
Plumbing: Supply, Drain, Waste And Vent

STUDY SESSION 1

1. This Session includes a discussion of the basic principles of supply plumbing.
2. At the end of the Study Session you should be able to —
 - list three things that can go wrong with supply piping
 - list four factors which affect the pressure or flow at a fixture
3. Quick Quiz 1 is included at the end of this Session. Answers may be written in your book.

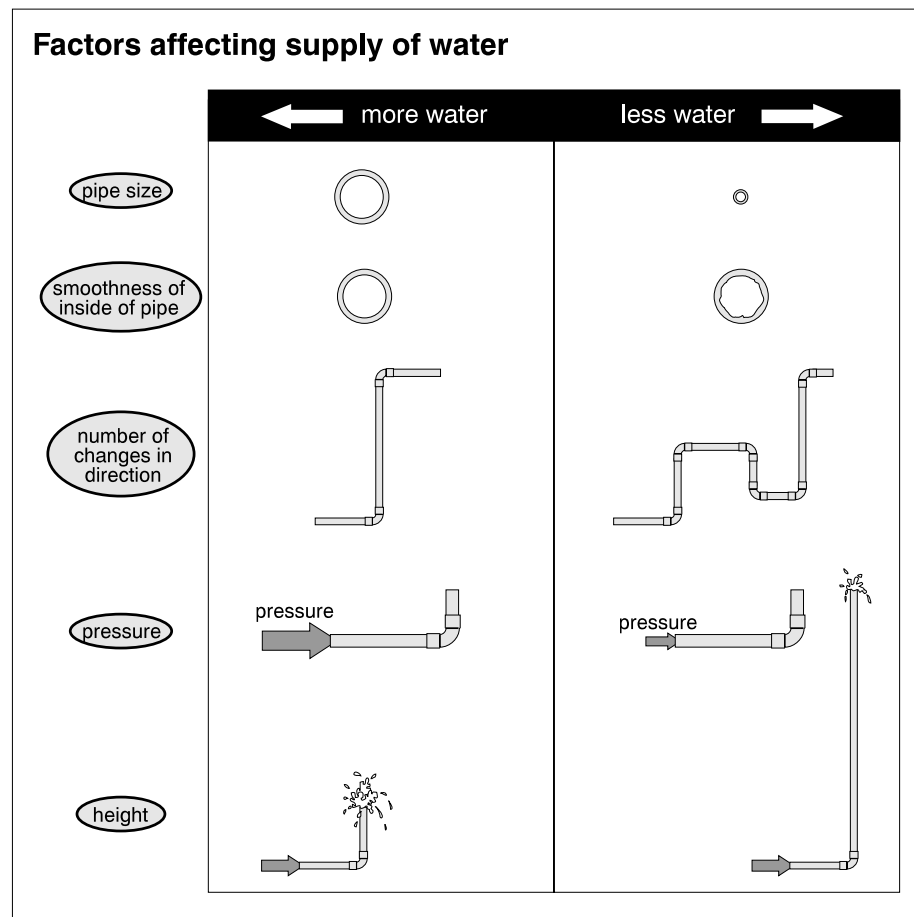


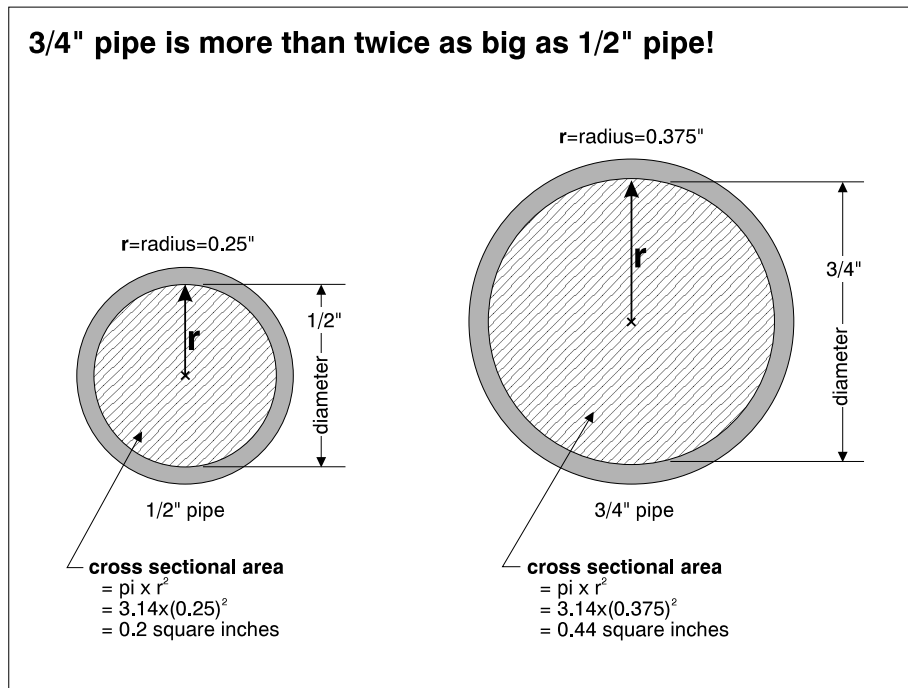
Water supply — pressure and flow

We hate formulas and we don't like graphs any better, so let's get through this without too many of either.

Factors Affecting Supply The amount of water available at the tap depends on several things, including —

- how big the pipe is
- how smooth the inside of the pipe is
- how straight the pipe is
- how hard it is being pushed from behind (what's the static pressure?)
- how much water we are trying to move (what flow are we looking for, in gallons per minute?)
- are we pushing it uphill? how high?



*Much Better*

In practice, the difference is even more dramatic than the cross-sectional area would suggest. If you consider 100 feet of 1/2-inch diameter pipe, you will lose 10 psi of pressure running **3.5 gallons per minute** through the pipe. For 3/4-inch diameter pipe, you will lose 10 psi when you flow **9.4 gallons** per minute through it. The cross-sectional area of a 3/4-inch pipe is 225 percent of a 1/2-inch pipe, but the **flow** through a 3/4-inch diameter pipe is 270 percent of the flow of a 1/2-inch pipe with the same pressure loss!

Rusted Pipes Are Bad

We now have a pretty good sense of how important pipe diameter is. This should give you some appreciation to how little water flows through rusted galvanized steel pipes, for example. Not only does the surface become considerably rougher, which reduces flow (or increases pressure loss due to friction, whichever way you think of it) but it also reduces the pipe diameter. This dramatically reduces the ability of the pipe to move water. The profile or curve of a faucet fed by rusted galvanized steel piping, for example, becomes steeper with time. Homeowners become less and less happy with the rate of flow available at any given pressure.



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QUICK QUIZ 1

INSTRUCTIONS

- You should finish Study Session 1 before doing this Quiz.
- Write your answers in the spaces provided.
- If you have trouble with the Quiz, reread the Study Session and try the Quiz again.
- If you did well, it's time for Study Session 2.

1. What are three things that go wrong with water supply?

2. List at least four things that affect the volume of water at the tap.

