Canoe Freeboard

Make up a problem involving the amount of “freeboard” of a loaded canoe. Freeboard is the distance between the gunwale of the canoe and the water. Your problem should be solvable by a student in this class using pencil, paper and a calculator. The problem should be somewhat indirect (involve setting up an equation involving the desired quantity that cannot be solved immediately).

Typical canoe dimensions are:
- w: 32” – 34”
- d: 13” – 15”
- Length: 16’ – 18’

Cross-section of canoe

Example Problem:

Your canoe has the following dimensions:
- Length: 17 feet
- Width at top: 33 inches
- Depth: 15 inches

Calculate the amount of freeboard if the canoe and payload weigh 1200 lb. Assume a triangular cross-section so that the volume inside the canoe = (A_{cross-section})(Length)

Answer: Freeboard = 2.8 inches