Section 5.1:
1. Pressure is:

2. Why do your lungs inflate when you inhale?

Section 5.2:
3. What is the formula for pressure?

4. Why does air pressure drop with increasing altitude in the atmosphere?

5. What are the mathematical relationships between mmHg, atm, torr, inHg, and psi?
   
   \[1 \text{ mmHg} = \_ \_ \_ \_ \_ \_ \_ \_ \_ \text{ torr}, \quad 1 \text{ atm} = \_ \_ \_ \_ \_ \_ \_ \_ \_ \text{ mmHg}, \quad 1 \text{ atm} = \_ \_ \_ \_ \_ \_ \_ \_ \_ \text{ psi} \quad 1 \text{ atm} = \_ \_ \_ \_ \_ \_ \_ \_ \_ \text{ inHg}\]

   How does a barometer work? View the first 1:30 of this video: https://www.youtube.com/watch?v=FtsVAPt72m0

   And this video with actual mercury! https://www.youtube.com/watch?v=GgBE8_SyQCU

6. Why doesn’t the liquid Hg completely drain out of the tube?

   View figure 5.5.

7. What would happen to the level of Hg in the left side of the manometer if the pressure of the gas in the bulb was decreased?

Section 5.3:
It is not necessary to memorize the names of each of the gas laws, but students do need to know the relationships.

8. If the volume of a closed sample of gas is increased at constant temperature, what happens to the pressure?

9. Volume and pressure are inversely/directly related (circle one).

   View figure 5.8.

10. Why is the mass on top of the piston on the right side of the figure twice as large as the mass on the left side?

11. How many atmospheres of pressure are exerted for every 32.8 feet of water depth that a diver experiences?

12. Solve “For Practice” 5.2:
13. If the temperature of a closed sample of gas is increased at constant pressure, what happens to the volume?

14. Volume and temperature are inversely/directly related (circle one).

View figure 5.11
15. Why does the volume of the balloon change with different temperatures?

16. When using equation 5.3, what temperature units must be used? ______________ Why is this?

17. Solve “For Practice” 5.3:

18. If the number of moles of a sample of gas is increased at constant pressure and temperature, what happens to the volume?

19. Volume and number of moles of gas are inversely/directly related (circle one).

Section 5.4:
20. What is the ideal gas law?

21. What units are used for the ideal gas constant?

22. Solve “For Practice” 5.5:

Section 5.5:
23. What are the standard conditions (temp and pressure) described for STP?

24. What is the approximate volume of one mole of a gas at STP?

Density of gases:
The density of a gas is simply the mass of a gas, in grams, divided by the volume that the gas occupies. There is no need for a complicated formula as described on page 210, equation 5.6. If one is asked to calculate the density of a gas, determine the mass and volume, then divide mass by volume.

25. Solve “For Practice” 5.7:

Section 5.6:
Wow, page 213 is a lot of equations. Yuck. Or maybe it’s your thing. If not, this video is worth 5 minutes of your time. https://www.youtube.com/watch?v=RqffPYOoxdB so that you can use and apply Dalton’s Law of Partial Pressures.
26. Solve “For Practice” 5.9:

We will skip mole fractions.

**Page 217:** You will be collecting gases over water in experiment 13, so this section is well worth your time.

Almost every sample of liquid will produce some vapor-phase molecules of the liquid. So, in a sample of water, or motor oil, or mercury, there is some vapor of that liquid above the sample.

View figure 5.14. View this video to see a similar process in action. [https://www.youtube.com/watch?v=pKhbY5ocj4g](https://www.youtube.com/watch?v=pKhbY5ocj4g)

27. In the video, what gases are present in the test tube when it is half full?

28. Look over the calculation on p. 218. What law is being used in the calculation of $P_{H2}$?

29. Up for a challenge? Solve “For Practice” 5.11:

**Section 5.7:**
Here is your chance to show off that you really did learn stoichiometry.

30. Solve “For Practice” 5.12:

**Section 5.8:**
31. Why is the size of a gas particle considered negligible compared to the size of the container?

32. Why is the KE of gas particles proportional to temperature, and not simply the velocity of a gas particle?

33. Collisions of particles are considered elastic. What would happen to the KE of a gas particle over time if atoms were more like lumps of clay (making collisions inelastic)?