Pre-lab Quiz Results
You scored 100% by answering 3 out of 3 questions correctly.

1. The erythrocyte sedimentation rate (ESR)
   You correctly answered: c. is increased whenever fibrinogen and immunoglobulins cause the RBCs to clump together, stack up, and form a column.

2. The ESR cannot be used to follow the progression of which of the following diseases?
   You correctly answered: d. gingivitis

3. The ESR can be used to evaluate a patient with
   You correctly answered: e. all of the above.
Experiment Results
Predict Question: How will the sedimentation rate for sample 6 (individual with angina pectoris) compare with the sedimentation rate for sample 1 (healthy individual)?
Your answer: c. It will be the same.

Stop & Think Questions:
What is in the beige-colored portion of the sedimentation tube?
You correctly answered: c. plasma

Experiment Data:

<table>
<thead>
<tr>
<th>Blood sample</th>
<th>Distance RBCs have settled</th>
<th>Time elapsed</th>
<th>Sedimentation rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5 mm</td>
<td>60 min</td>
<td>5 mm/hr</td>
</tr>
<tr>
<td>2</td>
<td>15 mm</td>
<td>60 min</td>
<td>15 mm/hr</td>
</tr>
<tr>
<td>3</td>
<td>0 mm</td>
<td>60 min</td>
<td>0 mm/hr</td>
</tr>
<tr>
<td>4</td>
<td>30 mm</td>
<td>60 min</td>
<td>30 mm/hr</td>
</tr>
<tr>
<td>5</td>
<td>40 mm</td>
<td>60 min</td>
<td>40 mm/hr</td>
</tr>
<tr>
<td>6</td>
<td>5 mm</td>
<td>60 min</td>
<td>5 mm/hr</td>
</tr>
</tbody>
</table>

Sample 1: healthy individual
Sample 2: menstruating female
Sample 3: individual with sickle cell anemia
Sample 4: individual with iron-deficiency anemia
Sample 5: individual suffering a myocardial infarction
Sample 6: individual with angina pectoris
Post-lab Quiz Results
You scored 100% by answering 3 out of 3 questions correctly.

1. The erythrocyte sedimentation rate (ESR) measures
   You correctly answered: d. the settling of RBCs in a vertical, stationary tube of whole blood during one hour.

2. An increase in the ESR is
   You correctly answered: c. associated with worsening of anemia.

3. To properly measure the ESR, you need
   You correctly answered: c. a 1-hour timer.
Review Sheet Results

1. Describe the effect that sickle cell anemia has on the sedimentation rate (sample 3). Why do you think that it has this effect?
   Your answer:
   No rouleaux. In sample 3 the sedimentation rate is 0 mm/hr. It is so low, because in a normal cell, they form the normal rouleaux phenomena, because the erythrocytes are negative, while fibrinogen and globulins are positive, so they will attract each other and form the rouleaux. When a patient have sickle cell anemia, the cell will have a different shape than normal, so they will not be able to produce the rouleaux phenomena and the sedimentation will be a lot slower, even zero.

2. How did the sedimentation rate for the menstruating female (sample 2) compare with the sedimentation rate for the healthy individual (sample 1)? Why do you think this occurs?
   Your answer:
   Sample 2 - menstruating female - 15 mm/hr.
   This is because when there is lesser blood, they will not repell as much as usual, because the distance between them are bigger. That means that the cells will settle faster and the sedimentation will be faster.

3. How did the sedimentation rate for the individual with angina pectoris (sample 6) compare with the sedimentation rate for the healthy individual (sample 1)? Why? How well did the results compare with your prediction?
   Your answer:
   As I predicted, the sedimentation rate for a patient with angina pectoris will be the same as for a normal person. In angina pectoris you do not have myocardial infarction, which means there is not any destruction of the red blood cells, so it can still form rouleaux phenomena and the sedimentation rate will be the same.

4. What effect does iron-deficiency anemia (sample 4) have on the sedimentation rate?
   Your answer:
   Sample 4 - iron deficiency - sedimentation rate 30mm/hr. In this disease, the red blood cells are smaller than usual, so they will not repell as much as they are further apart. So they do not form the rouleaux the sedimentation and settle very fast.

5. Compare the sedimentation rate for the individual suffering a myocardial infarction (sample 5) with the sedimentation rate for the individual with angina pectoris (sample 6). Explain how you might use this data to monitor heart conditions.
   Your answer:
   In a patient with myocardial infarction, the patient does not get sufficient blood and thereby oxygen to the heart. There is an inflammation, which means that the cells are not broken, then they cannot form the rouleaux phenomena and they will settle fast, so the sedimentation rate is very fast. In angina pectoris on the other hand, the cells are not broken, so they will normally form the rouleaux formation and they will not settle as fast as in the myocardial infarction.