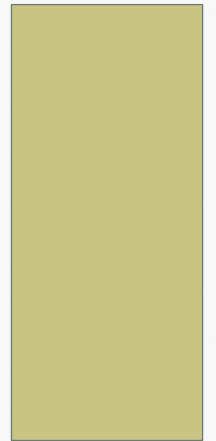


12 LEAD – SESSION 2

RATE AND RHYTHM



IDENTIFYING THE RATE

- What do we mean by “What is the rate”? Rate of what?
 - Electrical Rate –
 - As interpreted and displayed by the cardiac monitor
 - Atrial Rate; Ventricular Rate
 - Mechanical Rate (Pulse Rate) –
 - As interpreted by palpation of a pulse point
- Do electrical and mechanical rates always match???

NON-CORRELATING RATE EXAMPLES

- Non-perfusing ectopy
 - PVCs
- PEA
 - Complexes that have a rate but no palpable rate
- Abnormal T waves
 - Displayed numeric rate
- A-Fib
 - Displayed numeric rate
- **You cannot solely rely on the monitor to inform you of the patient's pulse rate**

IDENTIFYING THE RATE

- Determining mechanical pulse rate?
 - Well...you palpate it
- Phillips MRx
 - Calculates the displayed rate by measuring the time (distance) between consecutive R waves
 - This may lead to incorrectly displayed rates
- Pleth waves
 - Yeeeeeeaaaah, not even going there...

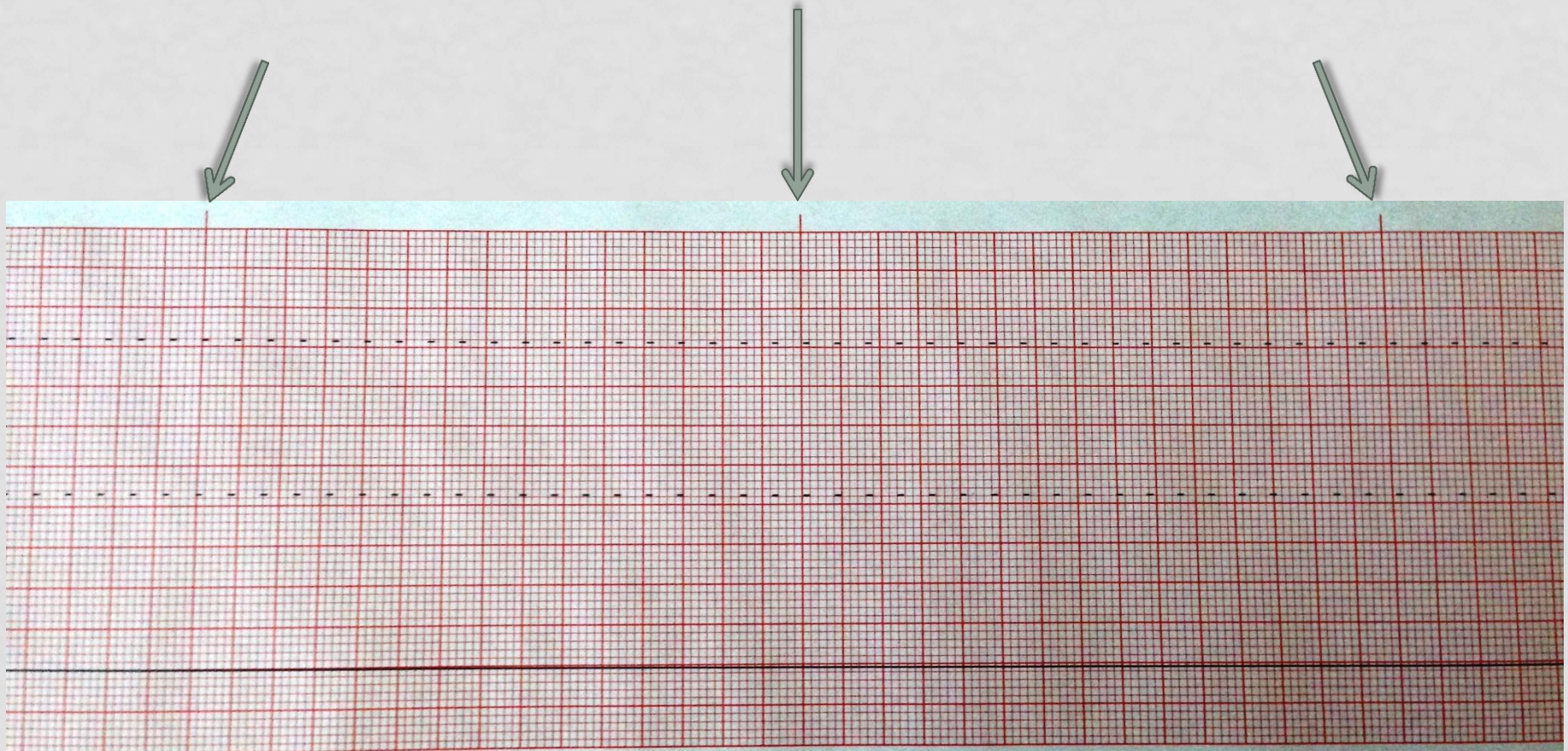
IDENTIFYING THE RATE

- Visual inspection of the printed ECG

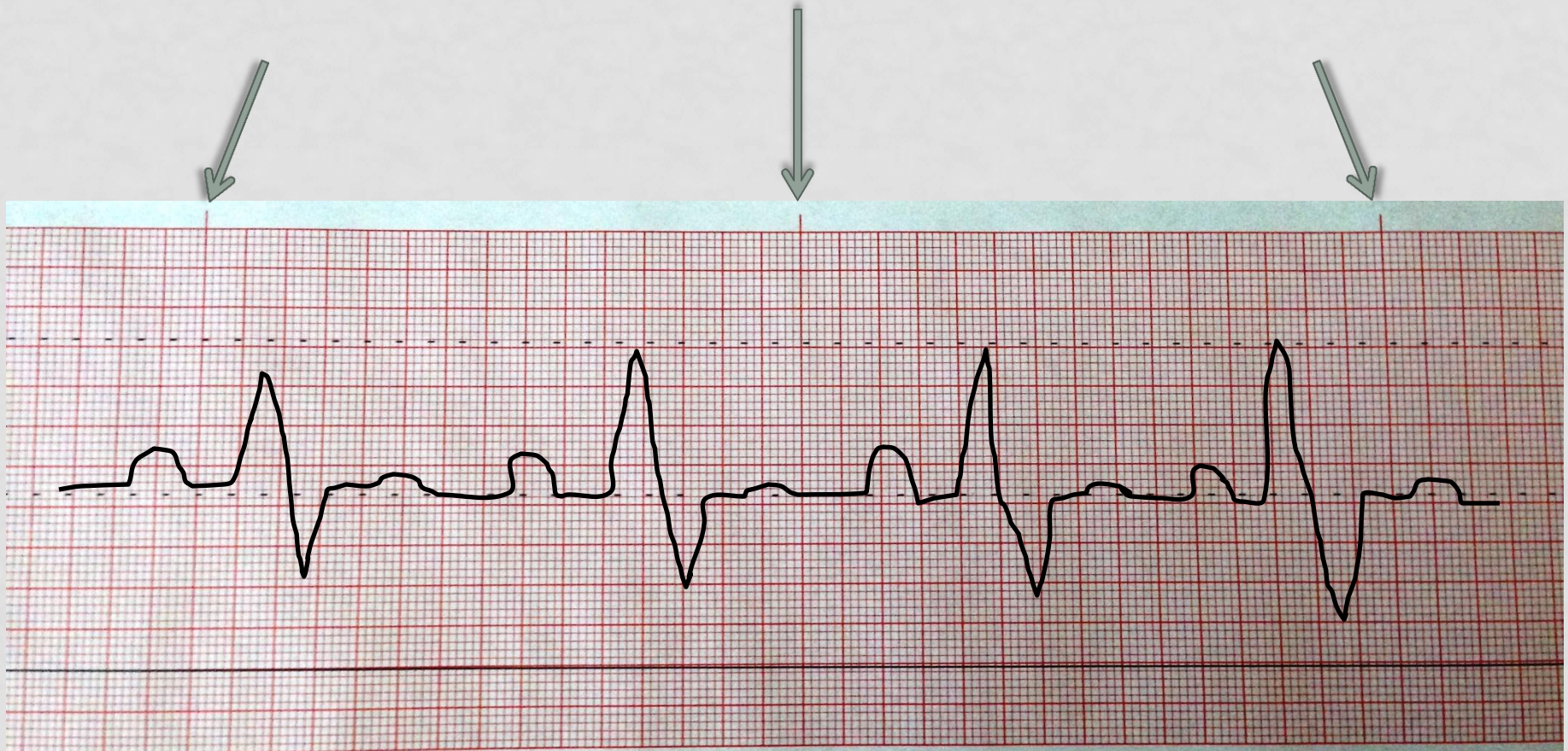


- 6 second method
 - Observe the “tic” marks printed on the ECG paper
 - These are printed every 3 seconds
 - Count the number of QRS complexes
 - $(\# \text{ of complexes in } 6 \text{ secs}) \times 10 = \text{Pulse Rate } +/-$

IDENTIFYING THE RATE

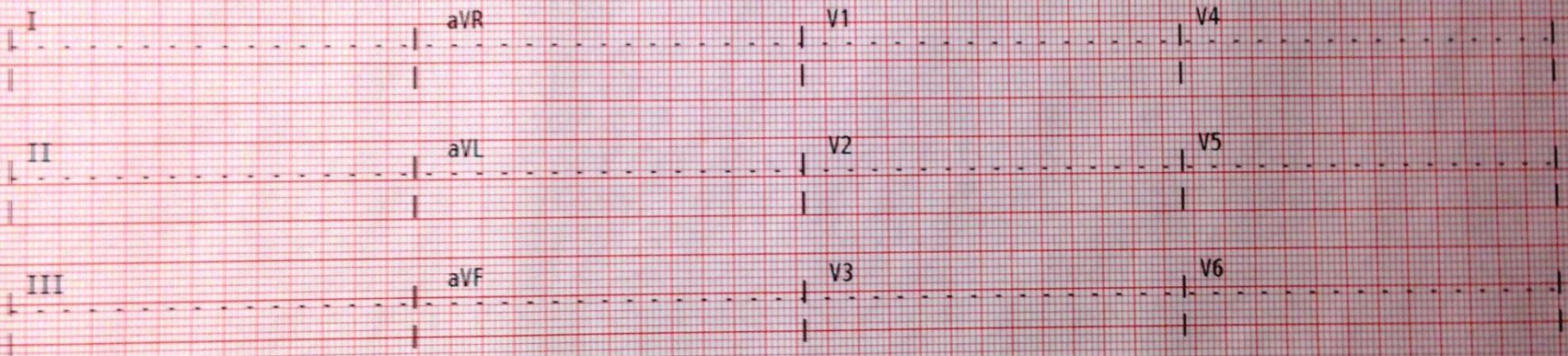


IDENTIFYING THE RATE

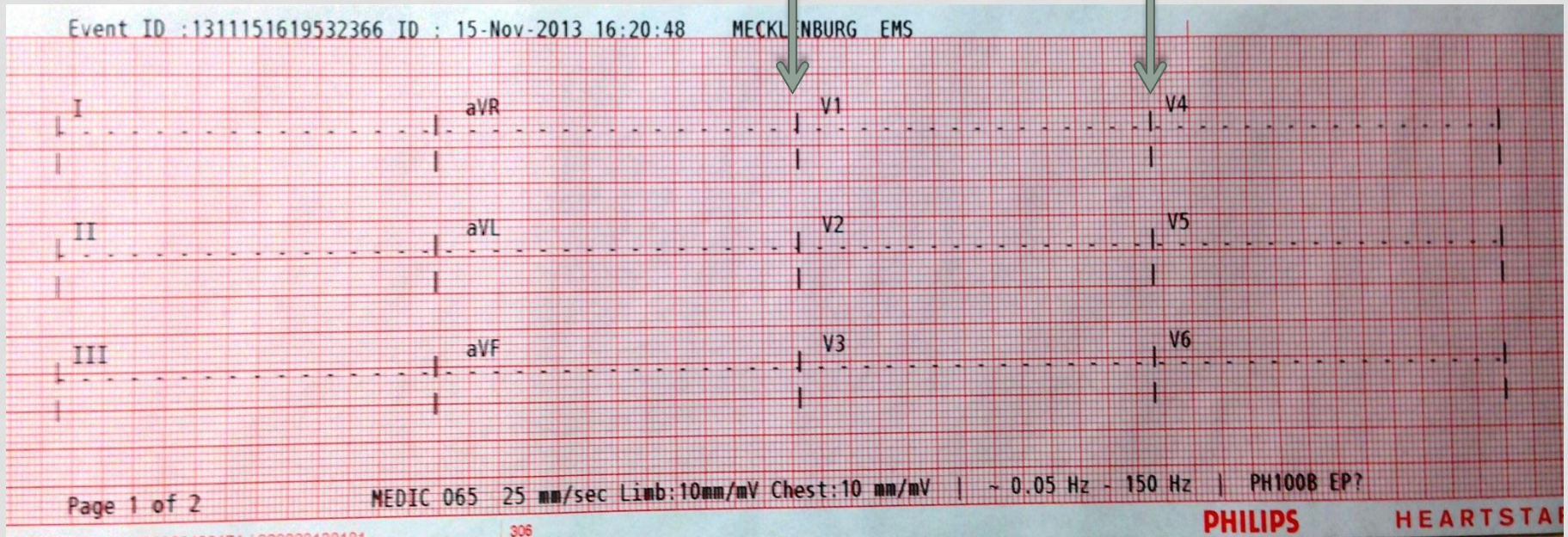


IDENTIFYING THE RATE

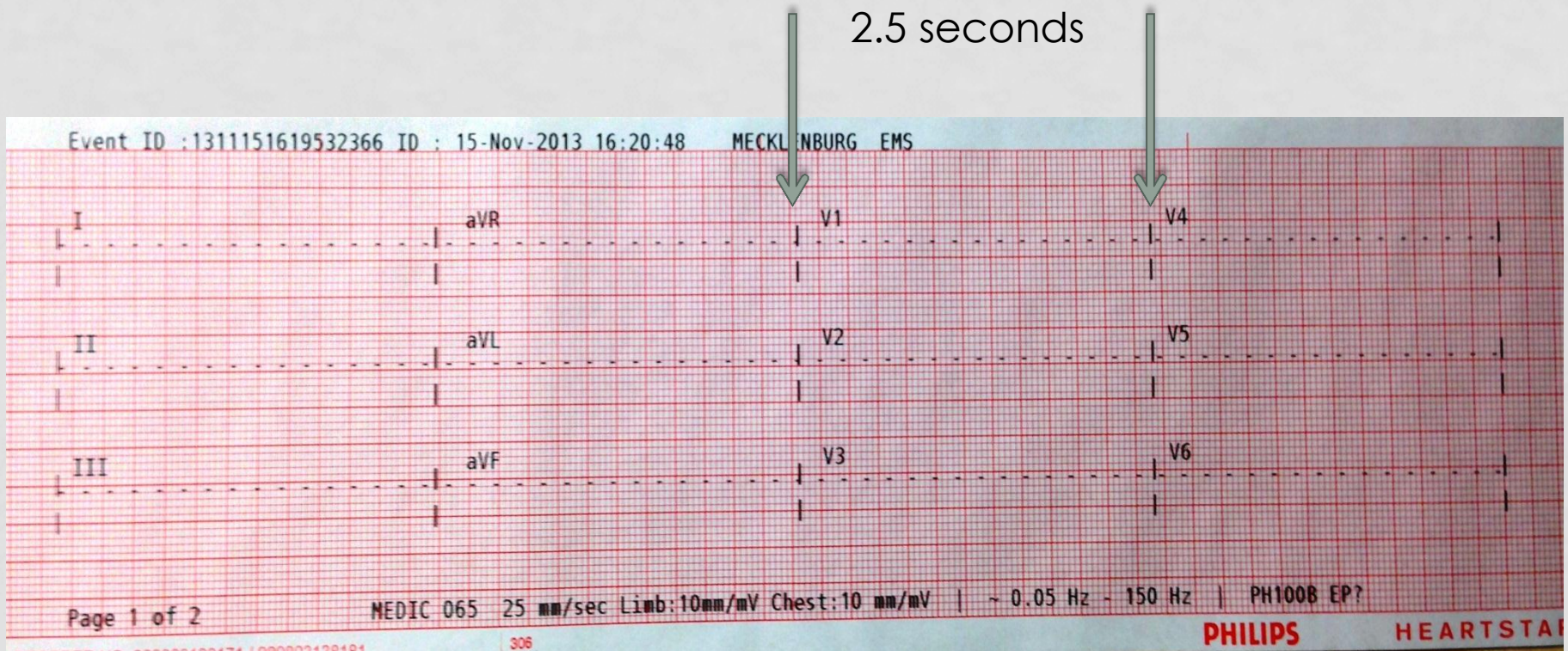
Event ID :1311151619532366 ID : 15-Nov-2013 16:20:48 MECKLENBURG EMS



IDENTIFYING THE RATE



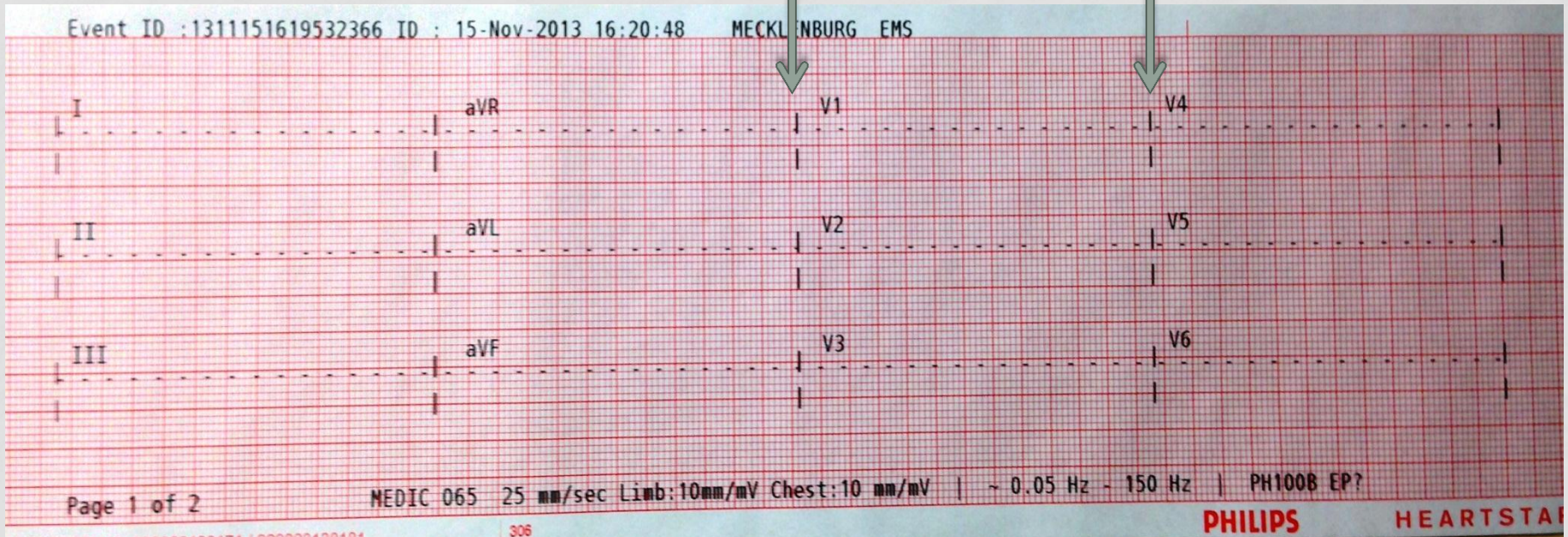
IDENTIFYING THE RATE



IDENTIFYING THE RATE

2.5 seconds

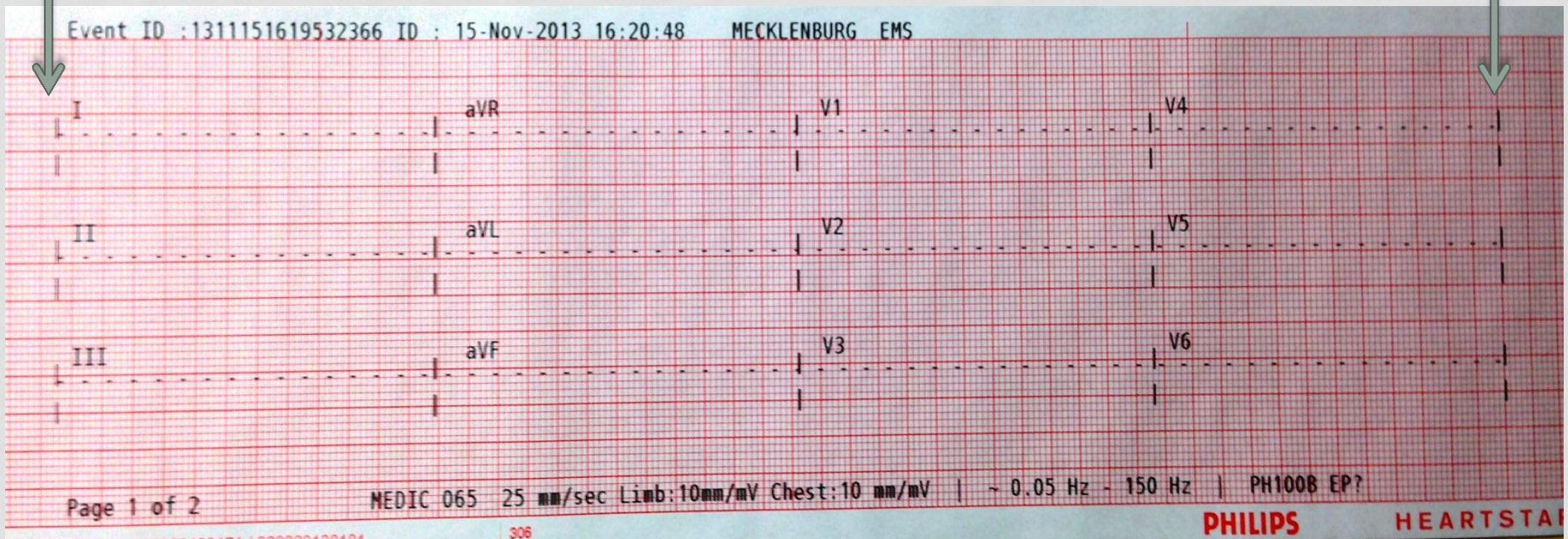
x 24 = Rate



IDENTIFYING THE RATE

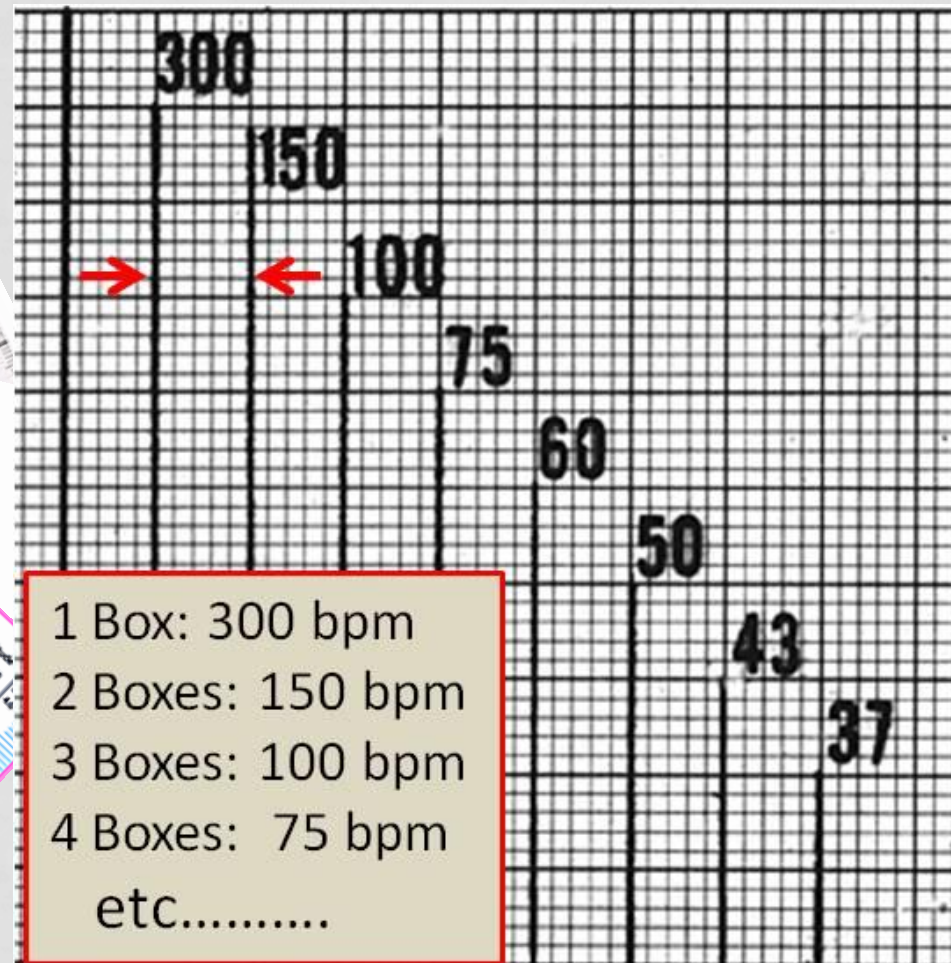
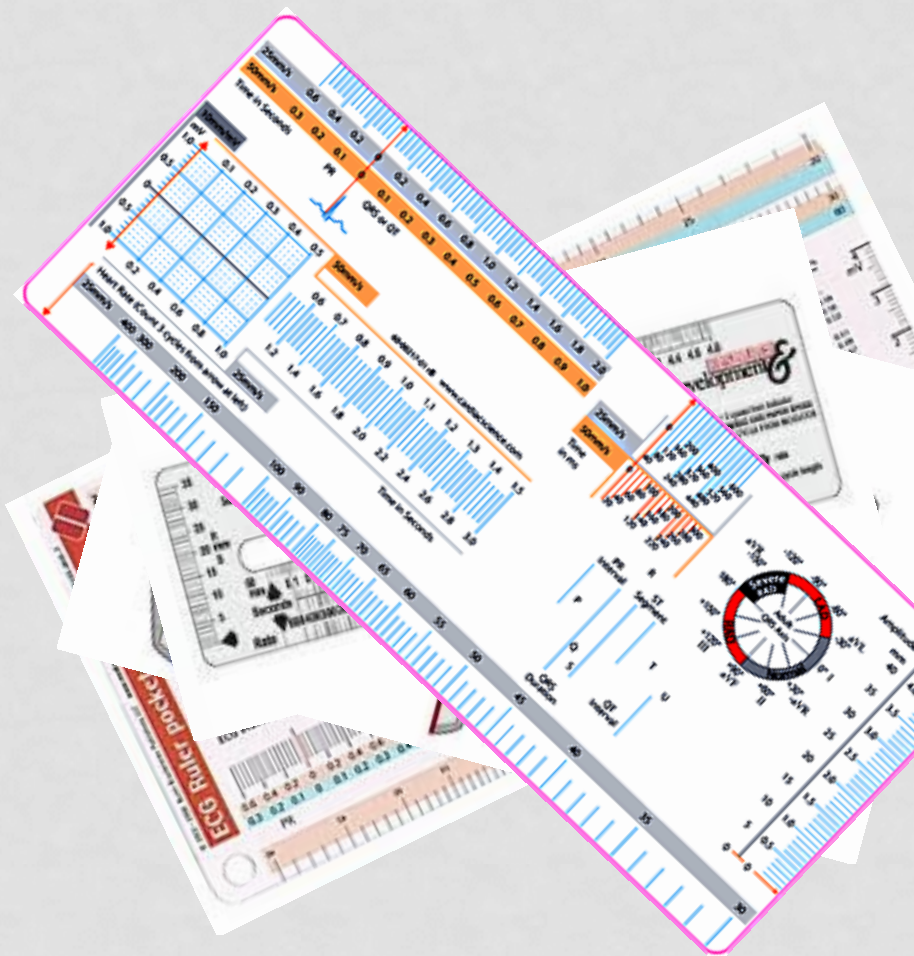
10 seconds

X 6 = Rate



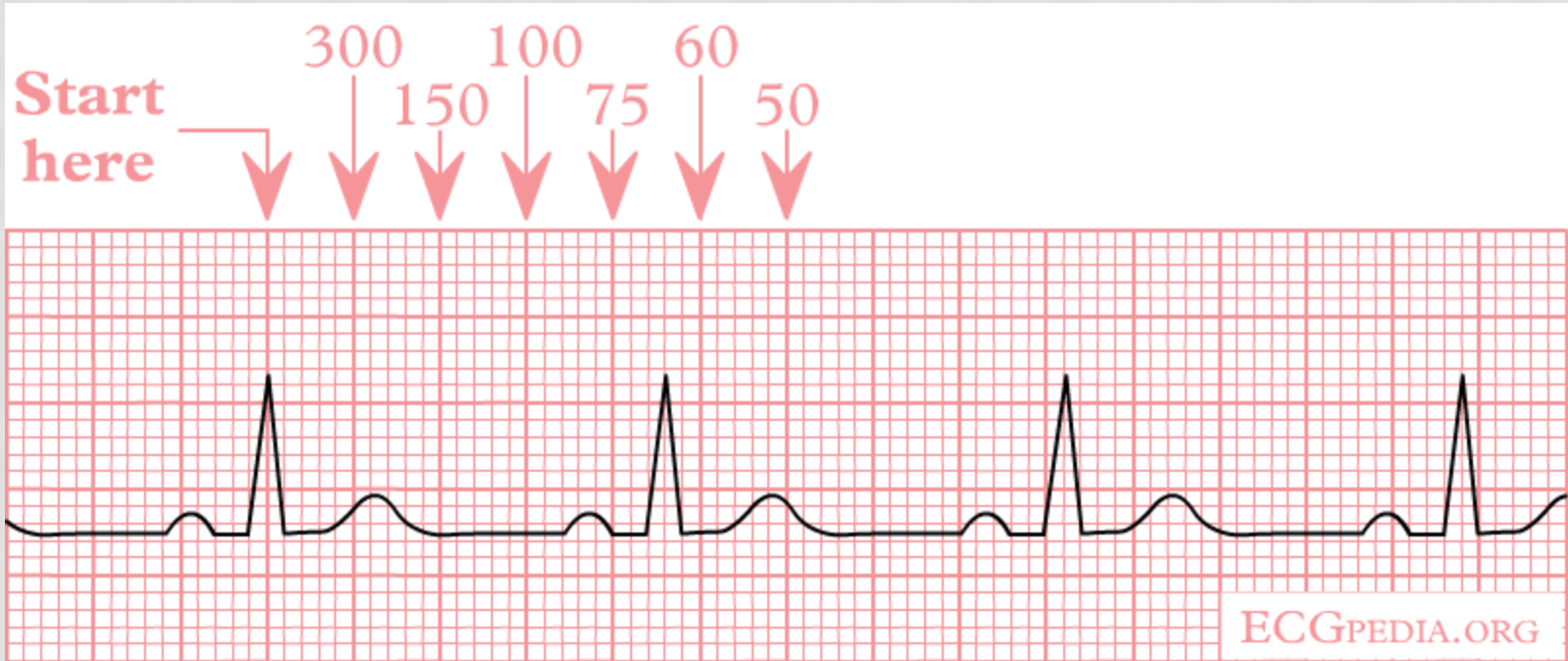
IDENTIFYING THE RATE

- Cardiac Ruler Method



IDENTIFYING THE RATE

- Cardiac Ruler Method



IDENTIFYING THE RATE



IDENTIFYING THE RATE



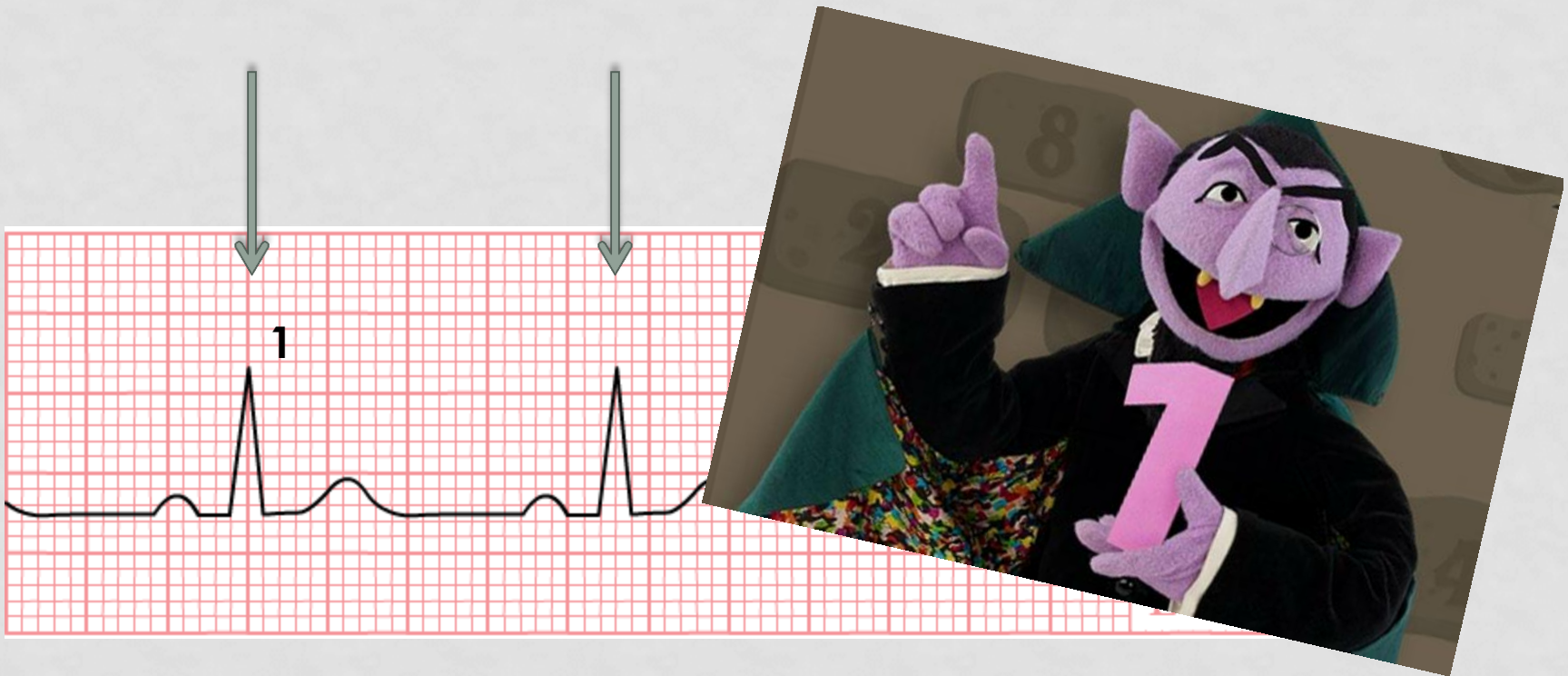
IDENTIFYING THE RATE

- 300 Method
 - Divide 300 by the number of BIG blocks between R waves



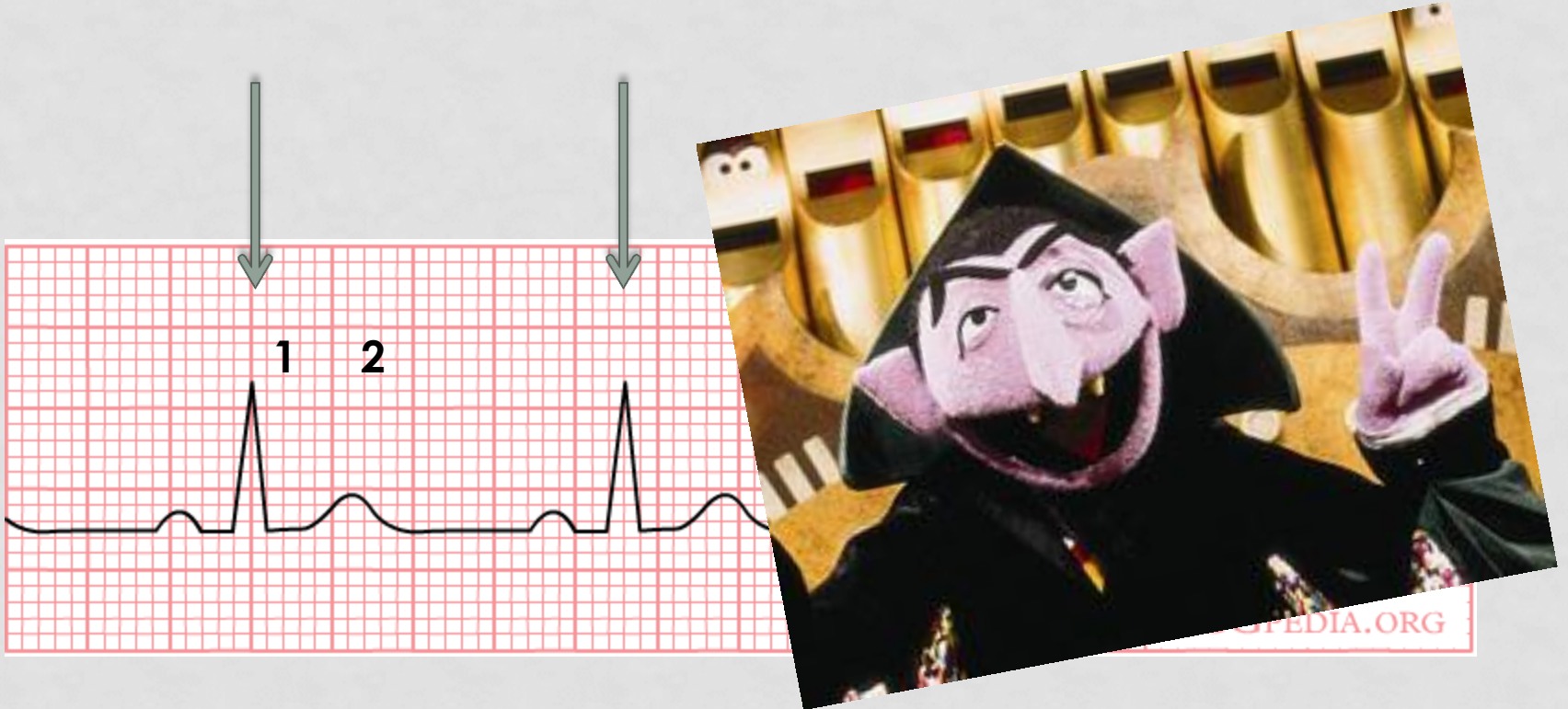
IDENTIFYING THE RATE

- 300 Method
 - Divide 300 by the number of BIG blocks between R waves



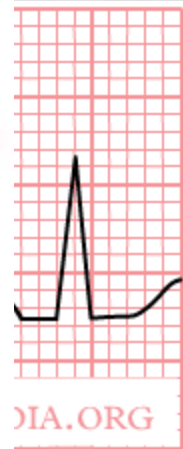
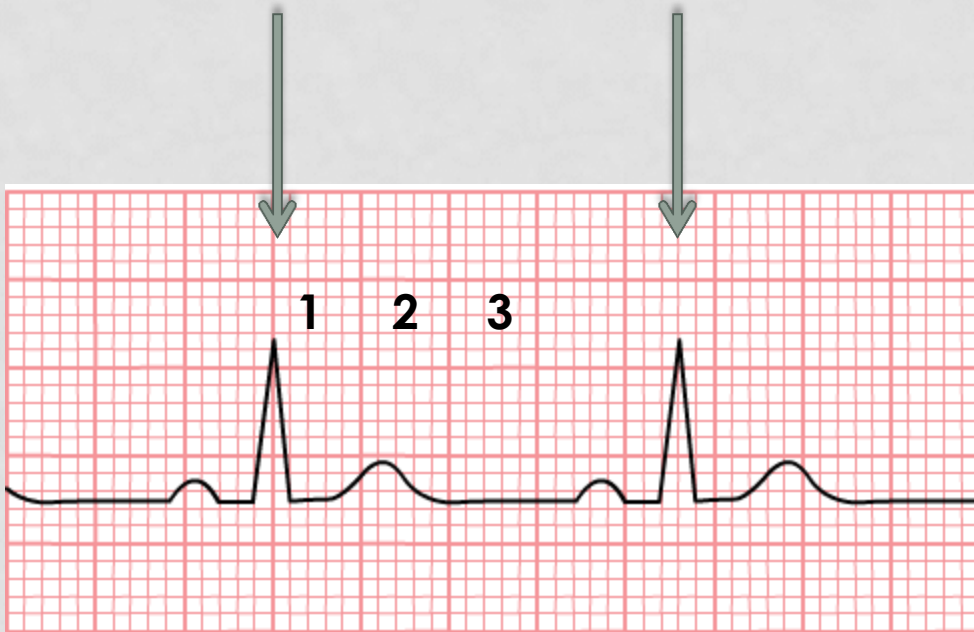
IDENTIFYING THE RATE

- 300 Method
 - Divide 300 by the number of BIG blocks between R waves



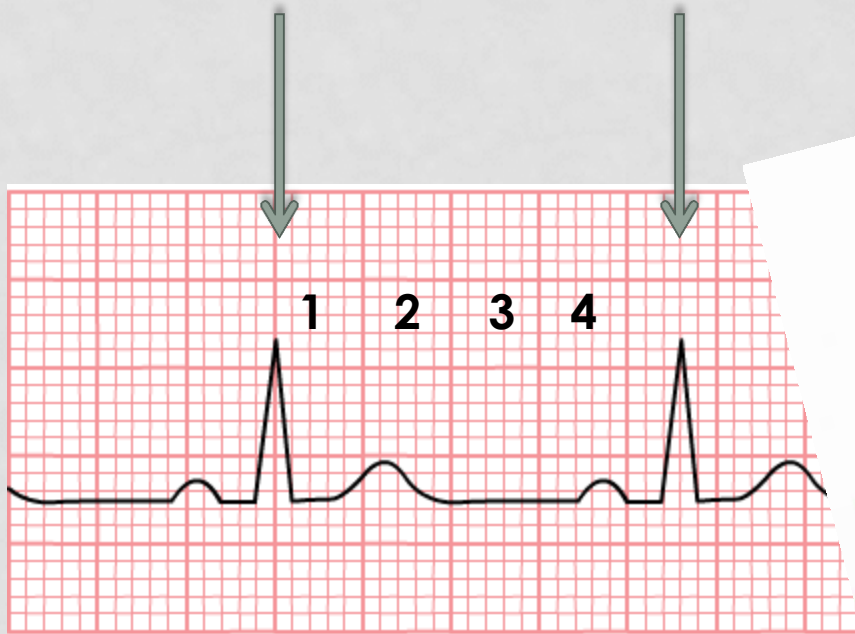
IDENTIFYING THE RATE

- 300 Method
 - Divide 300 by the number of BIG blocks between R waves



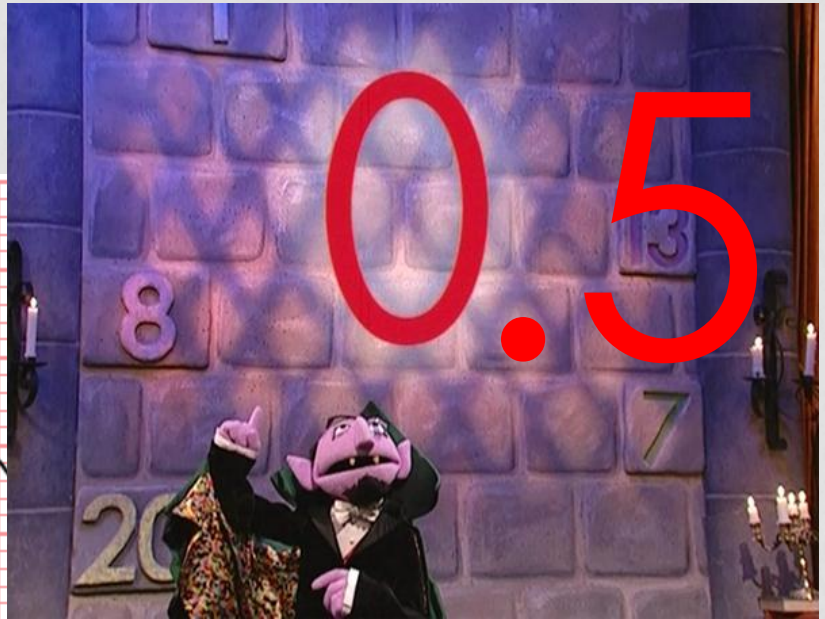
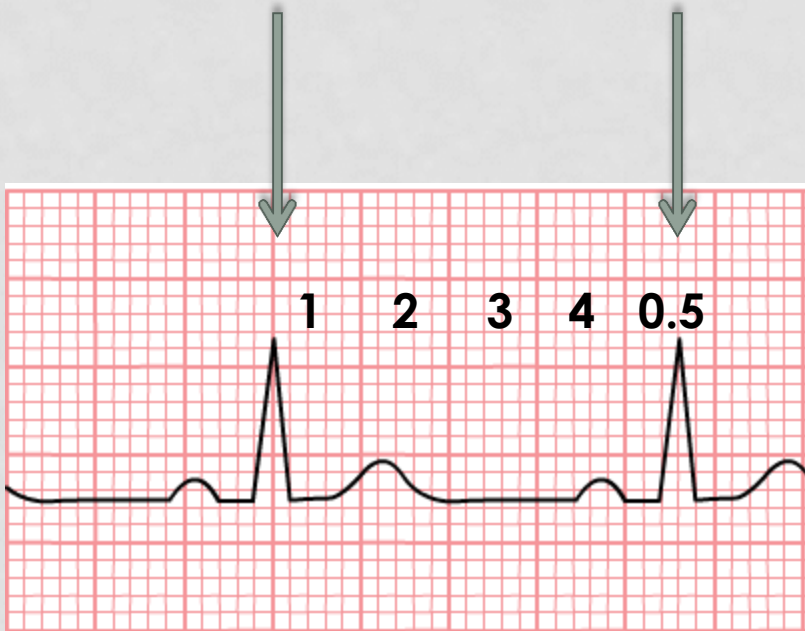
IDENTIFYING THE RATE

- 300 Method
 - Divide 300 by the number of BIG blocks between R waves



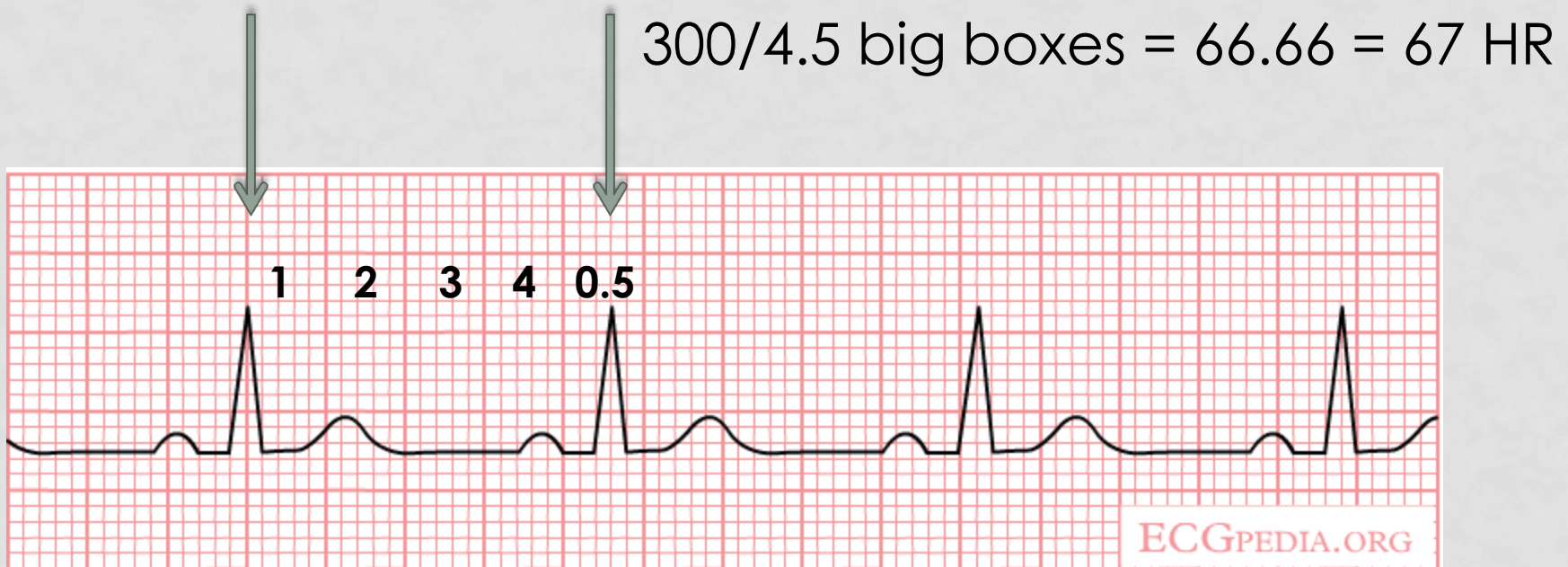
IDENTIFYING THE RATE

- 300 Method
 - Divide 300 by the number of BIG blocks between R waves



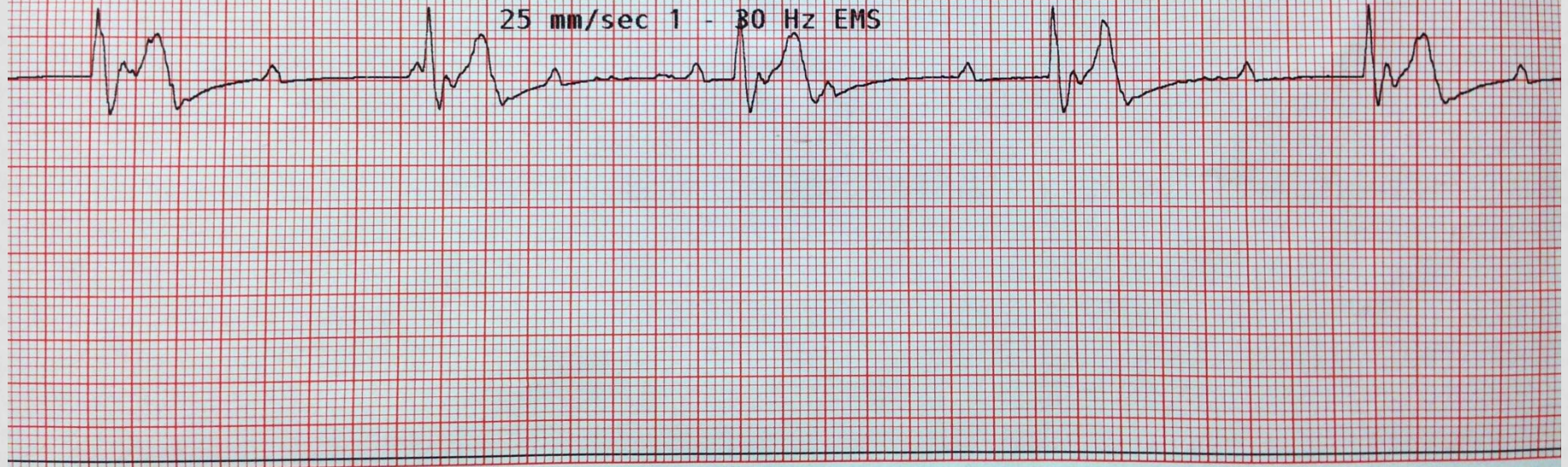
IDENTIFYING THE RATE

- 300 Method
 - Divide 300 by the number of BIG blocks between R waves



THIS IS A TEST

10:15:00 Delayed Alarms Off Adult HR [REDACTED] EtCO2 0mmHg AwRR 0rpm SpO2 -?- Pulse -?- Comp 0cp



REORDER NO: 989803138171 / 989803138181

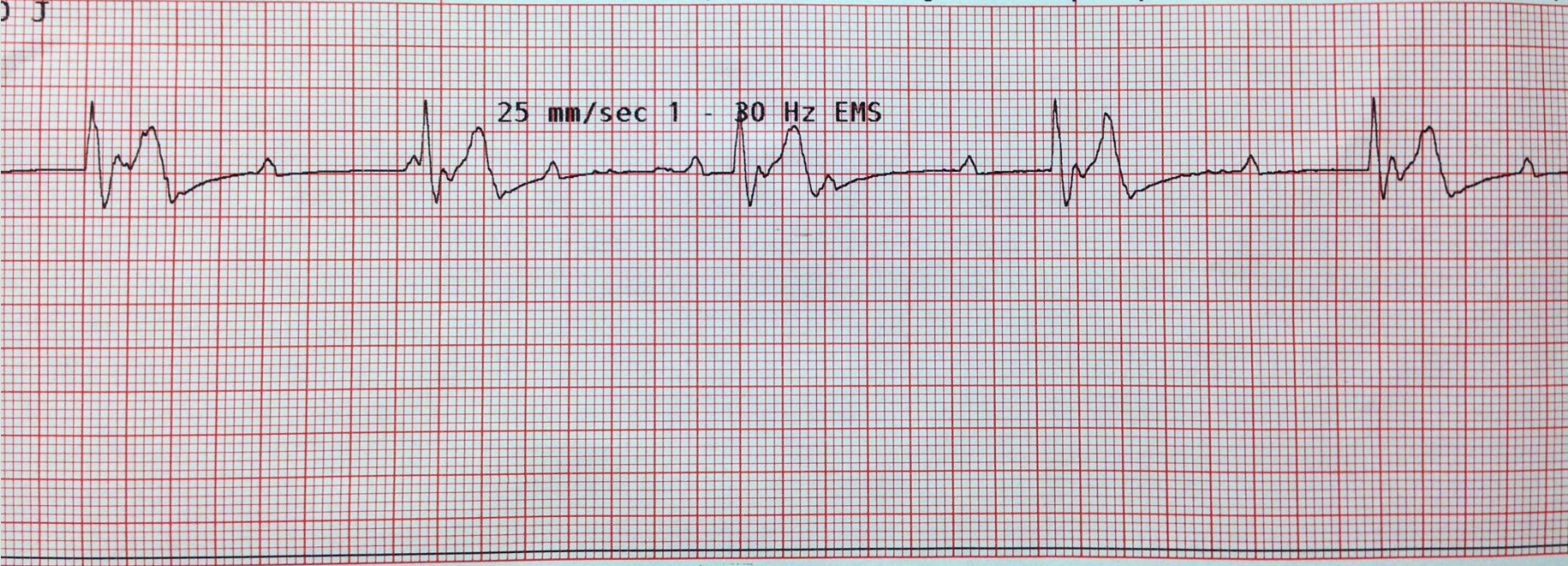
306

THIS IS A TEST



WWHHHHAAAAAHHHHHH????

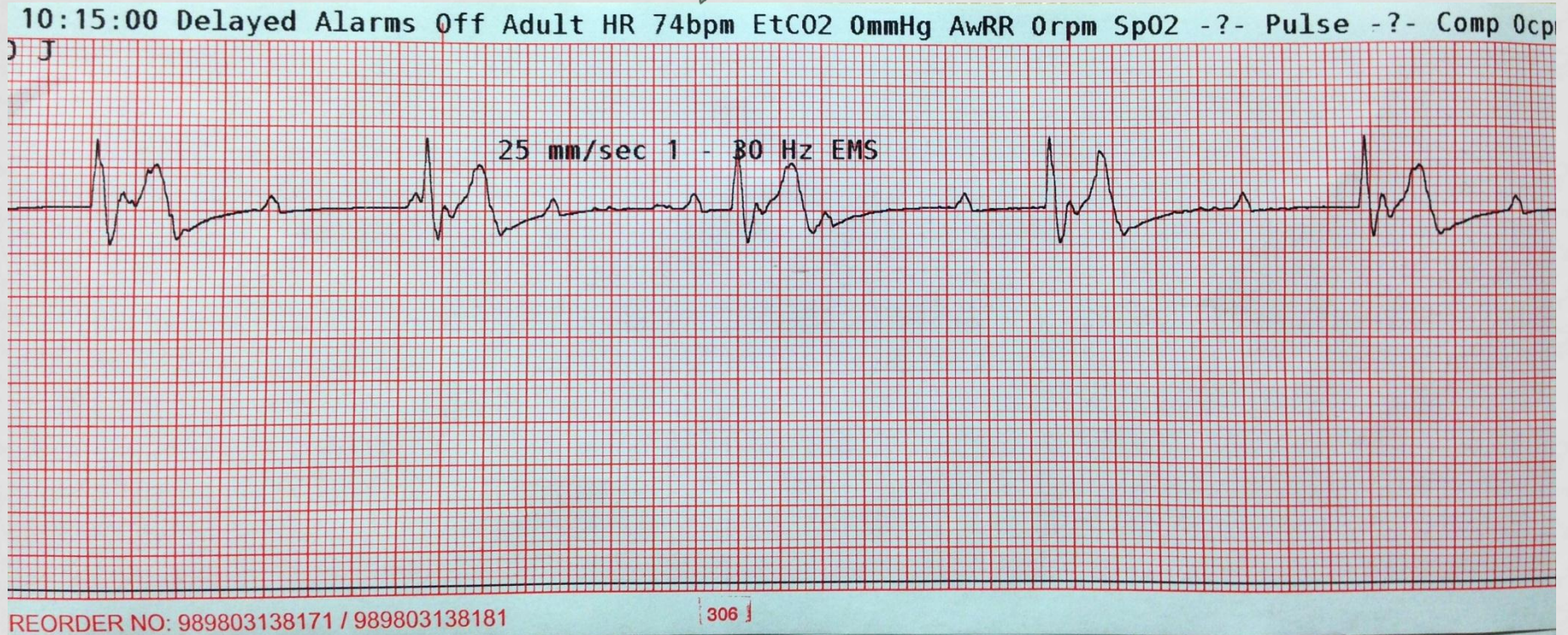
10:15:00 Delayed Alarms Off Adult HR 74bpm EtCO2 0mmHg AwRR 0rpm SpO2 -?- Pulse -?- Comp 0cp



THIS IS A TEST



WWHHHHAAAAAHHHHHH????

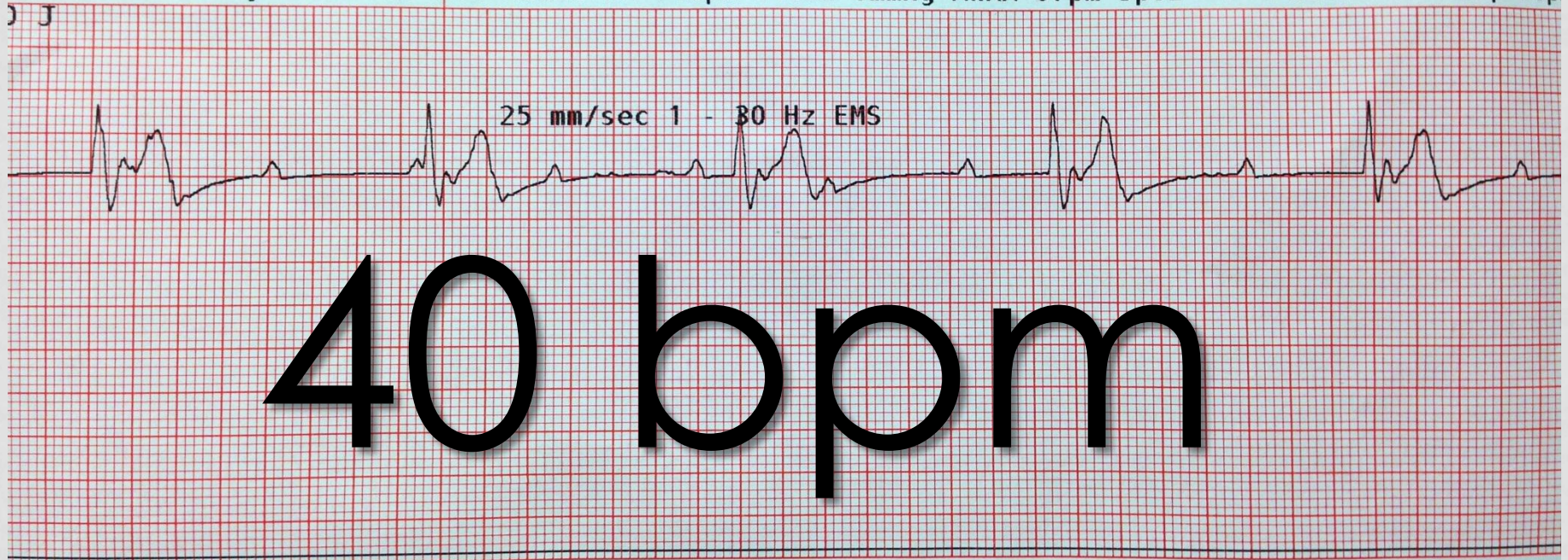


THAT MONITOR IS LYING TO YOU!!!

THIS IS A TEST

WWHHHHAAAAAHHHHHH????

10:15:00 Delayed Alarms Off Adult HR 74bpm EtCO2 0mmHg AwRR 0rpm SpO2 -?- Pulse -?- Comp 0cp



REORDER NO: 989803138171 / 989803138181

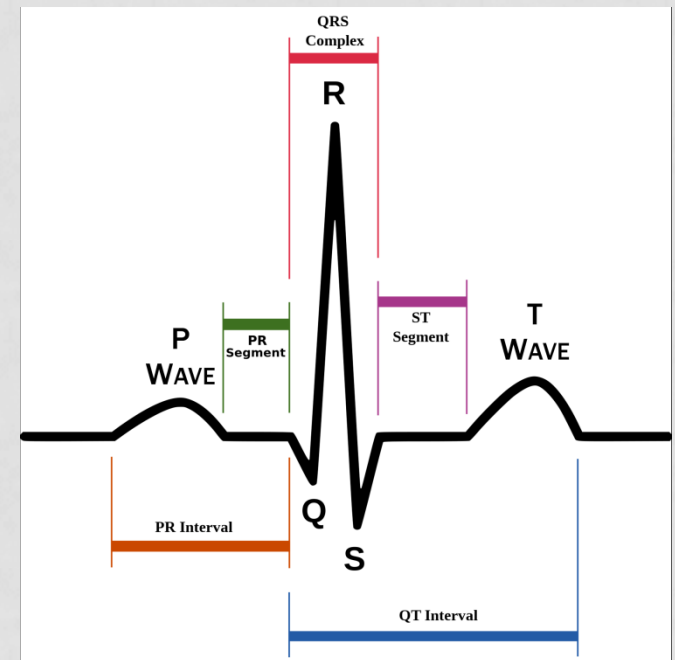
306

THAT MONITOR IS LYING TO YOU!!!

RHYTHM...YOU GOT IT???

- Steps to identifying the rhythm:

- Rate-
 - Fast? Slow? Normal? (refer to previous 27 slides!!!)
- Rhythm-
 - Regular? Irregular? Regularly/Irregularly Irregular?
- P wave-
 - Present? Upright?
- PR interval-
 - What's normal? Consistent PR?
- QRS-
 - Regular? Duration? Appearance?



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|--------|--------|-------------|-----|
| | | | | |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|--------|--------|-------------|-----|
| 87 | | | | |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|---------|--------|-------------|-----|
| 87 | Regular | | | |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|---------|--------------------|-------------|-----|
| 87 | Regular | Present Upright | | |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|---------|--------------------|-------------------|-----|
| 87 | Regular | Present Upright | 0.2 sec 200 ms | |



NAME THAT RHYTHM

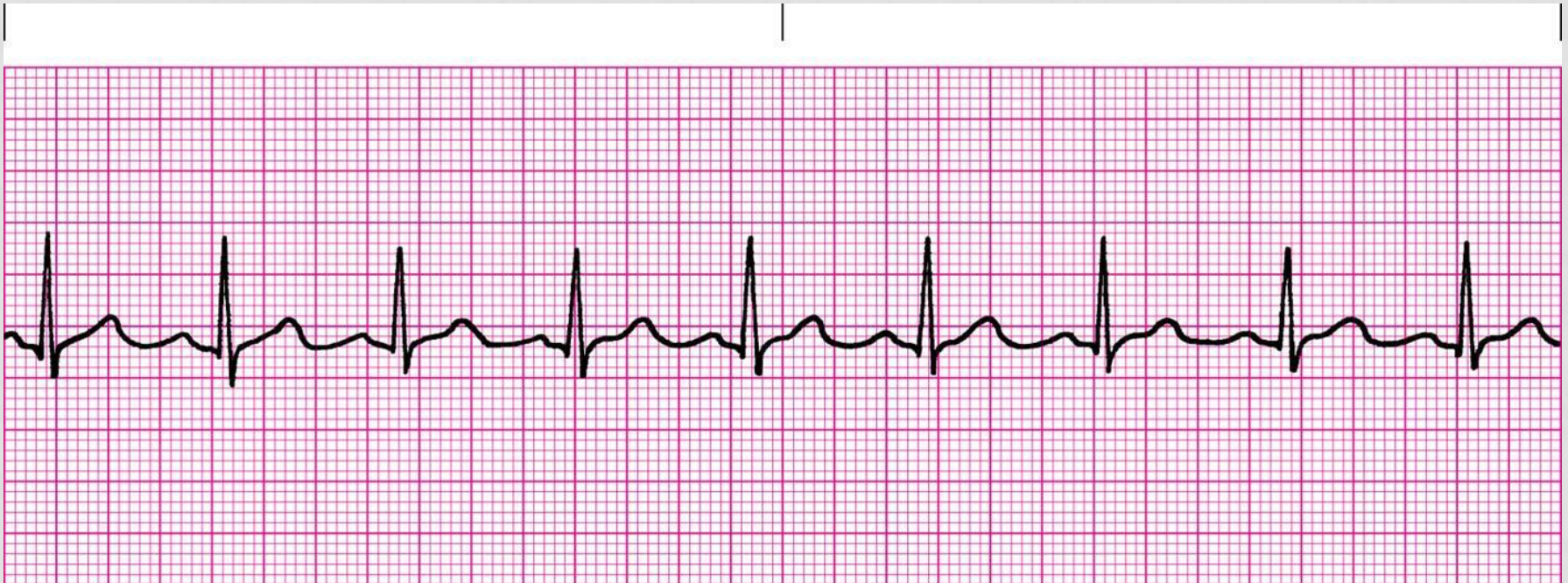
| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|---------|--------------------|-------------------|--------------------|
| 87 | Regular | Present Upright | 0.2 sec 200 ms | 0.12 sec 120 ms |



NAME THAT RHYTHM

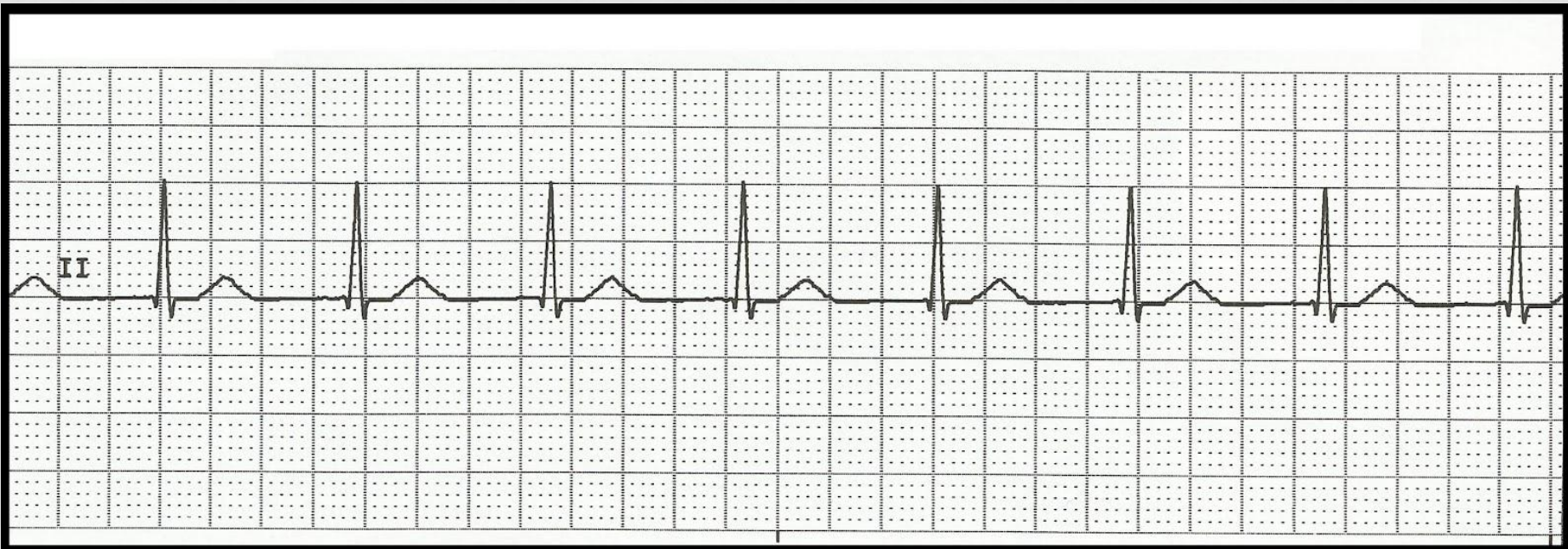
| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|---------|--------------------|-------------------|--------------------|
| 87 | Regular | Present Upright | 0.2 sec 200 ms | 0.12 sec 120 ms |

Normal Sinus Rhythm



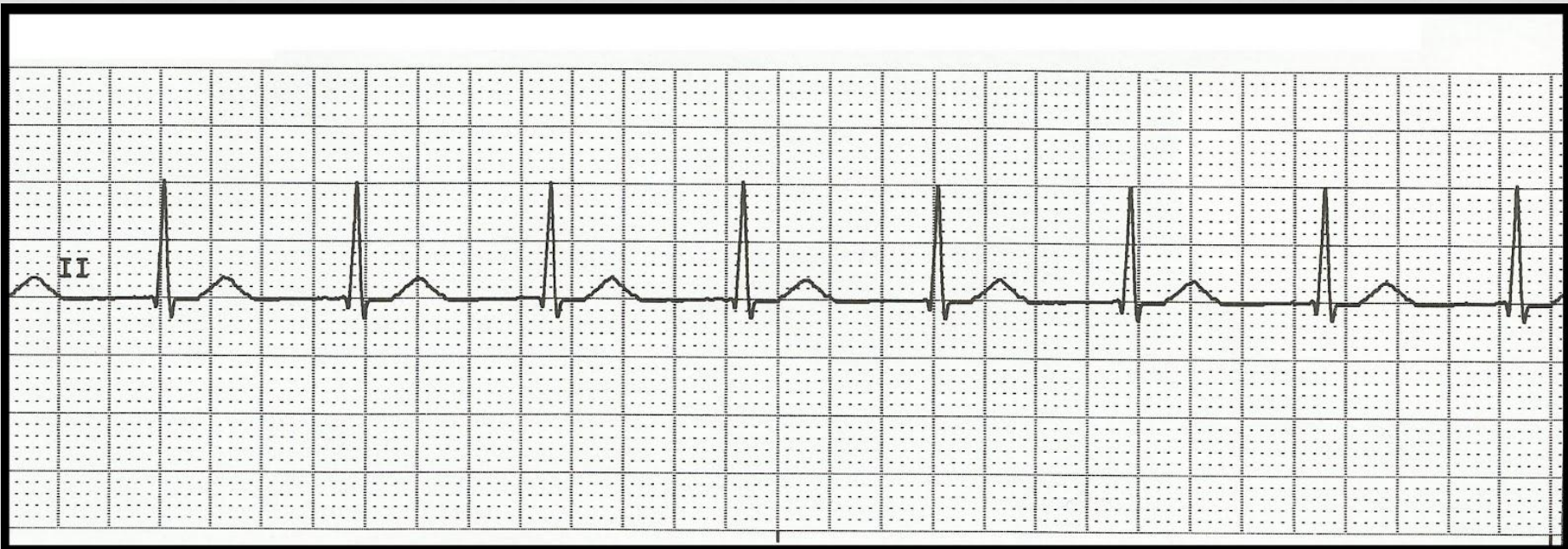
NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|--------|--------|-------------|-----|
| | | | | |



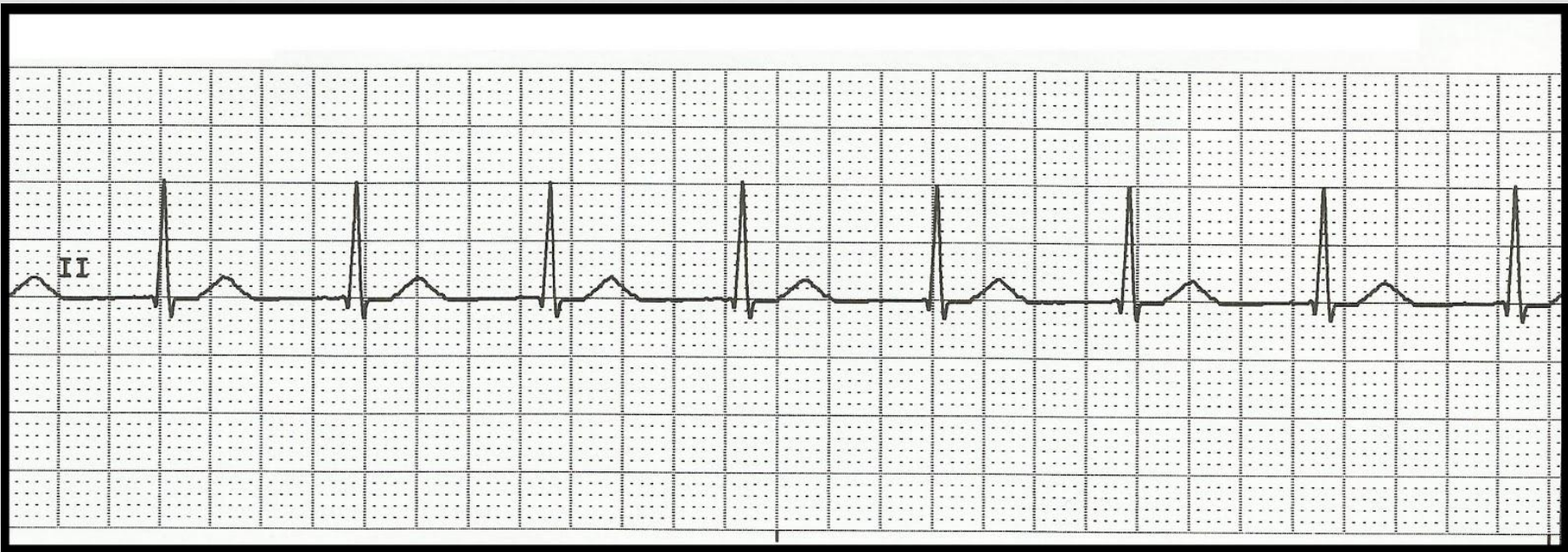
NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|--------|--------|-------------|-----|
| 76 | | | | |



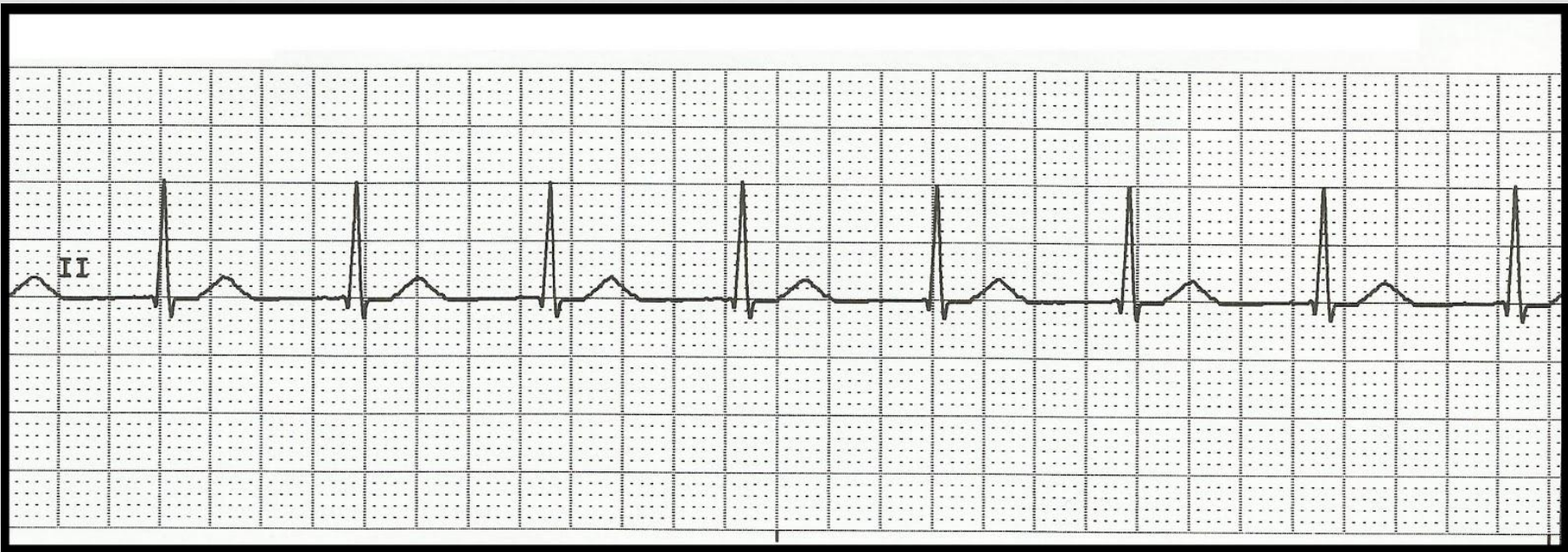
NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|---------|--------|-------------|-----|
| 76 | Regular | | | |



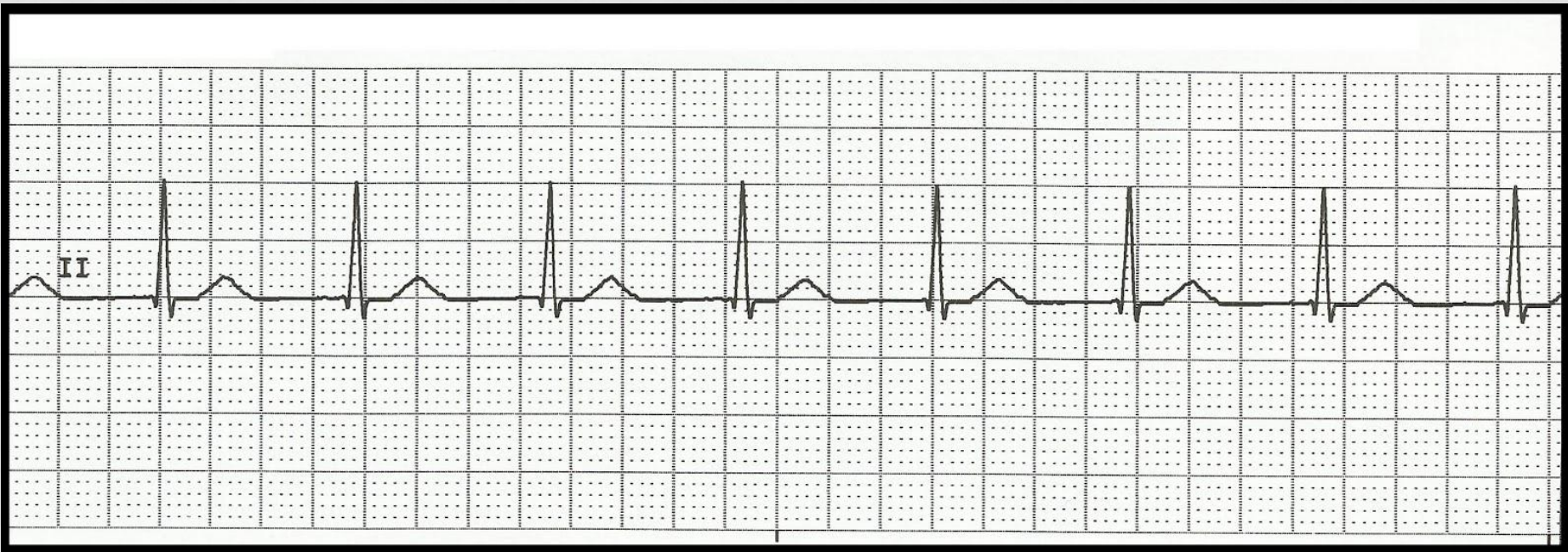
NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|---------|--------|-------------|-----|
| 76 | Regular | Absent | | |



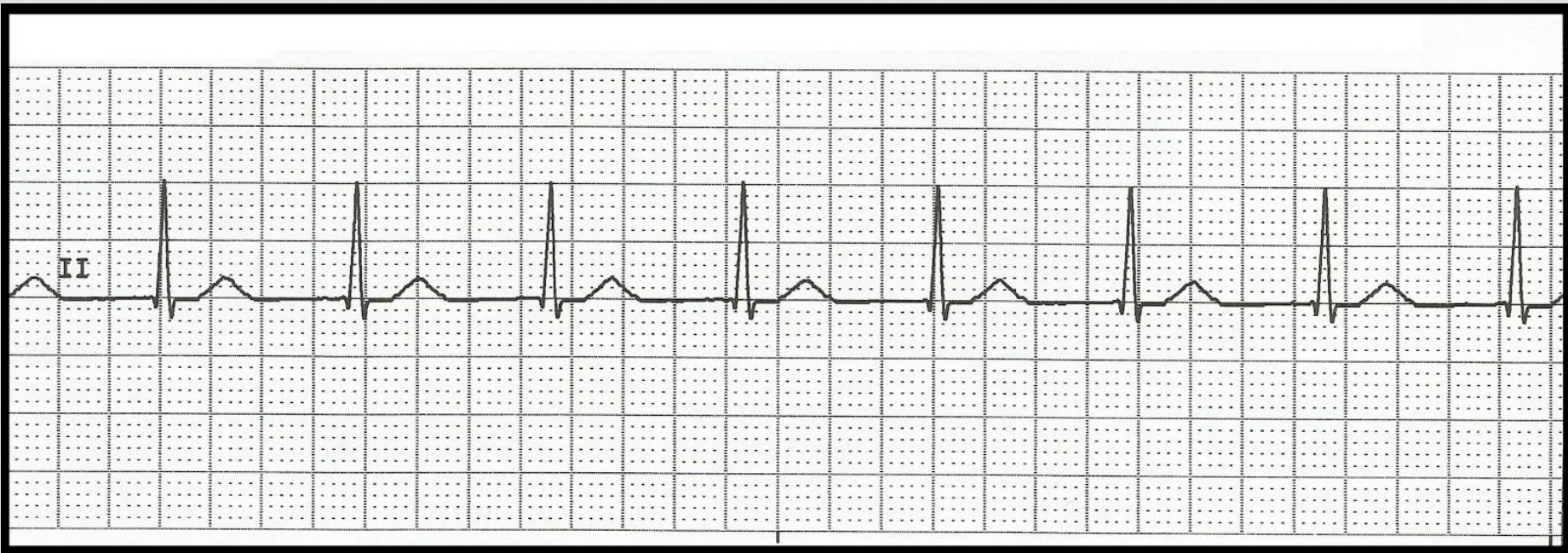
NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|---------|--------|-------------|-----|
| 76 | Regular | Absent | None | |



NAME THAT RHYTHM

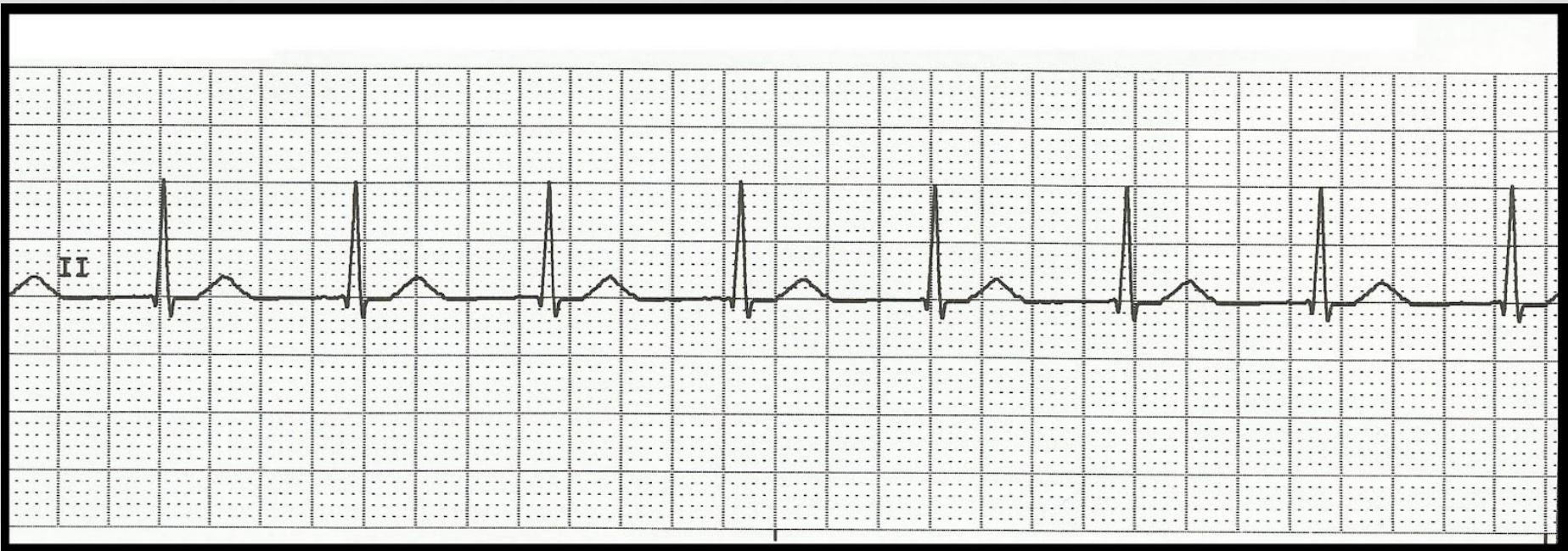
| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|---------|--------|-------------|-------------------|
| 76 | Regular | Absent | None | 0.08 sec 80 ms |



NAME THAT RHYTHM

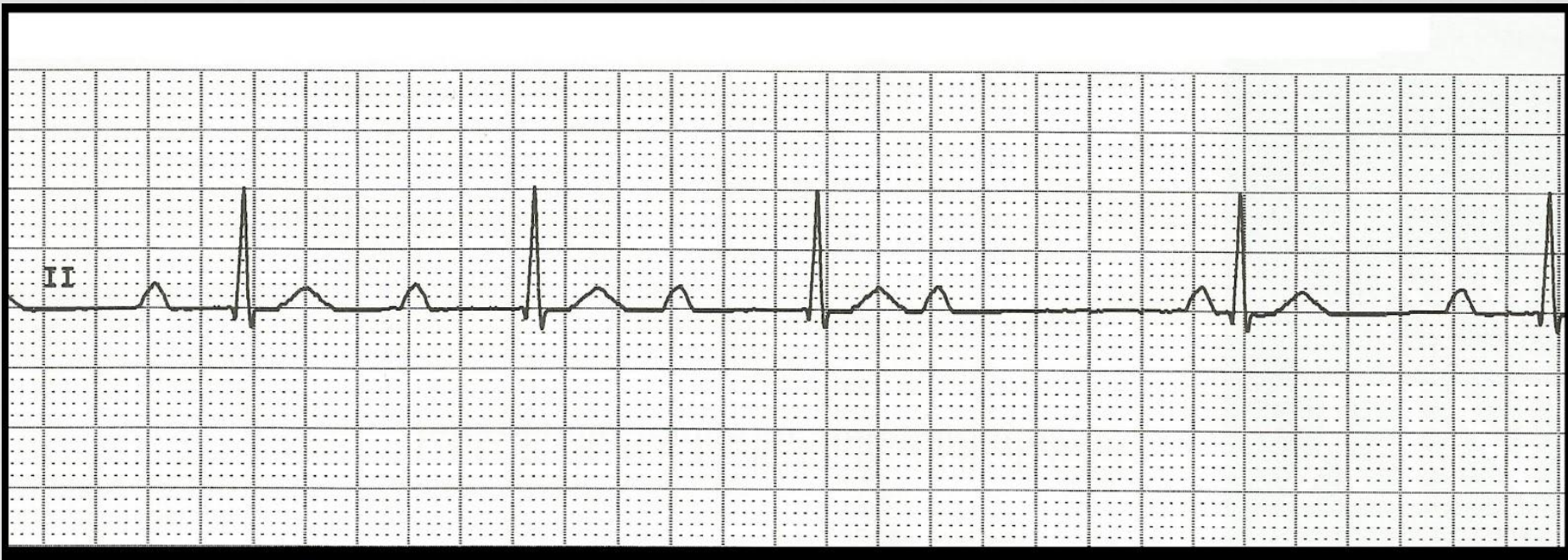
| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|---------|--------|-------------|-------------------|
| 76 | Regular | Absent | None | 0.08 sec 80 ms |

Accelerated Junction



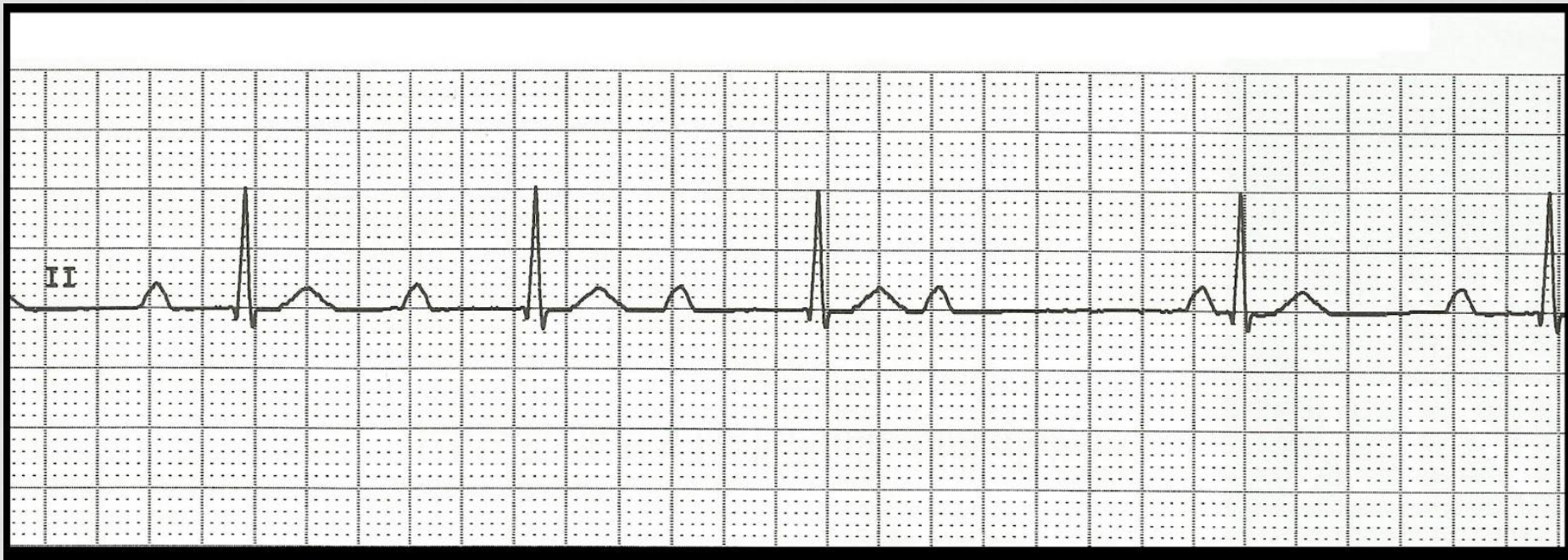
NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|--------|--------|-------------|-----|
| | | | | |



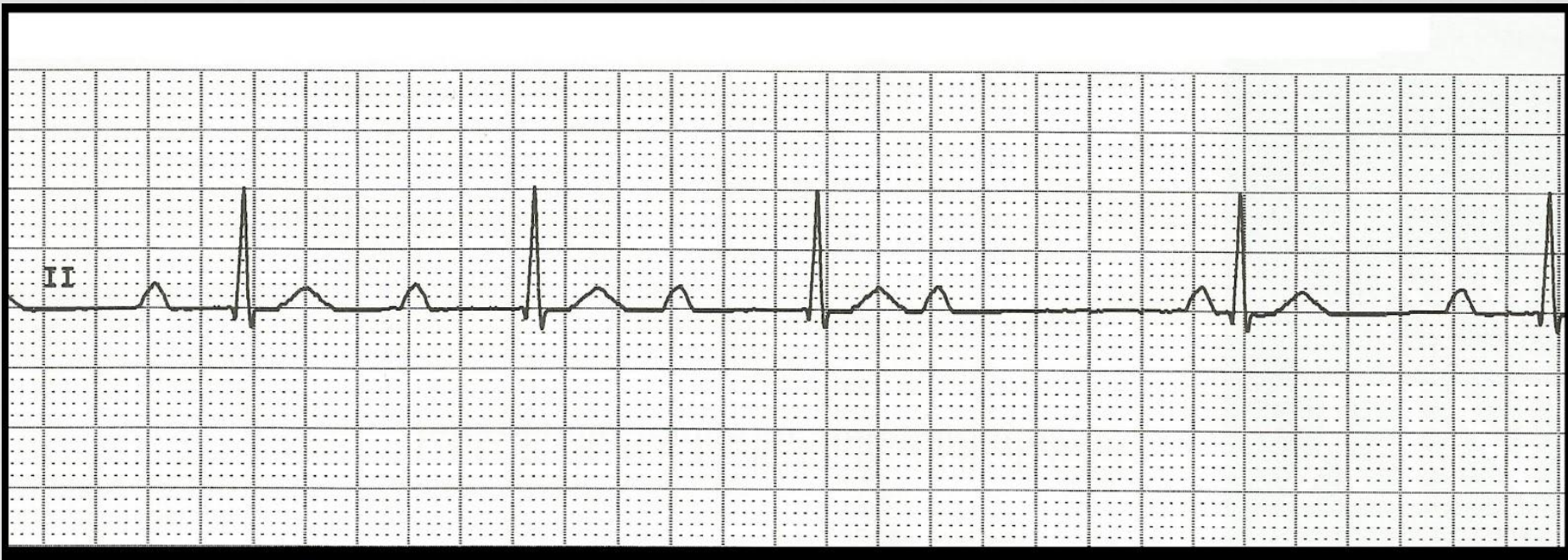
NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------------|--------|--------|-------------|-----|
| 51 Variable | | | | |



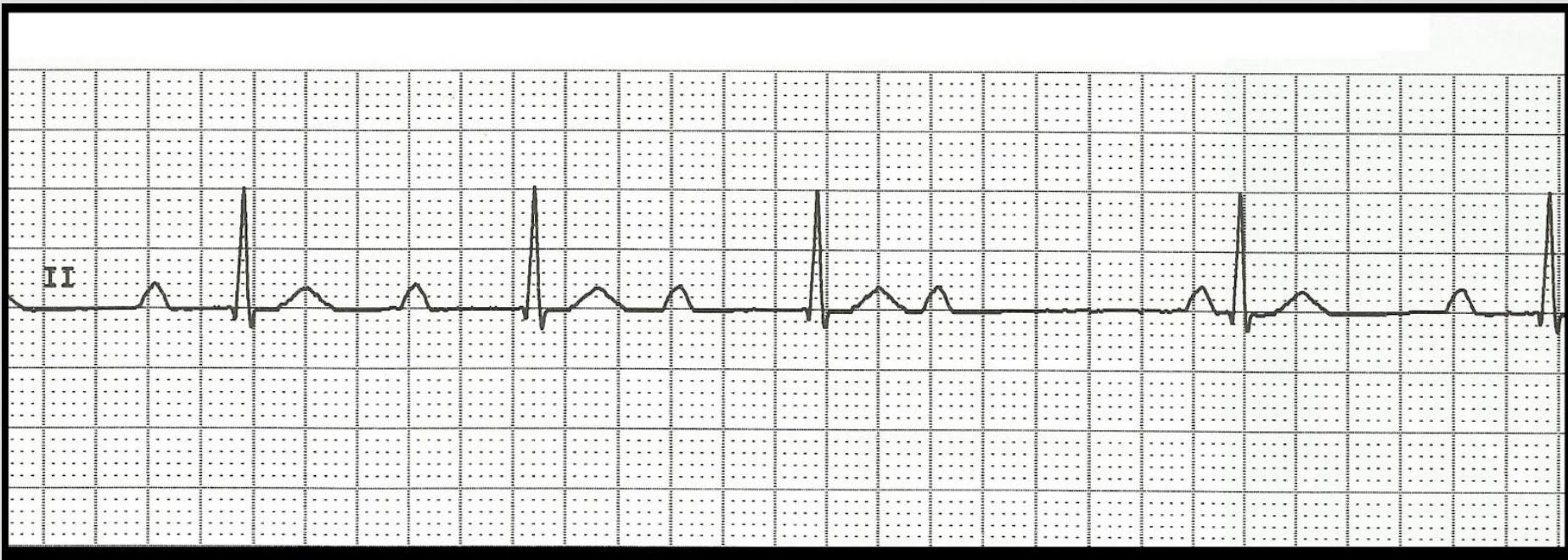
NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------------|-------------|--------|-------------|-----|
| 51 Variable | Reg. Irreg. | | | |



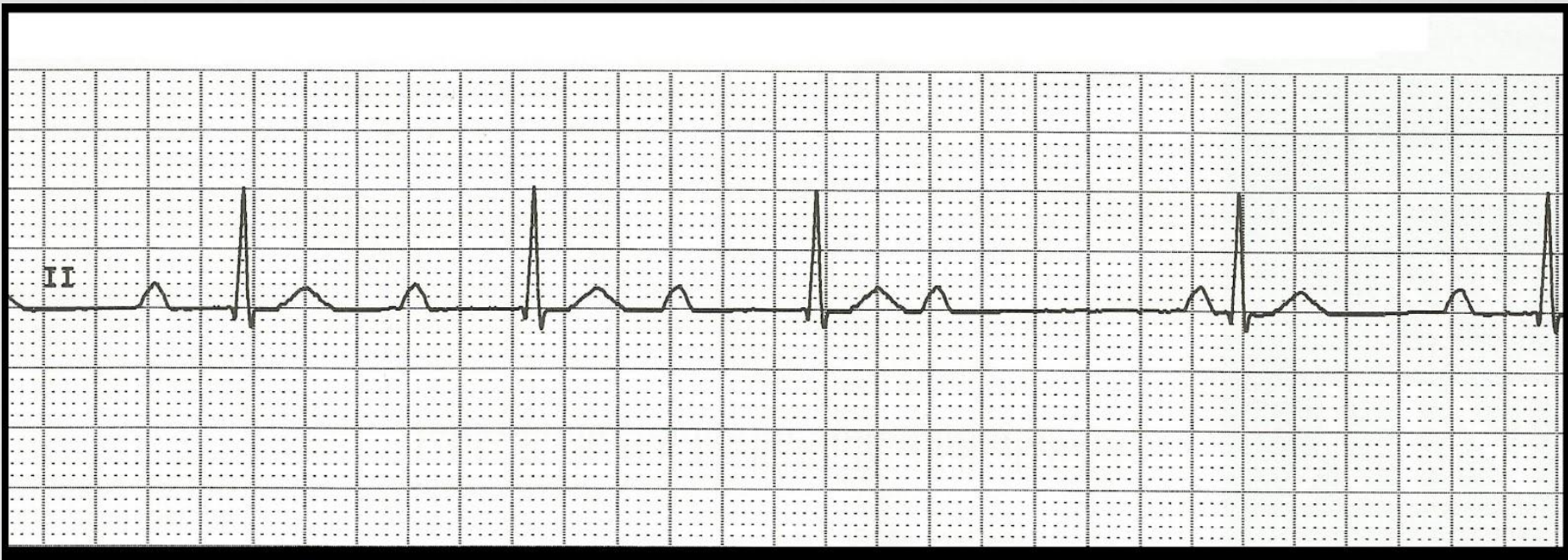
NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------------|-------------|--------------------|-------------|-----|
| 51 Variable | Reg. Irreg. | Present Upright | | |



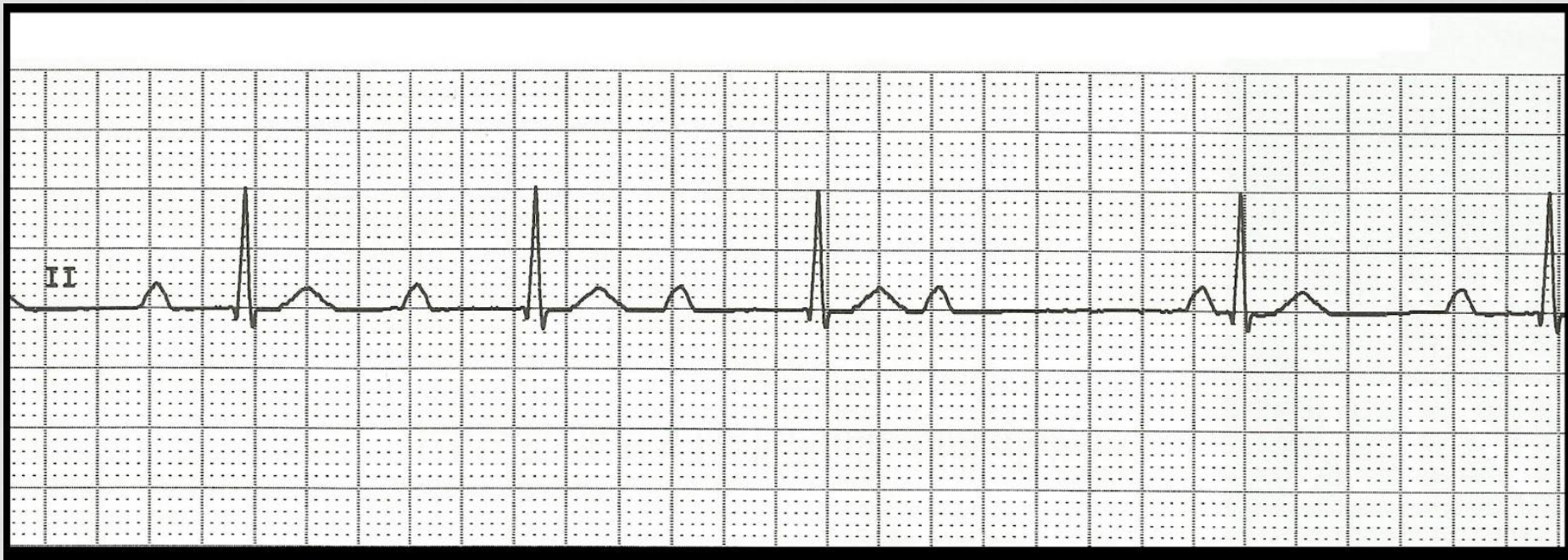
NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------------|-------------|--------------------|---------------------------|-----|
| 51 Variable | Reg. Irreg. | Present Upright | Increasing - drops QRS | |



NAME THAT RHYTHM

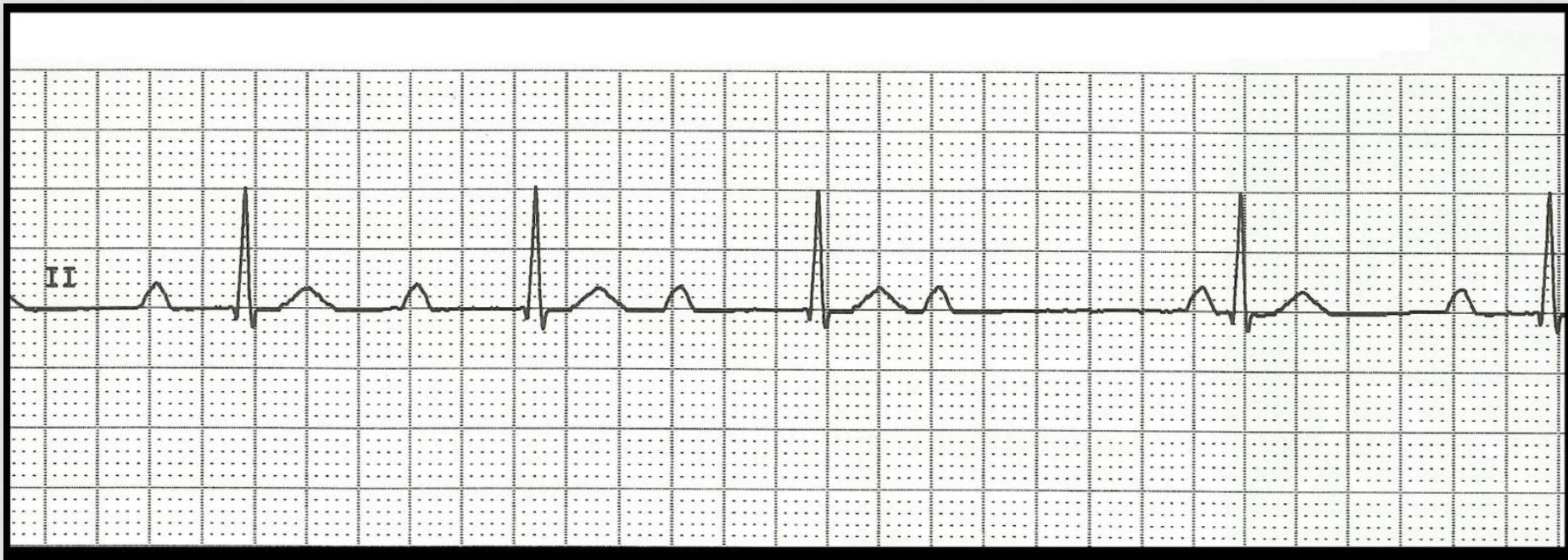
| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------------|-------------|--------------------|---------------------------|-------------------|
| 51 Variable | Reg. Irreg. | Present Upright | Increasing - drops QRS | 0.08 sec 80 ms |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------------|-------------|--------------------|---------------------------|-------------------|
| 51 Variable | Reg. Irreg. | Present Upright | Increasing - drops QRS | 0.08 sec 80 ms |

2nd Degree Mobitz Type 1



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|------|--------|--------|-------------|-----|
| | | | | |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------|--------|--------|-------------|-----|
| Variable | | | | |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------|--------------|--------|-------------|-----|
| Variable | Irreg. Irreg | | | |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------|--------------|-----------------|-------------|-----|
| Variable | Irreg. Irreg | Not Discernible | | |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------|--------------|-----------------|-------------|-----|
| Variable | Irreg. Irreg | Not Discernible | None | |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------|--------------|-----------------|-------------|-------------------|
| Variable | Irreg. Irreg | Not Discernible | None | 0.08 sec 80 ms |



NAME THAT RHYTHM

| Rate | Rhythm | P Wave | PR Interval | QRS |
|----------|--------------|-----------------|-------------|-------------------|
| Variable | Irreg. Irreg | Not Discernible | None | 0.08 sec 80 ms |

Atrial Fibrillation



SUMMARY

- Determine the Rate
 - 6 second method
 - 300 method
 - Cardiac Ruler
 - 12 lead rules
- Determine the Rhythm
 - Rate
 - Rhythm
 - P wave
 - PR Interval
 - QRS

MEDIC EXTRANET

- This and all previous 12 lead modules are/will be available on the medic extranet website
- Log into “My Medic”
- Placed under “Learning and Developement” --> “12 lead modules”