

1. A cubic foot of water weighs 62.42 lb.; a cubic foot of gold weighs 19.36 times as much; a cubic foot of iron weighs 7.78 times as much; 19.36 is the *specific gravity* of gold; 7.78 is the S. G. of iron. Find the weight of a cubic yard of gold; of iron.
2. A cubic foot of cork weighs 14.980 lb. Find its S. G.
3. How much pressure does the bottom of a stand-pipe full of water 60 ft. high and 10 ft. in diameter sustain? Calculate for a cylindrical pipe and for a square pipe of these dimensions.
4. A column of air 1 in. square extending from the sea-level to the highest point of the atmosphere weighs 15 lb.; that is, the atmospheric pressure is 15 lb. to every square inch of surface at the sea-level. How much air does a square rod of land support?
5. At the sea-level the air not only presses down, but in all directions, with a force of 15 lb. to the square inch. There are about 2000 sq. in. on the surface of a man's body. How much pressure does his body sustain?
6. A cubic inch of air weighs about .31 grains. Find the weight of the air in a room $10' \times 20' \times 30'$.
7. The column of mercury (S. G. 13.6) in the barometer is about 30 in. high, and is supported by atmospheric pressure. If water were used instead of mercury, how long must be the tubes of the barometer?
8. The velocity of sound through air at a temperature of 32° F. is 1090 ft. per second and is about 1 ft. more per second for every degree of temperature above 32° . How many meters per second will sound travel at a temperature of 57° F.?
9. Five seconds elapsed between a flash of lightning and the thunder following. How far away did it strike, temperature being 80° F.?
10. A man shouting to his cattle hears the echo of his words in 6 seconds after he has uttered them. How far away is the cliff which occasioned the echo, the temperature being 50° F.?
11. If a speaking tube should connect two places 1 mi. 239 rd. apart, how long would it take for a word to be sent from one place to the other, the temperature being 60° ?