Electrocardiogram (ECG) Worksheet

Background
An electrocardiogram (ECG) is a graph that records the changes in the electrical properties of the heart during the cardiac cycle. The electrocardiogram is produced by an electrocardiograph machine. This is simply a voltmeter that measures the rise and fall of voltage (electric potential) between two points. Electrodes are generally placed on the right arm, left arm and left foot. Using only these three electrode leads, it is possible to look at the heart from six possible orientations. Additional leads may be placed around the chest to provide even more detailed pictures of cardiac muscle activity. Ultimately, the ECG allows a health professional to evaluate the function and integrity of the heart relative to the proper depolarization (contraction) and repolarization (relaxation) of the atria and ventricles.

Analysis Questions
Use textbook pages 347-352 and 567, along with your coloring, to complete the following questions.

1. Draw a flow chart of the components of the cardiac conduction system.

2. Why is the SA node called the pacemaker?

3. Draw a scaled six (6) second normal ECG pattern. Identify the P, QRS, and T portions of one cardiac cycle. Remember: each square represents 0.20 seconds in time.

4. The P wave of a normal ECG corresponds to:

5. The QRS complex of a normal ECG corresponds to:

6. The T wave of a normal ECG corresponds to:

7. What occurs during the P-R interval of a normal ECG?
8. What occurs during the S-T interval of a normal ECG?

9. Briefly explain how and why an ECG provides useful information about cardiac function.

10. Briefly, research and describe a specific cardiac arrhythmia. Your description should include the difference in ECG patterns (between normal and abnormal), as well as the clinical implications of the abnormality.