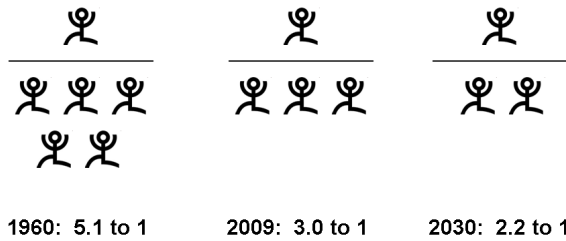


Unit 5

Percent, Ratio, and Rate



Social Security: Worker to Beneficiary Ratio



Source: Social Security Administration Trustees Report Table IV.B2
Ratio of covered workers to beneficiaries

Percent to Decimal

$$34\% = 0.34$$

because $34 / 100 =$

- divide the percent by 100

Decimal to Percent

$$0.2 = 20\%$$

because $0.2 \times 100 =$

$$0.378 = 37.8\%$$

because

- multiply by 100

(move decimal to right 2 places)

Decimal to Fraction

-Place values help

* the place value is the denominator

* NO decimals in fractions

-Always reduce

$$0.125 = \frac{125}{1000} \div 25 = \frac{5}{40} \div 5 = \frac{1}{8}$$

Stops in thousandths

Fraction to Decimal

means \div -Divide top number by bottom number on a calculator
 $\rightarrow \frac{2}{7} = 0.285$

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

$$\frac{7}{20} = \frac{35}{100} = 0.35$$

(Note: $7 \times 5 = 35$ and $20 \times 5 = 100$)

Percent to Fraction

-Whole number put over 100

$$26\% = \frac{26}{100} = \frac{13}{50}$$

(Note: Reduce 26/100 to 13/50)

- NO Decimals in fractions so write equivalent fractions

$$12.5\% = 0.125$$

(Note: 100 Decimal place value)

$$\frac{12.5 \times 10}{100 \times 10} = \frac{125}{1000} \div 125 = \frac{1}{8}$$

Can't have a decimal in a fraction.

$$\frac{7}{10}$$

$$0.\underline{7}$$

$$\frac{22}{100}$$

$$.\underline{2}\underline{2}$$

$$\frac{8}{1000}$$

$$0.\underline{0}\underline{0}\underline{8}$$

$$\frac{17}{10}$$

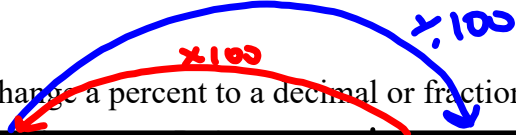
$$1.\underline{7}$$

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%	$\frac{18}{100} \div 2 = \frac{9}{50}$	0.18
75%	$\frac{3}{4} \times \frac{25}{25} = \frac{75}{100}$	0.75
45%	$\frac{45}{100} = \frac{9}{20}$	0.45
35%	$\frac{7}{20} \times \frac{5}{5} = \frac{35}{100}$	0.35
83%	$\frac{83}{100}$	0.83
55%	5/9	0.55

$\frac{1}{9} = 0.\overline{1}$
 $\frac{2}{9} = 0.2$
 $\frac{3}{9} = \frac{1}{3} = 0.\overline{3}$

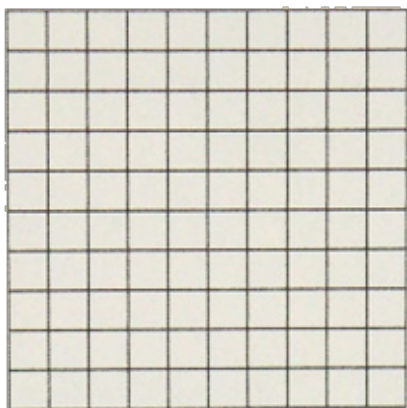
Think test results

What is the decimal value? the percentage?

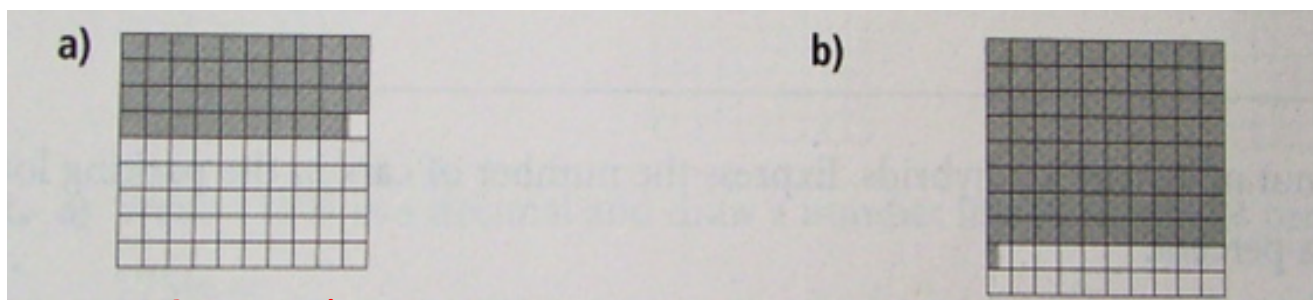
$$\frac{62}{82} = \overset{\text{Decimal}}{0.75} \xRightarrow{\times 100} 75\%$$

Top \div Bottom \Rightarrow Decimal $\xrightarrow{\times 100}$ %

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



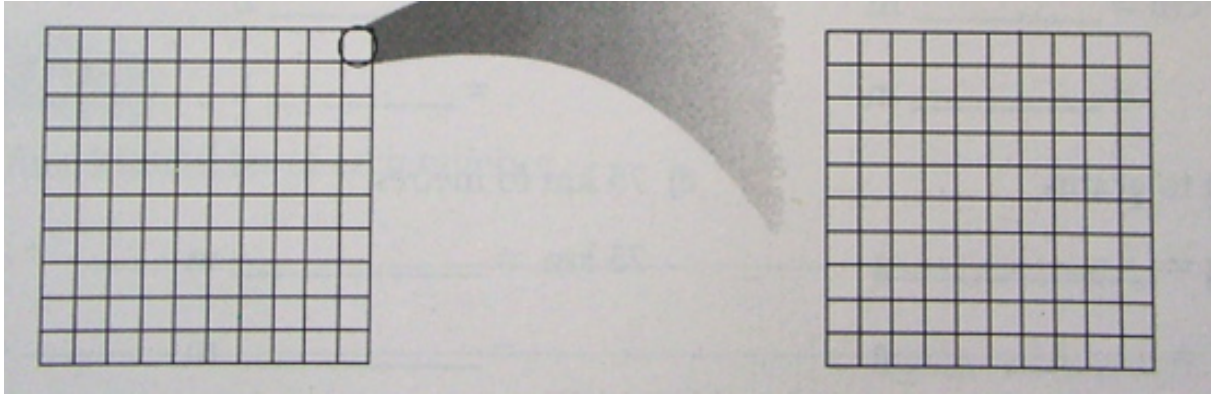
Each hundred chart represents 100%. What fraction is shaded?
Write each fraction as a decimal and as a percent.



39%

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

$\div 100$ to get decimal

0.2% is 0.002 as a decimal

0.007% = 0.00007 as a decimal

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?

Use calculators