

ACTIVITY 2: INVESTIGATING ANIMAL INTELLIGENCE

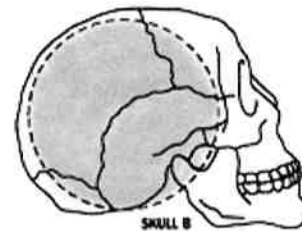
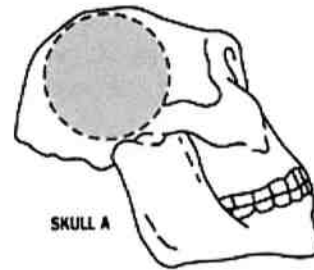
One characteristic of chimpanzees and other higher primates is their larger brain size. The farther up a species is on the evolutionary tree, the bigger its brain. Over the eons, primates evolved larger and more complex brains. Sheba, the chimp seen solving math problems in this episode of *Frontiers*, exhibits a high degree of intelligence. In this activity, you'll have to exercise your math skills. After all, if Sheba can do math, so can you!

MEASURING CRANIAL CAPACITY

One indication of animal intelligence is brain size. Primates come in all shapes and sizes, and so do their brains. The smallest primate, a mouse lemur, is only about 60g (2 oz.), so its cranial capacity is rather limited. A little higher on the scale are the New World monkeys, more advanced than lemurs, with bigger brains. But the great apes are even more advanced than the New or Old World monkeys. And one relative of the great apes (humans) has the most

advanced brain of all the primates! The average ape's cranial capacity rarely exceeds 600 cu cm, while the average human brain has a capacity of 1,350 cu cm.

In this activity, you'll be modeling how specialists in animal behavior measure cranial capacity of species they are studying. The circle on each skull represents the brain capacity of two primates. Measure the diameter of each circle. Then multiply by 200 to approximate the brain capacities in cubic centimeters.



QUESTIONS:

1. What brain capacity did you calculate for Skull A?
_____ cubic centimeters
2. What brain capacity did you calculate for Skull B?
_____ cubic centimeters
3. What primate do you think each skull belongs to?
Skull A: _____
Skull B: _____

ANSWERS:

1. approximately 600 cu cm
2. approximately 1,100 cu cm
3. Skull A: chimp; Skull B: human

CONSIDER THIS!

- Pioneer ethologist Dr. Jane Goodall worked with chimpanzees for over 35 years. She has shown that chimps not only make and use tools, but display remarkable similarities to humans in terms of behavior. What do you think defines intelligence? Can a chimp or other higher primate be as intelligent as a human?
- Dr. Francine Patterson spent almost two decades teaching American Sign Language to Koko, a lowland gorilla. Koko has a sign language vocabulary of over 600 words. Dr. Patterson and many other researchers believe that vocabulary development is one of the best indicators of intelligence. Do you think Koko and Sheba the chimp have a true cognitive understanding of the language they have been taught? Is animal communication the same as human language?