Name _____ Date _____

Missing Persons

A Lab on Forensic Anthropology

Objective

You will identify a missing person by using the humerus bone length to find the height of that individual.

Background Information

Last week 12 families received letters from the Federal Bureau of Investigation stating that a human humerus, the upper arm bone, had washed ashore on nearby Seagull Beach. The FBI letter said that it is likely that this upper arm bone belonged to one of 12 missing persons in the area who have never been discovered.

The life insurance policies that covered these 12 individuals have not yet paid the beneficiaries. These polices cannot be paid until proof of the missing person's death has been confirmed. Many of these families are in desperate need of this financial assistance. Most of the familes believe their loved one was murdered.

The length of the upper arm bone can be used to determine the actual height of its owner. For this reason, each of the 12 families has been asked to provide information about the height of their loved one. The members of the crime lab will compare the height of each missing person with the projected height of the individual to whom the humerus belonged. A crime lab report will be sent to the proper insurance company if a match is found for the humerus bone.

Materials

Tape measure (metric)
Calculator
Exhibit A

Procedure

1. Exhibit A is a life-size sketch of the upper arm bone that washed up on Seagull Beach. You and your team of experts will determine the owner of the humerus.
2. Measure the length of the arm bone in centimeters. Record the length of the humerus on your Crime Report Sheet.

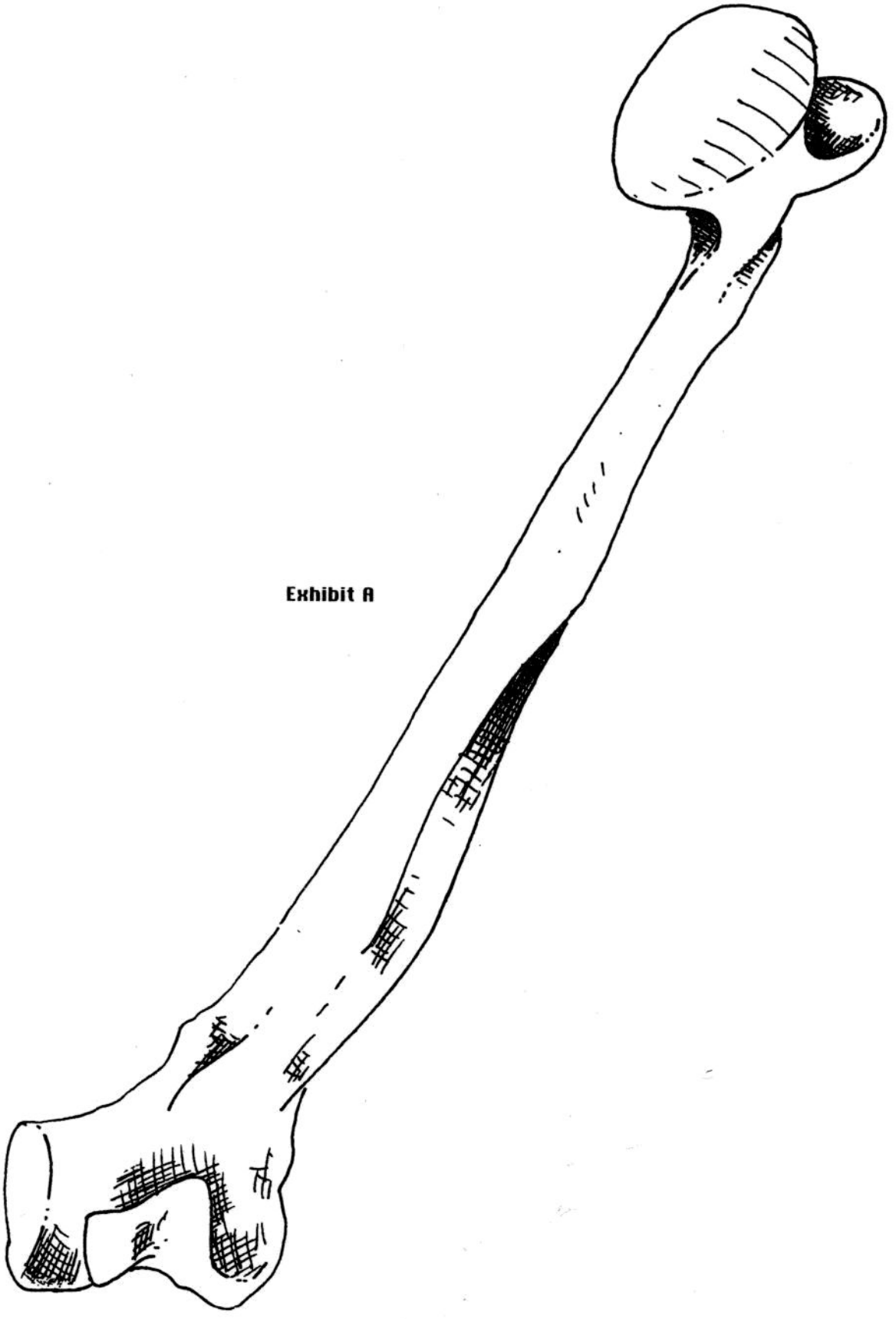

Exhibit A

3. The families of the 12 missing persons have provided information regarding the height of their missing family member to the FBI. Their information is provided on the Data Table. Convert the heights in feet and inches to centimeters. Remember that 2.54 cm equals 1 inch.

4. Use the following formulas to determine whether or not the humerus bone could have belonged to one of these missing persons. Record this information on the Data Table.

   The formula for males and females is different:

   Height of male = (Length of humerus bone in cm) × (2.89) + 70.64
   Height of female = (Length of humerus bone in cm) × (2.79) + 71.48

5. On the Crime Report Sheet indicate the owner of Exhibit A.

Crime Report Sheet

1. Name of Investigators: _____
   Date of Investigation: _____

2. *Results of Investigation:* Length of Exhibit A Humerus: _____ cm

DATA TABLE

3.

Missing person	*Height (feet and inches)*	*Height (cm)*	*Calculated length of humerus (cm)*
Bill Boston	5′ 11″		
Jane Caldwell	5′ 5″		
Ernest Bass	5′ 6″		
Jill James	4′ 10″		
Gary Burnes	6′ 10″		
Lily Walker	5′ 9″		
Mary Zimmerman	4′ 8″		
Billy Jenkins	6′ 2″		
Jessie Agan	6′ 0″		
Gladys Thomas	5′ 7″		
Don Harris	5′ 7″		
Lenny Aires	6′ 4″		

4. Is the owner male or female? _____
5. Estimated height of owner of humerus bone: _____
6. Is one of the 12 missing persons a possible owner? _____
7. Name of probable owner: _____
8. To prove to the insurance company that this formula works, find the height in cm of each person in your investigative team. Then measure the length of each person's humerus. Use your calculations to show that humerus bone length can be used to determine height.