

CHAPTER

5

Percent

GETTING STARTED

Decimals and Fractions

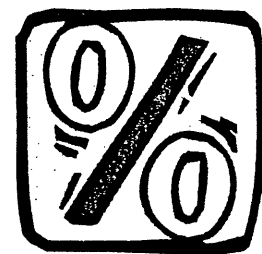
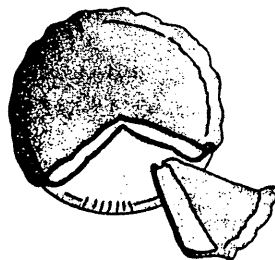
- 5.1 Percent**
- 5.2 Fractions and Decimals as Percents**
- 5.3 Percents as Fractions and Decimals**
- 5.4 Finding a Percent of a Number**
- 5.5 Estimating With Percent: Mental Math**
- 5.6 Finding the Percent**

Review

Chapter Check

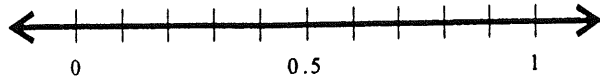
Problem Solving: Using the Strategies

Answers CHAPTER 5 Percent





Skill Builder



When estimating with decimals smaller than 1, look for numbers that are close to 1 or to 0.5.

Estimate.

1. 0.45×56

Estimate
 0.5×60
 $=$

2. 0.77×32

Estimate
 $1 \times \square$
 $=$

3. 0.51×49

Estimate

4. 0.25×21

Estimate

5. 0.89×106

Estimate

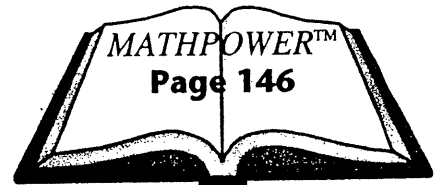
6. 0.05×122

Estimate

GETTING STARTED



Work together with your classmates, using your *MATHPOWER*TM student text, page 146.



Decimals and Fractions

1. Express each fraction as a decimal.

a) $\frac{1}{2} \xrightarrow{\times 5} \frac{5}{10}$

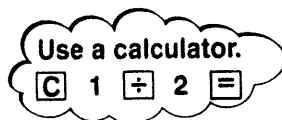
b) $\frac{1}{4} = \frac{\quad}{100}$

c) $\frac{3}{4} =$

d) $\frac{1}{5} =$

$= 0.5$

OR



e) $\frac{2}{5} =$

f) $\frac{3}{5} =$

g) $\frac{3}{10} =$

h) $\frac{5}{25} =$

2. Write each as a fraction in simplest form.

$$\text{a) } 0.2 = \frac{2}{10}$$

$\div 2$
 $\div 2$

$$\text{b) } 0.4 =$$

$$\text{c) } 0.6 =$$

$$\text{d) } 0.8 =$$

$$= \frac{1}{\square}$$

$$\text{e) } 0.15 =$$

$$\text{f) } 0.35 =$$

$$\text{g) } 0.45 =$$

$$\text{h) } 0.60 =$$

3. Express each fraction in simplest form.

$$\text{a) } \frac{3}{9}$$

$\div 3$
 $\div 3$

$$= \frac{1}{\square}$$

$$\text{b) } \frac{2}{8} =$$

$$\text{c) } \frac{3}{12} =$$

$$\text{d) } \frac{4}{12} =$$

$$\text{e) } \frac{8}{12} =$$

$$\text{f) } \frac{10}{12} =$$

$$\text{g) } \frac{10}{30} =$$

$$\text{h) } \frac{7}{28} =$$

4. Express as an improper fraction.

$$\text{a) } 2\frac{1}{4} = \frac{(2 \times 4) + 1}{4}$$

$$= \frac{\square}{4}$$

$$\text{b) } 3\frac{1}{2} = \frac{(\square \times \square) + 1}{2}$$

$$= \frac{\square}{2}$$

$$\text{c) } 2\frac{1}{5} =$$

$$\text{d) } 7\frac{1}{3} =$$

$$\text{e) } 1\frac{1}{8} =$$

$$\text{f) } 2\frac{2}{3} =$$

$$\text{g) } 3\frac{1}{4} =$$

$$\text{h) } 2\frac{5}{8} =$$

$$\text{i) } 4\frac{5}{6} =$$

An improper fraction has a numerator greater than its denominator.

e.g., $\frac{15}{4}$

A mixed number is made up of a whole number and a fraction.

e.g. $9\frac{1}{4}$

5. Write each improper fraction as a mixed number.

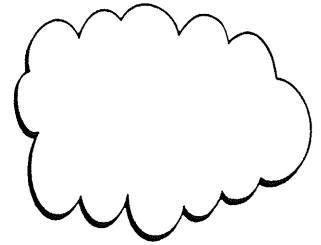
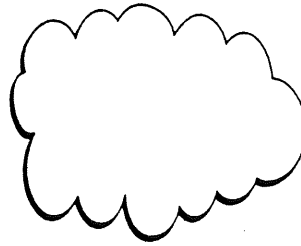
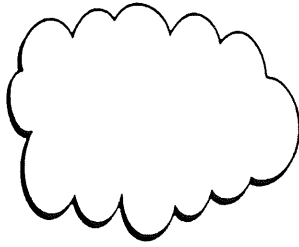
a) $\frac{13}{4} = 3 \frac{\boxed{}}{4}$ Remainder

b) $\frac{9}{2}$

c) $\frac{5}{4}$

d) $\frac{19}{5}$

$$\begin{array}{r} 3 \text{ R}1 \\ 4 \overline{)13} \\ \underline{12} \\ 1 \end{array}$$

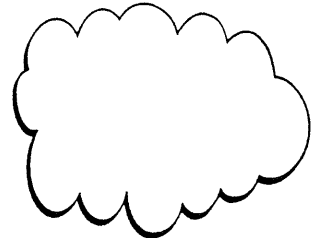
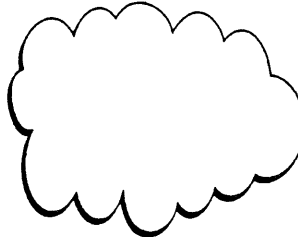
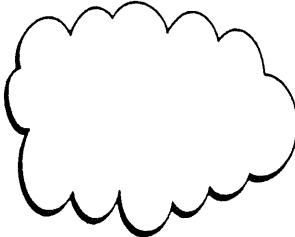
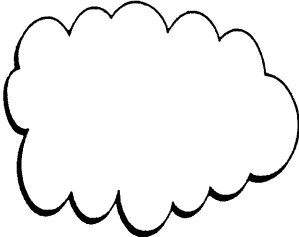


e) $\frac{23}{7}$

f) $\frac{32}{5}$

g) $\frac{c}{4}$

h) $\frac{13}{4}$



6. Find the missing number.

a) $\frac{1}{2} \times \frac{\text{cloud}}{50} = \frac{\text{cloud}}{100}$

b) $\frac{3}{4} \times \frac{\text{cloud}}{\text{cloud}} = \frac{\text{cloud}}{100}$

c) $\frac{2}{5} \times \frac{\text{cloud}}{\text{cloud}} = \frac{\text{cloud}}{100}$

d) $\frac{7}{10} \times \frac{\text{cloud}}{\text{cloud}} = \frac{\text{cloud}}{100}$

e) $\frac{3}{25} \times \frac{\text{cloud}}{\text{cloud}} = \frac{\text{cloud}}{100}$

f) $\frac{9}{20} \times \frac{\text{cloud}}{\text{cloud}} = \frac{\text{cloud}}{100}$

Mental Math

1. Add.

a) $36 + 10 = \underline{\hspace{2cm}}$

b) $810 + 100 = \underline{\hspace{2cm}}$

c) $45 + 5 = \underline{\hspace{2cm}}$

d) $325 + 5 = \underline{\hspace{2cm}}$

e) $75 + 25 = \underline{\hspace{2cm}}$

f) $30 + 50 = \underline{\hspace{2cm}}$

g) $18 + 2 = \underline{\hspace{2cm}}$

h) $18 + 12 = \underline{\hspace{2cm}}$

i) $20 + 8 = \underline{\hspace{2cm}}$

2. Subtract.

a) $85 - 5 = \underline{\hspace{2cm}}$

b) $96 - 6 = \underline{\hspace{2cm}}$

c) $425 - 100 = \underline{\hspace{2cm}}$

d) $615 - 15 = \underline{\hspace{2cm}}$

e) $66 - 6 = \underline{\hspace{2cm}}$

f) $66 - 16 = \underline{\hspace{2cm}}$

g) $54 - 14 = \underline{\hspace{2cm}}$

h) $54 - 24 = \underline{\hspace{2cm}}$

i) $75 - 30 = \underline{\hspace{2cm}}$

Continues on next page. →

3. Multiply.

a) $6 \times 10 =$ _____

b) $12 \times 10 =$ _____

c) $25 \times 10 =$ _____

d) $75 \times 1000 =$ _____

e) $100 \times 36 =$ _____

f) $100 \times 540 =$ _____

g) $5 \times 70 =$ _____

h) $6 \times 200 =$ _____

i) $68 \times 1000 =$ _____

4. Divide.

a) $42 \div 7 =$ _____

b) $420 \div 7 =$ _____

c) $36 \div 6 =$ _____

d) $3600 \div 6 =$ _____

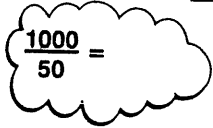
e) $240 \div 10 =$ _____

f) $1500 \div 100 =$ _____

g) $75\ 000 \div 100 =$ _____

h) $1000 \div 50 =$ _____

i) $100 \div 20 =$ _____



5. Divide and write the remainder.

a) $5 \overline{)12}$

b) $4 \overline{)15}$

c) $9 \overline{)36}$

d) $9 \overline{)40}$

e) $10 \overline{)85}$

f) $9 \overline{)75}$

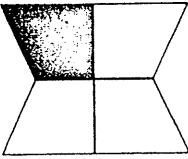
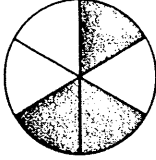
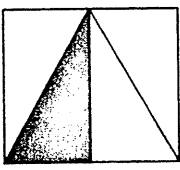
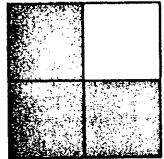
g) $7 \overline{)40}$

h) $5 \overline{)40}$

6. a) How many nickels are there in \$1.00? _____
b) How many nickels are there in \$2.00? _____
c) How many dimes are there in \$1.00? _____
d) How many dimes are there in \$5.00? _____
e) How many quarters are there in \$1.00? _____
f) How many quarters are there in \$10.00? _____

Skill Builder

1. Complete the chart.

	Figure	Shaded Part as a Fraction	Fraction out of 100	Decimal
a)		$\frac{1}{4}$	$\frac{1}{4} \xrightarrow{\times 25} \frac{\square}{100}$	$\frac{25}{100} = 0.25$
b)				
c)				
d)				

2. Solve.



When multiplying by 0.1, 0.01, 0.001, etc., move the decimal to the left.



NO CALCULATOR



When dividing by 0.1, 0.01, 0.001, etc., move the decimal to the right.

a) $65 \times 0.1 = \underline{\hspace{2cm}}$

b) $65 \div 0.1 = \underline{\hspace{2cm}}$

$65 \times 0.01 = \underline{\hspace{2cm}}$

$65 \div 0.01 = \underline{\hspace{2cm}}$

$65 \times 0.001 = \underline{\hspace{2cm}}$

$65 \div 0.001 = \underline{\hspace{2cm}}$

3. Calculate.

a) $2 \times 0.01 = \underline{\hspace{2cm}}$

b) $148 \times 0.1 = \underline{\hspace{2cm}}$

c) $12 \times 0.001 = \underline{\hspace{2cm}}$

d) $0.9 \div 0.1 = \underline{\hspace{2cm}}$

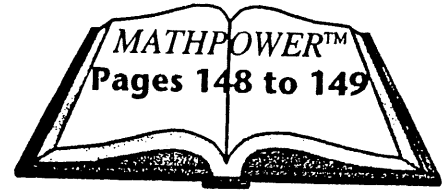
e) $0.39 \div 0.01 = \underline{\hspace{2cm}}$

f) $11.7 \div 0.001 = \underline{\hspace{2cm}}$

LEARNING TOGETHER Percents



Work together with your classmates, using your *MATHPOWER*™ student text, pages 148 and 149.



Skill Builder

1. "What goes up, but never comes down?"

To find the answer:

(i) Write each fraction in lowest terms.

(ii) Write the letter that matches the answer in the blank.

U. $\frac{18}{20} \xrightarrow{\div 2} \frac{\quad}{\quad} \xrightarrow{\div 2} \frac{\quad}{10}$

A. $\frac{20}{40} \xrightarrow{\div \quad} \frac{\quad}{\quad} \xrightarrow{\div \quad} \frac{\quad}{\quad}$

O. $\frac{14}{18} =$

R. $\frac{9}{12} =$

E. $\frac{5}{25} =$

Y. $\frac{8}{10} =$

G. $\frac{12}{32} =$

The answer is:

$\frac{4}{5}$

$\frac{7}{9}$

$\frac{9}{10}$

$\frac{3}{4}$

$\frac{1}{2}$

$\frac{3}{8}$

$\frac{1}{5}$

2. Find the missing number.

a) $\frac{21}{50} \xrightarrow{\times 2} \frac{\quad}{100} \xrightarrow{\times 2} \frac{\quad}{\quad}$

b) $\frac{7}{10} \xrightarrow{\times \quad} \frac{\quad}{100} \xrightarrow{\times \quad} \frac{\quad}{\quad}$

c) $\frac{5}{20} = \frac{\quad}{100}$

d) $\frac{17}{25} = \frac{\quad}{100}$

3. Calculate.

a) $490 \div 7 =$

b) $5400 \div 6 =$

c) $6400 \div 8 =$

d) $150 \div 3 =$

e) $80 \div 2 =$

f) $70 \times 9 =$

g) $60 \times 4 =$

h) $300 \times 6 =$

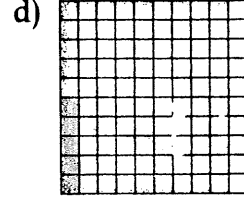
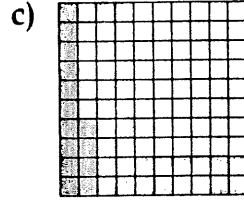
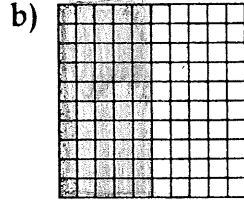
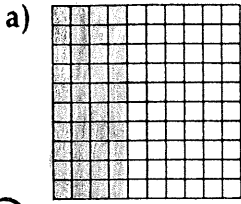
i) $80 \times 5 =$



5.1 Percent

Practice

1. Express the shaded part of each figure as a fraction, then as a percent.



Don't forget your symbol!
%

$$\frac{\quad}{100} = \text{---}\%$$

$$\frac{\quad}{100} = \text{---}$$

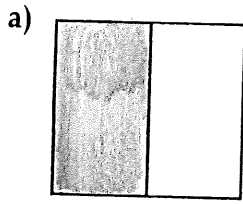
$$\frac{\quad}{100} = \text{---}$$

$$\frac{\quad}{100} = \text{---}$$

2. Complete the chart.

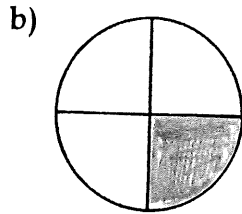
	Figure	Fraction of Figure Shaded	Fraction of Figure Shaded out of 100	Percent of Figure Shaded
a)		$\frac{1}{4}$	$\frac{1}{4} \begin{matrix} \times 25 \\ \hline \end{matrix} \frac{\quad}{100} \begin{matrix} \times 25 \\ \hline \end{matrix}$	
b)				
c)				
d)				
e)				
f)				
g)				
h)				

3. What percent of each figure is *not* shaded?



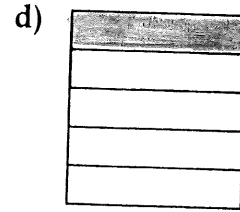
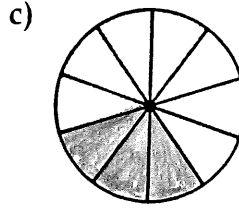
$$\frac{1}{2} \begin{matrix} \times 50 \\ \hline \times 50 \end{matrix} = \frac{\quad}{100}$$

= _____ %



$$\frac{\quad}{4} \begin{matrix} \times \\ \hline \times \end{matrix} = \frac{\quad}{100}$$

= _____ %



4. Complete the following.

a) $\frac{1}{10} \begin{matrix} \times 10 \\ \hline \times 10 \end{matrix} = \frac{\quad}{100} = \text{_____} \%$

b) $\frac{7}{50} \begin{matrix} \times \\ \hline \times \end{matrix} = \frac{\quad}{100} = \text{_____} \%$

c) $\frac{4}{5} = \frac{\quad}{100} = \text{_____} \%$

d) $\frac{4}{50} = \frac{\quad}{100} = \text{_____} \%$

5. Write each as a percent.

a) $\frac{21}{100} = \text{_____} \%$

b) $\frac{9}{100} =$

c) $\frac{35}{100} =$

d) $\frac{7}{50} = \frac{\quad}{100} = \text{_____} \%$

e) $\frac{21}{50} =$

f) $\frac{9}{10} =$

g) $\frac{1}{4} =$

h) $\frac{2}{5} =$

i) $\frac{1}{25} =$

Percent means out of a hundred.

Problems and Applications

6. Our GST (Goods and Services Tax) is 7%.

a) How many cents on a dollar do you pay? _____

b) If our sales tax were 8%, how many cents on a dollar would you pay?

7. A sweater is made of material that is one half natural fibre. What percent is natural fibre?

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

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

Sentence: _____

8. Choose the *better* test score. Circle it.

a) 8 out of 10

or

12 out of 20

$$\frac{8}{10} = \frac{\hspace{1cm}}{100}$$

$$= \underline{\hspace{1cm}} \%$$

$$\frac{12}{20} = \frac{\hspace{1cm}}{100}$$

$$= \underline{\hspace{1cm}} \%$$



b) 3 out of 5

or

50%

c) 7 out of 10

or

65%



d) 15 out of 20

or

35 out of 50

e) 21 out of 25

or

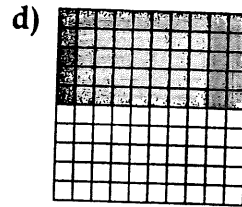
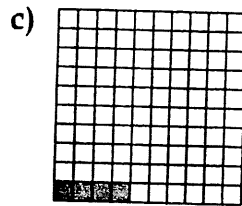
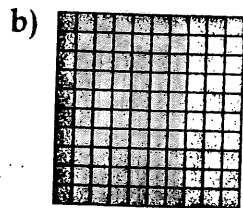
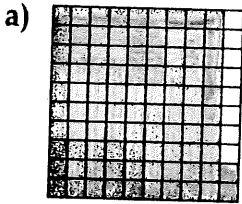
85 out of 100

9. From 1975 to 1984, the Edmonton Eskimos won 6 out of 10 Grey Cup Finals. What percent did they win?

10. Make a list of things that are often expressed as percents.

Skill Builder

1. What percent is shaded?



2. Write each fraction as a decimal.

a) $\frac{4}{10} = \underline{\quad}$

b) $\frac{6}{10} = \underline{\quad}$

c) $\frac{9}{10} = \underline{\quad}$

d) $\frac{9}{100} = \underline{\quad}$

e) $\frac{15}{100} = \underline{\quad}$

f) $\frac{87}{100} = \underline{\quad}$

g) $\frac{125}{1000} = \underline{\quad}$

h) $\frac{96}{1000} = \underline{\quad}$

i) $\frac{15}{1000} = \underline{\quad}$

j) $\frac{2}{10} = \underline{\quad}$

k) $\frac{99}{100} = \underline{\quad}$

l) $\frac{29}{1000} = \underline{\quad}$

Patterns:
+ by 10, 100, 1000

Hint:

$$\frac{8}{10} = 0.8$$

$$\frac{8}{100} = 0.08$$

5.2 Fractions and Decimals as Percents



Practice

1. Express each as a percent.

a) $\frac{17}{100} = 17\%$

b) $\frac{27}{100} = \underline{\hspace{2cm}}$

c) $\frac{7}{100} = \underline{\hspace{2cm}}$

d) $\frac{24}{100} = \underline{\hspace{2cm}}$

e) $\frac{99}{100} = \underline{\hspace{2cm}}$

f) $\frac{63}{100} = \underline{\hspace{2cm}}$

g) $\frac{33}{100} = \underline{\hspace{2cm}}$

h) $\frac{1}{100} = \underline{\hspace{2cm}}$

2. Complete the following.

a) $\frac{1}{2} \xrightarrow{\times 50} \frac{\quad}{100}$

b) $\frac{31}{50} \xrightarrow{\times \quad} \frac{\quad}{100}$

c) $\frac{7}{10} \xrightarrow{\times \quad} \frac{\quad}{100}$

d) $\frac{25}{25} \xrightarrow{\times \quad} \frac{\quad}{100}$

e) $\frac{14}{25} = \frac{\quad}{100}$

f) $\frac{11}{20} = \frac{\quad}{100}$

g) $\frac{3}{10} = \frac{\quad}{100}$

h) $\frac{43}{50} = \frac{\quad}{100}$

i) $\frac{8}{20} = \frac{\quad}{100}$

j) $\frac{6}{50} = \frac{\quad}{100}$

k) $\frac{20}{25} = \frac{\quad}{100}$

l) $\frac{10}{10} = \frac{\quad}{100}$

3. Complete the following.

a) $0.65 = \frac{\quad}{100}$

b) $0.7 = \frac{\quad}{100}$

c) $0.01 = \frac{\quad}{100}$

d) $0.99 = \frac{\quad}{100}$

e) $0.3 = \frac{\quad}{100}$

f) $0.05 = \frac{\quad}{100}$

4. Write each fraction as a percent.

a) $\frac{7}{10} \xrightarrow{\times \quad} \frac{\quad}{100}$

b) $\frac{9}{20} = \frac{\quad}{100}$

c) $\frac{31}{50} = \underline{\hspace{2cm}}$

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

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

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

d) $\frac{21}{25} = \underline{\hspace{2cm}}$

e) $\frac{12}{20} = \underline{\hspace{2cm}}$

f) $\frac{4}{5} = \underline{\hspace{2cm}}$

Show your work!



5. Write each fraction as a percent.

a) $\frac{9}{20} = \underline{\hspace{2cm}}\%$

b) $\frac{4}{16} = \underline{\hspace{2cm}}\%$



Press **C** 9 **÷** 20 **%**

Don't forget your sign!
%

c) $\frac{12}{60} = \underline{\hspace{2cm}}\%$

d) $\frac{17}{25} = \underline{\hspace{2cm}}$

e) $\frac{6}{8} = \underline{\hspace{2cm}}$

f) $\frac{36}{48} = \underline{\hspace{2cm}}$

g) $\frac{56}{80} = \underline{\hspace{2cm}}$

h) $\frac{14}{28} = \underline{\hspace{2cm}}$

6. Complete the following.

a) $0.3 = \frac{\hspace{1cm}}{100} = \underline{\hspace{2cm}}\%$

b) $0.9 = \frac{\hspace{1cm}}{100} = \underline{\hspace{2cm}}\%$

Example:
 $0.78 = \frac{78}{100} = 78\%$

c) $0.33 = \frac{\hspace{1cm}}{100} = \underline{\hspace{2cm}}\%$

d) $0.84 = \frac{\hspace{1cm}}{100} = \underline{\hspace{2cm}}\%$

7. Write each decimal as a percent.

a) $0.4 = \underline{\hspace{2cm}}$

b) $0.8 = \underline{\hspace{2cm}}$

c) $0.75 = \underline{\hspace{2cm}}$

d) $0.01 = \underline{\hspace{2cm}}$

e) $0.055 = \underline{\hspace{2cm}}$

Hint: Use a calculator.
 $0.048 = 4.8\%$
Press **C** 0.048 **%**

f) $0.635 = \underline{\hspace{2cm}}$

8. Make a true statement using $>$, $<$, or $=$.

a) $0.25 \bigcirc 30\%$

$0.25 \bigcirc 0.30$



b) $\frac{3}{4} \bigcirc 75\%$

c) $\frac{27}{50} \bigcirc 52\%$

d) $0.35 \bigcirc 40\%$

Hint:
Change all percents and fractions to decimals.

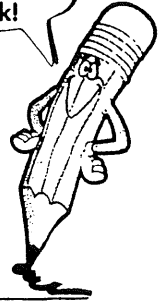
$>$ greater than
 $<$ less than



Challenge
yourself!

Problems and Applications

Show your work!



9. Joe got 4 out of 5 questions correct on a test. What percent did he get correct?
-

10. 20% of the children attending Nicholby School arrive by school bus. Express this percent as a fraction in lowest terms.
-

11. In 1991, the average Canadian family spent about 0.45 of its income on different types of taxes. Express this decimal as a percent.
-

12. The table shows the number of students in Grades 6, 7, and 8 classes.

Grade	Number of Students
6	12 girls 14 boys
7	20 girls 12 boys
8	16 girls 26 boys

- a) What is the total number of students in Grades 6, 7, and 8?
-

- b) What percent of the students are in Grade 6?
-

- c) What percent of the students are in Grade 7?
-

- d) What percent of the students are girls?
-

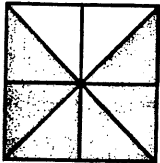
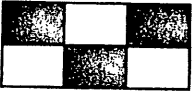
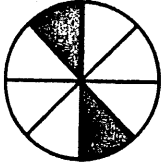
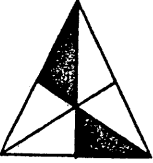
13. Of the students in your class, what percent are

a) boys?

b) girls?

Skill Builder

1. Complete the chart below.

	Diagram	Fraction Shaded	Fraction Not Shaded
a)		$\frac{6}{8} = \frac{\boxed{}}{4}$	
b)			
c)			
d)			

Express fractions
in lowest terms.



2. Write each fraction as a decimal.

a) $\frac{12}{100} = \underline{\hspace{2cm}}$

b) $\frac{1}{100} = \underline{\hspace{2cm}}$

c) $\frac{1}{2} = \underline{\hspace{2cm}}$

d) $\frac{96}{100} = \underline{\hspace{2cm}}$

e) $\frac{4}{100} = \underline{\hspace{2cm}}$

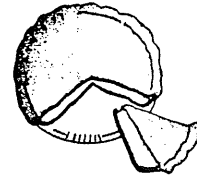
f) $\frac{5}{10} = \underline{\hspace{2cm}}$



NO CALCULATOR

5.3 Percents as Fractions and Decimals

Practice



1. Express each percent as a decimal.

$$62\% = \frac{62}{100} = 0.62$$

a) $21\% = \frac{\quad}{100} = \underline{\quad}$

b) $25\% =$

c) $18\% =$

d) $5\% =$

e) $9\% =$

f) $7\% =$

g) $50\% =$

h) $80\% =$

i) $100\% =$

2. Express each percent as a fraction in lowest terms.

a) $25\% = \frac{25}{100} =$
Reduce

b) $20\% =$

c) $30\% =$

d) $10\% =$

e) $60\% =$

f) $40\% =$

g) $70\% =$

h) $50\% =$

i) $90\% =$

j) $80\% =$

k) $75\% =$

l) $1\% =$

3. Express each percent as a decimal.

a) $27\% = \frac{\boxed{}}{100} = \underline{\hspace{2cm}}$

b) $15\% = \frac{\boxed{}}{100} = \underline{\hspace{2cm}}$

c) 37%

d) 52%

e) 95%

f) 99%

g) 62%

h) 19%

4. a) Express each percent as a fraction in lowest terms.

T $2\% \rightarrow \frac{2}{100} \xrightarrow{\div 50} \frac{\boxed{}}{50}$

G $5\% \rightarrow$

E $18\% \rightarrow$

O $40\% \rightarrow$

S $44\% \rightarrow$

N $49\% \rightarrow$

K $53\% \rightarrow$

I $55\% \rightarrow$

H $28\% \rightarrow$

B $75\% \rightarrow$

b) To solve the riddle, write the letter that matches the answer in the blanks below.

“What do you call an overweight lion?”



$\frac{1}{50}$

$\frac{7}{25}$

$\frac{9}{50}$

$\frac{53}{100}$

$\frac{11}{20}$

$\frac{49}{100}$

$\frac{1}{20}$

$\frac{2}{5}$

$\frac{3}{4}$

$\frac{9}{50}$

$\frac{11}{25}$

$\frac{9}{50}$

5. Complete the chart.

Fractions must be in lowest terms.

	Percent	Fraction	Decimal
a)	9%		
b)	80%		
c)		$\frac{1}{2}$	
d)			0.2
e)	30%		
f)		$\frac{3}{4}$	
g)	25%		
h)		$\frac{1}{20}$	
i)			0.07
j)	75%		
k)			0.1

6. Make each statement true by using $<$, $>$, or $=$.



a) 21% $\frac{11}{25}$

b) 31% 0.31

c) 5% 0.5

Change percents and fractions to decimals.

0.21 0.44

d) 70% 0.7

e) 35% $\frac{7}{10}$

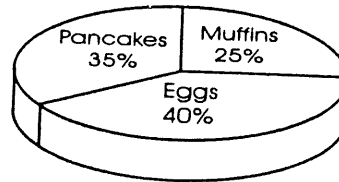
f) 0.06 6%

Problems and Applications



7. The circle graph shows the most popular breakfast foods ordered in a restaurant.

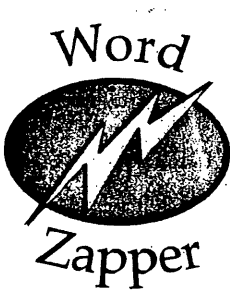
a) Express each percent as a decimal.



b) Express each percent as a fraction in lowest terms.

8. Jason slept for 30% of Saturday. For what fraction of the day did Jason sleep?


1 day = _____ hours



Word
Zapper

Replace each with a different vowel to make real words.

P A T
P T
P T
P T
P T



Skill Builder

1. Complete the chart.

	Number	$\times 100$	$\div 100$
a)	269	26 900	
b)	26.9		
c)	3700		
d)	37		0.37
e)	1052		
f)	105.2		

2. Write each fraction as a percent.

a) $\frac{1}{2} = \frac{\quad}{100} = \quad\% \quad \begin{matrix} \text{cloud} \\ \times \\ \text{cloud} \end{matrix}$

b) $\frac{1}{4} = \frac{\quad}{100} = \quad\%$

c) $\frac{3}{4}$

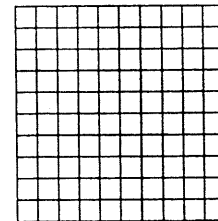
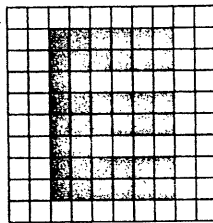
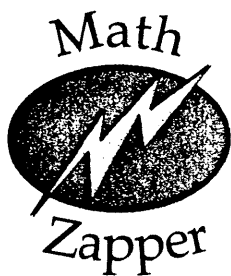
d) $\frac{1}{10}$

e) $\frac{30}{100}$

f) $\frac{3}{100}$

g) $\frac{65}{100}$

h) $\frac{95}{100}$



a) How many squares are in each diagram? _____

b) What percent of the diagram is shaded for the letter E? _____

c) Make one of your initials in the diagram on the right. What percent of the diagram did you shade? _____

5.4 Finding a Percent of a Number



Practice

1. Complete the chart.

	Percent	Fraction in Lowest Terms	Decimal
a)	1%	$\frac{1}{100}$	
b)	9%		
c)	12%		
d)	15%	$\frac{15}{100}$ $\xrightarrow{\div 5}$ $\frac{\quad}{20}$	
e)	18%		
f)	25%		0.25
g)	37%		
h)	50%		
i)	75%		
j)	80%		
k)	20%		
l)	44%		

Use a calculator.

Enter $\boxed{C} 1 \boxed{\div} 100 \boxed{=} \boxed{0.01}$

Try it.



"Of" means multiply.

2. Estimate.

a) 10% of 47

$= 0.1 \times 47$
Estimate
 0.1×50
 $=$ _____

b) 15% of 63

← Rewrite →

$= 0.15 \times 63$
Estimate
 $0.2 \times$
 $=$ _____

c) 25% of 76

$=$
Estimate

d) 25% of 98

← Rewrite →

$=$
Estimate

e) 20% of 195

$=$
Estimate

f) 50% of 419

$=$
Estimate

3. Calculate.



a) 50% of 36

$= 0.50 \times 36$
 $=$

b) 10% of 42

c) 12% of 35

d) 15% of 76

e) 25% of 88

f) 25% of 144

g) 50% of 252

h) 75% of 12

i) 30% of 240

Problems and Applications



4. Calculate to the nearest cent.

a) 10% of \$75.00

$$= 0.10 \times 75$$

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

b) 8% of \$32.50

c) 15% of \$64.90

d) 20% of \$99.00

e) 25% of \$105.00

f) 30% of \$225.00

5. The Ascot Hotel has 180 rooms. From Monday to Thursday, the hotel is 80% full. From Friday to Sunday, the hotel is 45% full.

a) How many rooms are rented from Monday to Thursday?

$$\mathbf{80\% \text{ of } 180}$$

=

b) How many rooms are rented from Friday to Sunday?

c) In total, how many hotel rooms are rented each week?

6. The Toronto Blue Jays play in the Skydome. The Skydome has 50 516 seats. If it is 75% full, how many people are there?



7. The Glenwood Park Restaurant adds a 15% tip to all bills. Grant's bill is \$54.85. How much is the tip?
-

8. In its first year, a baby is awake an average of 40% of 24 h. How many hours is a baby awake?



Skill Builder

1. Calculate.

a) 60% of 40

b) 45% of 100

c) 50% of 150

d) 25% of 16

e) 65% of 130

f) 90% of 180

2. Calculate.

a) $\frac{1}{2}$ of 10 = _____

b) $\frac{1}{2}$ of 8 = _____

c) $\frac{1}{2}$ of 12 = _____

d) $\frac{1}{2}$ of 20 = _____

e) $\frac{1}{2}$ of 40 = _____

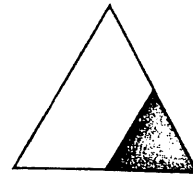
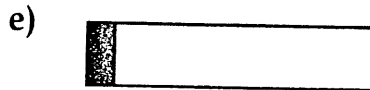
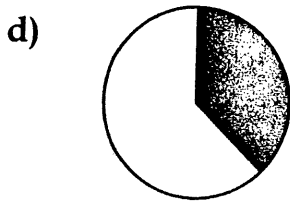
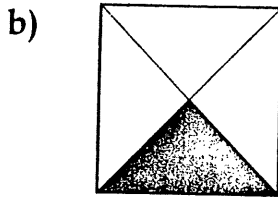
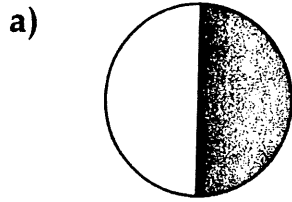
f) $\frac{1}{2}$ of 100 = _____

5.5 Estimating With Percent: Mental Math



Practice

1. Look at each diagram. Estimate the percent of each figure that is shaded.



2. Find the percent of each number.

a) 50% of 200 = _____

b) 25% of 100 = _____

c) 10% of 100 = _____

d) 20% of 60 = _____

e) 50% of 500 = _____

f) 25% of 200 = _____

3. Estimate the percent of each amount.

a) 12% of \$50.00

b) 18% of \$70.00

c) 21% of \$97.00

Rewrite

= $0.12 \times \$50.00$

Estimate

0.1×50

= _____

Estimate

Estimate

d) 34% of \$101.00

e) 8% of \$123.00

f) 11% of \$207.00

Estimate

Estimate

Estimate

4. Estimate which fractions are greater than 50%. Circle them.

a) $\frac{5}{8}$

b) $\frac{7}{11}$

c) $\frac{8}{15}$

d) $\frac{8}{20}$

e) $\frac{17}{25}$

f) $\frac{29}{50}$

g) $\frac{25}{60}$

h) $\frac{11}{15}$

i) $\frac{13}{28}$

$\frac{1}{2} = 0.5 = 50\%$



Problems and Applications

5. Estimate the 15% tip for each restaurant bill.

a) 15% of \$10.00

b) 15% of \$19.95

c) 15% of \$60.00

d) 15% of \$7.75

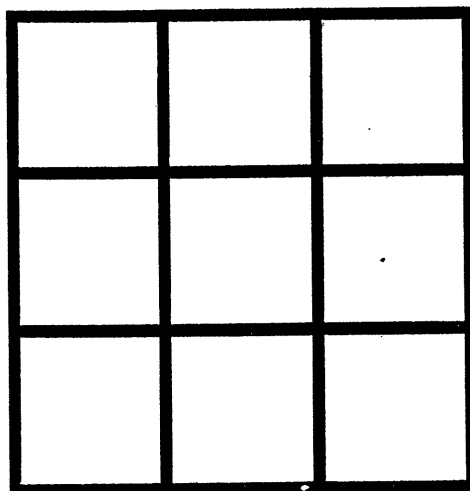


Pattern



Zapper

How many squares are in the figure below?



9 is NOT correct.

Skill Builder

1. Write each decimal as a fraction in lowest terms.

a) $0.05 = \frac{5}{100} =$

b) $0.4 =$

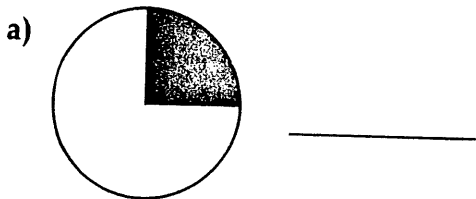
c) $0.25 =$

d) $0.75 =$

e) $0.60 =$

f) $0.83 =$

2. Estimate the percent of each figure that is shaded.



3. Estimate which fractions are greater than 50%. Circle them.

a) $\frac{8}{14}$

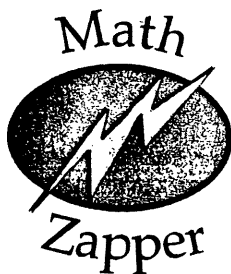
b) $\frac{6}{11}$

c) $\frac{9}{20}$

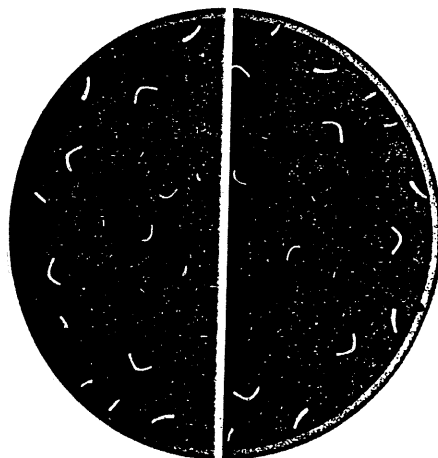
d) $\frac{7}{15}$

e) $\frac{14}{20}$

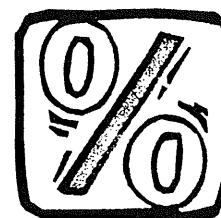
f) $\frac{31}{60}$



Joel ordered a pizza to share with 4 of his friends. When the pizza arrived, it was cut in half. How should he cut it so everyone can have the same amount?



5.6 Finding the Percent



Practice

1. Express each decimal as a percent.

E.g., $0.65 = \frac{65}{100}$
 Change to a fraction out of one hundred. $= 65\%$

a) $0.35 = \frac{\quad}{100}$
 $= \underline{\quad\quad} \%$

b) $0.63 =$

c) $0.27 =$

d) $0.4 =$

e) $0.1 =$

f) $0.9 =$

g) $0.07 =$

h) $0.01 =$

E.g., $3.25 = \frac{325}{100}$
 $= 32.5\%$

i) $0.05 =$

j) $0.345 =$

k) $0.025 =$

l) $0.105 =$

2. Change each fraction to a percent.

First, express each fraction out of one hundred.

a) $\frac{1}{2} \xrightarrow{\times 50} \frac{\quad}{100}$
 $= \underline{\quad\quad} \%$

b) $\frac{2}{5} \xrightarrow{\times \quad} \frac{\quad}{100}$
 $= \underline{\quad\quad} \%$

c) $\frac{3}{5} \xrightarrow{\quad} \frac{\quad}{\quad}$
 $= \underline{\quad\quad} \%$

d) $\frac{3}{10} =$

e) $\frac{7}{10} =$

f) $\frac{5}{10} =$

g) $\frac{1}{4} =$

h) $\frac{2}{4} =$

i) $\frac{3}{4} =$

j) $\frac{5}{100} =$

k) $\frac{35}{100} =$

l) $\frac{96}{100} =$

3. Find the percent.

a) $\frac{45}{100} =$

b) $\frac{1}{4} =$

c) $\frac{2}{10} =$

d) $\frac{5}{5} =$

e) $\frac{4}{50} =$

f) $\frac{5}{10} =$


g) $\frac{2}{5} =$

h) $\frac{15}{20} =$

i) $\frac{12}{25} =$

4. a) Use a calculator. Write each fraction as a percent.

b) Shade all the triangles that have fractions equal to 60%.


Example: 

$$\frac{6}{8} =$$

C 6 **÷** 8 **=** 0.75

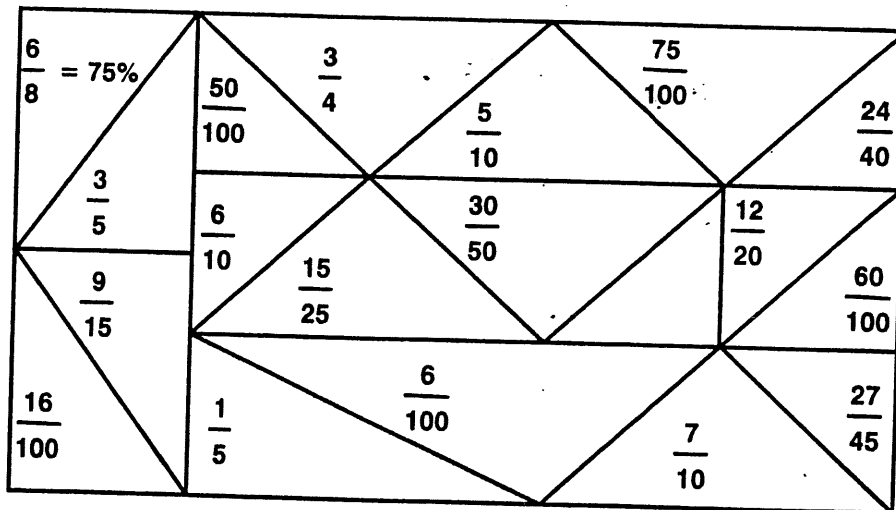
$$0.75 = 75\%$$

OR


Example: 

$$\frac{6}{8} =$$

C 6 **÷** 8 **%** 75



5. Express each fraction as a percent, rounded to the nearest whole percent.

Example: 

$$\frac{35}{45} =$$

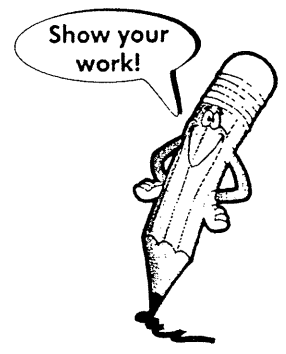
C 35 \div 45 **%** 77. $\bar{7}$

$$\frac{35}{45} \doteq 78\%$$

Don't forget your percent sign (%).

- a) $\frac{1}{3} =$ _____ b) $\frac{5}{6} =$ _____ c) $\frac{7}{30} =$ _____ d) $\frac{29}{40} =$ _____
- e) $\frac{35}{40} =$ _____ f) $\frac{25}{35} =$ _____ g) $\frac{14}{27} =$ _____ h) $\frac{18}{55} =$ _____

Problems and Applications



6. In the 1990–1991 season, the Calgary Flames won 46 out of 80 games played. What percent of the games did they win?



Sentence: _____

7. Marilyn got 40 out of 50 questions correct on a test. Nadia got 21 out of 25 questions correct on a different test.

- a) What percent did Marilyn get on the test? b) What percent did Nadia receive?

c) Who had the better score and by how much?

8. Nelson played ball for an Edmonton team. He got 21 hits in 50 times at bat. What percent of times at bat did he hit?



Sentence: _____

9. From 1948 to 1992, the United States won 9 out of 12 Olympic finals in men's basketball. What percent of the finals did the United States win?



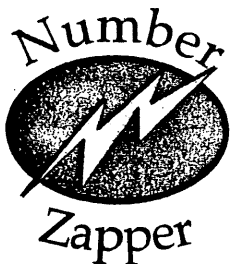
Sentence: _____

10. Ms. Chan gave her students a math test. The table below shows the results.

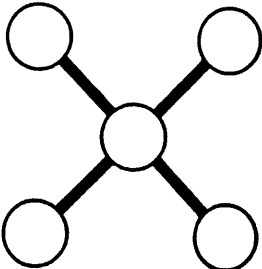
Complete the chart.

Name	Number Correct	Number of Questions	Score out of 100	Percent
Henry	35	50	$\frac{35}{50} = \frac{\boxed{}}{100}$	
Margot	25	50		
Joshua	30	50		
Paola	20	50		
Nanette	50	50		
Ali	46	50		

- a) Who had the highest percent score? _____
- b) Who had the lowest percent score? _____

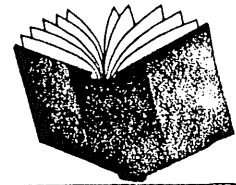


Place the numbers 1 to 5 in the correct circle, so that the numbers on each line add to 8.



Make a "Number Zapper" of your own.

Review



1. Complete the chart.

	Figure	Fraction Shaded	$\frac{?}{100}$	Percent Shaded
a)				
b)				
c)				
d)				
e)				

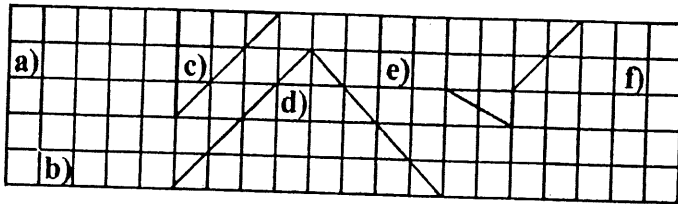


2. Complete the chart.

	Figure	Fraction Shaded	Decimal	Percent Shaded
a)				
b)				
c)				
d)				
e)				

3. There are 6 grey shapes on the grid below.
 What percent of the grid is covered by each shape?

Hint: First, count the number of squares (□) in each shape.



The grid has _____ squares (□).

- a) $\frac{\quad}{100} = \quad\% \quad$ b) _____ c) _____
 d) _____ e) _____ f) _____

4. Complete the chart below.

	Fraction	$\frac{?}{100}$	Percent
a)	$\frac{7}{10}$		
b)	$\frac{2}{5}$		
c)	$\frac{9}{25}$		
d)	$\frac{2}{10}$		
e)	$\frac{3}{4}$		
f)	$\frac{4}{5}$		
g)	$\frac{20}{1000}$		

Don't forget your percent sign (%).

5. Write each decimal as a percent.

a) $0.75 =$

b) $0.35 =$

c) $0.02 =$

d) $0.99 =$

e) $0.6 =$

f) $0.4 =$

g) $0.2 =$

h) $0.8 =$

i) $0.125 =$

j) $0.375 =$

k) $0.075 =$

l) $0.055 =$

Example:
 $0.345 = \frac{34.5}{100}$
 $= 34.5\%$

6. Complete the chart.

	Percent	$\frac{?}{100}$	Fraction in Lowest Terms
a)	5%	$\frac{5}{100}$	$\frac{5}{100} = \frac{\boxed{}}{\boxed{}}$
b)	25%		
c)	50%		
d)	20%		
e)	1%		
f)	75%		
g)	99%		
h)	7%		
i)	15%		
j)	90%		

7. Express each percent as a decimal.

a) $25\% = \frac{25}{100} = 0. \underline{\hspace{1cm}}$ b) 50%

d) 5% e) 1%

g) 98% h) 17.6%

c) 75%

f) 33%

i) 12.5%



8. Use $<$, $>$, or $=$ to make a true statement.

c) $0.2 \bigcirc 15\%$

b) $0.25 \bigcirc 25\%$

c) $0.35 \bigcirc 70\%$

$>$ greater than
 $<$ less than

Hint:
Change all
percents and
fractions to
decimals.

$0.20 \bigcirc 0.15$

d) $0.5 \bigcirc 5\%$

e) $0.35 \bigcirc 81\%$

f) $44\% \bigcirc 0.68$



g) $\frac{1}{4} \bigcirc 25\%$

h) $55\% \bigcirc \frac{7}{20}$

i) $\frac{3}{5} \bigcirc 20\%$

9. Calculate.

a) 25% of 100
= 0.25×100
=

b) 20% of 50

c) 75% of 200

"Of" means multiply.

d) 50% of 300

e) 45% of 60

f) 60% of 200

10. Express each fraction as a percent.

a) $\frac{17}{25} \times \frac{\square}{100}$

b) $\frac{3}{5}$


c) $\frac{13}{20}$

d) $\frac{41}{50}$

= _____ %

11. Use your calculator. Express each fraction as a percent.

Don't forget your percent sign (%).

Hint: $\frac{8}{16}$ 

8 16 _____

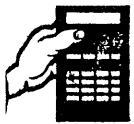
a) $\frac{8}{16}$

b) $\frac{6}{24}$

c) $\frac{54}{72}$

d) $\frac{26}{65}$

12. Estimate, then calculate 8% of each amount.



a) \$25.00

b) \$50.00

8% of \$25.00 →

$0.08 \times \$25.00$

= _____

Estimate

10% of \$25.00

$0.1 \times \$25.00$

= \$2.50

Estimate

Remember: $10\% = 0.10 = 0.1$

c) \$125.00

d) \$10.25

Estimate

Estimate

e) \$16.50

f) \$175.25

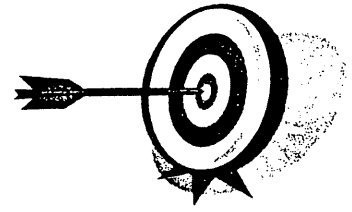
Estimate

Estimate

13. St. John's, Newfoundland, is foggy 34% of 365 days in the year.
How many days are foggy?



14. During archery practice, Bryce hit the bull's-eye 12 times out of 20.
What percent of the shots hit the bull's-eye?



15. Jason received these marks on four tests.

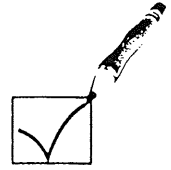
Language Arts	21 out of 25
Mathematics	39 out of 50
Science	7 out of 10
Social Studies	71 out of 100

- a) What percent did Jason receive on each test?
- b) In which subject did Jason score the highest?

16. In two weeks, Petra babysat 4 times and earned \$8.00, \$9.50, \$7.50, and \$12.00.

- a) How much money did Petra earn altogether?
- b) Petra saved 15% of the total money earned. How much did she save?

Chapter Check



1. Express each as a percent.

a) $\frac{53}{100} =$

b) $\frac{4}{5} =$

c) $\frac{5}{20} =$

d) $0.3 =$

e) $0.16 =$

f) $0.155 =$

2. Complete the chart.

	Percent	Decimal	Fraction in Lowest Terms
a)	18%		
b)	25%		
c)	55%		

3. Calculate.



a) 12% of 65

b) 25% of 70

c) 65% of 80

d) 70% of 95

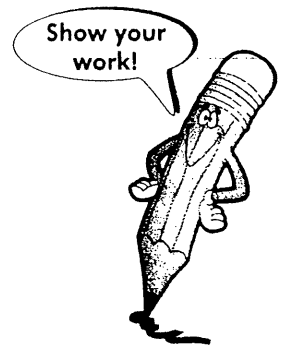
4. What percent is 12 out of 20?



5. Write 12 out of 24 as a percent.

6. 20 out of 50 is what percent?

7. What is 15% of \$32.80?

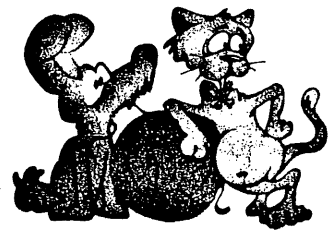


8. What is 3% of \$120?
9. At the end of 1990, 20 nuclear reactors were operating in Canada. There were 18 in Ontario, 1 in Quebec, and 1 in New Brunswick. What percent of the reactors were in each province?

Ontario	Quebec	New Brunswick
$\frac{\square}{20} = \frac{\square}{100} = \underline{\hspace{2cm}}\%$		

Sentence: _____

10. There are 30 students in a Grade 7 class. 60% of these students own a pet. How many students own a pet?



11. Stacey has 55 coins. If 11 coins are nickels, what percent of the coins are nickels?

Start with a fraction.

12. The All-Star team lost 20% of the 30 games they played. How many games did they win?

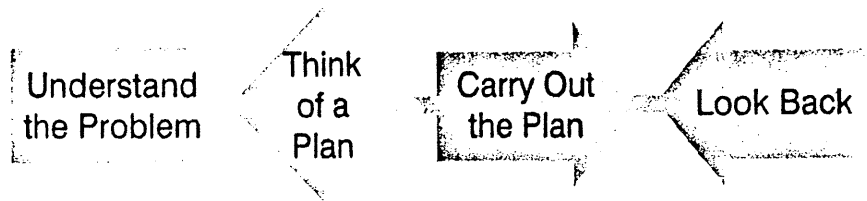
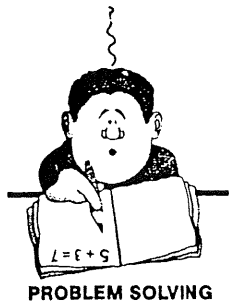


13. In 1993, there were 605 First Nation bands in Canada. About 32% of these bands were in British Columbia.

Estimate the number of bands in British Columbia.

Problem Solving: Using the Strategies

Show your work on looseleaf.



1. Using pennies, nickels, and dimes, list the different ways you can make 25¢.

Example:	Pennies	Nickels	Dimes	Total 25¢
	10	1	1	Yes

2. Draw two lines across each bagel to make the stated number of pieces.



3 Pieces



4 Pieces



5 Pieces

3. Julian bought 3 pens for \$1.89 each and 2 notebooks for \$5.78 each. There was no tax.

- How much did 3 pens and 2 notebooks cost altogether?
- If Julian gave the store clerk \$20.00, how much change did he get back?

4. Contestants in a game show won \$25.00 worth of prizes for every 5 points scored. If Tamara scored 200 points, how much were her prizes worth?

5. Rachel bought antique chairs for \$32.00 each. After she refinished them, she sold them for \$75.00 each.



- How much did she make on each chair?
- It takes 2 h to refinish one chair. How much does Rachel make in 1 h?

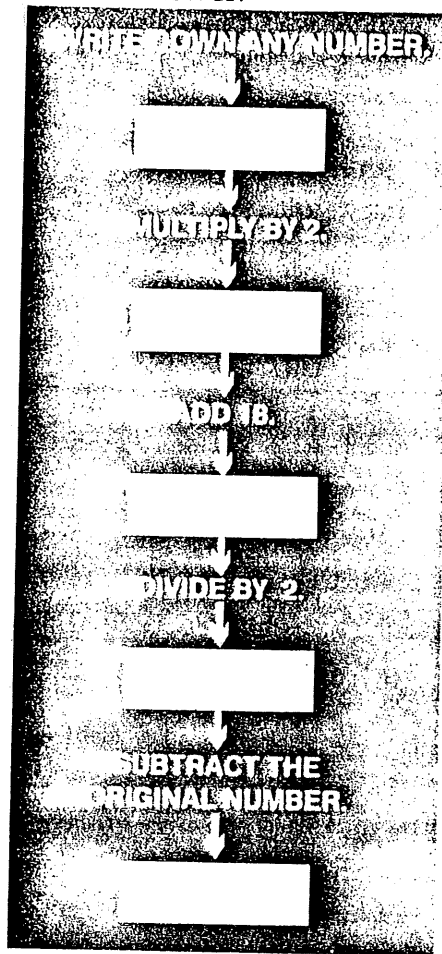


6. There are four hockey teams in a tournament. Each team will play each of the other teams once. How many games will be played in the tournament?



7. Write a number that will give a remainder of 3 when divided by 50.

8. Follow the steps below to find the answer.



Start with a different number and try the steps again. What did you discover?

DATA BANK

Use the Data Bank on page 384 of your MATHPOWER™ student text.

The Adams family drove from Saint John to Edmonton. Their average speed was 80 km/h.

a) How many kilometres did they drive? _____

b) How many hours did they spend driving?

c) Look at a map of Canada. What provincial capitals did they pass through on their trip?

Answers CHAPTER 5 Percent

Skill Builder page 257

Answers may vary.

1. 30 2. 32 3. 25 4. 10
5. 106 6. 55

Decimals and Fractions

pages 257-259

1. a) 0.5 b) 0.25 c) 0.75 d) 0.2
e) 0.4 f) 0.6 g) 0.3 h) 0.2
2. a) $\frac{1}{5}$ b) $\frac{2}{5}$ c) $\frac{3}{5}$ d) $\frac{4}{5}$
e) $\frac{3}{20}$ f) $\frac{7}{20}$ g) $\frac{9}{20}$ h) $\frac{3}{5}$
3. a) $\frac{1}{3}$ b) $\frac{1}{4}$ c) $\frac{1}{4}$ d) $\frac{1}{3}$
e) $\frac{2}{3}$ f) $\frac{5}{6}$ g) $\frac{1}{3}$ h) $\frac{1}{4}$
4. a) $\frac{9}{4}$ b) $\frac{7}{2}$ c) $\frac{11}{5}$ d) $\frac{22}{3}$
e) $\frac{9}{8}$ f) $\frac{8}{3}$ g) $\frac{13}{4}$ h) $\frac{21}{8}$
i) $\frac{29}{6}$
5. a) $3\frac{1}{4}$ b) $4\frac{1}{2}$ c) $1\frac{1}{4}$ d) $3\frac{4}{5}$
e) $3\frac{2}{7}$ f) $6\frac{2}{5}$ g) $2\frac{1}{4}$ h) $3\frac{1}{4}$
6. a) 50 b) 75 c) 40 d) 70
e) 12 f) 45

Mental Math pages 259-260

1. a) 46 b) 910 c) 50
d) 330 e) 100 f) 80
g) 20 h) 30 i) 28
2. a) 80 b) 90 c) 325
d) 600 e) 60 f) 50
g) 40 h) 30 i) 45
3. a) 60 b) 120 c) 250
d) 75 000 e) 3600 f) 54 000
g) 350 h) 1200 i) 68 000
4. a) 6 b) 60 c) 6
d) 600 e) 24 f) 15
g) 750 h) 20 i) 5
5. a) 2 R2 b) 3 R3 c) 4 R0
d) 4 R4 e) 8 R5 f) 8 R3
g) 5 R5 h) 8 R0
6. a) 20 b) 40 c) 10
d) 50 e) 4 f) 40

Skill Builder page 261

1. a) $\frac{25}{100}$ b) $\frac{3}{6} = \frac{1}{2} = \frac{50}{100} = 0.5$
c) $\frac{1}{4} = \frac{25}{100} = 0.25$ d) $\frac{3}{4} = \frac{75}{100} = 0.75$
2. a) 6.5, 0.65, 0.065
b) 650, 6500, 65 000
3. a) 0.02 b) 14.8 c) 0.012
d) 9 e) 39 f) 11 700

Skill Builder page 262

1. YOUR AGE
2. a) 42 b) 70
c) 25 d) 68
3. a) 70 b) 900 c) 800
d) 50 e) 40 f) 630
g) 240 h) 1800 i) 400

5.1 Percent pages 263-266

Practice

1. a) $\frac{25}{100}$, 25% b) $\frac{68}{100}$, 68%
c) $\frac{52}{100}$, 52% d) $\frac{99}{100}$, 99%
2. a) $\frac{1}{4} = \frac{25}{100}$, 25% b) $\frac{3}{10} = \frac{30}{100}$, 30%
c) $\frac{1}{2} = \frac{50}{100}$, 50% d) $\frac{4}{8} = \frac{50}{100}$, 50%
e) $\frac{11}{20} = \frac{55}{100}$, 55% f) $\frac{6}{25} = \frac{24}{100}$, 24%
g) $\frac{3}{5} = \frac{60}{100}$, 60% h) $\frac{3}{4} = \frac{75}{100}$, 75%
3. a) 50% b) 25%
c) 60% d) 60%
4. a) $\frac{10}{100}$, 10% b) $\frac{14}{100}$, 14%
c) $\frac{80}{100}$, 80% d) $\frac{8}{100}$, 8%
5. a) 21% b) 9% c) 35%
d) 14% e) 42% f) 90%
g) 25% h) 40% i) 4%

Problems and Applications

6. a) \$0.07 or 7¢ b) \$0.08 or 8¢
7. 50%
8. a) 8 out of 10 b) 3 out of 5
c) 7 out of 10 d) 15 out of 20
e) 85 out of 100
9. 60%
10. Answers may vary.

Skill Builder page 266

1. a) 92% b) 100%
c) 4% d) 50%
2. a) 0.4 b) 0.6 c) 0.9
d) 0.09 e) 0.15 f) 0.87
g) 0.125 h) 0.096 i) 0.015
j) 0.2 k) 0.99 l) 0.029

5.2 Fractions and Decimals as Percents pages 267-270

Practice

1. a) 17% b) 27% c) 7%
d) 24% e) 99% f) 63%
g) 33% h) 1%
2. a) 50 b) 62 c) 70 d) 100
e) 56 f) 55 g) 30 h) 86
i) 40 j) 12 k) 80 l) 100
3. a) 65 b) 70 c) 1
d) 99 e) 30 f) 5

4. a) 70% b) 45% c) 62%
d) 84% e) 60% f) 80%
5. a) 45% b) 25% c) 20%
d) 68% e) 75% f) 75%
g) 70% h) 50%
6. a) 30, 30% b) 90, 90%
c) 33, 33% d) 84, 84%
7. a) 40% b) 80% c) 75%
d) 1% e) 5.5% f) 63.5%
8. a) < b) = c) > d) <

Problems and Applications

9. 80% 10. $\frac{1}{5}$ 11. 45%
12. a) 100 b) 26%
c) 32% d) 48%
13. Answers may vary.

Skill Builder page 270

1. a) $\frac{3}{4} = \frac{1}{4}$ b) $\frac{1}{2} = \frac{1}{2}$
c) $\frac{1}{4} = \frac{3}{4}$ d) $\frac{1}{2} = \frac{2}{3}$
2. a) 0.12 b) 0.01 c) 0.5
d) 0.96 e) 0.04 f) 0.5

5.3 Percents as Fractions and Decimals pages 271-274

Practice

1. a) 0.21 b) 0.25 c) 0.18
d) 0.05 e) 0.09 f) 0.07
g) 0.5 h) 0.8 i) 1
2. a) $\frac{1}{4}$ b) $\frac{1}{5}$ c) $\frac{3}{10}$ d) $\frac{1}{10}$
e) $\frac{3}{5}$ f) $\frac{2}{5}$ g) $\frac{7}{10}$ h) $\frac{1}{2}$
i) $\frac{9}{10}$ j) $\frac{4}{5}$ k) $\frac{3}{4}$ l) $\frac{1}{100}$
3. a) 0.27 b) 0.15 c) 0.37
d) 0.52 e) 0.95 f) 0.99
g) 0.62 h) 0.19

4. a) $T = \frac{1}{50}$, $G = \frac{1}{20}$, $E = \frac{9}{50}$, $O = \frac{2}{5}$,
 $S = \frac{11}{25}$, $N = \frac{49}{100}$, $K = \frac{53}{100}$,
 $I = \frac{11}{20}$, $H = \frac{7}{25}$, $B = \frac{3}{4}$

b) THE KING OBESE

5. a) $\frac{9}{100}$, 0.09 b) $\frac{4}{5}$, 0.8
c) 50%, 0.5 d) 20%, $\frac{1}{5}$
e) $\frac{3}{10}$, 0.3 f) 75%, 0.75
g) $\frac{1}{4}$, 0.25 h) 5%, 0.05
i) 7%, $\frac{7}{100}$ j) $\frac{3}{4}$, 0.75
k) 10%, $\frac{1}{10}$

6. a) < b) = c) <
 d) = e) < f) =

Problems and Applications

7. a) Pancakes 0.35, Muffins 0.25, Eggs 0.4
 b) Pancakes $\frac{7}{20}$, Muffins $\frac{1}{4}$, Eggs $\frac{2}{5}$

8. $\frac{3}{10}$

Skill Builder

page 275

1. a) 2.69 b) 2690, 0.269
 c) 370 000, 37 d) 3700
 e) 105 200, 10.52
 f) 10 520, 1.052
 2. a) 50% b) 25% c) 75%
 d) 10% e) 30% f) 3%
 g) 65% h) 95%

Math Zapper

page 275

- a) 100 b) 40%
 c) Answers may vary.

5.4 Finding a Percent of a Number

pages 276–279

Practice

1. a) 0.01 b) $\frac{9}{100}$, 0.09
 c) $\frac{3}{25}$, 0.12 d) $\frac{3}{20}$, 0.15
 e) $\frac{9}{50}$, 0.18 f) $\frac{1}{4}$, 0.25
 g) $\frac{37}{100}$, 0.37 h) $\frac{1}{2}$, 0.5
 i) $\frac{3}{4}$, 0.75 j) $\frac{4}{5}$, 0.8
 k) $\frac{1}{5}$, 0.2 l) $\frac{11}{25}$, 0.44

2. Answers may vary.

- a) 5 b) 12 c) 20
 d) 25 e) 40 f) 200
 3. a) 18 b) 4.2 c) 4.2
 d) 11.4 e) 22 f) 36
 g) 126 h) 9 i) 72

Problems and Applications

4. a) \$7.50 b) \$2.60 c) \$9.74
 d) \$19.80 e) \$26.25 f) \$67.50
 5. a) 144 rooms b) 81 rooms
 c) 819 rooms
 6. 37 887 7. About \$8.23
 8. 9.6 h or 9 h 36 mins

Skill Builder

page 279

1. a) 24 b) 45 c) 75
 d) 4 e) 84.5 f) 162
 2. a) 5 b) 4 c) 6
 d) 10 e) 20 f) 50

5.5 Estimating With Percent: Mental Math

pages 280–281

Practice

1. Answers may vary.
 a) 50% b) 25% c) 80%
 d) 33% e) 10% f) 25%
 2. a) 100 b) 25 c) 10
 d) 12 e) 250 f) 50
 3. Answers may vary.
 a) \$5.00 b) \$14.00 c) \$20.00
 d) \$30.00 e) \$12.00 f) \$21.00
 4. a, b, c, e, f, h

Problems and Applications

5. a) \$1.50 b) \$3.00
 c) \$9.00 d) \$1.20

Pattern Zapper

page 281

14

Skill Builder

page 282

1. a) $\frac{1}{20}$ b) $\frac{2}{5}$ c) $\frac{1}{4}$
 d) $\frac{3}{4}$ e) $\frac{3}{5}$ f) $\frac{83}{100}$
 2. a) 25% b) 33%
 3. a, b, e, f

Math Zapper

page 282

Cut each half into 5 equal pieces.

5.6 Finding the Percent

pages 283–286

Practice

1. a) 35% b) 63% c) 27%
 d) 40% e) 10% f) 90%
 g) 7% h) 1% i) 5%
 j) 34.5% k) 2.5% l) 10.5%
 2. a) 50% b) 40% c) 60%
 d) 30% e) 70% f) 50%
 g) 25% h) 50% i) 75%
 j) 5% k) 35% l) 96%
 3. a) 45% b) 25% c) 20%
 d) 100% e) 8% f) 50%
 g) 40% h) 75% i) 48%
 4. b) $\frac{3}{5}$ $\frac{9}{15}$ $\frac{6}{10}$ $\frac{30}{50}$ $\frac{12}{20}$
 $\frac{60}{100}$ $\frac{24}{40}$ $\frac{27}{45}$ $\frac{15}{25}$ $\frac{36}{60}$ or your own number
 5. a) 33% b) 83% c) 23%
 d) 73% e) 88% f) 71%
 g) 52% h) 33%

Problems and Applications

6. 57.5%
 7. a) 80% b) 84% c) Nadia, 4%
 8. 42% 9. 75%
 10. Henry $\frac{70}{100}$, 70%; Margot $\frac{50}{100}$, 50%;
 Joshua $\frac{60}{100}$, 60%; Paola $\frac{40}{100}$, 40%;

Nanette $\frac{100}{100}$, 100%; Ali $\frac{92}{100}$, 92%

- a) Nanette b) Paola

Number Zapper

page 286

2, 3, 1, 4, 5, and variations

Review

pages 287–292

1. a) $\frac{4}{10}$ $\frac{40}{100}$, 40%
 b) $\frac{3}{5}$ $\frac{60}{100}$, 60% c) $\frac{1}{4}$ $\frac{25}{100}$, 25%
 d) $\frac{10}{25}$ $\frac{40}{100}$, 40% e) $\frac{1}{4}$ $\frac{25}{100}$, 25%
 2. a) $\frac{2}{8} = \frac{1}{4}$, 0.25, 25%
 b) $\frac{12}{24}$, 0.5, 50%
 c) $\frac{6}{8} = \frac{3}{4}$, 0.75, 75%
 d) $\frac{6}{16} = \frac{3}{8}$, 0.375, 37.5%
 e) $\frac{5}{8}$, 0.625, 62.5%
 3. a) 7% b) 6% c) $4\frac{1}{2}\%$
 d) 16% e) 11% f) 14%
 4. a) $\frac{70}{100}$, 70% b) $\frac{40}{100}$, 40%
 c) $\frac{36}{100}$, 36% d) $\frac{20}{100}$, 20%
 e) $\frac{75}{100}$, 75% f) $\frac{80}{100}$, 80%
 g) $\frac{2}{100}$, 2%
 5. a) 75% b) 35% c) 2%
 d) 99% e) 60% f) 40%
 g) 20% h) 80% i) 12.5%
 j) 37.5% k) 7.5% l) 5.5%
 6. a) $\frac{5}{100}$ $\frac{1}{20}$ b) $\frac{25}{100}$ $\frac{1}{4}$
 c) $\frac{50}{100}$ $\frac{1}{2}$ d) $\frac{20}{100}$ $\frac{1}{5}$
 e) $\frac{1}{100}$ $\frac{1}{100}$ f) $\frac{75}{100}$ $\frac{3}{4}$
 g) $\frac{99}{100}$ $\frac{99}{100}$ h) $\frac{7}{100}$ $\frac{7}{100}$
 i) $\frac{15}{100}$ $\frac{3}{20}$ j) $\frac{90}{100}$ $\frac{9}{10}$
 7. a) 0.25 b) 0.5 c) 0.75
 d) 0.05 e) 0.01 f) 0.33
 g) 0.98 h) 0.176 i) 0.125
 8. a) > b) = c) <
 d) > e) < f) <
 g) = h) > i) >
 9. a) 25 b) 10 c) 150
 d) 150 e) 27 f) 120
 10. a) 68% b) 60%
 c) 65% d) 82%
 11. a) 50% b) 25%
 c) 75% d) 40%

12. Estimates may vary.
 a) \$2.50, \$2.00
 b) \$5.00, \$4.00
 c) \$12.50, \$10.00
 d) \$1.00, \$0.82
 e) \$1.65, \$1.32
 f) \$17.50, \$14.02
13. About 124 days 14. 60%
15. a) Language Arts, 84%
 Mathematics, 78%
 Science, 70%
 Social Studies, 71%
 b) Language Arts

16. a) \$37.00 b) \$5.55

Chapter Check pages 293–294

1. a) 53% b) 80% c) 25%
 d) 30% e) 16% f) 15.5%
2. a) 0.18, $\frac{9}{50}$ b) 0.25, $\frac{1}{4}$
 c) 0.55, $\frac{11}{20}$
3. a) 7.8 b) 17.5 c) 52 d) 66.5
4. 60% 5. 50% 6. 40%
7. \$4.92 8. \$3.60
9. Ontario, 90%; Quebec, 5%;
 New Brunswick, 5%
10. 18 11. 20% 12. 24
13. Answers may vary. 180

Problem Solving: Using the Strategies
 pages 295–296

1. 12 ways

Pennies	Nickels	Dimes
10	1	1
5	2	1
15	2	0
15	0	1
10	3	0
20	1	0
5	4	0
5	0	2
25	0	0
0	5	0
0	1	2
0	3	1

2. Answers may vary.
 3. a) \$17.23 b) \$2.77
 4. \$1000.00
 5. a) \$43.00 b) \$21.50/h
 6. 6 games 7. Answers may vary.
 8. You always get 9.

DATA BANK page 296

- a) 4704 km b) 58.8 h
 c) Answers may vary.
 Toronto, Winnipeg, Regina

