

## Measuring Mammals

### Level D

You have four scopes of different sizes, labeled accordingly.

#### Type A



#### Type B

Same size hole as type A but longer in length.



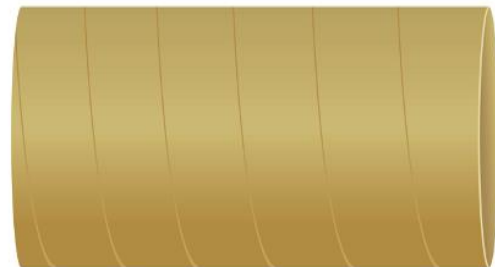
#### Type C

Larger size hole as type A and B but same length as type B.



#### Type D

Same size hole as type C and same length as type A.



— Inside Problem Solving: Measuring Mammals —

You are standing fifty feet away from an animal. Looking through scope TYPE A, the animal's image fills the scope's opening exactly.

- Explain what you need to do to look through a TYPE B scope and see the full image of the same animal fill the opening of that view tube.
- Explain what you need to do to look through a TYPE D scope and see the full image of the same animal fill the opening of that view tube.
- Suppose TYPE C scope is 3 times as long in length as TYPE A, and the diameter of the opening of TYPE C is twice the diameter of TYPE A. Exactly where would you need to stand to see the full image of the same animal fill the opening of that TYPE C scope?
- You are a tourist on safari on an African plain. Across the river, a distance away, there is an elephant standing still. The current of the river is swift and you cannot cross it. You have in your possession a piece of paper that can be rolled into various-sized view tubes, a measuring tape, a pen, and calculator. You would like to determine the height of the elephant. Explain to another tourist how you were able to accurately determine the elephant's height.