# O-101 Distance Learning Math Practice Assessment Tool

Following are the equations and some definitions that you will use to answer the questions. First of all , relax, this is 8th Grade Basic Geometry. Just pull the information out of the questions and put them into the formulas and go through the steps. At the end, look at your answer and see if it makes sense to you based on what you do in the field everyday…….for example if your answer to a drawdown question with three minutes of run time is 1,500 gallons, then you probably moved a decimal point somewhere…..it just doesn't make sense to be that high a number.

The quiz does not have any "trick" questions and neither does the exam that you will take later.

Take a moment and read through the entire quiz with your pencils down and just get a feel for the type of questions that it is asking you, then go back to the beginning and start.

**Definitions:**

Square: A square always has four equal sides: 5 feet X 5 Feet

Rectangle: A Rectangle always has two equal sides: 4 Feet X 6 Feet

Square Feet:  Square feet are calculated by multiplying the length by the width (4'X 6' = 24 sf')

Volume: This adds the depth of the vessel or tank to the equation and is written as "Cubic Feet" or : ft X ft X ft = cubic (3) feet.

Volume is also converted to Gallons per cubic foot for handling septage. **There are 7.5 Gallons per Cubic Foot of space.**

**Drawdown:**  Based on pump run times, you calculate the drawdown in terms of inches per minute of run time.

**To convert Gallons per Foot to Gallons per Inch in a tank, you simply divide the gallons per square foot of liquid by 12 inches (in a foot) to get the number of gallons per inch. An example is a typical Delgado tank is about 25 gallons per inch of depth.**

When it comes to circular tanks it can be a little more confusing, but the process of determining volumes, square footage, cubic feet and gallons per/inch follows the process with formulas that allows you to simply plug in the information that you pull out of the questions into the correct formula and do the math with a basic calculator.

**Circle:** In a "plan" view, this is like looking down on a 55 gallon drum. The circle is the top of the drum.

Diameter:  The "diameter" is the distance measured *across* the top of the circle from edge to edge.

Radius:  The Radius is the distance measured from the center of any circle to the outside edge: A circle that has a "Diameter" of 6 (six) feet, has a "*Radius*" of 3 feet.

Pi: This number is called a "constant" and is used to standardize the calculation for square feet in any circular calculation. **It never changes in the formula and is written as a simple number: 3.14**

*Area of A Circle:*  The basic formula for determining the area of a circle is Pi X the radius squared ( the radius is times itself. >>>>>>>>>>> If the diameter is 6' then the radius is 3 feet and the formula would be written thus:

**3.14 X 3X 3 or…. 3.14 X 9 = Area of a circle in Square Feet…….multiply your answer times the height or length and you get "cubic feet". Multiply that by 7.5 gallons per cubic foot and you get the gallonage of the tank.**

Issue date:   5/2010

# O-101 Distance Learning Math Practice Assessment Tool

Practical Application Questions:

1.) You arrive at the customer's site and after your initial interview you poke around in the back yard and find the top of the lid on the gravity system that you are inspecting. After cleaning the top of the tank off to get access to the lids, you determine that the tank is 5 feet by 7 feet long and is 5 feet deep.

Using the information in the above description, answer the following questions and write out your work:

A.)        How many *square feet* is the top of the tank?
B.)        How many *cubic feet* are contained in the tank?
C.)        What is its volume in gallons if one cubic foot is 7.5 gallons?


Answers:………write out your work!



2.) On your second stop of the day, you are going to inspect and test a simple pressure system on demand. You locate the septic tank and the pump tank…..you determine the pump tank to be 4 feet wide X 5 feet long X 5 feet high. Your run time on the pump is 3 minutes and the tank measure line show it went down 3 inches.

Using the information in the above description, answer the following questions and write out your work:

A.)        What are the total cubic feet of the tank?
B.)        How many total gallons in the tank?
C.)        What is the number of gallons per inch in the tank?
D.)        What was the dose volume going out to the drainfield?



Answers:………write out your work!


3.) Up bright and early the next day, you're off to your third job of the week and it's an old gravity system but the tank is 5 feet across and a circular tank. After measuring it, you determine that it is also 6 feet deep.

Using the information in the above description, answer the following questions and show your work:


A.)        How many *square feet* are in the top surface of the tank?
B.)        How many *cubic feet* are in the tank in total?
C.)        How many *total gallons* are in the tank?
D.)        How many *gallons per inch* are there?


Write out your work!:



Issue date:   5/2010

# O-101 Distance Learning Math Practice Assessment Tool

**Answer page:**

**Question 1:**

    **A.) 35 square feet. (5 X 7)**
    **B.) 175 cubic feet. (5 X 7 X 5)**
    **C.) 1312.5  total gallons. ( 5 X 7 X 5 X 7.5g/cft)**

**Question 2:**

    **A.  100cf ( 4 X 5 X 5)**
    **B.  750 gallons. ( 4 X 5  X 5 X 7.5)**
    **C.  12.5 gallons per inch.  ( 4 X 5 X 5 X 7.5/60)**
    **D.  37.5 dose gallons.  (4 X 5 X 5 X 7.5/60 X 3 in drawdown)**

**Question 3: Formula = (Pi X Radius squared) X  the other dimensions**

    **A.  19.6 sq/ft ( 3.14 X 2.5 X 2.5)**
    **B.  117.6 cubic feet. ( 3.14 X 2.5 X 2.5 X 6')**
    **C.  882 total gallons. ( 3.14 X 2.5 X 2.5 X 6 X 7.5 gal/cubic/ft)**
    **D.  12.25 gal/inch.  ( 3.14 X 2.5 X2.5 X 6 X 7.5 / 72") note: 6' is 72 inches**