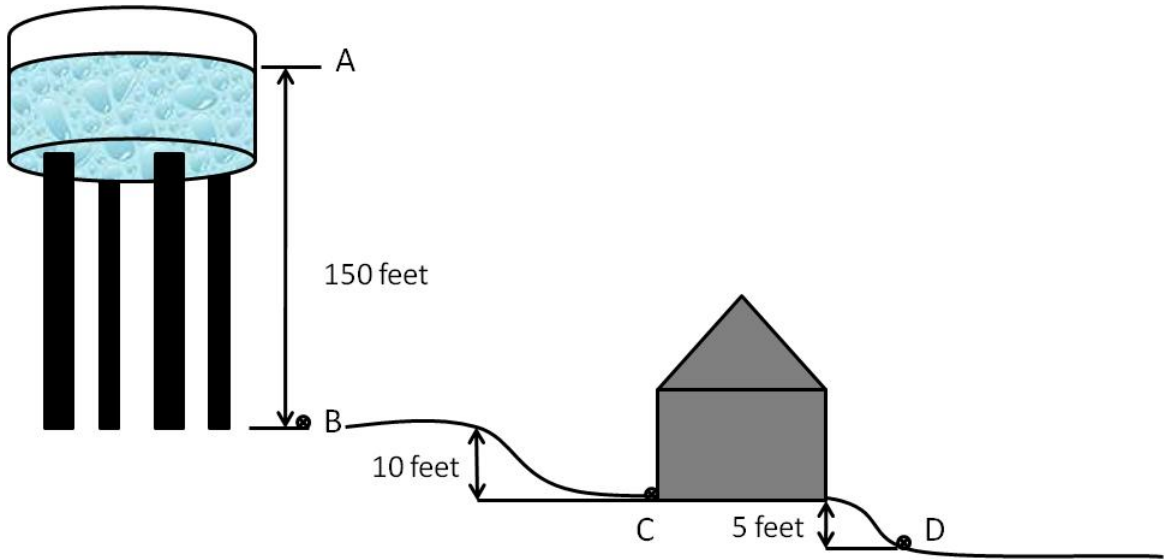


Worksheet 1 – Basic Hydraulics

1. Calculate the equivalent pressures in feet of head or psi as required.

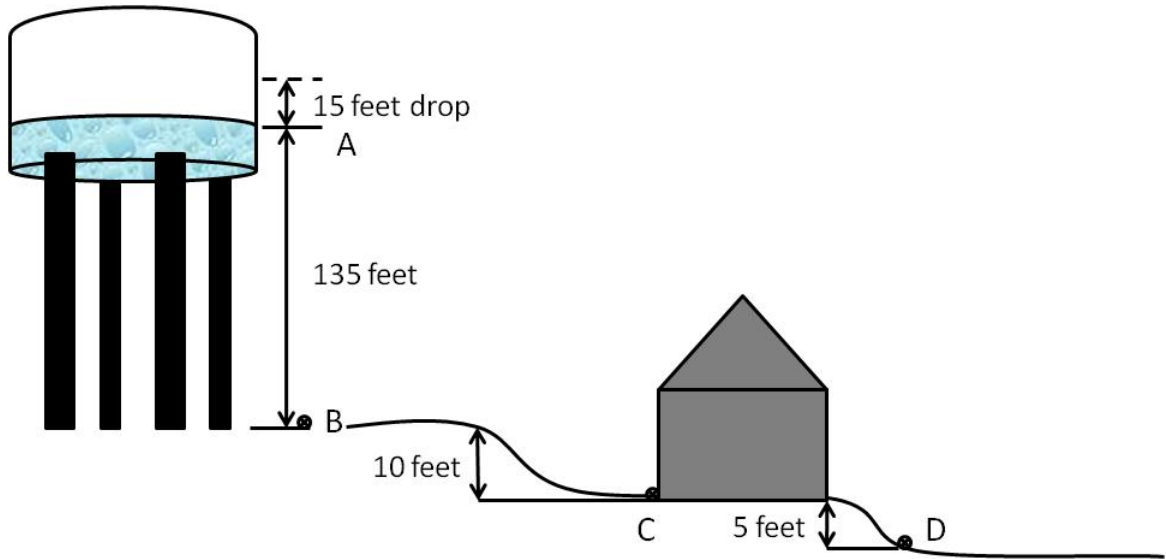
- a. 75 psi = _____ feet of head
- b. 120 feet of head = _____ psi
- c. 60 psi = _____ feet of head
- d. 30 feet of head = _____ psi
- e. 260 feet of head = _____ psi
- f. 10 psi = _____ feet of head

2. The water level in a water tower is 150 feet above ground level. Given the following diagram, calculate the static water pressure (in feet of head and psi) at points B, C and D.



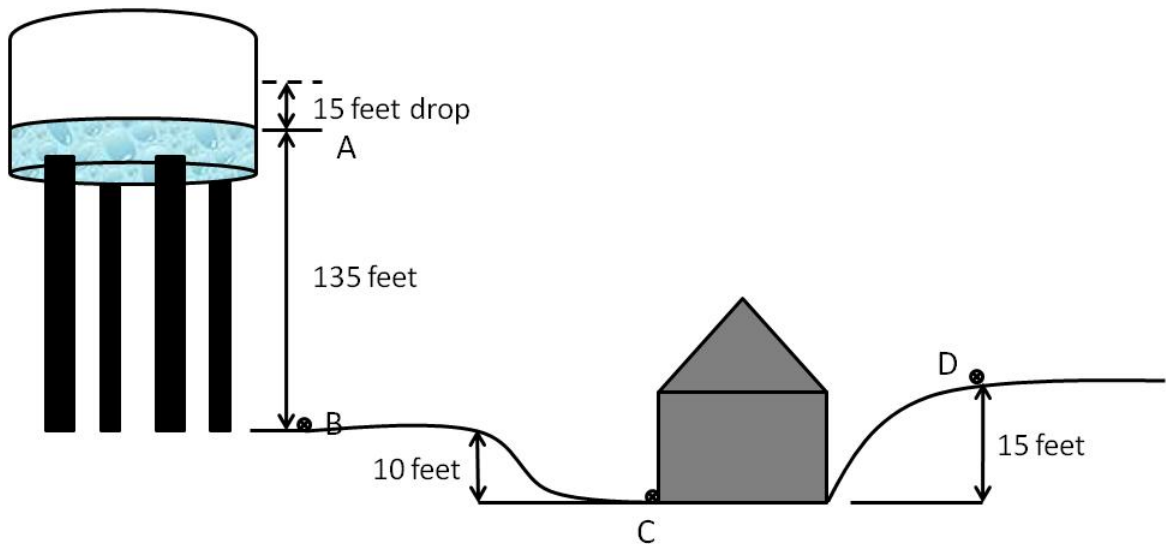
Water pressure at B: _____ feet of head, _____ psi
 Water pressure at C: _____ feet of head, _____ psi
 Water pressure at D: _____ feet of head, _____ psi

3. After two weeks without rainfall, water used for landscape irrigation increased dramatically causing the water level in the tower to fall 15 feet. Based upon the new water tower level and diagram given, recalculate the static water pressure (in feet of head and psi) for B, C and D.

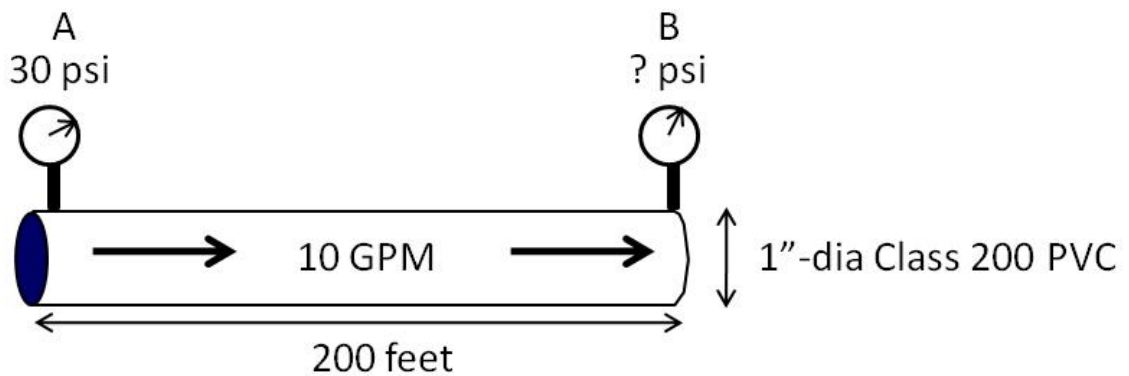


Water pressure at B: _____ feet of head, _____ psi
 Water pressure at C: _____ feet of head, _____ psi
 Water pressure at D: _____ feet of head, _____ psi

4. An irrigation valve is located at point "D" on the following diagram. What is the static water pressure at "D"? Water pressure at D: _____ feet of head _____ psi



5. You are planning to install drip irrigation for a vegetable garden. The drip tubing is rated at 0.50 gallons per hour (GPH) per linear foot of tubing.
- If you have 20 rows of tubing and each row is 100 foot long, how many gallons per hour (GPH) must you deliver to water the entire garden at one time?
 - Gallons per minute (GPM)?
 - If you can only deliver 5 gallons per minute (GPM), how many separate zones are required?
6. Water is flowing through a 200-foot horizontal pipe section at 10 gallons per minute. If the pressure gage at "A" is 30 psi, what will be the pressure reading at "B" considering friction loss? At what velocity is the water traveling through the pipe section? Use the friction loss table provided.



PVC CLASS 200 PIPE - Pressure Loss (psi/100 feet)

Size	3/4"	1"	1 1/4"
OD	1.050	1.315	1.660
ID	0.930	1.189	1.502
Wall Thickness	0.060	0.063	0.079

Flow GPM	Velocity	psi	Velocity	psi	Velocity	psi
	fps	Loss	fps	Loss	fps	Loss
1	0.47	0.06	0.29	0.02	0.18	0.01
2	0.94	0.22	0.58	0.07	0.36	0.02
3	1.42	0.46	0.87	0.14	0.54	0.04
4	1.89	0.79	1.15	0.24	0.72	0.08
5	2.36	1.19	1.44	0.36	0.90	0.12
6	2.83	1.67	1.73	0.51	1.09	0.16
7	3.30	2.23	2.02	0.67	1.27	0.22
8	3.77	2.85	2.31	0.86	1.45	0.28
9	4.25	3.55	2.60	1.07	1.63	0.34
10	4.72	4.31	2.89	1.30	1.81	0.42
11	5.19	5.14	3.17	1.56	1.99	0.50
12	5.66	6.04	3.46	1.83	2.17	0.59
14	6.60	8.04	4.04	2.43	2.53	0.78
16	7.55	10.29	4.62	3.11	2.89	1.00
18	8.49	12.80	5.19	3.87	3.26	1.24