The Earthworm

Harken to me, you that know what is just, my people who have My law in their heart:
Fear not the reproach of men and be not afraid of their blasphemies.
For the worm shall eat them up as a garment...:
But My salvation shall be forever, and my justice from generation to generation.  
Isaiah 51:7-8

Lab Report for: _______________________________

Table 1: Anatomical Terms and Directions in the Earthworm

<table>
<thead>
<tr>
<th>Anatomical Term</th>
<th>Relative Position</th>
<th>Example from the earthworm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior</td>
<td>Toward the front</td>
<td>The prostonium is anterior to the clitellum</td>
</tr>
<tr>
<td>Posterior</td>
<td>Toward the tail</td>
<td>The anus is posterior to the clitellum</td>
</tr>
<tr>
<td>Superior</td>
<td>Part is above another part</td>
<td>Brain is superior to the ventral nerve cord</td>
</tr>
<tr>
<td>Inferior</td>
<td>Part is below another part</td>
<td>Ganglia are inferior to the alimentary canal</td>
</tr>
<tr>
<td>Dorsal</td>
<td>On the top side</td>
<td>The brain is dorsal</td>
</tr>
<tr>
<td>Ventral</td>
<td>On the belly side</td>
<td>The ovary is ventral</td>
</tr>
<tr>
<td>Proximal</td>
<td>Part is closer to the point of attachment to the trunk</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Distal</td>
<td>Part is farther from point of attachment to the trunk</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Superficial</td>
<td>Near the surface of the organism</td>
<td>Setae are superficial to the brain</td>
</tr>
<tr>
<td>Deep</td>
<td>More internal parts of the organism</td>
<td>Crop is deep to the epidermis</td>
</tr>
<tr>
<td>Medial</td>
<td>Part is closer to the midline of the body</td>
<td>Dorsal blood vessel is medial to the nephridia</td>
</tr>
<tr>
<td>Lateral</td>
<td>Part is more toward the side of the body</td>
<td>Seminal vesicles are lateral to the dorsal blood vessel</td>
</tr>
<tr>
<td>Bilateral</td>
<td>Paired parts, one on each side</td>
<td>Ovaries are bilateral</td>
</tr>
</tbody>
</table>

*Student answers will vary. But the anatomical directions should be correct. They should also vary and not merely be the opposite from line to line.*
Data Analysis and Conclusions

1. Fill out the classification scheme for the earthworm, *Lumbricus terrestris*:
   a. Domain: ___Eukarya___________
   b. Kingdom: ___Animalia___________
   c. Phylum: ___Annelida___________
   d. Class: ___Oligochaeta___________
   e. Genus: ___Lumbricus___________
   f. Species: ___terrestris___________

2. What is a coelom? Why is it significant in Annelids?
   A coelom is a fluid-filled body cavity. The Annelids have a true coelom. The coelom is one of the main characteristics that sets the Annelids apart from the other worms, and from lower animals. The coelom is a protective cushion for the internal organs and allows for them to grow independently of the body wall.

3. Name another characteristic that sets the Annelids apart from other worms?
   The Annelids also have segmented bodies.

4. See the figure below:
   a. Is this a dorsal view or a ventral view of the earthworm?
      This is a ventral view.

   b. Identify the features of the external anatomy by filling in the blank boxes. Identify the Anterior End in one of the boxes.

5. In the dissection, the earthworm is first cut from the clitellum to the mouth, and the outer epidermis is opened. See the figure below for a representation. (Some of the organs have been removed in order to visualize just the circulatory and digestive systems.)

   a. Is this a dorsal view or a ventral view of the earthworm?
This is a dorsal view.

b. In this view, you can find most of the parts of the digestive system, and some components of the circulatory system. Identify the features by filling in the blank boxes.

6. The figure below shows some elements of the reproductive and excretory systems.
   a. Is this a dorsal view or a ventral view of the earthworm?
      This is a dorsal view.
   
      b. Identify the following features:
         - Nephridia
         - Ovary
         - Oviduct
         - Testes sac with testes
         - Seminal receptacle
         - Seminal vesicle
7. This is a side (lateral) view of the earthworm with the first part of the digestive system drawn in. In this figure, you will identify parts of the nervous system.
   a. Draw and label the following:
      - Ventral and dorsal sides
      - Two brain lobes
      - Fused nerve cords
      - Ventral nerve cord
      - Ganglia in segments
      - Nerves branching to body parts
8. This is a side (lateral) view of the earthworm with the first part of the digestive system drawn in. In this figure, you will identify parts of the circulatory system.
   a. What type of circulatory system does the earthworm have?
      The earthworm has a closed circulatory system.
   b. Draw and label the following:
      - Ventral and dorsal sides
      - Dorsal blood vessel
      - Ventral blood vessel
      - Aortic arches