

**Mystic Seaport for Educators**  
**Science on the 38<sup>th</sup> Voyage of the *Charles W. Morgan***  
**Lesson 1 of 6: Water Transparency and Whales**  
**Student Worksheet**

Name: \_\_\_\_\_

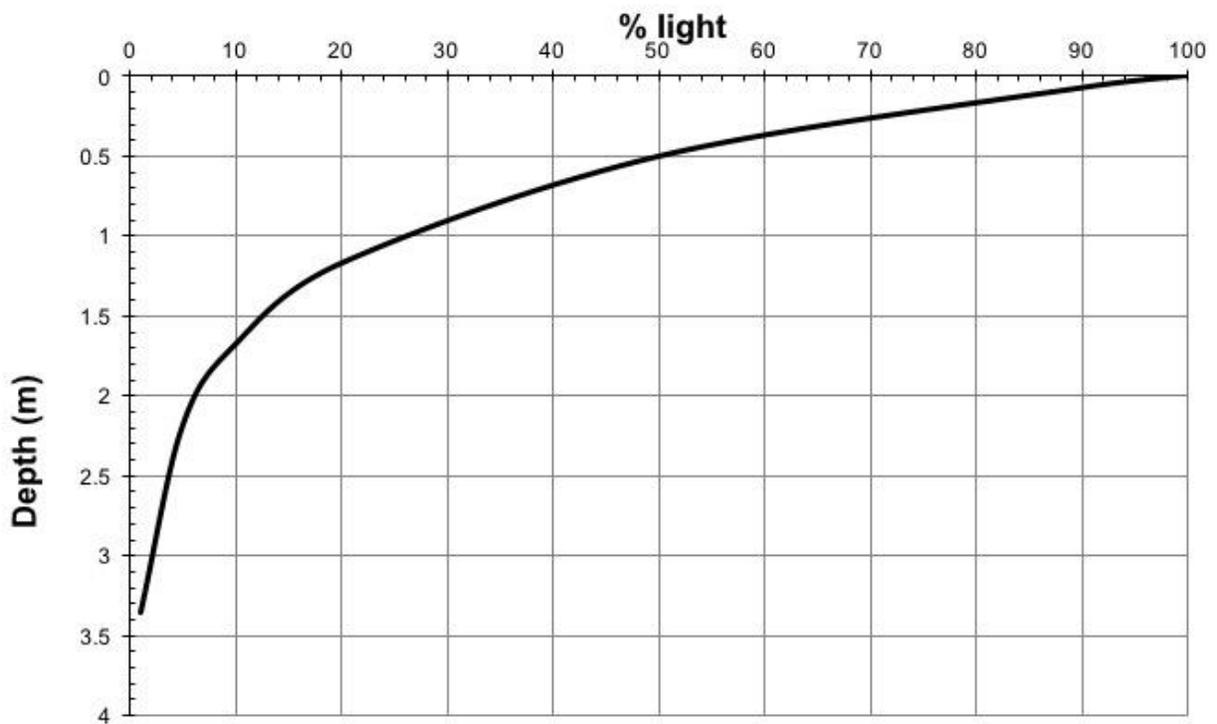
**Questions:**

1. After watching the video, record the observed Secchi depths and light levels in the Mystic Estuary. Write your answers in the box below:

Depth	How well can you see the Secchi disk?

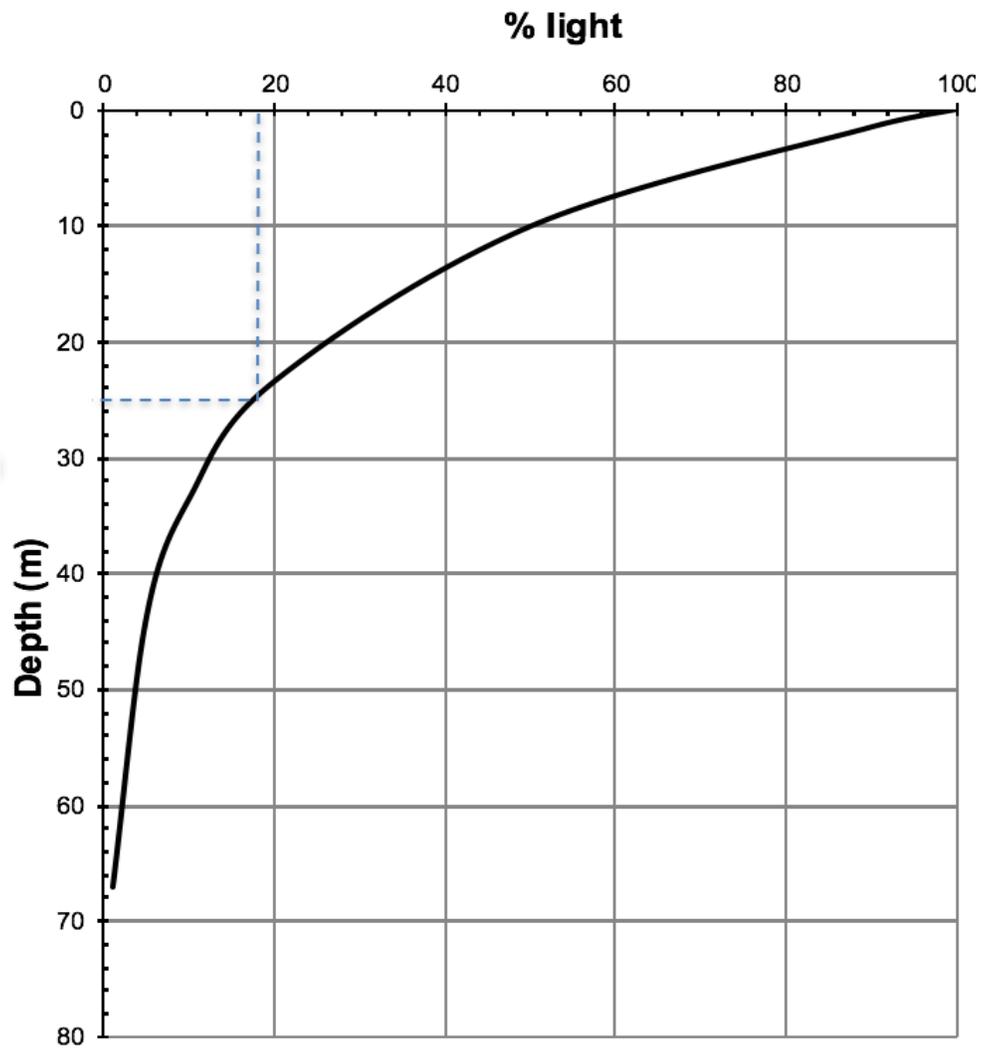
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2. The graph below shows light level (percentage) as a function of depth (m) in the Mystic Estuary.



- a. Before you consider the graph above, remember your observations from the video. Based on these observations, what is the Secchi depth in the Mystic Estuary?
- b. Does your answer above match the Secchi depth reading from the graph? Hint: The Secchi depth corresponds to the 18% light level.

3. The graph below shows the relationship between Secchi depth and percentage of light in a deep sea environment.



Using the graph above, find:

- i. Depth of 50% light level: \_\_\_\_\_
- ii. Depth of 18% light level: \_\_\_\_\_
- iii. Depth of 1% light level: \_\_\_\_\_

4. Compare the above graphs of the Mystic Estuary and deep ocean.
  - a. What is the Secchi depth in the deep ocean?
  - b. Which location (Mystic Estuary or deep ocean) has a deeper Secchi depth?
  - c. What are some factors that may have caused the difference in Secchi depth between the Mystic Estuary and the deep ocean?
  
5. **Challenge Question:** The Secchi disk can also be used to determine areas where plankton, a primary food source for many whale species, are most likely to be found.
  - a. Where would you be more likely to find a whale feeding? (Circle one)
    - i. In open waters with a Secchi depth of 1 meter
    - ii. In open waters with a Secchi depth of 10 meters
  - b. Support your choice in part a, using your knowledge of the relationship between plankton abundance and water clarity.