

Basic Math Test Study Guide

The Basic Math Test covers basic skills need by a Technician to succeed in passing CIT² courses and in understanding and performing KDOT test procedures. This guide covers most of the basic principles needed. It is not intended to be self study or all inclusive. The concepts should be presented by a knowledgeable person.

Things to know:

Calculator operation

- Store/recall

- Pi

- Square/square root

- Parenthesis

Order of operations

- PEMDAS, “**P**lease **E**xcuse **M**y **D**ear **A**unt **S**ally”

- Fraction Lines

Variables

Fractions/Decimals

Percentages

Rounding (KDOT method)

Area

- Square/rectangle

- Circles

 - Radius

 - Diameter

- Triangles

- Surface area of a cube

Volume

- Rectangular base

- Circular Base

Solving equations

Word problems

Order of operations

PEMDAS, “**P**lease **E**xcuse **M**y **D**ear **A**unt **S**ally”

Mnemonic to remember:

Going from left to right in an equation, operations inside
Parenthesis, such as $(x+y)$, are done first

Exponents are done next. $X \cdot Y^2$

Multiplication; AB , $A \times B$, $A \cdot B$ or

Division operations; A/B or $A \div B$ are done next

Addition, $2+X$ and

Subtraction $X-a$ are done last

Fraction Lines

Operations or groups of operations above and below the fraction line are completed separately and then the result above the line is divided by the result below the line.

$$\frac{(2+A)A}{2AC} =$$

Variables

Variable: A letter or symbol used to represent a value that may change.

Constant: A value that does not change which may be represented by a symbol. Pi for example has a value of approximately 3.14 and is represented by the symbol π .

1.

Solve the following for $X=2$

$$X \cdot 2 =$$

$$X/2 =$$

$$X+5 =$$

$$3X =$$

$$X^2 =$$

Solve the above if $X=9$

Variables

2.

Solve for X

$$3 \cdot 9 = X$$

$$2 \cdot 5 + 1 = X$$

$$3X = 9$$

3.

Solve these problems if A=5 and C=3

$$A + 2C =$$

$$(A \cdot C) / (C \cdot A) =$$

$$3A + C \cdot A =$$

$$(3A + 7C) / C =$$

Solve for G

$$G = \frac{A}{A - C}$$

$$\frac{(2 + A) \cdot (C^2 + A)}{(2AC)} =$$

4.

$$\alpha = 1.253, z = 2.056, A = 5, Y_a = 10$$

Solve:

$$\alpha + z + Y_a - A =$$

$$\alpha \left(\frac{z \cdot Y_a}{A} \right) =$$

$$(\alpha \cdot \pi) / Y_a =$$

Answers

1. For x=2, 4, 1, 7, 6, 4
For x=9, 18, 4.5, 14, 27, 81

2. 27, 11, 3

3. 11, 1, 30, 12, 2.5, 3.2667

4. 8.309, 5.152336, approx. 0.39