

Name \_\_\_\_\_ Date \_\_\_\_\_

# View Tube

## Picture

**Draw a labeled picture of the experimental setup.  
Call the distance from the meterstick to the eye  $L$ .  
Call the height of the field of view  $H$ .**

1. Which is the manipulated variable? \_\_\_\_\_
2. Which is the responding variable? \_\_\_\_\_
3. What variables should be held fixed during the experiment? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

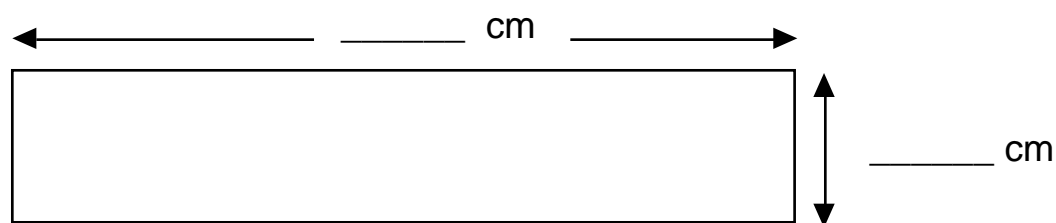
## Data Table

Work with your partner to gather your data.  
Record your data in the table below.

Table I

L in _____	H in _____			
	Trial 1	Trial 2	Trial 3	Average
100				
200				

Measure the length and diameter of your view tube.  
Record the measurements on the picture below.



View Tube Dimensions  
Side View

## Graph

**Plot your data on a sheet of graph paper. Remember to label each axis and write in proper units. Draw a best-fit curve for your data.**

4. On which axis (horizontal or vertical) did you plot H?

\_\_\_\_\_

5. On which axis (horizontal or vertical) did you plot L?

\_\_\_\_\_

6. Is the curve a straight line? \_\_\_\_\_

Why or why not? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Comprehension Questions

7. Is it important that the same person look through the view tube for the whole experiment?

\_\_\_\_\_

Why or why not? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

8. Use your graph to predict how much of the meterstick you could see if you stood 150 cm from the meterstick.

\_\_\_\_\_

Check your prediction. How much can you see? \_\_\_\_\_

Was your prediction close? \_\_\_\_\_

\_\_\_\_\_

9. Use your graph again. Tell how many centimeters you could see if you stood 5 meters away.

\_\_\_\_\_

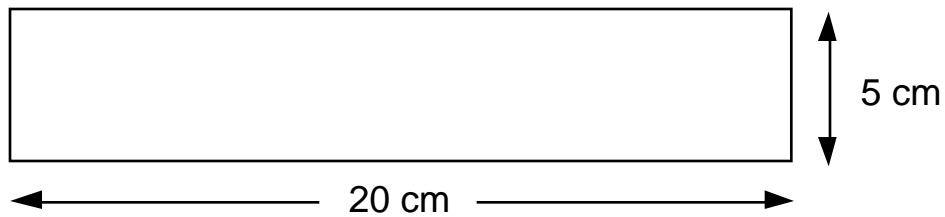
10. If you can see 80 cm of the meterstick, predict about how far away you are from the meterstick.

\_\_\_\_\_

Check your prediction. How far are you from the meterstick? \_\_\_\_\_

Was your prediction close? \_\_\_\_\_

11. Sally has the view tube shown below.  
On your graph, plot what you think her curve will look like.



## SIMPLE PROPORTIONAL REASONING

12. Use your data and proportional reasoning to predict how many cm you would see if you were 6 meters from the meterstick. Show all your work.

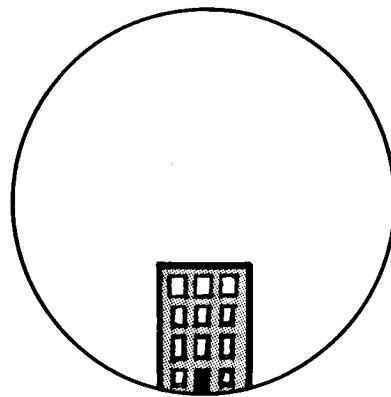
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13. At the zoo you find that you can just see all of the giraffe when you step back 18 meters from the fence where the giraffe is standing.

How tall is the giraffe? Show your work.

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14. You want to know how far you are from the public library. You look through your view tube and see that the library covers only  $\frac{1}{3}$  of the field of view of the view tube as shown at the right. The library has 4 stories and each story is about 4 meters tall.



Use your data and proportional reasoning to predict how far you are from the library. Show your work.

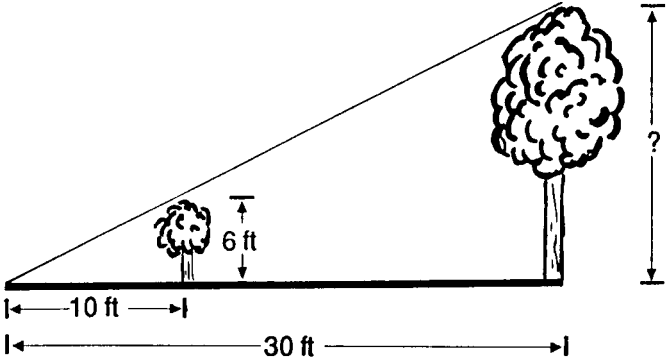
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15. Brian can see 25 cm of his meterstick through his view tube when he is 1 meter from it. Brian goes to the aquarium with his class. If Willie the Whale is 15 meters long and Brian can just see all of Willie in his view tube, how far is Brian from Willie? Show your work.

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16. Use your experience with the view tube to find the height of the tall tree in the picture below. Show your work.

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17. You have a new view tube with the same length as your toilet paper roll but it has twice the diameter.

a. What happens to your new field of view?

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b. How much would you see at 1, 2, and 3 meters?

1 m \_\_\_\_\_ 2 m \_\_\_\_\_ 3 m \_\_\_\_\_

18. You have a new view tube with the same diameter as your toilet paper roll but it has twice the length.

a. What happens to your new field of view?

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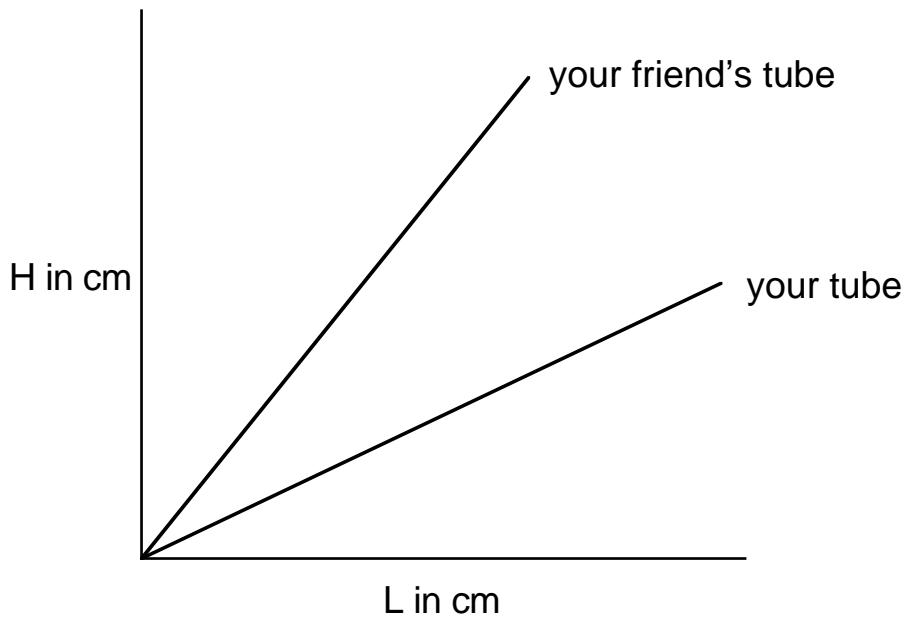
b. How much would you see at 1, 2, and 3 meters?

1 m \_\_\_\_\_ 2 m \_\_\_\_\_ 3 m \_\_\_\_\_

19. You have a new view tube with twice the length and half the diameter of your toilet paper roll. How much would you see at 1, 2, and 3 meters?

1 m \_\_\_\_\_ 2 m \_\_\_\_\_ 3 m \_\_\_\_\_

20. A friend tells you that he has a view tube too.  
The graph of the curves for both your view tubes is shown below.



How might the dimensions of your friend's view tube differ from yours?

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