**Calculating Medullary Index**

Recall from your notes that the medullary index is calculated by diving the medullar width (width of medulla) by the width of the cortex (see illustration below). Recall also that in humans, the value of the medullary index is usually 0.333 or less, and that of animal hair is 0.50 or greater

Calculation of Medullary Index

* In the diagram above, label the three parts of the structure of the hair.

Use a ruler to calculate the medullary index of the following sketches/pictures of hair samples. **SHOW YOUR WORK. Also, label each section of the hair for each picture.**

|  |  |
| --- | --- |
| Prediction:  Measurement/Calculation:  Conclusion: | Prediction:  Measurement/Calculation:  Conclusion: |
| Prediction:  Measurement/Calculation:  Conclusion | Prediction:  Measurement/Calculation:  Conclusion: |

* Below you will see the unit “micron.” This is also known as a micrometer. It is commonly written as µm. It represents 1 x 10-6 meters. That’s a very small number.
* Calculate the medullary index of a hair whose diameter is 110 microns wide and whose medulla measures 58 microns. **Is this a human or animal hair?**
* Calculate the medullary index of a hair whose diameter is 93 microns wide and whose medulla measures 31 microns**. Is this a human or animal hair?**
* Think: Why are we not including units? Do they matter in THIS case? What does our calculation actually tell us?

**Using growth rate of hair to calculate time since death.**

* Human hair grows at the rate of 0.44 mm per day. Use this information to answer the following question.
  + The body of a woman was found in the woods. Some hair fibers found on the body were sent to the crime lab for analysis. The ends of the hair attached to the body were gray, but the tips of the hair showed that it had been dyed. The distance from the root of the hair to the beginning of the dyed area measured 8 mm. Investigators determined that the victim’s hair had last been dyed on August 1, 2004. Assuming the hair grows at the rate of 0.44 mm per day, on approximately what date did the woman die? Explain your answer.