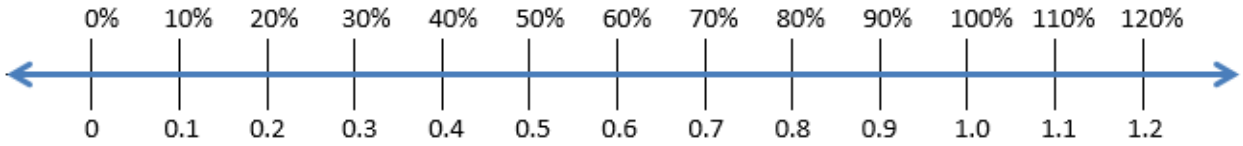
Converting Between Percentages and Decimals

PART A – Converting Decimals to Percentages

Decimal numbers, like whole numbers can be placed on a number line.

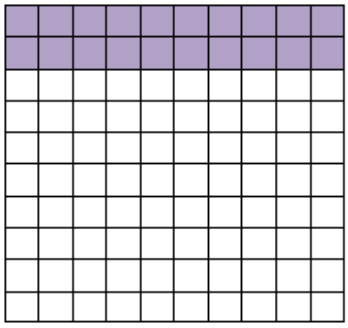
Since **100% = 1 whole**, numbers greater than 0 but less than 1 are between zero 0% and 100%. Furthermore, numbers greater than one, are greater than 100%.



Thus, decimal numbers are converted to percentages by multiplying the decimal number by 100%.

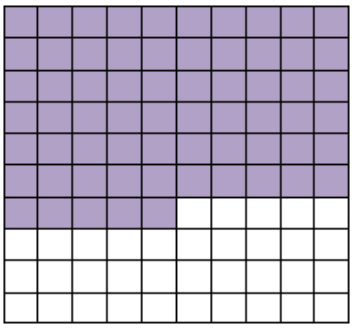
Example 1: **0.2**

0.2 x 100% = 20%



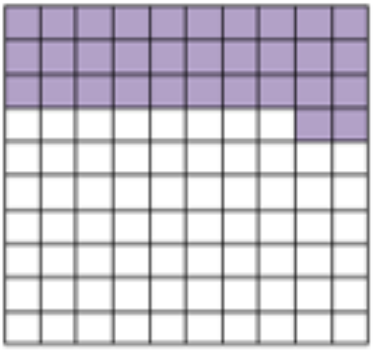
Example 2: **0.65**

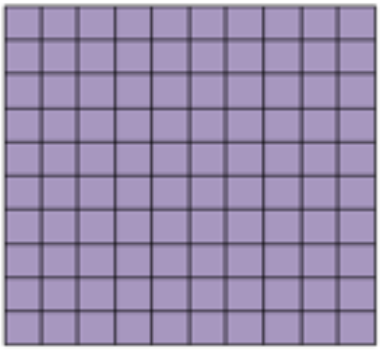
0.65 x 100% = 65%



Example 3: **1.32**

1.32 x 100% = 132%





PART B – Converting Percentages to Decimals

To convert a decimal number to a percentage, we ***multiplied*** the decimal number by 100%.

Thus, to convert a percentage to a decimal number, we *divide* the percentage by 100%.

Examples:

1) (Y) = 8%

$8 \div 100 = 0.08$

2) (P) = 39.5%

$39.5 \div 100 = 0.395$

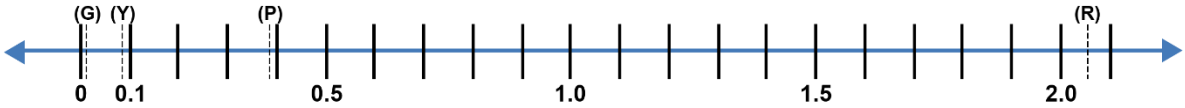
3) (G) = 0.25%

$0.25 \div 100 = 0.0025$

4) (R) = 205%

$205 \div 100 = 2.05$

These decimals and percentages can be placed on a number line.



Notes:

- When multiplying a number by a power of ten, like 10, 100, or 1000, move the decimal point to the right for as many zeros the power of ten has.

  $2.3 \times 10 = 23$ $2.3 \times 100 = 230$ $2.3 \times 1000 = 2300$

- When dividing a number by a power of ten, like 10, 100, or 1000, move the decimal point to the left for as many zeros the power of ten has.

  $2.3 \div 10 = 0.23$ $2.3 \div 100 = 0.023$ $2.3 \div 1000 = 0.0023$

Exercises:

1) Convert the following decimals to percentages:

a) 0.58 = b) 0.013 = c) 1.87 = d) 32.5 =

e) 0.23 = f) 0.203 = g) 0.5 = h) 4.05 =

2) Convert the following percentages to decimal numbers and plot them on a number line:

a) 45% =

b) 80% =

c) 24.2% =

d) 901% =

e) 68.502% =

f) 0.05% =

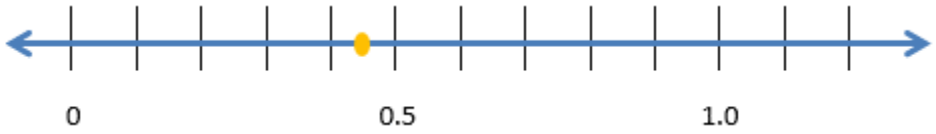
Solutions:

1) Convert the following decimals to percentages:

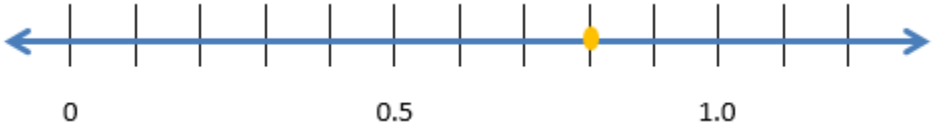
a) 0.58 = 58%
b) 0.013 = 1.3%
c) 1.87 = 187%
d) 32.5 = 3250%
e) 0.23 = 23%
f) 0.203 = 20.3%
g) 0.5 = 50%
h) 4.05 = 405%

2) Convert the following percentages to decimal numbers and plot them on a number line:

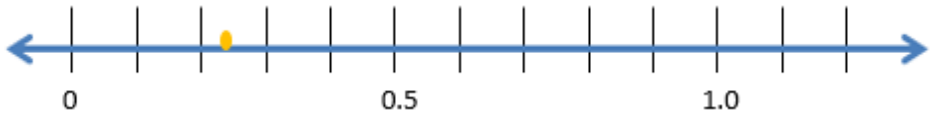
a) 45% = **0.45**



b) 80% = **0.8**

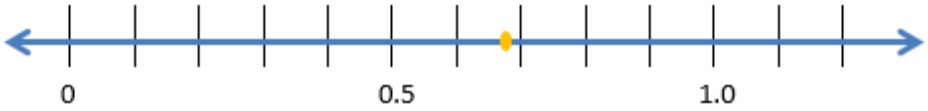


c) 24.2% = **0.242**



d) 901% = **9.01**

e) 68.502% = **0.68502**



f) 0.05% = **0.0005**