**Year 8 Circulatory System Research Task**

**Your task is to complete the following research activities. This content will be tested in your final topic test.**

**Visit this website** <https://www.livescience.com/49795-strange-animal-hearts.html> **and answer the following questions:**

1. The function of the heart is to pump blood around the body so that the cells are able to receive oxygen and nutrients like glucose which are needed for cellular respiration to occur. During cellular respiration the cells are able to create energy (ATP) which is used for the cells to function.

Different organisms have different heart rates (how many times the heart beats per minute). Suggest a reason why a hibernating ground hog’s heart only beats 5 times a minute whereas a hummingbird in flight will experience 1,260 beats per minute:

1. A giraffe’s heart is significantly larger than a human heart. How much larger is it and suggest a reason why this is the case:
2. Mammals have a four chambered heart, whereas frogs (amphibians) have 3 chambered hearts. Name the chambers present in a mammalian heart and an amphibian heart. How are they different?
3. Why do mammals have a four chambered heart? What is the advantage of this?
4. How does the heart of frogs prevent mixing of oxygenated and deoxygenated blood?
5. Describe how blood flows through (the path it takes) an amphibian heart:
6. Which organism has the largest heart of all living things?
7. Cephalopods have three hearts. Where are the two brachial hearts located and what is their function?
8. Where is the systemic heart located and what is its function?
9. Human blood is red in colour due to the presence haemoglobin. Cephalopods are considered to be ‘blue blooded’. What is found in the blood to make it blue?
10. Insects have open circulatory systems. What does this mean?
11. What is the role of the dorsal sinus?
12. What is the role of the spiracle?
13. What is haemolymph?
14. The insects heart is different to that of a mammal, in that it does not beat by itself. How does the insect heart deliver haemolymph to the rest of the body?
15. How is the circulatory system of an earthworm different to that of a human?
16. Describe the structure of a fish heart:
17. Describe how blood flows through (the path it takes) a fish heart?
18. Why do fish need a bulbous arteriosus?

**Visit this website** <http://www.dynamicscience.com.au/tester/solutions1/biology/hearts.html> **and answer the following questions:**

1. Describe the advantages and disadvantages of each type of circulatory system:

|  |  |  |
| --- | --- | --- |
| **Organism** | **Advantages** | **Disadvantages** |
| **Fish** |  |  |
| **Mammals** |  |  |
| **Insects (arthropods)** |  |  |
| **Amphibian** |  |  |
| **Avian** |  |  |

1. Why is it that a frog can cope with a 3 chambered heart but a dog cannot?
2. Why must a fish continually move in the water in order to survive?