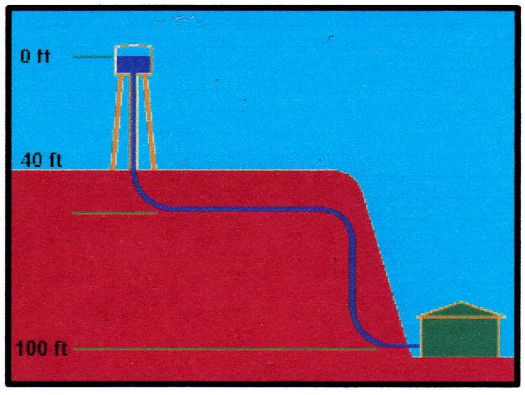
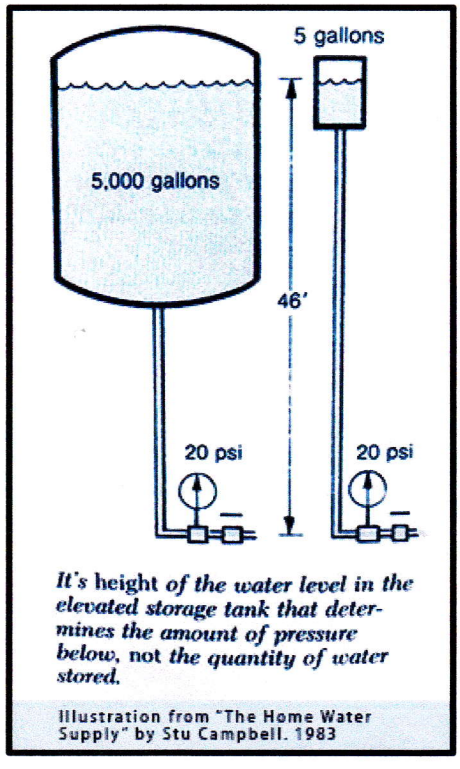
PRESSURE 101



1. In this picture the water pressure in the water tank at the top of the water surface level is 0 feet of head, or you could also say there is 0 PSI. This is because the is no water above it to create pressure. Head is another word that indicates pressure, it is mostly used when measuring pressure created by the depth of water. So 10 feet of depth = 10 feet of head.

2. Looking again at the picture above, we see that the ground level is 40 feet below the water level in the tank. Therefore the water pressure at ground level is 40 feet of head. Again 40 feet of depth = 40 feet of head. Now lets convert that to pressure measure in PSI. 1 foot of elevation change creates 0.433 PSI of water pressure. So in this case 40 feet of head is going to be about 17 PSI. (40 ft head x 0.433 psi/ft = 17.3 PSI.) Again, the formula is "feet of head x 0.433 = PSI.

3. Since water is essentially a non-compressible liquid it exhibits the unique trait of transferring pressure horizontally when in a confined space. What this means is that water in a pipe (which is a confined space) exhibits the same pressure as it would if the pipe were perfectly vertical. even if the pipe isn't.



4. In the drawing above the water enters the house at a level 100 feet below the water level in the tank. So the static water pressure at the house is 100 feet of head, or about 43.3 PSI. The water level is not just 100 feet above the house there is also easily 180 feet of pipe between the tank and the house! The answer is that the length of a pipe does not matter when water is static in the pipes. Static means the water is not flowing. This is very important! Because the water is a non-compressible liquid it transfers the pressure horizontally along the pipe route for pretty much any distance without any loss of pressure! This is why a small hose filled with hydraulic fluid can cause the brakes on every wheel of a mile long train to apply when the engineer hits the brakes! (www.irrigationtutorials.com)

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