

University SCUBA
Master Scuba Diver
Navigation / Deep Diving / Night Diving

1. The most accurate method of measuring distance underwater is:
 - a. Kick cycles
 - b. Measured line
 - c. Timed swims
 - d. Arm spans
2. The angular direction to an object expressed in degrees is called a:
 - a. Heading
 - b. Bearing
 - c. Course
 - d. Fix
3. Metal or magnetic fields near a compass can cause:
 - a. Variation
 - b. Deviation
 - c. Inclination
 - d. Declination
4. The execution of a search pattern underwater is most likely to be successful if it is:
 - a. Practiced beforehand on dry land
 - b. Visualized continuously in the mind
 - c. Discussed with a buddy
 - d. All of the above
5. A knot used to form a temporary loop at the end of a line is a(n):
 - a. Bowline
 - b. Double sheetbend
 - c. Figure eight
 - d. Anchor bend
6. Which of the following skills is more important when night diving than for diving during daylight hours?
 - a. Sharing air
 - b. Buoyancy control
 - c. Surface swimming
 - d. Underwater navigation
7. Deep diving for recreational dives is considered:
 - a. Dives to depths greater than 60 feet
 - b. Dives to depths of 60 to 130 feet
 - c. Dives to depths greater than 130 feet
 - d. Dives beyond 60 feet and requiring decompression
8. The minimum equipment for deep diving includes:
 - a. One depth gauge and one timing device per dive team
 - b. One depth gauge and one timing device per diver
 - c. Two depth gauges and two timing devices per diver
 - d. One depth gauge, one timing device and one light per diver
9. Which of the following poses the most serious hazard for deep diving?

- a. Nitrogen narcosis
- b. Greater buoyancy fluctuation
- c. Increased stress
- d. Diver ego

10. Which of the following activities are permissible following deep dives?

- a. Hot showers or baths
- b. Drinking alcoholic beverages
- c. Excessive exercise
- d. None of the above

11. A dive light waved in a circular motion signals:

- a. OK
- b. Distress
- c. Attention
- d. A and C but not B

12. Oxygen becomes toxic when breathed in concentrations where its partial pressure approaches _____ atmosphere(s).

- a. 1.0
- b. 1.6
- c. .80
- d. 2.1

13. The procedure for an omitted decompression stop include:

- a. Administer pure oxygen
- b. Give fluids if conscious
- c. Watch for signs of DCS
- d. All of the above

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(Continued)

14. The rule of thirds states:

- a. 1/3 of air for descent, 1/3 for bottom, 1/3 for ascent
- b. Never spend more than 1/3 of bottom time at deepest depth
- c. 1/3 of air for ascent and descent, and 2/3 for bottom time
- d. Use 1/3 of air out, 1/3 back, and hold 1/3 in reserve

15. When night diving, entries and exits should be:

- a. Well known by all divers

- b. Marked with two inline lights or beacons
- c. Well lighted so all divers can see
- d. Have stairs for easy entry and exit

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Dive Problems

1. A diver plans to make 2 dives at the same location. The depth is 72 ft., and she wishes to have 25 minutes of bottom time on each dive. After the first dive, what is the minimum surface interval necessary to repeat this dive?
2. After an 80 ft. dive for 25 minutes, a diver and his buddy wait 1 hour and 38 minutes on the surface. If this buddy team wishes to return to a depth of 64 ft., how long can they stay without having to decompress?
3. A diver makes a dive to 65 ft. for 40 minutes. After a 1 hour surface interval the diver returns to 58 ft. Losing track of time he notices that his bottom time is now 40 minutes. According to dive table procedures, what action should the diver take?
4. Two divers are planning an ice dive. They plan to dive to a depth of 50 ft. for 50 minutes. According to a special rule on cold water dives, what should this dive team's profile be? And what is their end of dive letter group?
5. In the question above, how long should these divers wait to fly?
6. A diver exits the water at 12:00 noon after a dive to 82 ft. for 29 minutes. She wishes to make another dive to 50 ft. for 40 minutes. What is the minimum surface interval that will allow this second dive?
7. After a dive to 90 ft. for 35 minutes, a diver makes an uninterrupted ascent to the surface. Immediately upon surfacing, what procedure should the diver follow?
8. A diver exits the water at 11:30 a.m. after a dive to 65 ft. for 30 minutes. At 1:00 p.m. she reenters the water for another dive to 59 ft. for 30 minutes. After a 30 minute surface interval, what is the maximum depth to which she may dive and remain for at least 20 minutes?
9. A diver exits the water at 1:30 p.m. after a dive to 65 ft. for 40 minutes. If the diver wishes to repeat this profile, what is the minimum amount of time that must be spent on the surface?
10. A diver exits the water at 10:35 a.m. after a dive to 50 ft. for 25 minutes. She immediately reenters the water at 10:40 a.m. and returns to 55 ft. for 23 minutes. After a 1 hour surface interval she wishes to return to 60 ft. What is the maximum allowable bottom time on the third dive?

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EMERGENCY PROCEDURES QUIZ

QUESTION: You and your buddy are scuba diving and come across an unconscious diver on the bottom. List the procedure for rescuing this victim and include what procedures should be done until EMS arrives.

You have the following resources:

1. First aid kit
2. Back board
3. Blanket
4. Oxygen Unit
5. Phone
6. There are six people watching the rescue
7. You just finished a first aid CPR course last weekend

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Equipment

1. An 1800 psi scuba cylinder is pressurized to _____ the total pressure when hydrostatically tested.
 - a. Same as
 - b. 2/3
 - c. 3/4
 - d. 5/3
2. The air entering a downstream valve in the second stage of a scuba regulator tends to _____ the valve.
 - a. Open
 - b. Close
 - c. Balance
 - d. Damage
3. At what stage in a regulator is the pressure converted from intermediate pressure to ambient pressure?
 - a. First Stage
 - b. Intermediate Stage
 - c. Second Stage
 - d. Ambient Stage
4. _____ law best describes the process by which a SCUBA compressor operates.
 - a. Charles'
 - b. Dalton's
 - c. Boyle's
 - d. Henry's
5. The burst disc in the valve of a 2250 psi tank is designed to rupture at a pressure of about _____ the working pressure.
 - a. The same as
 - b. Two times
 - c. 5/4
 - d. 5/3
6. The reserve lever on a J-valve needs to be _____ when the tank is being filled.
 - a. Up
 - b. Down
 - c. In a neutral position
 - d. Removed
7. A regulator that uses air pressure rather than mechanical leverage to open the main valve of the second stage is a _____ regulator.
 - a. Tilt valve
 - b. Balanced
 - c. Pilot valve
 - d. Downstream
8. A safety feature of submersible pressure gauges is a:
 - a. Safety plug
 - b. Burst disc

- c. Needle stop
 - d. High pressure dial face
9. Bourdon tubes are commonly used in:
- a. Depth gauges
 - b. Submersible pressure gauges
 - c. Cylinder pressure gauges
 - d. All of the above
10. The 4 pressures acting in the second stage of a balanced regulator are:
- a. Lung, water, spring, intermediate
 - b. Lung, water, spring, tank
 - c. Diaphragm, spring, intermediate, tank
11. Special training is needed for drysuit diving.
- a. True
 - b. False
12. The purpose of an expansion chamber on the output of an air compressor is to extract:
- a. Condensation
 - b. Carbon dioxide
 - c. Carbon monoxide
 - d. Particulate matter

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Equipment (continued)**

13. A(n) _____ regulator will maintain a constant intermediate pressure in spite of varying tank pressure:
- a. Piston
 - b. Diaphragm
 - c. Unbalanced
 - d. Balanced
14. A disadvantage of 80 cubic foot aluminum tanks is:
- a. Greater susceptibility to damage than steel tanks
 - b. Sensitivity to heat
 - c. Electrolysis between valve and tank
 - d. All of the above
15. Green discoloration on the filter in the first stage of a regulator indicates:
- a. Corrosion from an aluminum tank
 - b. Water has entered the regulator first stage
 - c. Compressor filter dust from scuba tanks

d. None of the above

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Physiology

1. Attempting a Valsalva maneuver with excessive force can result in:
 - a. A ruptured round window in the middle ear
 - b. Permanent tinnitus (ringing in the ear)
 - c. A reduction in hearing ability
 - d. All of the above
2. A(n) _____ causes severe neurological damage due to a blockage in the circulatory system.
 - a. Air embolism
 - b. Mediastinal emphysema
 - c. Subcutaneous emphysema
 - d. Spontaneous pneumothorax
3. The four disorders listed as answers in the previous question are caused by:
 - a. Overexertion of the lungs
 - b. Over expansion of the lungs
 - c. Excess air in body tissues
 - d. Excessive hyperventilation
4. A squeeze is the result of air pressure inside an air space being:
 - a. Equal to the external pressure
 - b. Greater than the external pressure
 - c. Less than the ambient pressure
 - d. Less than the gauge pressure
5. Nitrogen is the gas primarily responsible for which two of the following maladies:
 - a. Narcosis and bends
 - b. Narcosis and air embolism
 - c. Bends and air embolism
 - d. Emphysema and pneumothorax
6. Vertigo occurring during an ascent would most likely be caused by:
 - a. Decompression sickness
 - b. A reverse block that clears suddenly
 - c. Reduction of carbon dioxide partial pressure
 - d. A "trapdoor" effect on the Eustachian Tube
7. A carotid sinus reflex is caused by pressure on the:
 - a. Chest
 - b. Stomach
 - c. Neck
 - d. Radial artery

8. Hemoglobin has an affinity for carbon monoxide that is _____ times greater than its affinity for oxygen.
- a. 10
 - b. 50
 - c. 200
 - d. 600
9. Fitness for diving is greatly affected by pre-dive:
- a. Nutrition
 - b. Rest
 - c. Apprehension
 - d. All of the above
10. What gas is responsible for the stimulus to breathe in a healthy diver?
- a. Oxygen
 - b. Nitrogen
 - c. Carbon monoxide
 - d. Carbon dioxide

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Physics

1. At a depth of _____ feet in sea water, the partial pressure of oxygen in air is 1.6 atmospheres.
 - a. 66
 - b. 165
 - c. 218
 - d. 297

2. The volume of a 10 quart flexible container that is submerged to a depth of 99 feet in the ocean is _____ quarts.
 - a. 10
 - b. 5
 - c. $3 \frac{1}{3}$
 - d. $2 \frac{1}{2}$

3. A balloon filled with air has a volume of 6 cubic inches at a depth of 99 feet in the ocean. What is the volume of the balloon at a depth of 66 feet?
 - a. 6 cubic inches
 - b. 8 cubic inches
 - c. 12 cubic inches
 - d. 24 cubic inches

4. According to Archimedes' Principle, it is the _____ of the displaced fluid that forms the upward force on an immersed object.
 - a. Volume
 - b. Weight
 - c. Density
 - d. Buoyancy

5. The difference in weight between 2 cubic feet of fresh water and the same volume of salt water is _____ pounds.
 - a. 1.6
 - b. 2.4
 - c. 3.2
 - d. 5.6

6. If a tank contains 71.2 cubic feet of air at a pressure of 2475 psig, approximately _____ feet of air remain at 2250 psig if the temperature remains constant.
 - a. 70
 - b. 68
 - c. 65
 - d. 62

7. According to _____ law, twice as much nitrogen would be absorbed into the blood at a depth of 33 feet as would be absorbed at the surface.
 - a. Dalton's
 - b. Boyle's
 - c. Charles'

- d. Henry's
8. If the temperature of an 80 cu. ft. scuba cylinder filled to 3,000 psi is increased from 70 degrees F to 150 degrees F, the pressure in the tank will increase by about _____ psi.
- a. 16
 - b. 400
 - c. 480
 - d. 520
9. Breathing air containing 1% carbon monoxide at a depth of 132 feet in the ocean is equivalent to breathing air at the surface containing _____% carbon monoxide.
- a. One
 - b. Two
 - c. Four
 - d. Five
10. The gauge pressure at a depth of 59 feet in fresh water is _____ psig and the absolute pressure is _____ psia.
- a. 25.49, 40.19
 - b. 26.26, 40.96
 - c. 40.19, 25.49
 - d. 40.96, 26.26

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Dive Planning and Safety

1. Which of the following is not considered a part of dive planning?
 - a. Dive site assessment
 - b. Buddy check
 - c. Review of emergency procedures
 - d. All of the above are parts of dive planning
2. A square blue flag with a white square in the middle is:
 - a. The international "alpha" dive flag
 - b. The international recreational diver flag
 - c. A small craft warning signal
 - d. The diver recall flag
3. A dive light waved in a circular motion signals:
 - a. OK
 - b. Distress
 - c. Attention
 - d. Help
4. The ideal buddy system consists of:
 - a. Two divers side by side
 - b. Three divers abreast of each other
 - c. One diver following another diver
 - d. One diver above and behind another diver
5. The most desirable ascent procedure from any situation for an out-of-air emergency is:
 - a. A redundant scuba system
 - b. Rebreathing air from a BC
 - c. An emergency swimming ascent
 - d. Use of a buddy's extra second stage
6. Refresher training is recommended for a lapse of diving activity in excess of:
 - a. Three months
 - b. Six months
 - c. One year
 - d. Two years
7. The "turn-around" time for a dive team should be determined primarily by:
 - a. The highest air consumption rate

- b. The no-decompression limits
 - c. A strong wind
 - d. Depth in excess of 60 feet
8. It is recommended that night dives be made:
- a. At familiar sites
 - b. Under favorable diving conditions
 - c. From a boat
 - d. All of the above
9. Which of the following problems is most significant for a diver at night?
- a. Buddy separation
 - b. Judging the rate of ascent
 - c. Disorientation
 - d. Hazardous marine life
10. The proper amount of weight is that which will allow that diver to:
- a. Float at eye level with the BCD fully inflated
 - b. Float at eye level with the BCD completely deflated
 - c. Be neutrally buoyant during the safety stop at the end of the dive with very little air in the BCD
 - d. Be able to comfortably donate weight to an under weighted buddy

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Environment

- d. Twice the effect of the sun
1. The distance between successive wave crests or troughs is known as:
 - a. Wavelength
 - b. Wave period
 - c. Wave sets
 - d. Swell period

 2. The movement of water from the backrush of a wave breaking on a beach extends to a depth of about:
 - a. 1 foot
 - b. 3 feet
 - c. 6 feet
 - d. The height of the breaking wave

 3. The type of breaking waves that break with the most force are:
 - a. Spilling breakers
 - b. Plunging breakers
 - c. Collapsing breakers
 - d. Surging breakers

 4. The effect of the moon on the tides is about:
 - a. The same as the effect of the sun
 - b. Equal to the effect of the sun
 - c. Half the effect of the sun

 5. The highest tides are called _____ tides, and the lowest tides are called _____ tides.
 - a. Neap, spring
 - b. Spring, neap
 - c. Spring, diurnal
 - d. Diurnal, semi-diurnal

 6. When water rocks back and forth in a lake or a bay, the condition is known as:
 - a. Upwelling
 - b. Seiching
 - c. Surf beat
 - d. None of the above

7. When waves break on shore and the backrush is funneled through a narrow opening, the condition is known as:
- a. Coriolis effect
 - b. A feeder zone
 - c. Undertow
 - d. A rip current
8. Currents in bodies of water are formed by:
- a. surface winds
 - b. sun and moon influence
 - c. the spin of the earth
 - d. all of the above
9. Water of equal temperature at all levels (Isotherm) is most likely to be found in a lake during the:
- a. Late spring
 - b. Summer
 - c. Fall
 - d. Winter
10. The horizontal boundary between waters of differing salinity is known as a:
- a. Thermocline
 - b. Halocline
 - c. Salinocline
 - d. Reverse thermocline