

BJC MATHEMATICS TUTORIALS

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Suggested Mathematic texts:

Math Matters Book 1

By Geoff Buckwell & Robert Soloman

Nelson Caribbean Mathematics Book 1 & 2

By Marlene Folkes & Mary Maxwell

What We'll Cover in This Lesson

- Prime & Composite Numbers
- Vulgar Fractions
 - Proper Fractions
 - Equivalent Fractions
 - Reducing Fractions
 - Improper Fractions/Mixed Numbers
- Decimal Fractions
 - Writing decimal fractions as vulgar fractions
 - Changing vulgar fractions to decimal fractions
- Percents
 - Changing vulgar and decimal fractions to percentages
 - Finding a percentage of a given amount

Prime & Composite Numbers

- **Prime Numbers** are numbers whose only factors are 1 and itself
 - Except for 2, every other prime number is odd.

$$5 = 1 \times 5 \qquad 7 = 1 \times 7$$

$$2, 3, 5, 7, 11, 13, 17, \dots$$

- **Composite Numbers** are numbers that are not prime

$$9 = 1 \times 9$$

$$10$$

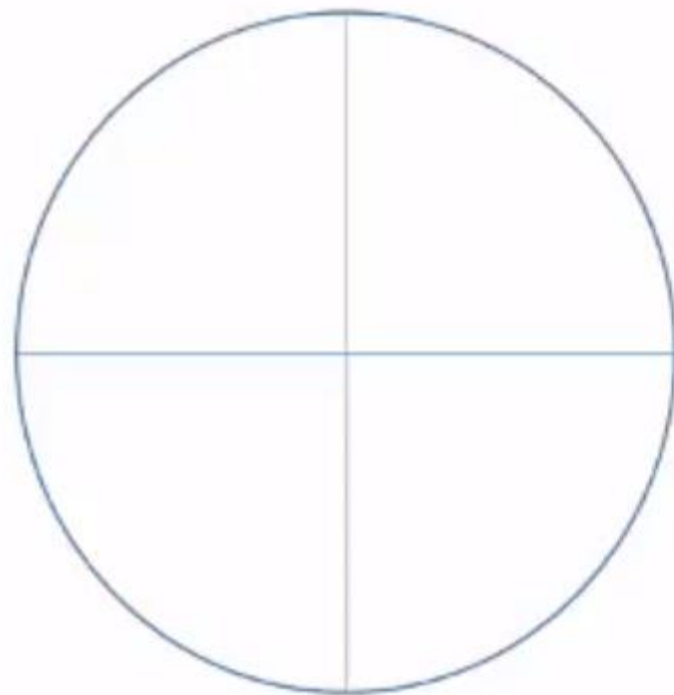
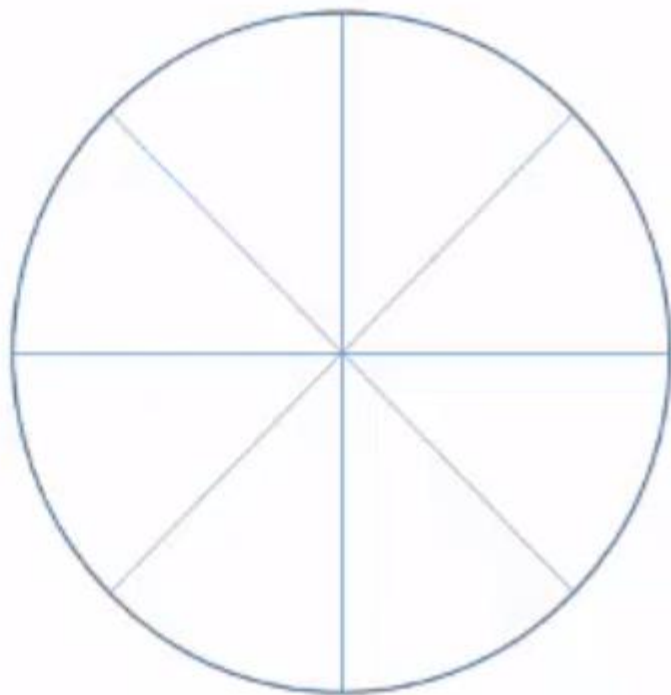
$$9 = 3 \times 3$$

Fractions

- A **fraction** represents a part (or parts) of a whole
 - The **denominator** (**bottom number**) represents how many equal parts the whole is divided into
 - The **numerator** (**top number**) in the fraction represents how many of the parts are taken (or remain, depending on the context)
 - Examples:
- *A vulgar fraction whose numerator is less than the denominator is a **proper fraction***

Equivalent Fractions

- **Equivalent fractions** are fractions that represent the same value though their numerators and denominators are different



Reducing Fractions

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

- Step 1: Find a factor (but not 1) that both the numerator and denominator have in common
- Step 2: Divide both the numerator and denominator by this common factor
- Step 3: Repeat Steps 1 and 2 until the numerator and denominator no longer have any factors in common (until it is in “lowest terms”)

Reducing Fractions Practice

- Reduce the fractions completely:

1) $\frac{5}{10}$

2) $\frac{9}{15}$

Mixed Numbers and Improper Fractions



- **Mixed Number**: A number consisting of an integer part and a fractional part
 - Examples:

Mixed Numbers and Improper Fractions



- **Mixed Number**: A number consisting of an integer part and a fractional part
 - Examples: $3\frac{1}{2}$
- **Improper Fraction**: A fraction whose numerator is greater than the denominator
 - Examples:

Changing Improper Fractions to Mixed Numbers

$$\frac{12}{5}$$

$$\begin{array}{r} 2 \\ 5 \overline{) 12} \\ \underline{10} \\ 2 \end{array}$$

- Step 1: Divide the numerator by the denominator
- Step 2: The whole number quotient found in Step 1 will be the whole number part of the mixed number
- Step 3:
 - A) The remainder found in Step 1 will be the numerator of the fraction in the mixed number
 - B) The denominator for the mixed number remains the same as it was in the improper fraction

Improper Fraction Mixed Number Practice

- Change the improper fractions to mixed numbers:

1) $\frac{10}{3}$

2) $\frac{14}{5}$

Decimals

- **Decimals** are another way to expressing fractional parts of a whole
 - The denominators in decimal fractions are powers of 10
 - The place values to the right of the decimal point mirror those to the left of it

Thousand's	Hundred's	Ten's	One's	.	Tenth's	Hundredth's	Thousandth's
			0	.	3	5	
			0	.	0	1	9

Changing Decimals to Vulgar Fractions

0. .

- Step 1: The numerals to the right of the decimal point will be the numerator of the vulgar fraction
- Step 2: Count the number of place values to the right of the decimal point to determine the denominator
 - Hint: **This number will tell you how many 0's are in the denominator**

Changing Decimals to Fractions Practice



- Change the decimals to fractions:

$$1) 0.012$$

$$2) 0.08$$

$$3) 0.3$$

Converting Vulgar Fractions to Decimals



- To convert fractions to decimals, simply divide the numerator by the denominator

Changing Fractions to Decimals Practice



- Change the fractions to decimals:

$$1) \frac{2}{5}$$

$$2) \frac{1}{8}$$

Percent

- **Percent:** means “out of 100”
 - Percentages can be expressed as fractions with a denominator of 100
 - Once in fraction form, reduce if possible

$$15\% = \frac{15 \div 5}{100 \div 5} = \frac{3}{20}$$

- To **change a decimal to a percentage**, multiply the decimal by 100 (move the decimal point 2 places to the right)

$$.78 \times 100 = 78(\%) = \frac{78}{100}$$

- To **change a fraction to a percentage**, change the fraction to a decimal, then multiply by 100

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

Finding a Percentage of a Given Amount



- Example: You get a 90% on a test that had 30 questions. How many questions did you answer correctly?
- Step 1: Change the percentage to a decimal by moving the decimal point 2 places to the left
- Step 2: Multiply the decimal form of the percentage (from Step 1) by the given amount

Practice with Percentages

- Change to a percentage

$$1) 0.15 = 15\%$$

$$2) \frac{1}{4} = .25$$

$$4 \overline{) 1.00} \begin{array}{r} .25 \\ 8 \downarrow \\ 20 \\ 20 \\ 0 \end{array}$$

$$\times 25 = 25\%$$

- 3) You take a test that has 25 questions and get 96% correct. How many questions did you answer correctly?

$$96\% \text{ of } 25 \Rightarrow .96 \times 25 = 24 \text{ questions correct}$$

- 4) Express 48 minutes as a percentage of one hour

$$\frac{48 \text{ mins}}{60 \text{ mins}} = \frac{48 \div 12}{60 \div 12} = \frac{4}{5}$$

$$5 \overline{) 4.0} \begin{array}{r} .8 \\ 40 \\ 40 \\ 0 \end{array}$$

$$\frac{4}{5} = .8 = 80\%$$

