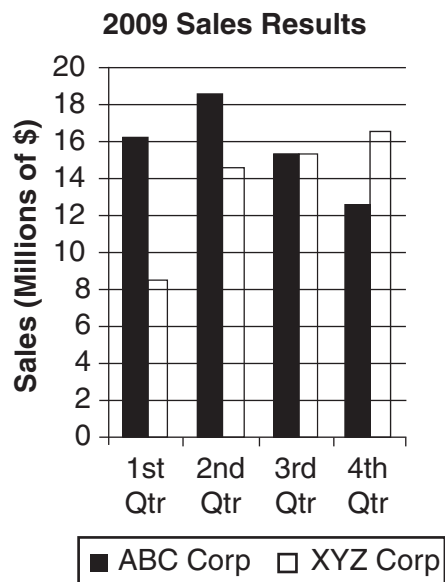
2. To the nearest million dollars, approximately how much less were ABC Corporation's sales in the 4th quarter than XYZ Corporation's sales in the 4th quarter?

3. Estimate the total sales for each company for 2009.

ABC Corporation _____

XYZ Corporation _____

4. As the year progressed, which corporation had increasing sales?



Line Graphs

Name: _____

Class: _____

Date: _____

Line graphs are used to show change in values over time.

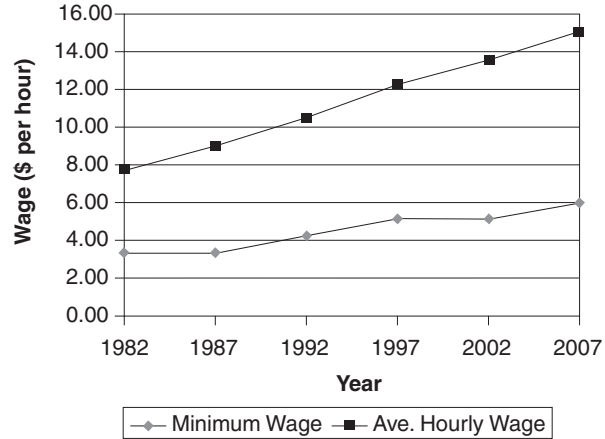
The title tells what the graph shows. The values along the vertical axis usually show the changing amounts. The values along the horizontal axis usually show the period of time.

Example 1 During which 5-year periods did the minimum wage stay the same?

Look at the line graph for the minimum wage. Find the parts of the graph that are horizontal, or flat.

The minimum wage stayed the same from 1982 to 1987 and from 1997 to 2002

Minium Wage Vs. Average Hourly Wage of U.S. Production Workers



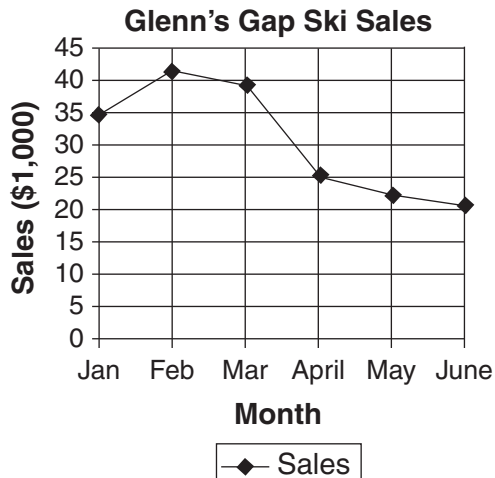
Practice

Use the line graphs above for Exercises 1–3.

- To the nearest dollar, about how much more was the average hourly earnings of a U S. production worker in 2007 that in 1982? _____
- About how much per hour did the minimum wage increase between 1982 and 2007? _____
- About how much per hour did the average hourly wage of a U. S. production worker increase between 1997 and 2007? _____

To the nearest thousand dollars, what were Glenn's Gap ski sales in:

- January? _____
- April? _____
- How much less were sales in May than in February? _____
- Do you think Glenn's Gap sells snow skis or water skis? Explain.



Circle Graphs

Name: _____

Class: _____

Date: _____

Circle graphs show relationships between parts of the whole

The title tells what the graph is about. The size of the sectors shows the percent or fraction that part is of the whole.

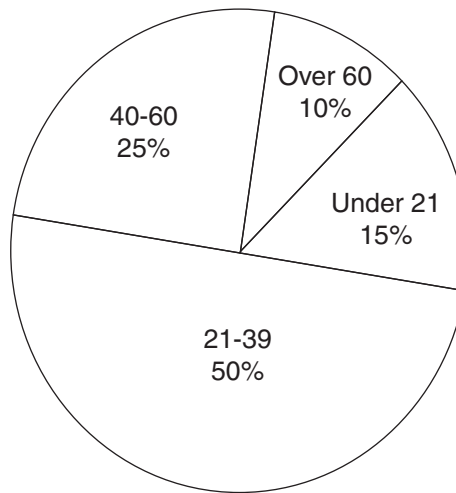
Example 1 What are the ages of most people shopping at Connie's store?

Most people shopping at Connie's store are from 21 to 39 years old.

Example 2 What percent of customers are over 60 at Connie's store?

10% are over 60.

Connie's Customer



Practice

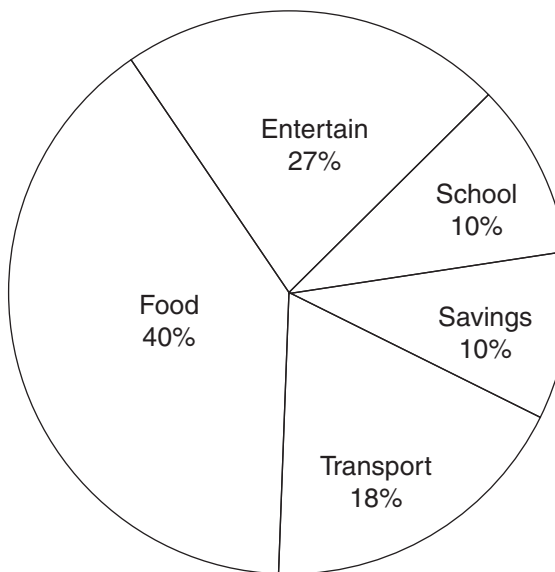
1. What does the graph at the right show?

2. On what does Glenda spend most of her allowance?

3. On which two items does Glenda spend 10% of her allowance?

4. Does Glenda spend more on entertainment or on transportation?

How Glenda Spends Her Allowance



Rounding Decimals and Estimation

Name: _____

Class: _____

Date: _____

Decimals are rounded in the same way as whole numbers.

When rounding to any place value, check the digit to the right of that place-value position, and round up if that digit is 5 or more or round down if the that digit is less than 5.

Decimal place values

0.	1	2	3	4	5	place values
						1 tenth
						2 hundredths
						3 thousandths
						4 ten-thousandths
						5 hundred-thousandths

Example 1 Fielder Company adds 0.234 mg of sodium to one product and 0.85 mg of sodium to another product. For a general company report, such amounts are given in tenths. Round each amount to the nearest tenth.

0.234 mg \approx 0.2 mg 2 is in the tenths place, so look at the 3 in the hundredths place. 3 is less than 5. Leave the 2 and drop the digits to the right.

0.85 mg \approx 0.9 mg 8 is in the tenths place, so look at the 5 in the hundredths place. 5 is equal to or greater than 5, so change 8 to 9 and drop the digits to the right.

When you estimate with decimal amounts, it is often sufficient to round to the nearest whole number.

Example 2 Gaeti Shipping Company charges \$2.35 per pound for shipping. One shipment weighed 16.84 pounds. Estimate the shipping charges.

To solve the problem, round each number to a whole number and multiply.
 $\$2.35 \approx \2 and $16.84 \text{ pounds} \approx 17 \text{ pounds}$

$\$2 \times 17 = \34 The shipping costs will be about \$34.

Practice

Round each number to the stated place value.

- 0.3892
nearest hundredth _____
- 3.5298
nearest tenth _____
- 0.26484
nearest thousandth _____
- 16.09352
nearest ten-thousandth _____
- The Carver Company produced 12.25 cases of parts each day. Last week the production line ran only 4.5 days. Estimate how many cases of parts were made last week. _____
- Erwin bought items that cost \$2.53, \$1.90, \$5.03, \$5.50, and \$8.29. Estimate the total cost of the items Erwin bought. _____
- Maureen bought items that cost \$0.98 and \$2.63. The tax was \$0.25. Estimate how much change she should get if she pays with a twenty-dollar bill. _____

Adding and Subtracting Decimals

Name: _____

Class: _____

Date: _____

When adding and subtracting decimals, align the decimal points. Then add or subtract as for whole numbers. Place the decimal point in the answer directly below where it is located in the computation. A number like 532 can also be written as 532. or 532.0. When writing decimals less than one, a zero is placed before the decimal point to show that there are no ones.

Example 1 Marge bought items that cost a total of \$7.36. She paid with a ten-dollar bill. How much change should she get?

$$\begin{array}{r} \$10.00 \\ - 7.36 \\ \hline \$ 2.64 \end{array}$$

Write numbers in a column, aligning the decimal points. If needed, add zeros **after** the decimal point to make subtraction easier.

Align the decimal point in the answer with decimal points in the column.

Marge should get \$2.64 back.

Example 1 During one week, London, England had these rainfall amounts: 0.35 cm, 1.42 cm, 0.04 cm, 2 cm, and 0.5 cm. What was the total rainfall in London during that week?

$$\begin{array}{r} 0.35 \\ 1.42 \\ 0.04 \\ 2.00 \\ + 0.50 \\ \hline 4.31 \end{array}$$

Write numbers in a column, aligning the decimal points.

$$2 = 2.0 = 2.00$$

Adding zeros **after** the decimal point does not change the value of the number.

$$0.5 = 0.50$$

Align the decimal point in the answer with decimal points in the column.

London had 4.31 cm of rain last week.

Practice

- $9.203 - 1.94 =$ _____
- $4.384 + 62.938 + 43.02 =$ _____
- $0.93 + 0.0039 + 1.0384 =$ _____
- $12.054 - 3.59 =$ _____
- $1,354.9 - 634.98 =$ _____
- $0.7 + 0.87 + 0.27 + 0.75 + 0.8 =$ _____
- Jessica jogged these distances in one week: 1.5 km, 0.6 km, 0.75 km, 2.25 km, and 0.875 km. Find the total distance she jogged that week. _____
- Chef Luis used 15.3 kg of beef and 16.75 kg of pork for a banquet.
 - Find the total amount of meat used. _____
 - How much more pork than beef was used? _____
- For a plumbing job, Monica bought parts that cost \$15.39, \$26.09, and \$0.59.
 - What was total cost of the parts? _____
 - She paid for the parts with three twenty-dollar bills. How much change should she get? _____

Multiplying Decimals

Name: _____

Class: _____

Date: _____

When multiplying decimals, align the numbers at the right. Multiply as if you are multiplying whole numbers. To locate the decimal point in the answer, count all digits to the right of the decimal point in each number being multiplied and place the decimal point so there are that many digits after the decimal point in the answer.

Remember: Estimation can be used to check that your answer is reasonable and that you have correctly located the decimal point in the answer.

Example 1 Joelle earns \$17.59 per hour. Last week she worked 37.5 hours. How much did she earn last week?

Multiply 17.59 by 37.5.

17.59	2 decimal places	
× 37.5	1 decimal place	
8 7 9 5	2 + 1 = 3	
1 2 3 13		
5 2 7 7		
6 5 9.625	3 decimal places	

Check:
 $17.59 \times 37.5 \approx 18 \times 40 = 720$
 \$720 is close to \$659.63.
 The answer is reasonable.

Round \$659.625 to the nearest cent; $\$659.625 \approx \659.63

Joelle earned \$659.63.

Practice

Find each product.

- | | |
|-------------------------------|---------------------------------|
| 1. $356 \times 0.5 =$ _____ | 2. $8,000 \times 0.6 =$ _____ |
| 3. $0.35 \times 3.83 =$ _____ | 4. $13,000 \times 0.05 =$ _____ |
| 5. $15.2 \times 0.25 =$ _____ | 6. $8.98 \times 4.36 =$ _____ |
7. Mr. Washington earns \$22.50 per hour. How much will he earn if he works 17.5 hours on a project? _____
 8. Ms. Koenig earns \$1.85 for each item sold. Yesterday she sold 58 items. How much did she earn yesterday? _____
 9. One type of meat costs \$3.68 per pound. A restaurant bought 21.4 pounds of that type of meat. What was the cost of that meat? _____
 10. Hamburger sells for \$1.98 per pound, or \$1.89 when purchased in packages of more than 5 pounds. A recipe calls for 6.5 pounds of hamburger. How much will the hamburger cost for that recipe? _____
 11. Last year Mrs. Zromski drove her personal car 3,532.6 miles on company business. She is reimbursed \$0.505 per mile for using her personal car for company business. How much did she receive as reimbursement for the use of her car? _____

Multiplying By Powers of 10

Name: _____

Class: _____

Date: _____

Numbers like 100,000,000, 10,000,100, 0.1, 0.01, and 0.00001 are powers of 10. To multiply by these, simply move the decimal point in the number being multiplied.

When multiplying by a power of 10 greater than one, move the decimal point to the right. The answer is larger than the number you started with.

When multiplying by a power of 10 less than one, move the decimal point to the left. The answer is smaller than the number you started with.

Example 1 In one state \$2.54 million of consumer credit was reported one year. How would you write that amount in standard form?

Hint: 1 million = 1,000,000

$$\begin{aligned} \$2.54 \text{ million} &= \$2.54 \times 1,000,000 \rightarrow \$2.\mathbf{540000}. = \$2,540,000 \\ &\hspace{10em} \rightarrow \end{aligned}$$

6 zeros, so move the decimal point
6 place to the right.

Example 2 Multiply 51.04 by 0.1; by 0.01; by 0.001.

$$51.04 \times 0.1 = 5.104$$

1 decimal place, so move the decimal left one place.

$$51.04 \times 0.01 = 0.5104$$

2 decimal places, so move the decimal left two places.
Remember: zero before the decimal point simply shows there are no ones.



$$51.04 \times 0.001 = 0.05104$$

3 decimal places, so move the decimal left 3 places.
Write zeros if needed so you can move the decimal point far enough to the left.



Practice

Find each product.

1. $51.04 \times 0.0001 =$ _____

2. $51.04 \times 0.00001 =$ _____

3. $51.04 \times 10 =$ _____

4. $51.04 \times 10,000 =$ _____

5. $0.9 \times 1,000 =$ _____

6. $0.9 \times 0.001 =$ _____

7. $5.029 \times 10,000,000 =$ _____

8. $123,436 \times 0.01 =$ _____

9. In one year 2.223 billion pounds of fish were caught along the Atlantic Coast. How would you write that amount in standard form?

Hint: 1 billion = 1,000,000,000

10. The fish caught in Exercise 9 were worth \$4.113 billion. How would you write that amount in standard form?

Dividing a Decimal by a Whole Number

Name: _____

Class: _____

Date: _____

Division involving decimals is completed like division of whole numbers, except for dealing with the decimal point.

When you divide a decimal by a whole number, you divide as for whole numbers and place the decimal point directly above the location of the decimal point in the dividend.

Example 1 In one week Witt & Company paid 8 temporary employees \$3,669.20 in wages. Each of the employees earned the same amount. How much did each employee earn that week?

Divide \$3,669.20 by 8.

$$\begin{array}{r}
 458.65 \\
 8 \overline{)3669.20} \\
 \underline{32} \\
 46 \\
 \underline{40} \\
 69 \\
 \underline{64} \\
 52 \\
 \underline{48} \\
 40 \\
 \underline{40} \\
 0
 \end{array}$$

Add zeros if needed.

To check division, multiply your quotient by the divisor. The result should be the dividend.

$$\begin{array}{r}
 458.65 \\
 \times 8 \\
 \hline
 3669.20 \checkmark
 \end{array}$$

Each employee earned \$458.65.

Practice

Find each quotient.

1. $76.8 \div 6 =$ _____

2. $27.522 \div 9 =$ _____

3. $55.2 \div 23 =$ _____

4. $54.3 \div 50 =$ _____

5. $9.424 \div 124 =$ _____

6. $2.32 \div 400 =$ _____

7. A plumber charged \$168.75 for 3 hours of labor. How much did that plumber charge per hour? _____

8. Su-Lyn's bank charges her for each check she writes. Last month the charge was \$1.20 for writing 8 checks. How much is Su-Lyn charged for each check she writes? _____

9. Leslie spent \$214.80 for 15 shares of stock. How much did she pay for each share of stock? (No handling fees were involved.) _____

10. Marcus was paid \$227.25 for using his car for business. He drove 450 miles on company business. How much was he paid for each mile driven? _____

Dividing by a Decimal

Name: _____

Class: _____

Date: _____

To divide by a decimal, move the decimal point to the right the same number of places in both the divisor and the dividend so you are dividing by a whole number.

Example 1 Teresa drove 163.4 miles and used 4.75 gallons of gasoline. What was his average gas mileage? (Gas mileage refers to miles driven on 1 gallon of gas.)

Divide 163.4 by 4.75. **Think:** 4.75 has two decimal places, move the decimal points in the divisor and in the dividend right two places. So you are actually dividing 16340 by 475.

$$\begin{array}{r} 34.4 \\ 475 \overline{)16340.0} \\ \underline{1425} \\ 209 \\ \underline{190} \\ 190 \\ \underline{190} \\ 0 \end{array}$$

Notice how zeros are added in order to move the decimal the needed number of places to the right and to add decimal places in order to complete the division

Remember: Estimation can be used to check that your answer is reasonable and that you have correctly located the decimal point in the answer.

About 35 miles per gallon \times about 5 gallons \approx 175 miles
Since 175 is close to 163.4, your answer is reasonable.

Practice

Find each quotient.

- $8.68 \div 3.1 =$ _____
- $26.855 \div 2.05 =$ _____
- $411.4 \div 6.8 =$ _____
- $877.13 \div 9.175 =$ _____
- $5.159 \div 18.76 =$ _____
- $458.889 \div 151.95 =$ _____
- The electrical company charged the Broeker family \$32.76 as an energy charge. The energy charge is \$0.078 per kilowatt hour. How many kilowatt hours did the Broeker family use? _____
- Sherri shipped several packages by courier. Each package cost \$3.50 to ship. The total shipping cost was \$31.50. How many packages did she ship? _____
- Odell's Catering Company ordered meat for a banquet. The total cost of the meat was \$405.53. The meat cost \$7.58 per pound. How many pounds of meat were ordered? _____
- A machine operates 15.5 hours per work day. In an average work day the machine can make 1162.5 parts. The machine makes the same number of parts each hour. How many parts can that machine make each hour? _____

Calculation Shortcuts

Name: _____

Class: _____

Date: _____

Businesses often price items at amounts such as 49¢, \$5.98, or \$99.95. A price of \$99.95 seems less to the buyer than an even \$100. When finding the cost of several of such items, you can use a mathematical shortcut.

Example 1 Find the cost of 27 items at 96¢ each. normal multiplication \$0.96

Shortcut: Think: $96¢ = \$1 - \0.04

$$(27 \times 1) - (27 \times 0.04) = 27 - 1.08$$
$$\begin{array}{r} \$27.00 \\ - 1.08 \\ \hline \$25.92 \end{array}$$

$\begin{array}{r} \times 27 \\ 672 \\ 192 \\ \hline \$25.92 \end{array}$

The cost of 27 items at 96¢ each is \$25.92.

Example 2 Find the cost of 102 items at \$7.99 each.

Shortcut:	Alternate Shortcut:
Think $\$7.99 = \$8 - \$0.01$	Think: $102 = 100 + 2$
$(102 \times \$8) - (102 \times \$0.01) =$	$(100 \times \$7.99) + (2 \times \$7.99) =$
$\$816 - \$1.02 = \$814.98$	$\$799 + \$15.98 = \$814.98$

The cost of 102 items at \$7.99 is \$814.98.

Example 3 Find the cost of 96 items at \$25 each.

Think: $25 = 100 \div 4$, so $96 \times 25 = 96 \times 100 \div 4 = 9,600 \div 4 = 2,400$

The cost of 96 items at \$25 each is \$2,400.

Practice

1. Find the cost of 101 items at \$0.74 each. _____
2. Find the cost of 153 items at \$0.99 each. _____
3. Find the cost of 98 items at \$3.26 each. _____
4. Find the cost of 1,900 items at \$6.27 each. _____
5. Find the cost of 25 items at \$268 each. _____
6. Find the cost of 264 items at \$50 each. _____
7. Find the cost of 106 items at \$25 each. _____
8. Find the cost of 50 items at \$1,764 each. _____
9. Find the cost of 99 items at \$603 each. _____
10. Find the cost of 202 items at \$999 each. _____

Measures of Central Tendency: Mean, Median, and Mode

Name: _____

Class: _____

Date: _____

In mathematics there are different kinds of *averages*. As a group these averages are **measures of central tendency**: the *mean*, the *median*, and the *mode*.

The **mean** or **average** is found by adding a group of numbers and dividing the sum by the number of items added. The mean or average is the best-known and most used measure of central tendency. If the data is arranged in order, the middle number of the set of data is called the **median**. Another measure of central tendency is the **mode**, which is the number in the set of data that occurs most often.

Example 1 Carter's Cafe kept track of the number of customers they had during one week. The results were: 127, 115, 153, 135, 163, 153, 120. Find the mean, median, and mode of the results.

Mean: Add the data and divide by 7.
 $127 + 115 + 153 + 135 + 163 + 153 + 120 = 966$
 $966 \div 7 = 138$
The mean or average was 138 customers.

Median: Arrange the data in order. Identify the middle value.
115, 120, 127, 135, 153, 153, 163
↑
The middle value is 135. The median is 135 customers.

Mode: Look at the data. Which number occurs the most times.
153 occurs twice. The mode is 153 customers.

Note: If no number occurs more than once, there is no mode. If two numbers occur equally as often, there are two modes.

Practice

1. Desiree made a survey of milk prices at 5 grocery stores. She found these prices per gallon: \$2.40, \$2.80, \$2.38, \$2.78, \$2.44 Find the mean, median, and mode of this data.

Mean: _____ Median: _____ Mode: _____

2. In one week, Mark had sales of \$250, \$250, \$250, \$250, \$250, and \$250. Find the mean, median, and mode of this data.

Mean: _____ Median: _____ Mode: _____

3. The Zero Corporation had monthly income during the first quarter of \$18,000, \$27,000, and \$18,000. Find the mean, median, and mode of this data.

Mean: _____ Median: _____ Mode: _____

4. Jamal kept track of the number of phone calls he received during one ten-hour business day. The results were: 1, 2, 7, 7, 6, 3, 7, 3, 2, 2. Find the mean, median, and mode of this data.

Mean: _____ Median: _____ Mode: _____

Equivalent Fractions

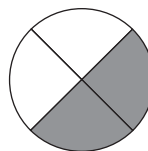
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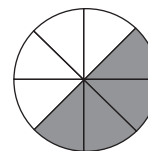
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A *fraction* is a number used to describe part of a whole or part of a group or set. Fractions that name the same number are called **equivalent fractions**.

The circles at the right show that $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$.



$\frac{2}{4}$



$\frac{4}{8}$

The top number of a fraction is the *numerator*. It tells how many parts are shaded. The bottom number of a fraction is the *denominator*. It tells how many parts there are in all.

You can use multiplication or division to find equivalent fractions.

Example 1 Write two equivalent fractions for $\frac{75}{100}$.

$$\frac{75}{100} = \frac{75 \times 2}{100 \times 2} = \frac{150}{200}$$

$$\frac{75}{100} = \frac{75 \div 25}{100 \div 25} = \frac{3}{4}$$

When working with fractions, you can **simplify** fractions by dividing the numerator and the denominator by a common factor. A common factor is a number that will divide into both numbers evenly. Division by such common factors is called **canceling** or **cancellation**.

Example 2 Simplify $\frac{10}{12}$ **Think:** 2 is a factor of both 10 and 12.

$$\frac{10}{12} = \frac{5}{6}$$

$$10 \div 2 = 5$$

$$12 \div 2 = 6$$

A fraction is in **simplest form** when the numerator and denominator have no common factors other than 1.

Practice

In the space after each fraction, write two fractions that are equivalent to that fraction.

1. $\frac{4}{10}$

2. $\frac{20}{30}$

3. $\frac{12}{18}$

In the space after each fraction, write each fraction in simplest form.

4. $\frac{5}{15}$

5. $\frac{9}{24}$

6. $\frac{10}{12}$

7. A company found that 150 out of every 900 parts made were defective. That means that $\frac{150}{900}$ are defective. In the space at the right, write that fraction in simplest form.

Adding Fractions and Mixed Numbers

Name: _____

Class: _____

Date: _____

To add fractions, you must have *like* denominators, referred to as the common denominator. Once you have like denominators, you add the numerators and use the common denominator. To add mixed numbers, you first add the fractions, then add the whole numbers. Finally, you must write the answer in simplest form.

A fraction is in simplest form when 1 is the only common factor of the numerator and the denominator. A mixed number is in simplest form when the fractional part is less than 1 and in simplest form.

Example 1 A stock rose $\frac{1}{8}$ point on Monday and $\frac{5}{8}$ point on Tuesday. How much did it rise over that two-day period?

$$\frac{1}{8} + \frac{5}{8} = \frac{1+5}{8} = \frac{6}{8}$$

$$\frac{6}{8} = \frac{6 \div 2}{8 \div 2} = \frac{3}{4}$$

The stock rose $\frac{3}{4}$ point over that two-day period.

Example 2 A stock began the day at $15\frac{3}{4}$. During the day the value went up $1\frac{7}{8}$. What was the value of the stock at the end of the day?

$$\begin{array}{r} 15\frac{3}{4} \\ +1\frac{7}{8} \\ \hline \end{array}$$

Think: $\frac{3}{4} = \frac{3 \times 2}{4 \times 2} = \frac{6}{8}$
Denominator is 8,
no need to change.

$$\begin{array}{r} 15\frac{6}{8} \\ +1\frac{7}{8} \\ \hline \end{array}$$

$$16\frac{13}{8} = 17\frac{5}{8}$$

The value of that at the end of the day was $17\frac{5}{8}$.

Practice

Add. Write your answer in simplest form.

1. $\frac{3}{7} + \frac{2}{7}$

2. $\frac{7}{10} + \frac{1}{5}$

3. $1\frac{1}{6} + 2\frac{1}{6}$

4. $4\frac{7}{8} + 2\frac{3}{8}$

5. $1\frac{1}{4} + \frac{3}{8}$

6. $3\frac{1}{2} + 1\frac{5}{8}$

7. $17\frac{3}{4} + 1\frac{1}{2}$

8. $32\frac{7}{8} + 3\frac{3}{8}$

Subtracting Fractions and Mixed Numbers

Name: _____

Class: _____

Date: _____

To subtract fractions, you must have a common denominator. Once you have like denominators, subtract the numerators and use the common denominator. To subtract mixed numbers, first subtract the fractions, then subtract the whole numbers. Finally, write the answer in simplest form.

Example 1 Find this difference: $\frac{3}{4} - \frac{5}{8}$.

$$\frac{3}{4} - \frac{5}{8} = ? \quad \text{Think: } \frac{3}{4} = \frac{3 \times 2}{4 \times 2} = \frac{6}{8} \quad \frac{6}{8} - \frac{5}{8} = \frac{1}{8}$$

The difference is $\frac{1}{8}$.

Example 2 A stock began the day at $15\frac{3}{4}$. During the day the value went down $1\frac{7}{8}$. What was the value of the stock at the end of the day?

$$\begin{array}{r} 15\frac{3}{4} \\ -1\frac{7}{8} \\ \hline \end{array} \quad \begin{array}{r} 15\frac{6}{8} \\ -1\frac{7}{8} \\ \hline \end{array} \quad \text{Think: } 15\frac{6}{8} = 14\frac{14}{8} \quad \begin{array}{r} 14\frac{14}{8} \\ -1\frac{7}{8} \\ \hline 13\frac{7}{8} \end{array}$$

The value of that at the end of the day was $13\frac{7}{8}$.

Practice

Subtract. Write your answer in simplest form.

1. $\frac{6}{7} - \frac{2}{7}$

2. $\frac{7}{10} - \frac{2}{5}$

3. $4\frac{5}{6} - 2\frac{1}{6}$

4. $5\frac{3}{8} - 2\frac{5}{8}$

5. $3\frac{1}{4} - \frac{7}{8}$

6. $12\frac{1}{2} - 6\frac{3}{4}$

7. $24\frac{1}{2} - 13\frac{1}{4}$

8. $37\frac{1}{8} - 36\frac{5}{8}$

9. A stock began the day at $58\frac{1}{4}$. During the day the value went down $3\frac{5}{8}$.
What was the value of the stock at the end of the day? _____

10. A stock began the day at $27\frac{3}{8}$. It ended the day at $25\frac{7}{8}$.
By how much did the stock go down during that day? _____

Multiplying A Whole Number By A Fraction

Name: _____

Class: _____

Date: _____

To multiply a whole number by a fraction, multiply the whole number by the numerator and then divide that answer by the denominator.

Example 1 Eduardo earned \$480 one week. Two-thirds of his income came from commissions on the sales he made at AmCan Furniture Company. How much did Eduardo earn in commissions?

$$480 \times \frac{2}{3} = \frac{480 \times 2}{3} = \frac{960}{3} = 320$$

Eduardo earned \$320 in commissions.

Remember:

$\frac{960}{3}$ means "divide 960 by 3."

Example 2 Bashia earned \$6,400 one month. Four-fifths of her income came from her full-time job as a landscaper. The rest of her income came from a part-time computer consulting job. How much did Bashia earn from each job?

$$6400 \times \frac{4}{5} = \frac{6400 \times 4}{5} = \frac{25600}{5} = 5120$$

6,400	Total income
-5,120	Income from full-time job
1,280	Income from part-time job

Bashia earned \$5,120 from her full-time job as a landscaper and \$1,280 from her part-time computer consulting job.

Practice

Multiply.

1. $84 \times \frac{2}{7}$

2. $\frac{7}{10} \times 5,430$

3. $642 \times \frac{1}{3}$

4. $\frac{5}{8} \times 16,840$

5. $200 \times \frac{3}{5}$

6. $\frac{7}{12} \times 1,872$

7. Kiddie Kingdom earned five-ninths of its income from video games. In one week, the income at Kiddie Kingdom was \$15,921. What was the amount of income that came from video games? _____

8. Together, Sierra and Gavin earned \$5,404. Sierra earned four-sevenths of the money.

a. How many dollars did Sierra earn? _____

b. How many dollars did Gavin earn? _____

Multiplying Fractions and Mixed Numbers

Name: _____

Class: _____

Date: _____

To multiply two fractions, multiply the numerators and then multiply the denominators. Reduce the result to simplest form.

Example 1 Two-thirds of people surveyed said that they had used Product X. Of the people who said they had used the product, three-fifths said that they liked the product. What fraction of all people surveyed said they liked Product X?

Multiply to find the answer.

$$\frac{2}{3} \times \frac{3}{5} = \frac{2 \times 3}{3 \times 5} = \frac{6}{15} = \frac{2}{5}$$

Two-fifths of all people surveyed said they liked Product X.

Example 2 Find the product of $4\frac{1}{2}$ and $2\frac{4}{5}$.

$$4\frac{1}{2} \times 2\frac{4}{5} = \frac{9}{2} \times \frac{14}{5} = \frac{9 \times 14}{2 \times 5} = \frac{126}{10} = 12\frac{6}{10} = 12\frac{3}{5}$$

Rewrite mixed numbers as fractions.

Multiply numerators.
Multiply denominators.

Write in simplest form.

Practice

1. $\frac{2}{7} \times \frac{3}{4}$

2. $\frac{8}{11} \times \frac{11}{12}$

3. $2\frac{1}{3} \times 1\frac{1}{7}$

4. $\frac{1}{4} \times 2\frac{2}{3}$

5. $15\frac{3}{10} \times 3\frac{1}{9}$

6. $3\frac{1}{5} \times 18\frac{3}{4}$

7. A board was two and one-half feet long. Martha used one-half of it for a project. How long (in feet) was the board that Martha used? _____

8. A recipe calls for $\frac{3}{4}$ pound of meat. Ms. Sweeney is making $\frac{1}{2}$ of that recipe. How many pounds of meat will Ms. Sweeney need? _____

9. A recipe calls for $1\frac{3}{4}$ cups of milk. Mr. Price is making $2\frac{1}{2}$ times as much as the original recipe makes. How many cups of milk will Mr. Price need? _____

10. What is the product of $2\frac{1}{4}$ and $\frac{4}{9}$? _____

Fractions and Decimals

Name: _____

Class: _____

Date: _____

Sometimes you may have to change from a fraction to a decimal or vice versa.

Example 1 Dominic bought 2 pieces of material to make a banner. The labels are shown at the right. How much material did he buy in all?

Blue Cotton
1.4 yards

White Cotton
 $\frac{3}{4}$ yard

To change a fraction to a decimal, divide the numerator by the denominator, adding zeros after the decimal point as needed to complete the division.

$$\begin{array}{r} 0.75 \\ 4 \overline{)3.00} \\ \underline{28} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

The zero before the decimal point shows there are no ones.

$$\begin{array}{r} 1.4 \\ +0.75 \\ \hline 2.15 \end{array}$$

Now add to find the total yardage. He bought 2.15 yards of material.

Example 2 Change 0.075 to a fraction in simplest form.

Write the decimal as a fraction. $\frac{75}{1000}$ 0.075 is *seventy-five thousandths*, so use 1000 as the denominator.

$$\frac{75}{1000} = \frac{75 \div 25}{1000 \div 25} = \frac{3}{40}$$

Sometimes, when changing a fraction to a decimal, the decimal repeats indefinitely. When this happens, the repeating part of decimal is shown with a bar over that part of the decimal or with “...” placed after the number.

Example 3 Change $\frac{5}{6}$ to a decimal.

Use a calculator to find $5 \div 6$. The result shows: 0.83333333

So five-sixths is equal to $0.8\overline{3}$ or 0.83....

Practice

Complete the chart below by changing each fraction to a decimal or each decimal to a fraction in simplest form. Cut out the chart and keep it for reference.

fraction	decimal
$\frac{1}{2}$	
	0.33...
$\frac{2}{3}$	
	0.25
	0.75

fraction	decimal
	0.2
	0.4
	0.6
	0.8
$\frac{1}{6}$	

fraction	decimal
$\frac{5}{6}$	
	0.125
	0.375
	0.625
$\frac{7}{8}$	

fraction	decimal
	0.1
$\frac{1}{12}$	
	0.0625
	0.05
	0.025

Ratios and Proportions

Name: _____

Class: _____

Date: _____

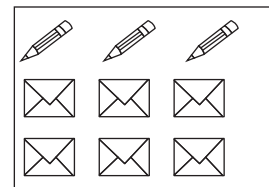
When you use numbers to compare two situations, such as miles driven to gallons of gasoline used, the pair of numbers used to compare two values is called a *ratio*. When two equivalent or equal ratios are used, a *proportion* is formed.

Example 1 Write a ratio to describe the relationship between the number of pencils to the number of envelopes.

A ratio can be written in 3 ways:

with a colon using "to" as a fraction
 $3:6$ 3 to 6 $\frac{3}{6}$

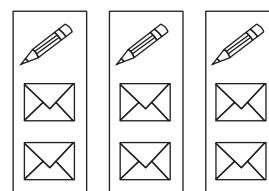
All forms, however are read as "3 to 6."



Think of regrouping the pencils and envelopes. Now there is 1 pencil for each 2 envelopes, or a ratio of 1 to 2. Since both ratios name the same relationship, they can be set equal to each other to form a proportion.

$$\frac{3}{6} = \frac{1}{2}$$

A ratio is in simplest form when the fraction for that ratio is in simplest form.



Proportions can be used in problem solving.

Example 2 Emilia's Emporium knows that it sells 5 T-shirts for every 2 pairs of jeans it sells. One week 500 T-shirts were sold. How many pairs of jeans were sold that week?

T-shirts $\frac{5}{2} = \frac{500}{n}$ T-shirts sold in one week
 Jeans Jeans sold that week

You can cross-multiply to solve a proportion.

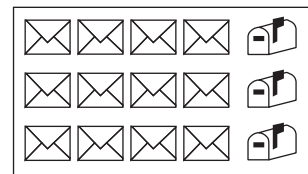
Divide both sides of the equation by 5.

They sold 200 pairs of jeans that week.

$$\begin{aligned} 5 \times n &= 2 \times 500 \\ 5 \times n &= 1000 \\ n &= 1000 \div 5 \\ n &= 200 \end{aligned}$$

Practice

- Complete the ratio of to . 12 to _____
- Write the ratio of to in simplest form. _____
- Complete the ratio of to . 3 to _____
- Write the ratio of to in simplest form. _____
- In the space at the right, write a proportion using equivalent ratios of to .
- A delivery truck makes 4 city deliveries for every 3 farm deliveries. One day the truck made 24 city deliveries. How many farm deliveries were made that day? _____



Rates and Unit Rates

Name: _____

Class: _____

Date: _____

When a ratio compares two unlike measurements, the ratio is called a *rate*. Rates you are familiar with include miles per hour, miles per gallon, dollars per hour, words per minute, price per ounce, and cost per pound. Most rates are usually written as *unit rates*. A unit rate is written so that the denominator is 1 unit.

Example 1 A car travels 120 miles on 5 gallons of gasoline. Write the ratio of miles to gallons as a unit rate.

$$\frac{120 \text{ miles}}{5 \text{ gallons}} = \frac{(120 \div 5) \text{ miles}}{(5 \div 5) \text{ gallons}} = \frac{24 \text{ miles}}{1 \text{ gallon}} \text{ or } 24 \text{ miles per gallon}$$

Example 2 Tanya earned wages of \$62.25 for 7.5 hours of work. Write Tanya's wages as a rate of dollars per hour. Using a calculator can simplify this work.

$$\frac{\$62.25}{7.5 \text{ hours}} = \frac{\$(62.25 \div 7.5)}{(7.5 \div 7.5) \text{ hours}} = \frac{\$8.30}{1 \text{ hour}} \text{ or } \$8.30 \text{ per hour}$$

Practice

1. The temperature rose 24° in 3 hours. Express that ratio as a unit rate in degrees per hour. _____
2. On one trip, Cindy drove her delivery truck 260 miles in 5 hours. Express that ratio as a unit rate in miles per hour. _____
3. Miguel paid \$62 for 4 shirts. Express that ratio as a unit rate in dollars per shirt. _____
4. Carl earned \$120 in 20 hours. Express that ratio as a unit rate in dollars per hour. _____
5. Gerhingers's Manufacturing Company manufactured 1,800 machines in 12 days. Express that ratio as a unit rate in machines per day. _____
6. Ms. LaCoss typed 584 words in 8 minutes. Express that ratio as a unit rate in words per minute. _____
7. Huffman's Gas Station sold 41,280 gallons of gasoline in one day (24 hours). Express that ratio as a unit rate in gallons per hour. _____
8. Chef Rudolpho spent \$81.20 for 14 pounds of cheese. Express that ratio as a unit rate in dollars per pound. _____
9. American Sports Center sells 120 sports cards for \$60.
 - a. Express that ratio as a unit rate in sports cards per dollar. _____
 - b. Express that ratio as a unit rate in dollars per sports card. _____

Meaning of Percent

Name: _____

Class: _____

Date: _____

Percent is derived from two Latin words, "per centum," meaning "by the hundred." You can express a percent as a common fraction or a decimal fraction. To change a percent to a decimal when the percent involves a fraction, change the mixed number to a decimal and move the decimal point two places to the left.

$$7\frac{1}{4}\% = 7.25\% = 0.0725$$

Example 1 Sales tax in one city is seven and one-fourth percent. Write the sales tax as a percent, a decimal, and a fraction.

$$7.25\% = 0.0725$$

Move the decimal point two places to the left and drop the percent sign.

$$0.0725 = \frac{725}{10000} = \frac{29}{400}$$

0.0725 is 725 *ten-thousandths*

Divide numerator and denominator by 25.

$$\text{So, } 7.25\% = 0.0725 = \frac{29}{400}$$

Example 2 The state personal income tax is one-fourth of your federal tax liability. Write one-fourth as a fraction, as a decimal, and as a percent.

$$\frac{1}{4} = \frac{25}{100} = 0.25$$

Write an equivalent fraction with a denominator of 100. Then change the fraction to a decimal.

$$0.25 = 25\%$$

Move the decimal point two places to the right and add the percent sign.

When rounding percents, round as if you are rounding whole numbers, decimals, or fractions.

Example 3 Round 7.34% and 3.86% to the nearest percent.

"To the nearest percent" means "to the nearest **whole** percent."

7.34% \approx 7% To round to the nearest whole percent, look at the tenths digit. If it is less than 5, simply drop the decimal part of the percent. If the tenths digit is equal to or greater than 5, add one to the percent and drop

3.86% \approx 4% the decimal part.

Practice

Write each percent as a decimal and as a fraction in simplest form.

1. 50% = _____ = _____ 2. 19% = _____ = _____

3. 12.5% = _____ = _____ 4. 78% = _____ = _____

5. Lu Ann completed a community survey. She found that four-tenths of the people living her home town went to college. What percent of the people was that? _____

6. Lu Ann found that 15% of the people living her home town graduated from college. What fraction of the people was that? _____

Finding a Percent of a Number

Name: _____

Class: _____

Date: _____

To find the percent of a number, change the percent to a fraction or decimal and multiply. Using a calculator simplifies the process.

Example 1 A quality control worker found that 3.7% of the parts were defective. This company produces 13,940 parts each week. To the nearest whole part, how many defective parts would be produced each week?

$$13,940 \times 3.7\% = 13,940 \times 0.037 = 515.78 \approx 516$$

About 516 defective parts would be produced each week.

Example 2 A winter coat regularly sells for \$122. This coat is on sale for 20% off. The sales tax on the coat is 5% of the sale price. Find the sale price of the coat plus tax?

Think: 20% off means the coat will cost 100% – 20%, or 80% of the regular cost.

Sale price:	$\$122 \times 80\% = \$122 \times 0.80 = \$97.60$	\$ 97.60
Sales tax:	$\$97.60 \times 5\% = \$97.60 \times 0.05 = \$4.88$	+ 4.88
	Sale price plus tax	<u>\$102.48</u>

Practice

Find each of the following. If needed, round the answer to the nearest hundredth.

1. 10% of 352 _____
2. 73% of 400 _____
3. 15% of 5,802 _____
4. 30% of 26,500 _____
5. 0.025% of 6,400 _____
6. 64.5% of 12,680 _____
7. Plastic Play Things estimates that it will sell 95% of the toy cars it produces. One month 16,400 toy cars were produced.
 - a. How many of the toy cars produced that month does Plastic Play Things expect to sell? _____
 - b. How many of the toy cars produced that month does Plastic Play Things expect to have left? _____
8. A treadmill regularly sells for \$479. This treadmill is on sale for 15% off. The sales tax on the treadmill is 8% of the sale price. Find the sale price of the treadmill plus tax? _____
9. The restaurant bill was \$85. The tax is 5%. You want to leave a 15% tip.
 - a. What is the tax on \$85? _____
 - b. How much tip will you leave, rounded to the nearest dollar? _____
 - c. What is the total cost including restaurant bill, tax, and tip? _____

Simple Interest

Name: _____

Class: _____

Date: _____

Interest is money paid for the privilege of using someone else's money. Interest is always expressed as a percent. The *principal* is the amount of money borrowed. Simple interest (I) is calculated by multiplying the principal (P) times the annual interest rate (R) times the length of time in years (T). The formula is written as:

$$I = P \times R \times T$$

Example 1 Find the amount of simple interest due on \$740 borrowed for 2 years at 9%.

First, write the percent as a decimal. $9\% = 0.09$

$$I = \$740 \times 0.09 \times 2 = \$142.20$$

The interest is \$142.20

Example 2 Sierra borrowed \$12,500 for 6 months at 9.25%. Find the amount of simple interest she must pay on the loan. Then find the total amount she will pay when the loan is due.

First, write the percent as a decimal. $9.25\% = 0.0925$

Then, change months to years. 6 months = 0.5 years

$$I = \$12,500 \times 0.0925 \times 0.5 = \$578.125$$

The interest is \$578.13, rounded to the nearest cent.

When the loan is due, Sierra will pay the principal plus the interest.

$$\$12,500 + \$578.13 = \$13,078.13 \qquad \text{Sierra will pay } \$13,078.13.$$

Practice

1. Mark borrowed \$500 for 1 year at 8% interest. Find the amount of simple interest Mark must pay on the loan. _____
2. Find the amount of simple interest due on \$3,200 borrowed for 2 years at 6% interest. _____
3. Kayla borrowed \$75,000 for 5 years at 12% interest. Find the amount of simple interest Kayla must pay on the loan. _____
4. Keanu borrowed \$125,000 for 6 months at 10% interest. Find the amount of simple interest Keanu must pay on the loan. _____
5. Stacy borrowed \$557,500 for 1 month at 12.5% interest. Find the amount of simple interest Stacy must pay on the loan. _____
6. Burns Corporation borrowed \$20,000 for 4 years at 6.5% interest.
 - a. Find the amount of simple interest Burns Corporation must pay. _____
 - b. Find the total amount (principal plus interest) that the Burns Corporation must pay when the loan is due. _____

Compound Interest

Name: _____

Class: _____

Date: _____

When interest due is calculated and added to the previous balance to make a new principal on which interest is calculated for the next period, you are compounding interest, or paying interest on the interest. Most banks compound interest daily.

Example 1 Suppose you have \$1,000 in a savings account that pays 6% interest, compounded quarterly. You make no other deposits or withdrawals during the year. Your balance at the end of each quarter is shown in the table below.

There are four quarters in one year, so interest per quarter is $6\% \div 4$ or 1.5%.

Quarter	Beginning Balance	Interest* (1.5% per quarter)	Ending Balance
1st Quarter	\$1,000.00	\$15.00	\$1,015.00
2nd Quarter	\$1,015.00	\$15.23	\$1,030.23
3rd Quarter	\$1,030.23	\$15.45	\$1,045.68
4th Quarters	\$1,045.68	\$15.69	\$1,061.37

*When the interest earned is calculated, amounts are rounded to the nearest cent. For example, \$15.225 rounds up to \$15.23 and \$15.45345 rounds down to \$15.45.

After 4 quarters (1 year) you have earned \$61.37 on your savings. Had this money been in a simple interest account, you would have earned \$60.

There are also tables and computer programs that allow interest to be compounded daily. At 6% interest compounded daily, the principal is multiplied by 1.062716 to calculate the amount in the account after one year.

Example 2 You have \$1,000 in a savings account that pays 6% interest, compounded daily. Find your balance at the end of one year.

Multiply by 1.062716 to find the amount $\$1,000 \times 1.062716 = \$1,062.716$ in your account at the end of one year.

The balance at the end of one year is \$1,062.72.

Practice

Suppose you have \$500 in a savings account that pays 6% interest, compounded quarterly. You make no other deposits or withdrawals during the year. Complete the table.

	Quarter	Beginning Balance	Interest (1.5% per quarter)	Ending Balance
1.	1st Quarter	\$500.00		
2.	2nd Quarter			
3.	3rd Quarter			
4.	4th Quarter			

5. You have \$500 in a savings account that pays 6% interest, compounded **daily**. You make no other deposits or withdrawals during the year. Find your balance at the end of one year. _____

Finance Charges and Installment Loans

Name: _____

Class: _____

Date: _____

Finance charges are any costs associated with borrowing money. These include interest, credit card fees, and even credit insurance.

Example 1 Suppose you have a credit card that charges 1.5% interest per month on the unpaid balance plus an annual fee of \$30 due in May. Suppose that in January you owe \$1,200 on your credit card, pay \$200 a month, and make no more charges. How much in finance charges did you pay in all?

When the interest on loans or credit cards is calculated, **all amounts** are rounded **up** to the next cent. For example, \$6.8319 rounds up to \$6.84.

Your balance at the end of each month would look like this:

Month	Beginning Balance	Interest (1.5% per month)	Amount Paid	Ending Balance
Jan.	\$1,200.00	\$18.00	\$200.00	\$1,018.00
Feb.	\$1,018.00	\$15.27	\$200.00	\$833.27
Mar.	\$833.27	\$12.50	\$200.00	\$645.77
Apr.	\$645.77	\$9.69	\$200.00	\$455.46
May	\$455.46	\$6.84	\$200.00	\$262.30
May	Finance Charge of \$30.00 added to balance			\$292.30
June	\$292.30	\$4.39	\$200.00	96.69
July	96.69	\$1.46	98.15	0

The finance charge was \$98.15.

Practice

Suppose that you owe \$500 on your credit card, make no additional charges, and make payments of \$100 for six months. Assume a finance charge of \$25 is added to your account in April. Complete the table below. (Remember to round up.)

	Month	Beginning Balance	Interest (1.5% per month)	Amount Paid	Ending Balance
1.	Jan.	\$500.00		\$100.00	
2.	Feb.			\$100.00	
3.	Mar.			\$100.00	
4.	Apr.			\$100.00	
5.	Apr.	Finance Charge of \$25.00 added to balance			
6.	May			\$100.00	
7.	June				

8. What was the total amount of finance charge that you paid during those 6 months? _____

Finding What Percent One Number is of Another Number

Name: _____

Class: _____

Date: _____

To find what percent a number is of another, divide the one number (the part) by the other number (the whole). Then show the result as a percent.

Example 1 Joy's Jet Skis earned \$200,000 last year. They earned \$50,000 from renting jet skis. What percent of their income came from renting jet skis?

50,000 is what percent of 200,000? Think: $50,000 = n\% \times 200,000$.

Divide 50,000 by 200,000.

	0.25	
	200,000)50,000.00	Add zeros as needed
	40 000 0	after the decimal point.
	10 000 00	
	10 000 00	

0.25 = 25% Twenty-five percent of their income came from renting jet skis.

Example 2 Rachel's Rowboats earned \$12,000 last year. She earned \$10,100 from renting rowboats. What percent of her income came from renting rowboats?

10,100 is what percent of 12,000? Think: $10,100 = n\% \times 12,000$

Using a calculator to find $10,100 \div 12,000$, you will get 0.84166667

$0.84166667 \approx 0.842 = 84.2\%$, rounded to the nearest tenth of a percent

She earned 84.2% of her income from renting rowboats.

Practice

Solve. Round all answers to the nearest tenth of a percent.

- | | |
|--|---|
| <p>1. 10 is what percent of 200? _____</p> | <p>2. 1,421 is what percent of 2,450? _____</p> |
| <p>3. 4,725 is what percent of 9,725? _____</p> | <p>4. 7,500 is what percent of 7,500,000? _____</p> |
| <p>5. Cameron's Campgrounds earned \$50,000 last year. He earned \$22,000 from renting cabins. What percent of his income came from renting cabins? _____</p> | |
| <p>6. Prince Industries had 280 employees. Of these, 210 employees lived within 10 miles of the main plant. What percent of employees of Prince Industries live within 10 miles of the plant? _____</p> | |
| <p>7. Wasabi Corporation has 75,825 employees. Of those, 40,945 are women. What is the percentage of men employed at Wasabi Corporation? _____</p> | |
| <p>8. If one state had 3,946,370 employed workers and 238,540 unemployed workers, what is its unemployment rate? Hint: The unemployment rate is computed on the total number of available workers. _____</p> | |

Finding the Whole When the Percent and Part Are Known

Name: _____

Class: _____

Date: _____

To find the whole amount when you know a part and the percent that part is of the whole, divide the part by the percent.

Example 1 Marlena said that 15% of the vehicles she sold were all-terrain vehicles (ATVs). Marlena had sold 6 ATVs. How many vehicles did Marlena sell in all?

Think: $6 = 15\% \times n$

To solve, divide 6 by 15%.

$15\% = 0.15$

$$0.15 \overline{)6.00}$$

Move the decimal point in the divisor and dividend two places to the right.

$$\begin{array}{r} 40. \\ 15 \overline{)600.} \\ \underline{60} \\ 00 \\ \underline{00} \\ 00 \end{array}$$

Marlena sold 40 vehicles.

Example 2 The Census Bureau predicts that by the year 2050, 0.137% of people in the U. S. will be age 100 years or older. It is predicted that there will then be 601,000 people at or over 100 years old. What is the Census Bureau's prediction for the population of the U. S. in the year 2050? Round to the nearest million.

Think: $601,000 = 0.137\% \times n$

$0.137\% = 0.00137$

Using a calculator to find $601,000 \div 0.00137$, the results are

438686131.4

To the nearest million, the predicted population in 2050 will be about 439,000,000 people.

Practice

1. Scott answered 18 questions on a test correctly. He had 90% of the questions correct. How many questions were there on the test? _____
2. In 2007 there were 2,704 homes that had computers in Center City. That was 52% of the homes in Center City. How many homes are there in Center City? _____
3. Enid sold 184 books last Sunday. That was 1.6% of all the books she had for sale. How many books did Enid have for sale? _____
4. Mr. O'Grady spent 60 hours flying helicopters last month. That was 44.1% of all his flying time last month. How many hours did he fly last month? Round your answer to the nearest whole number. _____
5. In his college basketball championship game, Tyrell made 28 free throws. He made 62.5% of the free throws he attempted in that game. How many free throws did he attempt? Round your answer to the nearest whole number. _____
6. The Census Bureau predicts that by the year 2020, 5.29% of the United States population will be between the ages of 14 and 17 years old. It is predicted that there will then be 18,048,000 such teenagers. What is the Census Bureau's prediction for the population of the United States in the year 2020? Round your answer to the nearest million. _____

Percent of Increase or Decrease

Name: _____

Class: _____

Date: _____

Many times you may need to compare costs or other amounts over a period of time. Comparing numbers may not be helpful. For instance, if your rent increases by \$200 from \$400 a month to \$600 a month, that is a major increase. But, if a business has an decrease in sales of \$200 from \$150,000 to \$149,800, that is a minor decrease. Using percents allows you to put the amount of change in perspective as related to the numbers involved.

When discussing the increase or decrease as a percent, use the amount from the earlier period as the base, or divisor.

Example 1 Your rent increased from \$400 a month to \$600 a month. Find the percent of increase in your rent.

First, find the amount of increase. $\$600 - \$400 = \$200$

Then, divide the increase or decrease by the amount from the earlier period.
$$\begin{array}{r} 0.5 \\ 400 \overline{)200.0} \end{array}$$

Write the decimal as a percent. $0.5 = 0.50 = 50\%$

The rent increased by 50%.

Example 2 A company had sales of 150,000 one year. The next year they had sales of \$149,800. Find the percent of decrease in the sales.

First, find the amount of decrease. $\$150,000 - \$149,800 = \$200$

Then, divide the increase or decrease by the amount from the earlier period.
$$\begin{array}{r} 0.001333... \\ 150,000 \overline{)200.000000} \end{array}$$

Write the decimal as a percent. $0.001333... \approx 0.13\%$

The sales decreased by 0.13%.

Practice

1. Last year a company had sales of \$200,000. This year that company had sales of \$250,000. Find the percent of increase in sales. _____
2. Last year a new digital camera cost \$120. This year the same model of camera costs only \$90. Find the percent of decrease in the cost of the camera. _____
3. Last year, Kendra bought a collectable stuffed elephant for \$18. This year that elephant is worth \$23. Find the percent of increase in the value of the collectable stuffed elephant. _____
4. Battle's Auto Shop had \$80,000 in business last year. This year it had \$160,000 in business. Find the percent of increase in business. _____
5. Last year, Armando had sales of \$400,000. This year his sales were \$395,000. Find the percent of decrease. _____
6. Last year, a team won 70 games. This year the team won 35 games. Find the percent of decrease. _____

Customary Measurement

Name: _____

Class: _____

Date: _____

In the United States feet, pounds, and gallons are still common units of measure.

Below are lists of common customary measurements and their equivalents.

Length

1 foot = 12 inches

1 yard = 3 feet

1,760 yards = 1 mile

5,280 feet = 1 mile

Capacity

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

Weight

1 pound = 16 ounces

1 ton = 2,000 pounds

Example 1 Thistle Top Builders ordered 25,000 pounds of top soil for their spring season. How many tons did they order?

There are 2,000 pounds in 1 ton, so divide to find how many tons are in 25,000 pounds.

$$25,000 \div 2,000 = 12.5$$

They ordered 12.5 tons.

Example 2 A chef is preparing a sauce for a banquet. The original recipe calls for 3 cups of cream. The chef will have to make 12 times the amount of sauce made in the original recipe. How many gallons of cream will be needed for the sauce?

$$3 \times 12 = 36 \quad \text{The chef will need 36 cups of cream.}$$

36 cups = 18 pints (Divide 36 by 2 because there are 2 cups in 1 pint.)

18 pints = 9 quarts (Divide 18 by 2 because there are 2 pints in 1 quart.)

9 quarts = $2\frac{1}{4}$ gallons (Divide 9 by 4 because there are 4 quarts in 1 gallon.)

The chef will need $2\frac{1}{4}$ gallons of cream.

Practice

1. Ms. Reikofski needs a board that is 72 inches long. How many feet long is the board she needs? _____
2. Mr. Nelson's class ordered 24 pints of milk. How many gallons is that? _____
3. Angie drew a map of a walking trail through the woods. She knows that the path is 6,160 yards long. How many miles long is that path? _____
4. Juan found an rock with an interesting shape. His scale said that it weighed 44 ounces. How many pounds did that rock weigh? _____
5. Hector made 1.75 gallons of punch. How many cups is that? _____
6. Allyssa's little sister is 1.25 yards tall. How many inches tall is her little sister? _____

Metric Measurement

Name: _____

Class: _____

Date: _____

The metric system of measurement is used in business by most nations in the world. Because of our great amount of trade with other countries, the United States has taken some steps toward conversion to the metric system. Some U.S. businesses and industries have already made the change.

You may already be familiar with the metric measures shown at the right.

Track Meet Today
400 meter relay
10 kilometer run

Potato Chips
Net Wt 16 oz
(453.6 grams)

The basic metric units are the *meter* (length), the *liter* (capacity), and the *gram* (mass or weight). All measurements can be expressed in terms of these three basic units. However, prefixes are used with the basic units to avoid dealing with very large and very small numbers. In the metric system, the same prefixes are used for length, capacity, and mass or weight. The most common prefixes used in the metric system are:

kilo-: one thousand times *centi-*: one one-hundredth of *milli-*: one one-thousandth of

The abbreviation or symbol for the measurements are shown in parentheses.

Length

- 1 kilometer (km) = 1000 meters
- 1 meter (m) = 100 centimeters
- 1 meter (m) = 1000 millimeters
- 1 centimeter (cm) = 10 millimeters
- 1 centimeter (cm) = 0.01 meter
- 1 millimeter (mm) = 0.001 meter

Capacity

- 1 kiloliter (kL) = 1000 liters
- 1 liter (L) = 1000 milliliters
- 1 milliliter (mL) = 0.001 liter

Mass (Weight)

- 1 kilogram (kg) = 1000 grams
- 1 gram (g) = 1000 milligrams
- 1 milligram (mg) = 0.001 gram

Practice

Circle the best answer.

1. Which is longest? 1 mm 1 cm 1 km
2. A compact disc (CD) is 12 cm wide. Which is the best estimate for the height of a standard door? 1 meter 2 meters 10 meters
3. Which is heavier? 1 gram 1 milligram
4. Which has the smaller capacity? 1 liter container 1 milliliter container
5. A dollar bill weighs about 1 g. Which of these items weighs about 1 kg? a soccer ball a pair of men's shoes
6. A teaspoon holds about 5 mL of water. Which of these holds about 50 L? a juice glass a car's gasoline tank

Converting Units Within the Metric System

Name: _____

Class: _____

Date: _____

Since the relationships between metric units of measure are multiples of 10, you can change from one unit to another by multiplying by a power of ten, which can be done by moving the decimal point.

Example 1 Marcie bought 365 centimeters of plastic tubing. How many meters of plastic tubing did she buy?

Change 365 centimeters to meters.

Think: 100 centimeters = 1 meter

To get from 100 to 1, move the decimal point to the left 2 spaces.

365. → 3.65. → 3.65
←

So 365 centimeters = 3.65 meters

She bought 3.65 meters of plastic tubing.

Example 2 A pharmacist has 2.5 liters of a certain medicine. How many milliliters of that medicine does he have?

Change 2.5 liters to milliliters.

Think: 1 liter = 1000 milliliters

To get from 1 to 1000, move the decimal point to the right 3 spaces.

2.5 → 2.500. → 2500
→

Notice how zeros are added so the decimal can be moved the needed number of spaces to the right.

So 2.5 liters = 2500 milliliters

He has 2500 milliliters of that medicine.

Practice

1. Josh ran in an 1800 meter cross-country race. How many kilometers did he run? _____
2. The doctor prescribed 0.04 liters of a medicine. How many milliliters were prescribed? _____
3. Pietro bought 0.6 kilograms of cheese. How many grams of cheese did he order? _____
4. Andrea bought 1 liter of milk. She used 300 milliliters of the milk.
 - a. How many milliliters of milk did Andrea have left? _____
 - b. How much of a liter of milk does Andrea have left? _____
5. Mrs. Mieteoreon used 4 meters of ribbon to make 10 bows.
 - a. How many meters of ribbon did she use for each bow? _____
 - b. How many centimeters of ribbon did she use for each bow? _____

Converting Between the Customary and Metric Systems

Name: _____

Class: _____

Date: _____

When it is necessary to convert from the metric system to the customary system or vice versa, you can use these charts.

Length/Distance

When you know:	You can find:	If you multiply by:
inches	millimeters	25.4
inches	centimeters	2.54
feet	meters	0.305
yards	meters	0.91
miles	kilometers	1.61
millimeters	inches	0.04
centimeters	inches	0.39
meters	inches	39.37
meters	feet	3.28
meters	yards	1.09
kilometers	miles	0.62

Weight/Mass

When you know:	You can find:	If you multiply by:
ounces	grams	28.35
pounds	kilograms	0.45
grams	ounces	0.035
kilograms	pounds	2.20

Capacity/Volume

When you know:	You can find:	If you multiply by:
pints	liters	0.47
quarts	liters	0.95
gallons	liters	3.78
liters	pints	2.11
liters	quarts	1.06
liters	gallons	0.26

Example 1 You are in an 800-meter race. How many feet long is the race?

To change from meters to feet, multiply by 3.28.

$$800 \times 3.28 = 2,624 \quad \text{The race is 2,624 feet long.}$$

Example 2 A company packed 150 grams of soup mix in each box. How many ounces of soup mix is in each box?

To change from grams to ounces, multiply by 0.035.

$$150 \times 0.035 = 5.25 \quad \text{There are 5.25 ounces of soup mix in each box.}$$

Practice

- A company sells bread in 1 pound loaves. How many grams are in each loaf? Round to the nearest 10 grams. _____
- Microwave popcorn is sold in boxes with a net weigh of 792 grams. How many ounces are in those boxes? Round to the nearest whole number of ounces. _____
- Vegetable cooking oil comes in 1.4 liter bottles. To the nearest whole pint, how many pints are in a bottle of vegetable cooking oil? _____
- A water tank holds 150 gallons of water. To the nearest whole liter, how many liters of water does that tank hold? _____
- Alex rode his bicycle 1.8 miles. How many kilometers did he ride? _____
- A machine part is 45 millimeters wide. To the nearest tenth of an inch, how many inches wide is that part? _____

Area and Perimeter

Name: _____

Class: _____

Date: _____

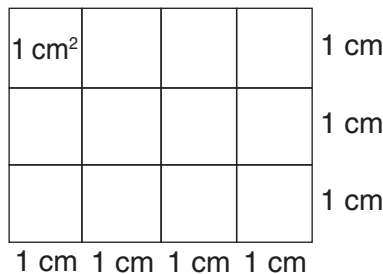
The distance around a geometric shape is its *perimeter*. Perimeter is measured in units of length. The amount of surface a geometric shape has is called its *area*. Area is measured in square units. One common geometric shape is the rectangle.

The perimeter of the rectangle is 14 centimeters. The area of the rectangle is 12 square centimeters.

The symbol for square centimeters is cm^2 .

To find the perimeter (p) of a rectangle with width w and length l , use either of these formulas:
 $p = 2l + 2w$ or $p = 2(l + w)$.

To find the area (A) of a rectangle with width w and length l , use the formula $A = l \times w$.



$$p = 2 \times 3 \text{ cm} + 2 \times 4 \text{ cm}$$

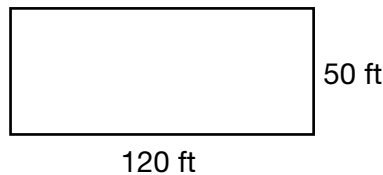
$$p = 6 \text{ cm} + 8 \text{ cm} = 14 \text{ cm}$$

$$A = 3 \text{ cm} \times 4 \text{ cm} = 12 \text{ cm}^2$$

or 12 square centimeters

Practice

1. Find the perimeter of the rectangle at the right. _____
2. Find the area of the rectangle at the right. _____



3. A school banner is a rectangle that is 8 feet long and 3 feet wide.
 - a. What is the perimeter of the school banner? _____
 - b. What is the area of the school banner? _____
4. A photograph is 8.5 inches wide by 11 inches tall.
 - a. What is the perimeter of the photograph? _____
 - b. What is the area of the photograph? _____
5. Jessica is painting a mural that is 10 meters long by 2 meters tall. She will paint a border around the perimeter of the mural.
 - a. What is the length of the border that Jessica will paint? _____
 - b. What is the area of the mural that she is painting? _____
6. A farmer has a rectangular field that is 500 meters wide and 1.2 km long.
 - a. What is the perimeter of the field? _____
 - b. What is the area of the field? _____

Probability

Name: _____

Class: _____

Date: _____

Probability is a mathematical expression of the *chance* that something will or will not happen. Probability is often written as a ratio:

$$\frac{\text{number of ways the desired outcome can occur}}{\text{total number of possible outcomes}}$$

Such ratios can then be expressed as fractions, decimals, or percents. The desired outcome is sometimes referred to as *favorable* outcomes.

If an event is **certain** to happen, it has a probability of 100%, or 1. If an event cannot happen, it has a probability of 0%, or 0.

Example 1 There are 10 marbles in a bag: 1 red, 2 yellow, 3 blue, 4 green
Find the probability of drawing a blue marble.

$$\frac{\text{favorable outcomes}}{\text{total outcomes}} = \frac{3}{10} = 0.3 = 30\%$$

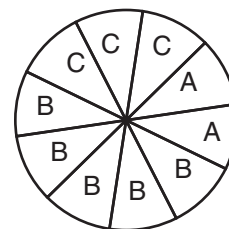
The probability of an event occurring tells about how many times that event should happen in a large number of tries. For instance, the probability of tossing *heads* on a fair coin is 50%, so if you toss a coin 1,000 times, you would expect to get *heads* about 500 times.

Example 2 A company found that the probability that a consumer buys their product when it is displayed near the checkout counter is 8%. A store had 2,000 customers in one day. If the probability is correct, about how many of those customers will buy the product displayed near the check-out counter?

$$2,000 \times 8\% = 2,000 \times 0.08 = 160 \quad 160 \text{ customers}$$

Practice

1. You toss a dart at the target at the right. What is the probability that the dart lands in a section labeled ...
- a. A? _____ b. B? _____ c. C? _____



(Express each probability as a percent.)

2. Suppose you toss a dart at the target at the right 500 times. How many times would you expect the dart to hit a section labeled B?

3. There are 5 marbles in a bag. All 5 are black. You draw one marble without looking. What is the probability that you draw:
- a. a black marble? _____ b. a white marble? _____
4. For an advertising promotion, a company packed 1 winning ticket in every 200 boxes of their cereal. What is the probability of getting a winning ticket if you buy one box of cereal? Express the probability as a percent.

Answer Key

Business Math Activity Master 1

1. 646,375; 646,375 has more digits than 42,536, so 646,375 is the greater number
2. 1,533,724; Both numbers have the same number of digits and have 1 in the millions place. 1,533,724 has 5 in the hundred thousands place and 1,034,942 has 0 in the hundred thousands place. 5 is greater than 0, so 1,533,724 is the greater number.
3. 525,693; Both numbers have the same number of digits and the same digits in the left four places. 525,623 has 2 tens and 525,693 has 9 tens. 9 is greater than 2, so 525,693 is the greater number.
4. 362; 362 has the fewest number of digits, so 362 is the least number.
5. 930; All numbers have the same number of digits and the same left two places. 0 is the least of the ones digits, so 930 is the least number.
6. 909; 1,326 and 1,340 both have 4 digits and 972 and 909 both have 3 digits. The least number will be 972 or 909. 0 is less than 7, so 909 is the least number.
7. 3,900; 3,938 The digit to the right of the hundred place is less than 5, so leave the hundreds digit the same and replace 38 with zeros.
8. 300,000; 256,928 The digit to the right of the hundred thousands place is equal to 5, so add one to the hundred thousands digit and replace the rest of the digits with zeros.
9. 65,000; 65,359 The digit to the right of the thousands place is less than 5, so leave the thousands digit the same and replace the rest of the digits with zeros.
10. 940,000,000; 935,235,264 The digit to the right of the ten millions place is equal to 5, so add one to the ten millions digit and replace the rest of the digits with zeros.

Business Math Activity Master 2

1.
$$\begin{array}{r} 23,604 \\ + 10,425 \\ \hline 34,029 \end{array}$$
2.
$$\begin{array}{r} 392,367 \\ - 51,032 \\ \hline 341,335 \end{array}$$
3.
$$\begin{array}{r} 564,062 \\ - 133,748 \\ \hline 430,314 \end{array}$$
4.
$$\begin{array}{r} 276,463 \\ + 953,284 \\ \hline 1,229,747 \end{array}$$
5.
$$\begin{array}{r} 4,749 \\ 2,294 \\ + 9,287 \\ \hline 16,330 \end{array}$$
6.
$$\begin{array}{r} 248,932,000 \\ - 13,962,028 \\ \hline 234,969,972 \end{array}$$
7. \$37,121
Subtract to solve the problem.
$$\begin{array}{r} \$39,059 \\ - 1,938 \\ \hline \$37,121 \end{array}$$
8. \$67,985
Add to solve the problem.
$$\begin{array}{r} \$23,253 \\ 19,098 \\ + 25,634 \\ \hline \$67,985 \end{array}$$
9. a. \$320,959
Add to find the answer.
$$\begin{array}{r} \$ 49,938 \\ 90,492 \\ 91,324 \\ + 89,205 \\ \hline \$320,959 \end{array}$$

b. \$130,499
Add to find the answer.
$$\begin{array}{r} \$ 10,353 \\ 59,023 \\ 38,093 \\ + 23,030 \\ \hline \$130,499 \end{array}$$

c. \$190,460
Subtract the part **b.** answer from the part **a.** answer to solve the problem.
$$\begin{array}{r} \$320,959 \\ - 130,499 \\ \hline \$190,460 \end{array}$$

Answer Key

Business Math Activity Master 3

1-6. Estimates may vary.

1. 1,300
 $425 + 932 \approx 400 + 900 = 1,300$
2. 300
 $949 - 592 \approx 900 - 600 = 300$
3. 160,000
 $235,763 - 75,726 \approx 240,000 - 80,000 = 160,000$
4. 140,000,000
 $77,394,025 + 59,753,028 \approx 80,000,000 + 60,000,000 = 140,000,000$
5. 140,000
 $33,492 + 82,928 + 29,478 \approx 30,000 + 80,000 + 30,000 = 140,000$
6. 200,000,000
 $758,493,326 - 572,340,027 \approx 800,000,000 - 600,000,000 = 200,000,000$
7. Yes
 $3,938 + 9,392 + 950 \approx 4,000 + 9,000 + 1,000 = 14,000$;
14,280 is close to 14,000.
The answer is reasonable.
8. No
 $993,253 - 535,252 \approx 1,000,000 - 500,000 = 500,000$;
1,528,505 is not close to 500,000.
The answer is not reasonable.
9. Yes
 $659,293 + 592,572 \approx 700,000 + 600,000 = 1,300,000$;
1,251,885 is close to 1,300,000.
The answer is reasonable.
10. No
 $1,092,592 - 8,935 \approx 1,093,000 - 9,000 = 1,084,000$;
183,657 is not close to 991,000.
The answer is not reasonable.
11. No
 $82 + 928 + 648 + 39 \approx 100 + 900 + 600 + 0 = 1,600$;
16,970 is not close to 1,600.
The answer is not reasonable.

Business Math Activity Master 4

1. 63,000
2. 360,000
3. 4,650,000
4. 7,200,000
5. 11,200,000
6. 3,402,000,000
7. 54,000 bagels
 $1,800 \times 30 = 54,000$
8. \$2,520,000
 $\$21,000 \times 120 = \$2,520,000$
9. \$2,490,000
 $8,300 \times 300 = 2,490,000$
10. \$60,000,000
 $1,500,000 \times 40 = 60,000,000$

Business Math Activity Master 5

1. No
 $30,000 \times 300 = 9,000,000$;
825,370 is not close to 9,000,000.
The answer is not reasonable.
2. No
 $10,000 \times 2,000 = 20,000,000$;
199,346,680 is not close to 20,000,000.
The answer is not reasonable.
3. d. 300 miles
 $35 \times 12 \approx 30 \times 10 = 300$;
He should underestimate so that he does not run out of gas.
4. Estimates and explanations may vary.
 $\$9,600,000$; Less than actual income
 $16,370 \times \$612 \approx 16,000 \times \$600 = \$9,600,000$;
Both number were rounded down, so the estimate is less than the actual product.

Answer Key

Business Math Activity Master 6

- 149
- 510
- 2,848
- 186
- 237
- 2,182
- 266 packages
 $2128 \div 8 = 266$
- 3,541 dozen eggs
 $42,492 \div 12 = 3,541$
- 5,250 cases
 $126,000 \div 24 = 5,250$
- 28 miles per gallon
 $21,000 \div 750 = 28$

Business Math Activity Master 7

- 500
- 50
- 5
- 200,000
- 80,000
- 300
- 20 traveler's checks
 $2,000 \div 100 = 20$
- 10 miles per gallon
 $100,000 \div 10,000 = 10$
- 500 sheets
 $5,000 \div 10 = 500$
- 70,000 shares
 $7,000,000 \div 100 = 70,000$
- 300 shares
 $300,000 \div 1,000 = 300$
- 90 visitors
 $90,000 \div 1,000 = 90$

Business Math Activity Master 8

- 1-9. Estimates may vary.
- 300
 $9,152 \div 31 \approx 9,000 \div 30 = 300$
 - 3,000
 $59,235 \div 18 \approx 60,000 \div 20 = 3,000$
 - 30
 $13,423 \div 383 \approx 12,000 \div 400 = 30$
 - 5,000
 $243,839 \div 49 \approx 250,000 \div 50 = 5,000$
 - 90
 $80,434 \div 910 \approx 81,000 \div 900 = 90$
 - 70
 $5,642,982 \div 82,011 \approx$
 $5,600,000 \div 80,000 = 70$
 - 70 machines
 $34,323 \div 493 \approx 35,000 \div 500 = 70$
 - 500 books
 $392,636 \div 809 \approx 400,000 \div 800 = 500$
 - \$300,000
 $15,754,754 \div 52 \approx$
 $15,000,000 \div 50 = 300,000$
 - No
 $63,252 \div 21 \approx 60,000 \div 20 = 3,000$.
30,120 is not close to 3,000.
The answer is not reasonable.

Business Math Activity Master 9

- 136 boys
- 233 juniors; $112 + 121 = 233$
- 220 seniors; $106 + 114 = 220$
- 470 girls; $123 + 112 + 121 + 114 = 470$
- 944 students; Find $474 + 470 = 944$
OR find $259 + 232 + 233 + 220 = 944$
- Freshmen and Sophomores
- Boys
 - 4 more; $474 - 470 = 4$

Answer Key

Business Math Activity Master 10

- 78,264,000,000
 $78,264 \text{ million} = 78,264 \times 1,000,000 = 78,264,000,000$
- \$1.14
 $1.144 \text{ dollars} = \$1.144 \approx \$1.14$ rounded to the nearest cent
- \$7,361,640,000
 $7,361,640 \text{ thousand dollars} = 7,361,640 \times 1,000 = \$7,361,640,000$
- \$0.43
 $\$1.144 - \$0.718 = \$0.426 \approx \0.43 , rounded to the nearest cent
- 1,044,000,000
 $78,264 \text{ million} - 77,220 \text{ million} = 1,044 \text{ million more eggs produced in 2006 than in 2007;}$
 $1,044 \text{ million} = 1,044 \times 1,000,000 = 1,044,000,000$
- \$2,678,844,000
 $\$7,361,640,000 - \$4,682,796,000 = \$2,678,844,000$

Business Math Activity Master 11

- 350 shipments**
 $3 \times 100 + 50 = 350$
- 400 shipments**
 $4 \times 100 = 400$
- 525 shipments**
 $750 - 225 = 525$
- 1,725 shipments**
 $350 + 225 + 400 + 750 = 1,725$
- ■ ■ ■ ▶

Business Math Activity Master 12

- \$16,000,000
- \$4,000,000
 $\$16,000,000 - \$12,000,000 = \$4,000,000$
- Estimates may vary.
ABC Corporation: \$62,000,000;
XYZ Corporation: \$54,000,000
ABC Corporation = \$16,000,000 + \$18,000,000 + \$16,000,000 + \$12,000,000 = \$62,000,000;
XYZ Corporation: \$8,000,000 + \$14,000,000 + 16,000,000 + \$16,000,000 = \$54,000,000
- XYZ Corporation

Business Math Activity Master 13

- 1-6.** Estimates and answers may vary, depending on interpretation of the graph.
- \$7
 $\$15 - \$8 = \$7$
 - \$2.50
 $\$6 - \$3.50 = \$2.50$
 - \$3
 $\$15 - \$12 = \$3$
 - \$35,000
 - \$25,000
 - \$20,000
 $\$42,000 - \$23,000 \approx \$40,000 - \$20,000 = \$20,000$
 - Answers will vary.
Sample: Snow skis because sales were more during the winter.

Answer Key

Business Math Activity Master 14

1. How Gelnda spends her allowance
2. Food
3. School and savings
4. Entertainment

Business Math Activity Master 15

1. 0.39
 2. 3.5
 3. 0.265
 4. 16.0935
- 5-7. Estimates may vary.
5. 60 cases
 $12.25 \times 4.5 \approx 12 \times 5 = 60$
 6. \$24
 $\$2.53 + \$1.90 + \$5.03 + \$5.50 + \$8.29$
 $\approx \$3 + \$2 + \$5 + \$6 + \$8 = \24
 7. \$16
 $\$0.98 + \$2.63 + \$0.25 \approx \$1 + \$3 + \$0 =$
\$4 total cost;
 $\$20 - \$4 = \$16$

Business Math Activity Master 16

1. 7.263
2. 110.342
3. 1.9723
4. 8.464
5. 719.92
6. 3.39
7. 5.975 km
 $1.5 + 0.6 + 0.75 + 2.25 + 0.875 = 5.975$
8. a. 32.05 kg
 $15.3 + 16.75 - 32.05$
b. 1.45 kg
 $16.75 - 15.3 = 1.45$
9. a. \$42.07
 $15.39 + 26.09 + 0.59 = 42.07$
b. \$17.93
3 twenty-dollar bills = $20 \times 3 = 60$;
 $60 - 42.07 = \$17.93$

Business Math Activity Master 17

1. 178
2. 4,800
3. 1.3405
4. 650
5. 3.800 or 3.8
6. 39.1528
7. \$393.75
 $\$22.50 \times 17.5 = \393.75
8. \$107.30
 $\$1.85 \times 58 = \107.30
9. \$78.75
 $\$3.68 \times 21.4 = \78.75
10. \$12.29
 $6.5 \times \$1.89 = \12.29
11. \$1,783.96
 $3,532.6 \times \$0.505 = \$1,783.96$

Business Math Activity Master 18

1. 0.005104
2. 0.0005104
3. 510.4
4. 510,400
5. 900
6. 0.0009
7. 50,290,000
8. 1234.36
9. 2,223,000,000
2.223 billion = $2.223 \times 1,000,000,000 =$
2,223,000,000
10. \$4,113,000,000
4.113 billion = $4.113 \times 1,000,000,000 =$
4,113,000,000

Answer Key

Business Math Activity Master 19

- 12.8
- 3.058
- 2.4
- 1.086
- 0.076
- 0.0058
- \$56.25
 $\$168.75 \div 3 = \56.25
- \$0.15
 $\$1.20 \div 8 = \0.15
- \$14.32
 $\$214.80 \div 15 = \14.32
- \$0.505
 $\$227.25 \div 450 = \0.505

Business Math Activity Master 20

- 2.8
- 13.1
- 60.5
- 95.6
- 0.275
- 3.02
- 420 kilowatt hours
 $\$32.76 \div \$0.078 = 32780 \div 78 = 420$
- 9 packages
 $\$31.50 \div \$3.50 = 315 \div 35 = 9$
- 53.5 pounds
 $\$405.53 \div \$7.58 = 53.5$
- 75 parts
 $1162.5 \div 15.5 = 75$

Business Math Activity Master 21

- \$74.74
 $101 \times 0.74 = (100 + 1) \times 0.74 =$
 $(100 \times 0.74) + (1 \times 0.74) =$
 $\$74 + 0.74 = 74.74$
- \$151.47
 $153 \times 0.99 = 153 \times (1 - 0.01) =$
 $(153 \times 1) - (153 \times 0.01) =$
 $153 - 1.53 = 151.47$
- \$31,948
 $98 \times 3.26 = (100 - 2) \times 3.26 =$
 $(100 \times 3.26) - (2 \times 3.26) = 326 - 6.52$
 $= 319.48$
- \$11,913
 $1,900 \times 6.27 = (2,000 - 100) \times 6.27 =$
 $(2,000 \times 6.27) - (100 \times 6.27) =$
 $12,540 - 627 = 11,913$
- \$6,700
 $268 \times 25 = 268 \times 100 \div 4 =$
 $26,800 \div 4 = 6,700$
- \$13,200
 $264 \times 50 = 264 \times 100 \div 2 =$
 $26,400 \div 2 = 13,200$
- \$2,650
 $106 \times 25 = 106 \times 100 \div 4 =$
 $10,600 \div 4 = 2,650$
- \$88,200
 $1,764 \times 50 = 1,764 \times 100 \div 2 =$
 $176,400 \div 2 = 88,200$
- \$59,697
 $99 \times 603 = (100 - 1) \times 603 =$
 $(100 \times 603) - (1 \times 603) =$
 $60,300 - 603 = 59,697$
- \$201,798
 $202 \times 999 = 202 \times (1,000 - 1) =$
 $(202 \times 1,000) - (202 \times 1) =$
 $202,000 - 202 = 201,798$

Answer Key

Business Math Activity Master 22

1. Mean: \$2.56; Median: \$2.44;
Mode: No mode
- Mean: $2.40 + 2.80 + 2.38 + 2.78 + 2.44 = 12.80$
 $12.80 \div 5 = 2.56$
- Median: 2.38, 2.40, **2.44**, 2.78, 2.80
The middle number is 2.44, so 2.44 is the median.
- Mode: No number occurs twice, so there is no mode
2. Mean: \$250; Median: \$250; Mode: \$250
- Mean: $250 + 250 + 250 + 250 + 250 = 1,250$
 $1,250 \div 5 = 250$
- Median: 250, 250, **250**, 250, 250
The middle number is 250, so 250 is the median
- Mode: 250 occurs the most times, so 250 is the mode
3. Mean: \$21,000; Median: \$18,000;
Mode: \$18,000
- Mean: $27,000 + 18,000 + 18,000 = 63,000$
 $63,000 \div 3 = 21,000$
- Median: 27,000, **18,000**, 18,000
The middle number is 18,000, so 18,000 is the median.
- Mode: 18,000 occurs twice, so 18,000 is the mode.
4. Mean: 4; Median: 3; Modes: 2 and 7
- Mean: $1 + 2 + 7 + 7 + 6 + 3 + 7 + 3 + 2 + 2 = 40$
 $40 \div 10 = 4$
- Median: 1, 2, 2, 2, **3, 3**, 6, 7, 7, 7
The middle values are 3, so the median is 3.
- Modes: 2 and 7 both occur three times, so 2 and 7 are the modes.

Business Math Activity Master 23

- 1-2. Equivalent fractions may vary.
Samples are given.
1. $\frac{4}{10} = \frac{2}{5} = \frac{12}{30}$
2. $\frac{20}{30} = \frac{2}{3} = \frac{40}{60}$
3. $\frac{12}{18} = \frac{6}{9} = \frac{24}{36}$
4. $\frac{1}{3}$ 5. $\frac{3}{8}$
6. $\frac{5}{6}$ 7. $\frac{1}{6}$

Business Math Activity Master 24

1. $\frac{5}{7}$ 2. $\frac{9}{10}$
3. $3\frac{1}{3}$ 4. $7\frac{1}{4}$
5. $1\frac{5}{8}$ 6. $5\frac{1}{8}$
7. $19\frac{1}{4}$ 8. $36\frac{1}{4}$

Business Math Activity Master 25

1. $\frac{4}{7}$ 2. $\frac{3}{10}$
3. $2\frac{2}{3}$ 4. $2\frac{3}{4}$
5. $2\frac{3}{8}$ 6. $5\frac{3}{4}$
7. $11\frac{1}{4}$ 8. $\frac{1}{2}$
9. $54\frac{5}{8}$ 10. $1\frac{1}{2}$

Answer Key

Business Math Activity Master 26

- 24
- 3,801
- 214
- 10,525
- 120
- 1,092
- \$8,845
- \$3,088
 - \$2,316

Business Math Activity Master 27

- $\frac{3}{14}$
- $\frac{2}{3}$
- $\frac{7}{3} \times \frac{8}{7} = 2\frac{2}{3}$
- $\frac{1}{4} \times \frac{8}{3} = \frac{2}{3}$
- $\frac{153}{10} \times \frac{28}{9} = 47\frac{3}{5}$
- $\frac{16}{10} \times \frac{75}{4} = 60$
- $1\frac{1}{4}$ feet
- $\frac{3}{8}$ pound
- $4\frac{3}{8}$ cups
- 1

Business Math Activity Master 28

First two charts:

$$\begin{array}{ll} \frac{1}{2} = 0.5 & \frac{1}{5} = 0.2 \\ \frac{1}{3} = 0.333\dots & \frac{2}{5} = 0.4 \\ \frac{2}{3} = 0.666\dots & \frac{3}{5} = 0.6 \\ \frac{1}{4} = 0.25 & \frac{4}{5} = 0.8 \\ \frac{3}{4} = 0.75 & \frac{1}{6} = 0.1666\dots \end{array}$$

Second two charts:

$$\begin{array}{ll} \frac{5}{6} = 0.8333\dots & \frac{1}{10} = 0.1 \\ \frac{1}{8} = 0.125 & \frac{1}{12} = 0.08333\dots \\ \frac{3}{8} = 0.375 & \frac{1}{16} = 0.0625 \\ \frac{5}{8} = 0.625 & \frac{1}{20} = 0.05 \\ \frac{7}{8} = 0.875 & \frac{1}{40} = 0.025 \end{array}$$

Business Math Activity Master 29

- 3
- $\frac{4}{1}$ or 4:1
- 12
- $\frac{1}{4}$ or 1:4
- $\frac{12}{3} = \frac{4}{1}$ or 4 to 1
- 18 farm deliveries
 $\frac{4}{3} = \frac{24}{n}$; $4 \times n = 3 \times 24$; $n = 18$

Answer Key

Business Math Activity Master 30

1. 8° per hour
2. 52 miles per hour
3. \$15.50 per shirt
4. \$6 per hour
5. 150 machines per day
6. 73 words per minute
7. 1,720 gallons per hour
8. \$5.80 per pound
9. a. 2 cards per dollar
b. \$0.50 per card

Business Math Activity Master 31

1. $50\% = 0.5 = \frac{1}{2}$
2. $19\% = 0.19 = \frac{19}{100}$
3. $12.5\% = 0.125 = \frac{1}{8}$
4. $78\% = 0.78 = \frac{39}{50}$
5. 40%
6. $\frac{3}{20}$

Business Math Activity Master 32

1. 35.2
2. 292
3. 870.3
4. 7,950
5. 1.6
6. 8,178.6
7. a. 15,580 toy cars sold
b. 820 toy cars left
8. \$439.72
 $15\% \text{ of } 479 = 479 \times 0.15 = 71.85;$
 $479 - 71.85 = 407.15;$
 $8\% \text{ of } 407.15 = 407.15 \times 0.08 =$
 $32.572 \approx 32.57;$
 $407.15 + 32.57 = 439.72$
9. a. \$4.25 b. \$13 c. \$102.25

Business Math Activity Master 33

1. \$40
2. \$384
3. \$45,000
4. \$6,250
5. \$5,807.29
6. a. \$5,200
b. \$25,200

Business Math Activity Master 34

1. \$500.00 \$7.50 \$507.50
2. \$507.50 \$7.61 \$515.11
3. \$515.11 \$7.73 \$522.84
4. \$522.84 \$7.84 \$530.68
5. \$531.36

Business Math Activity Master 35

1. \$500.00 \$7.50 \$100.00 \$407.50
2. \$407.50 \$6.12 \$100.00 \$313.62
3. \$313.62 \$4.71 \$100.00 \$218.33
4. \$218.33 \$3.28 \$100.00 \$121.61
5. \$146.61
6. \$146.61 \$2.20 \$100.00 \$48.81
7. \$48.81 \$0.74 \$49.55 \$0.00
8. \$49.55

Business Math Activity Master 36

1. 5%
2. 58%
3. 48.6%
4. 0.1%
5. 44%
6. 75%
7. 46%
8. 5.7%

Answer Key

Business Math Activity Master 37

1. 20 questions
2. 5,200 homes
3. 11,500 books
4. 136 hours
5. 45 free throws
6. 341,000,000 people

Business Math Activity Master 38

- | | |
|----------|---------|
| 1. 25% | 2. 25% |
| 3. 27.8% | 4. 100% |
| 5. 1.25% | 6. 50% |

Business Math Activity Master 39

1. 6 feet
2. 3 gallons
3. 3.5 miles
4. 2.75 pounds
5. 28 cups
6. 45 inches

Business Math Activity Master 40

1. 1 km
2. 2 meters
3. 1 gram
4. 1 milliliter container
5. a pair of men's shoes
6. a car's gasoline tank

Business Math Activity Master 41

1. 1.8 kilometers
2. 40 milliliters
3. 600 grams
4. **a.** 700 milliliters
b. 0.7 liters
5. **a.** 0.4 meters
b. 40 centimeters

Business Math Activity Master 42

- | | |
|---------------------|---------------|
| 1. 450 grams | 2. 28 ounces |
| 3. 3 pints | 4. 567 liters |
| 5. 2.898 kilometers | 6. 1.8 inches |

Business Math Activity Master 43

1. 340 feet
2. 6,000 square feet
3. **a.** 22 feet
b. 24 square feet
4. **a.** 39 inches
b. 93.5 square inches
5. **a.** 24 meters
b. 20 square meters
6. **a.** 3.4 kilometers
b. 0.6 square kilometer

Business Math Activity Master 44

1. **a.** 20%
b. 50%
c. 30%
2. 250 times
3. **a.** 100% or 1
b. 0% or 0
4. 0.5%

