

National Marine Manufacturers
Association
Product Compliance Specialist Examination
Basic & Level Flotation (12/08)

1. Basic or Level Flotation is required for
 - a. all outboard or sterndrive boats 20 feet or less
 - b. all outboard or sterndrive boats 26 feet or less
 - c. all outboard or sterndrive boats less than 20 feet
 - d. all outboard or sterndrive boats less than 26 feet that are certified by NMMA

2. The total flotation material needed for basic flotation, requires which of the following items to be added together,
 - a. Flotation for the swamped boat
 - b. Flotation for the submerged propulsion equipment
 - c. Flotation for the persons capacity and dead weight
 - d. All of the above

3. Basic flotation is required for
 - a. Inboard, sterndrive, water jet drive and airboats less than 20'
 - b. Inboard, sterndrive and outboard boats over 2 HP
 - c. Inboard and sterndrive boats less than 20'
 - d. All outboard powered boats less than 26'

4. After pre-conditioning, a basic float boat must have enough flotation to keep a portion of the boat above the surface of the water when loaded with weights,
 - a. Equal to 75 % of the dry weights of propulsion system and battery(s)
 - b. Equal to 25 % of the persons capacity marked on the boat
 - c. Equal to 25 % of the dead weight
 - d. All of the above

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5. If non-integral air chambers are used for basic flotation,
 - a. The two largest chambers must be excluded
 - b. Only the two largest chamber must be included
 - c. Only the smallest chambers are used
 - d. They cannot be included as part of the flotation requirement

6. To insure that all boats of a specific model meet the flotation requirements, flotation shall be provided for
 - a. the heaviest production tolerances and all standard or optional equipment that may be installed or provided for
 - b. the heaviest production tolerances and all standard equipment provided by the manufacturer
 - c. the average production tolerances and only the equipment that has been installed at the factory
 - d. the amount of flotation material may vary depending on the actual weight of each boat

7. When calculating basic flotation requirements, the value We
 - a. Is the conversion factor for factory installed equipment, hardware and accessories
 - b. Is the submerged weight for factory installed equipment, hardware, and accessories
 - c. Is the dry weight for factory installed equipment, hardware, and accessories
 - d. May be separated into different submerged material weights instead of using the .69 conversion factor

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The following example boat will be used for questions #8 - #13

A 18' 6" sterndrive boat with a 72" beam has the following weights and information:

V6 engine -- 635 lb.
Maximum weight capacity -- 1,380 lb.
Maximum person's capacity -- 1130 lb. or 8 persons
Dry hull weight – 1215 lbs.—
 Fiberglass - 1080 lb.
 Fir Plywood - 135
Dry deck weight – 420 lbs.—
 Fiberglass 405 lb.
 Balsa - 19 lb.
Hardware & optional equipment -- 345 lb.
Fuel capacity – 48 gals
Battery – 45 lbs
Buoyancy of flotation foam (lbs/ft³) – 60.4

8. What is the swamped weight of the boat?
- a. 325 lbs
 - b. 485 lbs
 - c. 519 lbs
 - d. 281 lbs
9. How much flotation foam is required to support the swamped boat?
- a. 8.6 cubic feet
 - b. 14.6 cubic feet
 - c. 12.9 cubic feet
 - d. 2.8 cubic feet

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10. How much flotation foam is required to support the person's capacity and dead weight?
- a. 22.2 cubic feet
 - b. 4.5 cubic feet
 - c. 6.5 cubic feet
 - d. 5.6 cubic feet
11. How much flotation foam is required to support the propulsion equipment?
- a. 7.9 cubic feet
 - b. 9.2 cubic feet
 - c. 8.4 cubic feet
 - d. 11.3 cubic feet
12. What is the total required amount of flotation material?
- a. 26.6 cubic feet
 - b. 28.6 cubic feet
 - c. 21.5 cubic feet
 - d. 43.5 cubic feet
13. If a fully loaded vessel in the example above sank and had the required amount of flotation foam for basic flotation, what is its swamped weight with passengers clinging to it?
- a. ≥ 62.4 lbs
 - b. 135.5 lbs
 - c. < 0.0 lbs
 - d. 675.5 lbs

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14. Boats powered by outboard motor(s) under 26 ft. with a horsepower rating greater than 2 HP
- a. Shall meet modified level flotation for all boats less than 20'
 - b. Shall meet level flotation for all boats less than 26'
 - c. Shall meet basic flotation for all boats less than 26'
 - d. Shall meet level flotation for all boats less than 20'
15. Level flotation foam placement to support the swamped boat
- a. Is placed symmetrically within three feet of the transom
 - b. Is placed below the swamped water line
 - c. Is placed symmetrically about the balance point of the boat
 - d. Is placed symmetrically on both sides and fore and aft of the boat
16. An 18.5 ft. boat has a passenger carrying area measuring 12.5 ft. by 5.75 ft., what is its loading area?
- a. 40.5 sq. ft.
 - b. 11.5 sq. ft.
 - c. 28.75 sq. ft.
 - d. 72 sq. ft.
17. If an 19' 6" outboard boat with a max hp rating of 150 hp, intended for use with an outboard engine mounting bracket, is shipped to a dealer without the engine bracket installed
- a. The boat need not incorporate level flotation
 - b. The boat must be shipped with the engine bracket
 - c. The manufacturer must provide the dealer with specifications for the distance to the transom engine mounting surface
 - d. The manufacturer must provide the dealer with installation specification for the outboard motor

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18. Flotation material installed less than 12" above the lowest point in an engine compartment must meet which tests
- a. Reference fuel B ASTM D-471
 - b. A five percent solution of trisodium phosphate in water
 - c. Both A & B
 - d. Either A or B
19. Flotation material does not have to be resistant to oil or gasoline if used
- a. in manually propelled boats
 - b. anywhere outside of an engine compartment
 - c. inside of an engine compartment
 - d. if it's enclosure leaks less than 1/2 once per hour when submerged to a depth of 12 inches

The following example boat will be used for questions #20 - #25

A 16 ft. outboard powered boat (with portable fuel tank) has the following weights and information:

90 Maximum HP (single)

Maximum weight capacity -- 1180 lbs.

Maximum persons capacity -- 550 lbs.

Dry hull weight – 480 lbs total – below swamped waterline

Fiberglass laminate 375 lbs

Fir Plywood – 105 lbs

Dry deck weight –225 lbs – above swamped waterline

Fiberglass laminate 195 lbs

Fir Plywood – 30 lbs

S.S. hardware & optional equipment -- 55 lb. above swamped waterline

S. S. hardware & optional equipment – 45 lbs below swamped waterline

Buoyancy of flotation foam (lbs/ft³) – 60.4

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20. What is the swamped weight of the outboard used in the flotation calculation?
- a. 380 lbs
 - b. 447 lbs
 - c. 405 lbs
 - d. 427 lbs
21. How much flotation material is needed to support the swamped engine and battery?
- a. 9.9 cubic feet
 - b. 7.0 cubic feet
 - c. 6.3 cubic feet
 - d. 6.7 cubic feet
22. How much flotation material is needed to support the swamped boat?
- a. 6.3 cubic feet
 - b. 16.7 cubic feet
 - c. 5.9 cubic feet
 - d. 13.3 cubic feet
23. How much flotation is needed to support the persons capacity and dead weight?
- a. 5.2 cubic feet
 - b. 4.7 cubic feet
 - c. 6.7 cubic feet
 - d. 7.0 cubic feet
24. How much flotation material would be needed for step 4 for this boat?
- a. 17.3 cubic feet
 - b. 24.8 cubic feet
 - c. 18.5 cubic feet
 - d. 16.9 cubic feet

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25. If the boat in the above example was designed for twin outboard engines what would be the weight used to determine the amount of foam needed for Fp?
- a. 504
 - b. 472
 - c. 497
 - d. 447