Unit 5

Percent, Ratio, and Rate

Social Security: Worker to Beneficiary Ratio

1960: 5.1 to 1   2009: 3.0 to 1   2030: 2.2 to 1
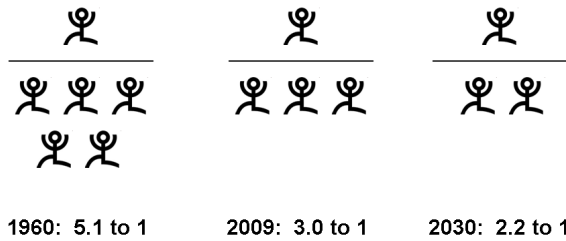
Source: Social Security Administration Trustees Report Table IV.B2
Ratio of covered workers to beneficiaries

<u>Percent to Decimal</u>

34% = 0.34

because 34 / 100 =

- divide the percent by 100

$34.$

Decimal to Percent

0.2 = **20 %**

because 0.2 x 100 =

0.378 = **37. 8 %**

because

- multiply by 100

tenths hundradth thousandths

Reduce fraction

Decimal to Fraction

0.125 = $\dfrac{125}{1000}$ $\begin{matrix}\div 125 \\ \div 125\end{matrix}$ $= \dfrac{1}{8}$

-Place values help

　　* the place value is the denominator

　　* NO decimals in fractions

-Always reduce

Fraction to Decimal

-Divide top number by bottom number on a calculator

$\dfrac{2}{7}$

$2 \div 7$

$= 0.2857$

- Some fractions you can write as equivalent fractions with denominator of 100

x5

$\dfrac{7}{20}$ = $\dfrac{35}{100}$ $= 0.3\underline{5}$

x5

Percent to Fraction

-Whole number put over 100

$\div 2$

26% = $\dfrac{26}{100}$ Reduce $= \dfrac{13}{50}$

$\div 2$

- NO Decimals in fractions so write equivalent fractions

12.5% =

$\overrightarrow{decimal}$ 0.125 $\Rightarrow$ $\dfrac{125}{1000} = \dfrac{1}{8}$

Fraction use place value

$12.5 \% \Rightarrow \dfrac{12.5}{100} \begin{matrix}x10 \\ x10\end{matrix} = \dfrac{125}{1000} = \dfrac{1}{8}$

Not Fraction

Relating Fractions, Decimals and Percent

What is percent?

Percent is a special ratio where the second term is always 100 or it is out of 100.

How do you change a percent to a decimal or fraction?

% to Decimal
÷ 100

Percent	Reduce Fraction	Decimal
18%	$\frac{18}{100} = \frac{9}{50}$	0.18
75%	$\frac{3}{4}$ 3/4	0.75
45%	$\frac{45}{100} \begin{smallmatrix}÷5\\÷5\end{smallmatrix} \frac{9}{20}$	0.45
35%	7/20 7÷20	0.35
83%	$\frac{83}{100}$	0.83
55%	$\frac{5}{9}$ 5/9	$0.\overline{55}$

$\frac{1}{9} = 0.\overline{1}$

$\frac{2}{9} = 0.\overline{2}$

$\frac{3}{9} = \frac{1}{3} = 0.\overline{33}$

Think test results
What is the decimal value? the percentage?

$$\frac{62}{82}$$

$62 \div 82$
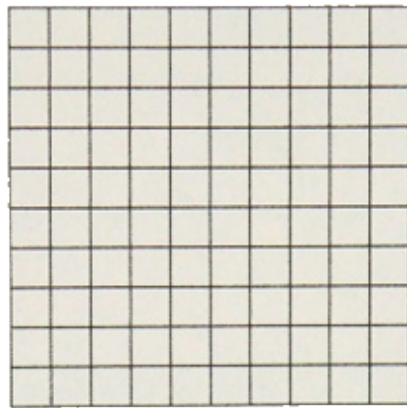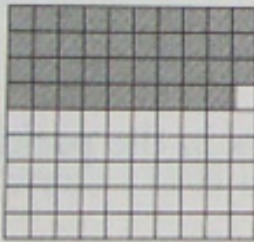
0.75

decimal

$\xrightarrow{\times 100}$

75%

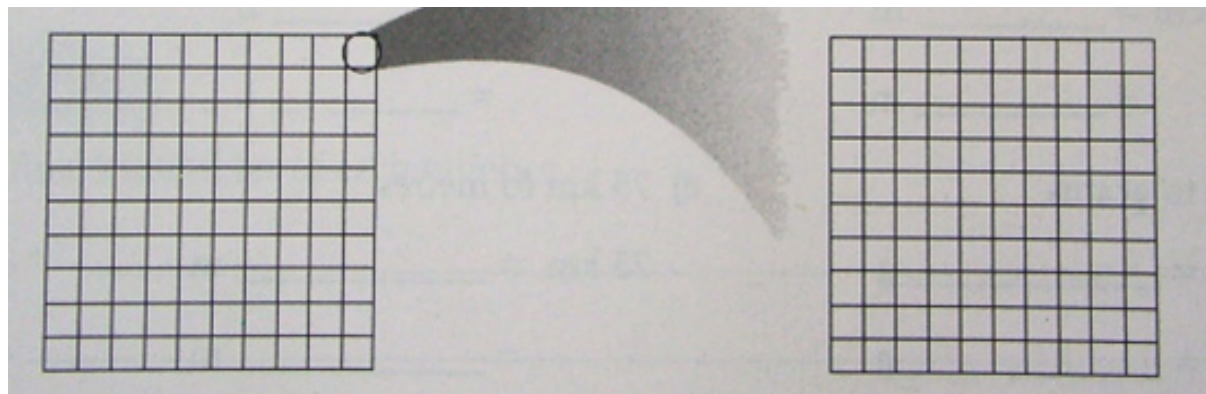We can use a hundred chart to represent one whole or 100%. Each small square represents 1%.

Each hundred chart represents 100%. What fraction is shaded?
Write each fraction as a decimal and as a percent.

a) **39%**

b) **80.5%**

One small square on a hundred chart can be enlarged to show 100 squares.
This is called a hundredths chart.

Each small square of a hundredths chart represents $\frac{1}{100}$ of 1%, or $\frac{1}{100}$ %,
or 0.01%

Percent to decimal remember to divide by 100

Be careful not to confused a
decimal percent to a decimal

0.2% is 0.002 as a decimal

0.007% =   as a decimal

Write each percent as a fraction and a decimal:

(a) 7% 7.%

0.07 $\dfrac{7}{100}$

(b) 7.75% % ÷100 ↓decimal

0.0775 $\dfrac{775}{10000} = \dfrac{31}{400}$

(c) 7 1/4 %

7.25% —÷100→ 0.0725 —→ $\dfrac{725}{10000} = \dfrac{29}{400}$

Write each fraction as a decimal and as a percent:

(a) $\dfrac{5}{8}$

Fraction → decimal
5 ÷ 8
0.625   —×100→   62.5%

(b) $\dfrac{5}{6}$

0.8$\overline{3}$ —×100→   8$\overline{3}$%

(c) $\dfrac{5}{1000}$ = 0.005   —×100→   0.5%

Buffy had 23 $\frac{1}{2}$ out of 30 on her math test

She had 21 $\frac{1}{2}$ out of 40 on her second math test

On which test did Buffy do better?   **1st Test**

Use calculators

1st

$$\frac{23\frac{1}{2}}{30} \Rightarrow \frac{23.5}{30} \Rightarrow 0.78 = 78\%$$

2nd

$$\frac{21\frac{1}{2}}{40} \Rightarrow \frac{21.5}{40} \Rightarrow 0.5375 = 53.75\%$$

Class/Homework

Practice Questions

% → fract → dec

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