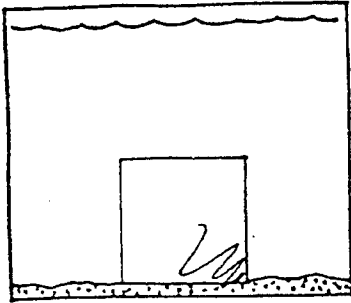


**Concept-Development
Practice Page**

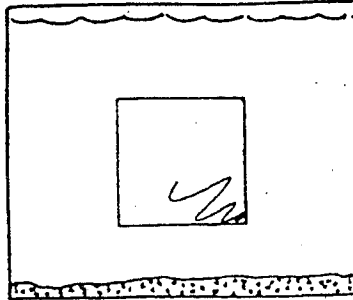
19-2

Archimedes' Principle II

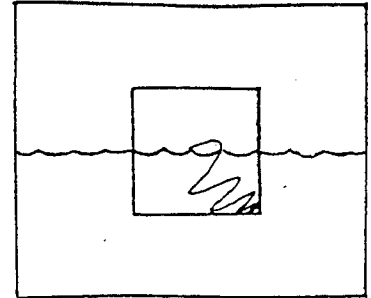
1. The water lines for the first three cases are shown. Sketch in the appropriate water lines for cases *d* and *e*, and make up your own for case *f*.



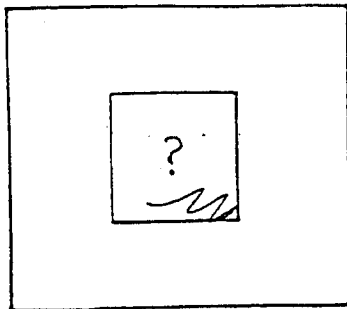
a. DENSER THAN WATER



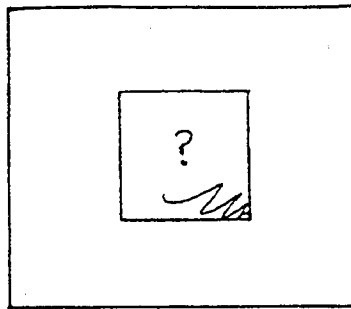
b. SAME DENSITY AS WATER



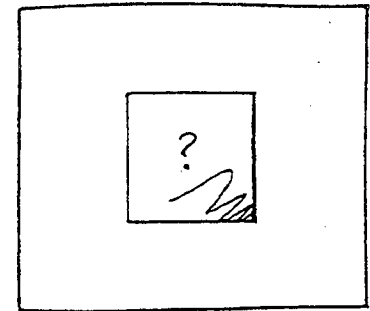
c. 1/2 AS DENSE AS WATER



d. 1/4 AS DENSE AS WATER

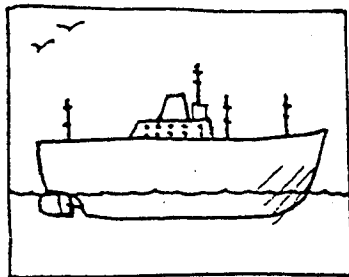


e. 3/4 AS DENSE AS WATER

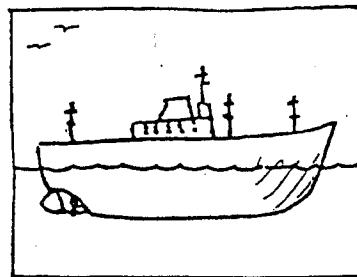


f. _____ AS DENSE AS WATER

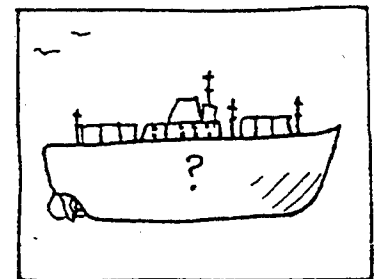
2. ___ If the weight of a ship is 100 million N, then the water it displaces weighs _____.
If cargo weighing 1000 N is put on board then the ship will sink down until an extra _____ of water is displaced.
3. The first two sketches below show the water line for an empty and a loaded ship. Draw in the appropriate water line for the third sketch.



a. SHIP EMPTY

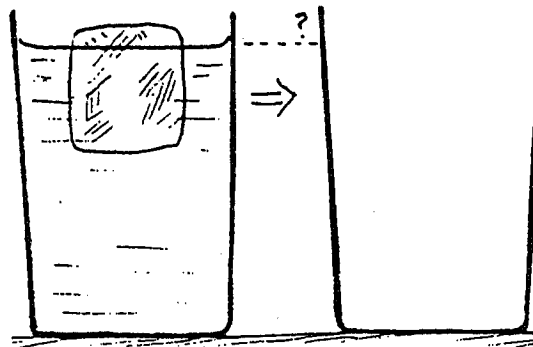


b. SHIP LOADED WITH 50 TONS OF IRON

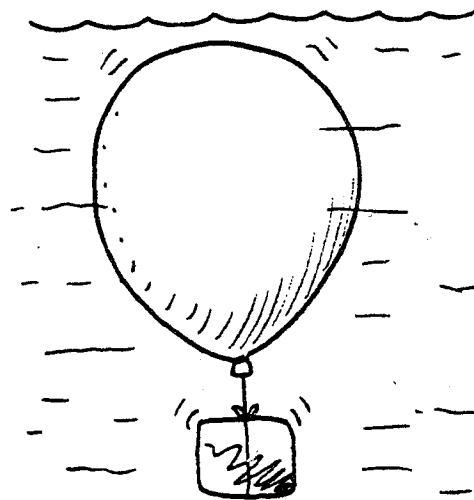


c. SHIP LOADED WITH 50 TONS OF STYROFOAM

4. Here is a glass of ice water with an ice cube floating in it. Draw the water line after the ice cube melts. (Will the water line rise, fall, or remain the same?)



5. The air-filled balloon is weighted so it sinks in water. Near the surface, the balloon has a certain volume. Draw the balloon at the bottom (inside the dashed square) and show whether it is bigger, smaller, or the same size.



- a. Since the weighted balloon sinks, how does its overall density compare to the density of water?
-
- b. As the weighted balloon sinks, does its density increase, decrease, or remain the same?
-
- c. Since the weighted balloon sinks, how does the buoyant force on it compare to its weight?
-
- d. As the weighted balloon sinks deeper, does the buoyant force on it increase, decrease, or remain the same?
-

5. What would be your answers to Questions *a*, *b*, *c*, and *d* for a rock instead of an air-filled balloon?

- a. _____
- b. _____
- c. _____
- d. _____

