Unit 2

Percent

Topic A: Introducing Percent

Percents are another form of fractions and are used in many everyday situations. Interest rates, credit card charges, taxes, pay deductions, increases and decreases are all calculated with percent. **Percents** are a **convenient** way to express part of the whole thing because the **unwritten denominator is always 100**.

- the denominator of 100 is not written or said.

- a percent sign **%** follows the number and is read as "percent".

- the whole thing is 100%

- **100% = 1**

Remember that *cent* is the Latin word meaning a *hundred* **or** a *hundredth*. And *per* is a Latin word meaning *by* **or** *for each*. So, *percent* **means** *for each hundred*.

Reading and Writing Percents

To write a percent

- write the number in the usual way

- place the percent sign after the numerals

  50%

  $5\frac{1}{2}\%$ or 5.5%

  $\frac{3}{4}\%$ or 0.75%

To read a percent

- read the numbers in the usual way

- say "percent" after the number

  16% say "sixteen percent"

  $4\frac{1}{2}\%$ say "four and one-half percent"

  0.25% say "twenty-five hundredths percent" , "one-quarter percent" or "point two five percent".

Exercise One

Write these percents using numerals and a percent sign. Note that the mixed numbers may be expressed with common fractions or decimals.

a) thirty-four percent   _34%_

b) twelve percent   _____

c) four-fifths percent   _____

d) one hundred sixteen and three-tenths percent   _____

e) thirteen percent   _____

f) six and one-fifth percent   _____

g) ninety-four and one-half percent   _____

h) one-tenth percent   _____

i) one hundred percent   _____

j) one hundred fifty percent   _____

Answers to Exercise One

b) 12 %	c) 0.8 % or $\frac{4}{5}$ %	d) 116.3 % or $116\frac{3}{10}$ %
e) 13 %	f) 6.2 % or $6\frac{1}{5}$ %	g) 94.5 % or $94\frac{1}{2}$ %
h) 0.1 % or $\frac{1}{10}$ %	i) 100 %	j) 150 %

Exercise Two

Write the words to show how you say these percents.

a) 62%   *sixty-two percent*

b) 37½ %   _____

c) 202%   _____

d) ¾ %   _____

e) 1¼ %   _____

f) 18.3%   _____

g) 14%   _____

h) 0.5%   _____

i) ½ %   _____

j) 25%   _____

k) 100%   _____

Answers to Exercise Two

b) thirty-seven and one-half percent

d) three-quarters percent

f) eighteen and three-tenths percent

h) five-tenths percent or one-half percent or zero point five percent

j) twenty-five percent

c) two hundred two percent

e) one and one-quarter percent

g) fourteen percent

i) one-half percent

k) one hundred percent

Changing Decimals to Percents

Writing equivalent fractions is an important math skill.

Equivalent common fractions, decimals, and percents all represent the same amount.

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

$$\frac{3}{10} = 0.3 = 30\%$$

You need the skill of writing equivalent fractions for working with percents.

> To change any number to a percent, multiply the number by 100% and place a percent sign **%** after the product.

Remember this shortcut for multiplying by 100?

$4.27 \times 100 = 427$

$0.287 \times 100 = 28.7$

$53 \times 100 = 5300$

The shortcut is: When multiplying by 100, **move the decimal point two places to the right**.

Example A: Change these numbers to a percent.

1	$1 \times 100\%$	=	100%
0.25	$0.25 \times 100\%$	=	25%
0.8	$0.8 \times 100\%$	=	80%
0.375	$0.375 \times 100\%$	=	37.5%

So...

> To change a decimal to a percent, move the decimal point two places to the right and then write the percent sign after the number.

Examples: Change each decimal to a percent.

$$0.125 = 0.\underset{\curvearrowright}{1}2.5 = 12.5\%$$

$$1.375 = 1.\underset{\curvearrowright}{3}7.5 = 137.5\%$$

If the decimal point moves to the end of the number it is not necessary to write the decimal point. Remember that zeros at the beginning of a number are also not necessary.

$$0.24 = 0.\underset{\curvearrowright}{24}\bullet = \cancel{0}24\% = 24\%$$

$$0.05 = 0.\underset{\curvearrowright}{05}\bullet = \cancel{0}\cancel{0}5\% = 5\%$$

If the decimal is a tenth (one decimal place), it will be necessary to add a zero. If you are changing a whole number to a percent, add two zeros.

$$0.4 = 0.\underset{\curvearrowright}{40}\bullet = 40\%$$

$$1.7 = 1.\underset{\curvearrowright}{70}\bullet = 170\%$$

$$2 = 2.\underset{\curvearrowright}{00}\bullet = 200\%$$

Exercise Three

Change these decimals to percents.

	Decimal	× 100% Move decimal 2 places to right	=	Percent
a)	0.75	0.75.	=	75%
b)	0.33			
c)	0.1			
d)	0.0025			
e)	0.07			
f)	0.9			
g)	0.166			
h)	0.43			
i)	0.325			
j)	0.088			
k)	0.0625			
l)	2.75			
m)	1.36			
n)	0.001			
o)	0.68			
p)	3			
q)	0.688			
r)	1.9			

Answers to Exercise Three

b) 33%	c) 10 %	d) 0.25 %	e) 7 %
f) 90 %	g) 16.6 %	h) 43 %	i) 32.5 %
j) 8.8 %	k) 6.25 %	l) 275 %	m) 136 %
n) 0.1 %	o) 68 %	p) 300 %	q) 68.8 %
r) 190 %			

Changing Percents to Decimals

Review **Dividing by 100** :

$47.39 \div 100 = 0.4739$

$429 \div 100 = 4.29$

$3.824 \div 100 = 0.03824$

To **divide by 100**, **move the decimal point two places to the left**.

Examples: Change each percent to a decimal or mixed number.

$58\% \; = \; 58 \div 100 = \quad .58 = \quad 0.58$
$20\% \; = \; 20 \div 100 = \quad .2 = \quad 0.2$
$\;\;6\% \; = \quad 6 \div 100 = \quad .06 = \quad 0.06$
$110\% =110 \div 100 = \; 1.10$

So...

> To change a percent to a decimal, divide by 100 (move the
> decimal point two places to the **left)** and remove the percent
> sign.

Examples: Change each percent to a decimal .

75%	=	75.0%	=	0.75
12%	=	12.0%	=	0.12
37.5%	=	37.5%	=	0.375
125%	=	125.0%	=	1.25
5%	=	5.0%	=	0.05
4.6%	=	4.6%	=	0.046

Some notes to remember:

- If there is no decimal point in the percent, place the decimal point **after** the last numeral and **then** divide by 100.

  $24\% = 24.\% = 0.24$

- It may be necessary to **prefix** zeros. (This means adding zeros in front of the number, if needed)

  $6\% = 6.\% = 0.06$

- A zero at the right of a decimal is not needed and may be left off.

  $40\% = 40.\% = .40 = 0.4$

Exercise Four

Change each percent to its decimal equivalent.

	Percent	÷ 100 **Move decimal 2 places to left**	=	Decimal
a)	23%	.23.	=	*0.23*
b)	1%			
c)	9.2%			
d)	112%			
e)	10.3%			
f)	36%			
g)	75%			
h)	100%			
i)	8.25%			
j)	9%			
k)	14%			
l)	5%			
m)	4.4%			
n)	147%			
o)	11.5%			
p)	18%			
q)	4%			
r)	200%			

To change **a percent containing a common fraction** to a decimal, do this:

- Change the common fraction in the percent to a decimal in the percent.

- Divide by 100 (move the decimal 2 places to the **left**).

Examples:

$$3\frac{1}{2}\% \ = 3.5\% \qquad 3.5\% \div 100 \ = .035 = 0.035$$

$$37\frac{1}{2}\% \ = 37.5\% \qquad 37.5\% \div 100 \ = .375 = 0.375$$

$$\frac{1}{4}\% \ \ = 0.25\% \qquad 0.25\% \div 100 \ = \ 0.0025$$

$$17\frac{1}{3}\% \ = 17.\overline{3}\% \qquad 17.\overline{3}\% \div 100 = 0.17\overline{3}$$

Exercise Five

Change each percent to its decimal equivalent.

a) $8\frac{4}{5}\% =$ ___*8.8% = 0.088*___

b) $4\frac{1}{2}\% =$ _____

c) $56\frac{3}{4}\% =$ _____

d) $1\frac{3}{5}\% =$ _____

e) $112\frac{1}{2}\% =$ _____

f) $2\frac{3}{8}\% =$ _____

g) $5\frac{1}{4}\% =$ _____

h) $1\frac{1}{2}\% =$ _____

i) $2\frac{1}{8}\% =$ _____

j) $77\frac{1}{2}\% =$ _____

Answers to Exercise Five

b) 0.045	c) 0.5675	d) 0.016	e) 1.125
f) 0.02375	g) 0.0525	h) 0.015	i) 0.02125
j) 0.775			

Changing Common Fractions to Percents

> To change any number to a percent, multiply the number by 100% and place the percent sign **%** after the product.

There are two methods you can use to change a common fraction to a percent.

Method One:

To change a common fraction to an equivalent percent, **multiply the common fraction by 100%**.

Examples:

$\dfrac{3}{4} = \underline{\ \ }\%$

$$\frac{3}{4} \times 100\% = \frac{3}{\cancel{4}_{1}} \times \frac{\cancel{100}^{25}}{1} = 75\%$$

$\dfrac{5}{8} = \underline{\ \ }\%$

$$\frac{5}{8} \times 100\% = \frac{5}{\cancel{8}_{2}} \times \frac{\cancel{100}^{25}}{1} = \frac{125}{2}\% = 62.5\%$$

$\dfrac{7}{10} = \underline{\ \ }\%$

$$\frac{7}{10} \times 100\% = \frac{7}{\cancel{10}_{1}} \times \frac{\cancel{100}^{10}}{1} = 70\%$$

$1\dfrac{1}{5} = \underline{\ \ }\%$

$$1\frac{1}{5} \times 100\% = \frac{6}{\cancel{5}_{1}} \times \frac{\cancel{100}^{20}}{1} = 120\%$$

Exercise Six

Multiply by 100% to change each common fraction to an equivalent percent.

a) $\frac{4}{5}$ $\frac{4}{5} \times 100\% = 80\%$ b) $\frac{1}{5}$ _____

c) $\frac{9}{10}$ _____   d) $1\frac{1}{2}$ _____

e) $\frac{7}{10}$ _____   f) $3\frac{3}{4}$ _____

g) $15\frac{1}{4}$ _____   h) $\frac{3}{20}$ _____

i) $\frac{17}{25}$ _____   j) $\frac{1}{3}$ _____

k) $\frac{7}{50}$ _____   l) $\frac{1}{2}$ _____

m) $\frac{16}{20}$ _____   n) $\frac{1}{4}$ _____

Answers to Exercise Six

b) 20 %   c) 90 %   d) 150 %   e) 70 %
f) 375 %   g) 1 525 %   h) 15 %   i) 68 %
j) $33\frac{1}{3}$ %   k) 14 %   l) 50 %   m) 80 %
n) 25 %

Method Two:

To change a common fraction to an equivalent percent, first write the common fraction as a decimal. Then multiply the decimal by 100% (move the decimal point two places to the **right**).

$\dfrac{3}{8} = \underline{\quad}\%$

$$\begin{array}{r} 0.375 \\ 8\overline{)3.000} \\ 2\ 4 \\ \hline 60 \\ 56 \\ \hline 4\cancel{0} \end{array}$$

$\dfrac{3}{8} = 0.375 \qquad 0.\underset{\smile}{\overset{\rightarrow}{37}}.5 = 37.5\%$

$\dfrac{1}{3} = \underline{\quad}\%$

$$\begin{array}{r} 0.33\overline{3} \\ 3\overline{)1.000} \end{array}$$

$0.\underset{\smile}{\overset{\rightarrow}{33}}.\overline{3} = 33.\overline{3}\%$

also written as $33\frac{1}{3}\%$

$\dfrac{11}{12} = \underline{\quad}\%$

$$\begin{array}{r} 0.9166 \\ 12\overline{)11.000} \\ 10\ 8 \\ \hline 20 \\ 12 \\ \hline 80 \\ 72 \\ \hline 8 \end{array}$$

$0.\underset{\smile}{\overset{\rightarrow}{91}}.\overline{6} = 91.\overline{6}\%$

Exercise Seven

Change each common fraction to an equivalent percent by first writing a decimal.

a) $\dfrac{1}{12} = 0.08\overline{3}$ $0.08\overline{3} \times 100\% = 8.\overline{3}\%$ b) $\dfrac{1}{8}$ _____

c) $\dfrac{5}{8}$ _____   d) $\dfrac{7}{8}$ _____

e) $12\dfrac{1}{5}$ _____   f) $\dfrac{2}{3}$ _____

g) $7\dfrac{1}{3}$ _____   h) $\dfrac{5}{16}$ _____

i) $\dfrac{5}{6}$ _____   j) $\dfrac{4}{9}$ _____

k) $\dfrac{1}{6}$ _____   l) $\dfrac{40}{45}$ _____

Answers to Exercise Seven

b) 12.5 %	c) 62.5 %	d) 87.5 %	e) 1 220 %
f) 66.6 %	g) 733.3 %	h) 31.25 %	i) 83.3 %
j) 44.4 %	k) 16.6 %	l) 88.8 %	

The method you use to change a common fraction to a percent will depend on the numbers you are working with. Choose whichever method seems easier for the situation. You will also memorize many equivalencies as you work with them. But you should definitely memorize $\dfrac{1}{3} = 33\dfrac{1}{3}\%$ and $\dfrac{2}{3} = 66\dfrac{2}{3}\%$.

Changing Percents to Common Fractions

You know that percents are a form of fraction with an unwritten denominator of 100. A **%** sign is used.

> To change any percent to a decimal, common fraction, or mixed number, divide by 100 and remove the percent sign.

To change a percent to a common fraction:

- write the numerals in the percent as the numerator.

- write 100 as the denominator. (Remember that the line in a fraction can be a divided by sign, so $58\% = \dfrac{58}{100}$ is the same as $58 \div 100$.)

- remove the % sign.

- simplify the fraction: $\dfrac{58}{100} = \dfrac{29}{50}$

Examples: Write each percent as a common fraction.

$$38\% = \dfrac{38}{100}\left(\dfrac{\div 2}{\div 2}\right) = \dfrac{19}{50}$$

$$25\% = \dfrac{25}{100}\left(\dfrac{\div 25}{\div 25}\right) = \dfrac{1}{4}$$

$$3\% = \dfrac{3}{100}$$

Note that **percents greater than or equal to 100 become improper fractions** which will be rewritten as mixed numbers.

$$110\% = \frac{110}{100} = 1\frac{10}{100} = 1\frac{1}{10}$$

$$100\overline{)110} \quad \frac{100}{10}$$

$$120\% = \frac{120}{100} = 1\frac{20}{100} = 1\frac{1}{5}$$

$$100\overline{)120} \quad \frac{100}{20}$$

➡ Remember 100% is the whole thing. **100% = 1**

Exercise Eight

Change each percent to a common fraction. Simplify to lowest terms.

a)   31% = _____

b)   11% = _____

c)   2% = _____

d)   78% = _____

e)   20% = _____

f)   50% = _____

g)   75% = _____

h)   60% = _____

i)   8% = _____

j)   95% = _____

k)   16% =   _____   l)   3% =   _____

m)   74% =   _____   n)   100% =   _____

o)   135% =   _____   p)   750% =   _____

q)   400% =   _____   r)   320% =   _____

s)   180% =   _____   t)   282% =   _____

Answers to Exercise Eight

a) $\frac{31}{100}$ b) $\frac{11}{100}$ c) $\frac{1}{50}$ d) $\frac{39}{50}$

e) $\frac{1}{5}$ f) $\frac{1}{2}$ g) $\frac{3}{4}$ h) $\frac{3}{5}$

i) $\frac{2}{25}$ j) $\frac{19}{20}$ k) $\frac{4}{25}$ l) $\frac{3}{100}$

m) $\frac{37}{50}$ n) 1   o) $1\frac{7}{20}$ p) $7\frac{1}{2}$

q) 4   r) $3\frac{1}{5}$ s) $1\frac{4}{5}$ t) $2\frac{41}{50}$

Percents Less than 1%

Sometimes a percent **smaller than 1%** is used. For example, you will hear amounts such as $\frac{1}{4}$% or $\frac{1}{8}$% or $\frac{1}{2}$% on the news about the Bank of Canada rate and the rise and fall of inflation. These are small amounts. Sometimes the expression "$\frac{1}{2}$ of a percentage point" is used instead of "$\frac{1}{2}$%".

What is $\frac{1}{4}$%?

$\frac{1}{4}$% is $\frac{1}{4}$ **of 1%**.

$1\% = \frac{1}{100}$ so $\frac{1}{4}$ of $1\% = \frac{1}{4} \times \frac{1}{100} = \frac{1}{400}$

$\frac{1}{4}\% = 0.25\% = 0.0025$

What is $\frac{1}{2}$%?

$\frac{1}{2}\% = \frac{1}{2}$ of $1\% = \frac{1}{2} \times \frac{1}{100} = \frac{1}{200}$

$\frac{1}{2}\% = 0.5\% = 0.005$

To work with percents less than 1%, change the percent to a decimal by dividing by 100 (move decimal point two places to the left).

$\qquad$ 0.2% $\quad$ = 0.002 $\qquad\qquad\qquad\qquad\qquad$ 0.75% $\quad$ = 0.0075

If the percent is expressed as a common fraction, do this:

- Write the common fraction percent as a decimal percent.

- Divide by 100 (move decimal point two places left).

½ % $\quad$ = 0.5% $\quad\quad$ = 0.005 $\qquad\qquad\qquad$ ¼ % $\quad$ = 0.25% $\quad\quad$ = 0.0025
⅛ % $\quad$ = 0.125% $\quad$ = 0.00125

Exercise Nine

Change each percent to an equivalent decimal.

a) $\frac{1}{2}\%$ = _____

b) 0.6% = _____

c) $\frac{3}{10}\%$ = _____

d) $\frac{3}{5}\%$ = _____

e) 0.75% = _____

f) $\frac{3}{4}\%$ = _____

g) 0.5% = _____

h) $\frac{1}{4}\%$ = _____

i) 0.125% = _____

j) $\frac{1}{3}\%$ = _____

k) $\frac{1}{8}\%$ = _____

l) $\frac{5}{8}\%$ = _____

m) $\frac{1}{16}\%$ = _____

n) $\frac{2}{5}\%$ = _____

Answers to Exercise Nine

a) 0.005   b) 0.006   c) 0.003   d) 0.006
e) 0.0075   f) 0.0075   g) 0.005   h) 0.0025
i) 0.00125   j) $0.00\overline{3}$ k) 0.00125   l) 0.00625
m) 0.000625   n) 0.004

$16\frac{2}{3}\%,\ 33\frac{1}{3}\%,\ 66\frac{2}{3}\%,\ 83\frac{1}{3}\%$ ...

These percents will become repeating decimals. For example

$$33\frac{1}{3}\% = 33.\overline{3}\% = 0.33\overline{3}$$

$$66\frac{2}{3}\% = 66.\overline{6}\% = 0.66\overline{6}$$

It is usually more convenient to use the common fraction equivalent of these percents. Memorize them, or make a note on a special paper and post it near your work space.

$$33\frac{1}{3}\% = 33\frac{1}{3} \div 100 = \frac{100}{3} \times \frac{1}{100} = \frac{1}{3}$$

$$66\frac{2}{3}\% = 66\frac{2}{3} \div 100 = \frac{200}{3} \times \frac{1}{100} = \frac{2}{3}$$

$$16\frac{2}{3}\% = \frac{1}{6}$$

$$33\frac{1}{3}\% = \frac{1}{3}$$

$$66\frac{2}{3}\% = \frac{2}{3}$$

$$83\frac{1}{3}\% = \frac{5}{6}$$

Review of Equivalent Common Fractions, Decimals, and Percents

Complete this chart. These are equivalents that you will often use, so use this chart for reference. Memorize as many equivalents as you can. You may wish to put other equivalents on the chart.

Common Fraction	Decimal	Percent
$\dfrac{1}{4}$		
	0.5	
		75%
$\dfrac{1}{8}$		
	0.375	
		62.5%
$\dfrac{7}{8}$		
	0.2	
		40%
$\dfrac{3}{5}$		
	0.8	
$\dfrac{2}{2}=\dfrac{3}{3}=\dfrac{4}{4}=\dfrac{5}{5}=1$		

$\frac{1}{6}$		
	$0.3\overline{3}$	
		$66.\overline{6}\%$
$\frac{5}{6}$		
	0.1	
		30%
$\frac{7}{8}$		
	0.9	
	1	

Answers to Review of Equivalent Common Fractions, Decimals, and Percents

Common Fraction	Decimal	Percent
$\frac{1}{4}$	0.25	25%
$\frac{1}{2}$	0.5	50%
$\frac{3}{4}$	0.75	75%
$\frac{1}{8}$	0.125	12.5%
$\frac{3}{8}$	0.375	37.5%
$\frac{5}{8}$	0.625	62.5%
$\frac{7}{8}$	0.875	87.5%
$\frac{1}{5}$	0.2	20%
$\frac{2}{5}$	0.4	40%
$\frac{3}{5}$	0.6	60%
$\frac{4}{5}$	0.8	80%
$\frac{2}{2}=\frac{3}{3}=\frac{4}{4}=\frac{5}{5}=1$	1	100%
$\frac{1}{6}$	$0.1\overline{6}$	$16.\overline{6}\%$
$\frac{1}{3}$	$0.3\overline{3}$	$33.\overline{3}\%$ or $33\frac{1}{3}\%$
$\frac{2}{3}$	$0.6\overline{6}$	$66.\overline{6}\%$ or $66\frac{2}{3}\%$
$\frac{5}{6}$	$0.8\overline{3}$	$83.\overline{3}\%$
$\frac{1}{10}$	0.1	10%
$\frac{3}{10}$	0.3	30%
$\frac{7}{8}$	0.875	87.5%
$\frac{9}{10}$	0.9	90%
e.g. $\frac{9}{9}$	1	100%

Topic A: Self-Test

A. Write these percents in numeral form.   **3 marks**

a) sixty-two and one-half percent   _____

b) eight percent   _____

c) one hundred six and one-fifth percent   _____

B. Write these percents in words.   **3 marks**

a) 72% _____

b) $120\frac{1}{4}\%$ _____

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

C. Change the percents to decimal fractions.   **10 marks**

a)   32%   _____   b) 10%   _____

c)   18.5%   _____   d) 125%   _____

e)   1%   _____   f) 0.25% _____

g) $44\frac{1}{2}\%$ _____   h) $\frac{3}{4}\%$ _____

i) $\frac{4}{5}\%$ _____   j) $\frac{2}{3}\%$ _____

D. Change these percents to common fractions in lowest terms.   **6 marks**

a) 16% _____

b) 20% _____

c) 106% _____

d) 100% _____

e) 75% _____

f) 5% _____

E. Change these common fractions to equivalent percents.   **4 marks**

a) $\frac{4}{5}$ _____

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

c) $\frac{3}{8}$ _____

d) $\frac{11}{12}$ _____

Answers to Topic A Self-Test

Part A
a) 62.5 % **or** $62\frac{1}{2}$ %   b) 8 %   c) 106.2 % **or** $106\frac{1}{5}$ %

Part B
a) seventy-two percent   b) one hundred twenty and one-quarter percent
c) three-quarters percent

Part C
a) 0.32	b) 0.10	c) 0.185	d) 1.25
e) 0.01	f) 0.0025	g) 0.445	h) 0.0075
i) 0.008	j) $0.00\overline{6}$		

Part D
a) $\frac{4}{25}$	b) $\frac{1}{5}$	c) $1\frac{3}{50}$	d) 1
e) $\frac{3}{4}$	f) $\frac{1}{20}$		

Part E
a) 80 %	b) 25 %	c) 37.5 %	d) $91.\overline{6}$ %

Unit 2 Review

1. Change these decimals to percents.

a) 0.75 _____   b) 0.34 _____

c) 0.156 _____   d) 0.03 _____

e) 0.0035 _____   f) 0.625 _____

g) 0.048 _____   h) 0.67 _____

i) 3.45 _____   j) 2.37 _____

2. Change each percent to a decimal.

a) 59% _____   b) 42% _____

c) 39.5% _____   d) 152% _____

e) 4.3% _____   f) 1% _____

g) $3\frac{1}{2}\%$ _____   h) $5\frac{3}{4}\%$ _____

i) $32\frac{1}{3}\%$ _____   j) $4\frac{1}{4}$ _____

k) $1\frac{4}{5}\%$ _____   l) $4\frac{3}{5}\%$ _____

3. Change each fraction to an equivalent percent.
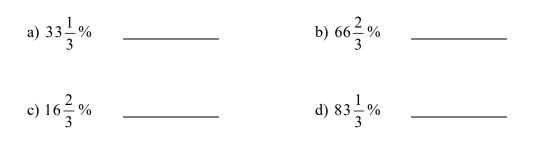
a) $\frac{6}{10}$ _____   b) $1\frac{3}{4}$ _____

c) $\frac{1}{5}$ _____   d) $4\frac{3}{20}$ _____

e) $\dfrac{5}{19}$ _____

f) $\dfrac{9}{20}$ _____

g) $1\dfrac{1}{4}$ _____

h) $2\dfrac{1}{3}$ _____

i) $\dfrac{7}{50}$ _____

j) $3\dfrac{17}{25}$ _____

4. Change each percent to a common fraction. Simplify your answer.

a) 16% _____

b) 25% _____

c) 110% _____

d) 95% _____

e) 650% _____

f) 284% _____

g) $\dfrac{1}{4}$% _____

h) $\dfrac{1}{2}$% _____

i) $\dfrac{1}{8}$% _____

j) $\dfrac{3}{5}$% _____

k) 0.125% _____

l) $\dfrac{1}{16}$% _____

m) $\dfrac{5}{8}$% _____

n) 0.7% _____

o) $\dfrac{3}{4}$% _____

p) 0.25% _____

5. Change each percent to a common fraction. These few should be memorized.

a) $33\frac{1}{3}\%$ _____

b) $66\frac{2}{3}\%$ _____

c) $16\frac{2}{3}\%$ _____

d) $83\frac{1}{3}\%$ _____

Answers to Review

1.
a) 75% b) 34% c) 15.6% d) 3%
e) 0.35% f) 62.5% g) 4.8% h) 67%
i) 345% j) 237%

2.
a) 0.59 b) 0.42 c) 0.395 d) 1.52
e) 0.04$\underline{3}$ f) 0.01 g) 0.035 h) 0.0575
i) 0.32$\overline{3}$ j) 0.0425 k) 0.018 l) 0.046

3.
a) 60% b) 175% c) 20% d) 415%
e) 26.3% f) 45% g) 125% h) 233.$\overline{3}$%
i) 14% j) 368%

4.

a) $\frac{4}{25}$ b) $\frac{1}{4}$ c) $1\frac{1}{10}$ d) $\frac{19}{20}$

e) $6\frac{1}{2}$ f) $2\frac{21}{25}$ g) $\frac{1}{400}$ h) $\frac{1}{200}$

i) $\frac{1}{800}$ j) $\frac{3}{500}$ k) $\frac{0.125}{100}$ or $\frac{1}{800}$ l) $\frac{1}{1600}$

m) $\frac{1}{160}$ n) $\frac{0.7}{100}$ or $\frac{7}{1000}$ o) $\frac{3}{400}$ p) $\frac{0.25}{100}$ or $\frac{1}{400}$

5.

a) $\frac{1}{3}$ b) $\frac{2}{3}$ c) $\frac{1}{6}$ d) $\frac{5}{6}$

TEST TIME!

Ask your instructor for
the Practice Test for this unit.

Once you've done the practice test,
you need to do the unit 2 test.

Again, ask your instructor for this.

Good luck!