



# Shark Frenzy

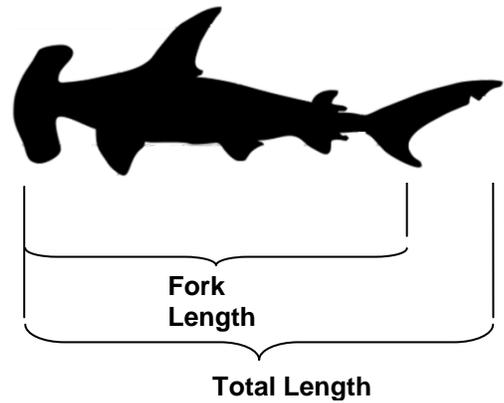
## Student Activity

Name \_\_\_\_\_

Class \_\_\_\_\_

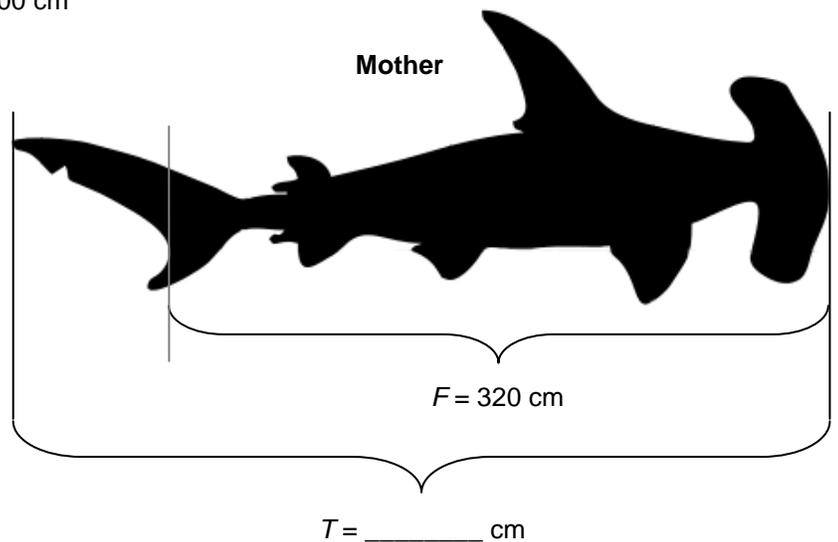
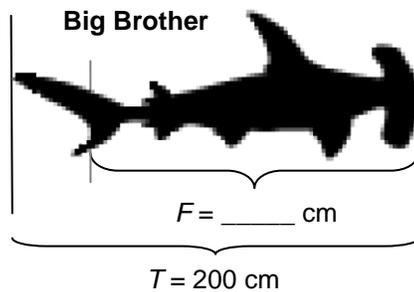
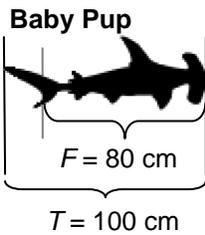
One way scientists can classify a shark is by measuring its “fork length”. In this activity we will explore why.

1. Explain why you think the name “fork length” is given to that particular length.



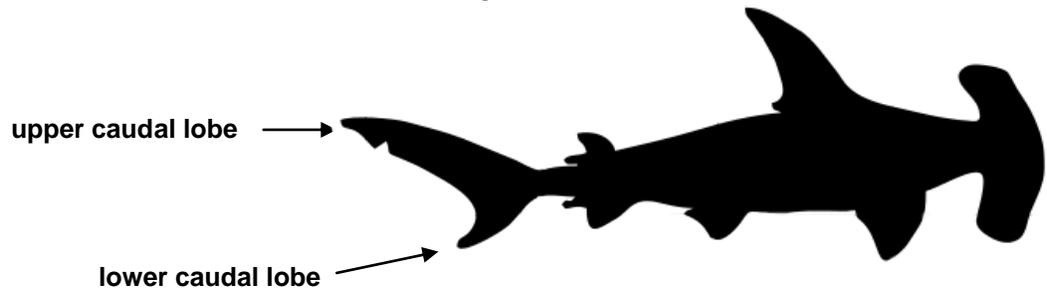
2. Suppose you have caught, measured, and tagged a family of hammerhead sharks. (Do not attempt without adult supervision.) If the sizes of all the members of this family were the same shape but different sizes, determine the missing lengths. Then complete the table. Discuss any patterns you see.

Hammerhead Shark	Total Length, $T$ (cm)	Fork Length, $F$ (cm)
Baby Pup		
Big Brother		
Mother		





3. The tail, or caudal, fin has two lobes as shown in the figure.



Do you agree or disagree with each of these statements?

- A. *The longer the lower caudal length, the longer the total length of the shark is.*

Circle one: AGREE    DISAGREE

- B. *The longer the upper caudal length, the longer the total length of the shark is.*

Circle one: AGREE    DISAGREE

Explain your reasoning.

4. A baby hammerhead shark, called a pup, and its mother are tagged. Measurements are shown in the table.

Shark	Total Hammerhead Length, $T$ (cm)	Hammerhead Fork Length, $F$ (cm)
Baby	90	72
Mother	400	320

- A. If these points  $(T, F)$  were plotted, what is the slope of the line which passes through them?

- B. What is the equation of the line which passes through these points?



5. A thresher shark pup and its bull father are tagged. Measurements are shown in the table.

A. If these points  $(T, F)$  were plotted, what is the slope of the line which passes through them?

<b>Shark</b>	<b>Total Thresher Length, <math>T</math> (cm)</b>	<b>Thresher Fork Length, <math>F</math> (cm)</b>
Baby	300	174
Father	450	261

B. What is the equation of the line which passes through these points?

6. Two great white sharks are tagged. Measurements are shown in the table.

A. If these points  $(T, F)$  were plotted, what is the slope of the line which passes through them?

<b>Shark</b>	<b>Total Great White Length, <math>T</math> (cm)</b>	<b>Great White Fork Length, <math>F</math> (cm)</b>
Little	500	460
Big	600	552

B. What is the equation of the line which passes through these points?



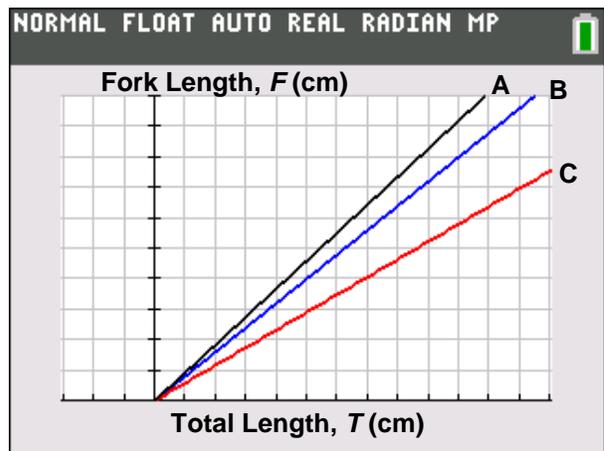
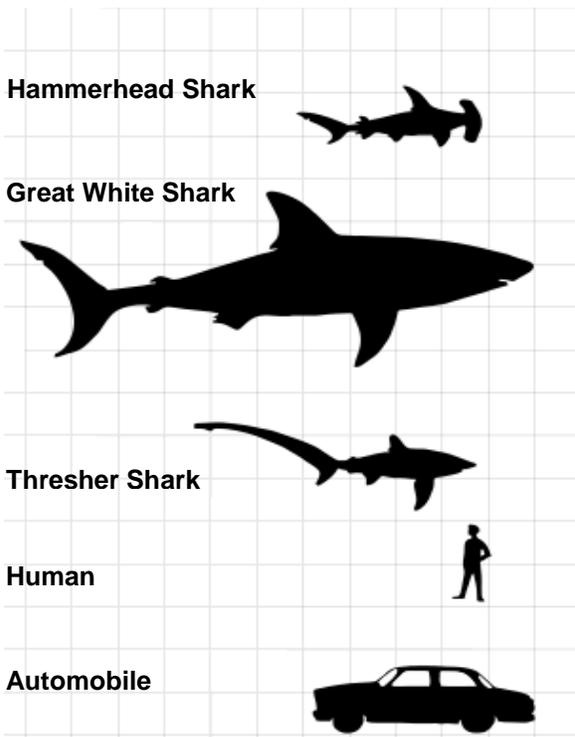
7. Enter all three of your equations in your calculator to display this family of linear functions. Use the window  $0 < x < 500$  and  $0 < y < 500$  where Xscl and Yscl are each 50. Then press ZOOM 5:Square to produce a "square window" with a true geometric perspective.

Below are silhouettes of three families of sharks showing how their lengths compare to the size of a human and the length of a car. Which shark matches which graph? Circle one letter choice for each shark family and write the equation of the linear model.

Hammerhead Shark    A   B   C    Equation: \_\_\_\_\_

Great White Shark    A   B   C    Equation: \_\_\_\_\_

Thresher Shark    A   B   C    Equation: \_\_\_\_\_



Graphic from [http://upload.wikimedia.org/wikipedia/commons/8/8d/Sharks\\_silhouettes.svg](http://upload.wikimedia.org/wikipedia/commons/8/8d/Sharks_silhouettes.svg).

8. Interpret the real world meaning of the slope and  $y$ -intercept of these lines.
9. Suppose you have caught several sharks which have the same total length. Circle which one of these statements about the rear fin is true. Explain your reasoning.
- A. Slopes of the lines of the three families **decrease** with increasing length of the upper caudal lobe.
- B. Slopes of the lines of the three families **increase** with increasing length of the upper caudal lobe.