

How to Read an ECG

1. Calculate beats/minute

- a. Determine the Number of Ventricle Contractions in the times given.
- b. Determine the total amount of time on the ECG.
- c. Set up proportion to determine beats/minute

$$\frac{\text{Number of Beats in ECG}}{\text{Total time in ECG (in seconds)}} = \frac{x \text{ (unknown amount of beats)}}{60 \text{ seconds}}$$

	Case Study #1	Case Study #2	Case Study #3	Case Study #4
Beat/Minute				

2. Based on the amount of beats/minute determine if the patient is has tachycardia, bradycardia or normal sinus rhythm.

Tachycardia Limits: Over 100 beats per minute.

Bradycardia Limits: Under 60 beats per minute.

Normal Sinus Rhythm: Between 60-100 beats per minute.

	Case Study #1	Case Study #2	Case Study #3	Case Study #4
Classify Pulse				

3. Determine if the heart has an arrhythmia:

The term "arrhythmia" refers to any change from the normal sequence of electrical impulses. The electrical impulses may happen too fast, too slowly, or erratically – causing the heart to beat too fast, too slowly, or erratically. When the heart doesn't beat properly, it can't pump blood effectively. When the heart doesn't pump blood effectively, the lungs, brain and all other organs can't work properly and may shut down or be damaged.

To determine if the heart is experiencing an arrhythmia—you need to see if there is an imbalance of Atrial Depolarizations, Ventricular Depolarizations and Ventricular Repolarizations. Where the imbalance occurs will clue you into what part of the impulse is malfunctioning and therefore what part of the heart is failing in contraction.

Color all atrial depolarizations green with a highlighter.

Color all ventricular depolarizations blue with a highlighter.

Color all ventricular repolarizations pink with a highlighter.

Now based on your highlighting—determine the number of atrial and ventricular depolarizations and ventricular repolarizations.

	Case Study #1	Case Study #2	Case Study #3	Case Study #4
How many atrial depolarizations?				
How many ventricular depolarizations?				
How many ventricular repolarizations?				

If there is an imbalance of events = arrhythmia

4. Determine if the cardiac efficiency

The function of atrial depolarization is to get the atria to contract and drain into the ventricles.

The function of ventricular depolarization is to get the ventricles to contract and pump blood to lungs/body.

The function of ventricular repolarization is to rest, which accomplishes two things—reset the electrical signal in nodal system and get the heart to refill with blood.

	Case Study #1	Case Study #2	Case Study #3	Case Study #4
Explain the issues with how the heart will work under the ECG conditions?				