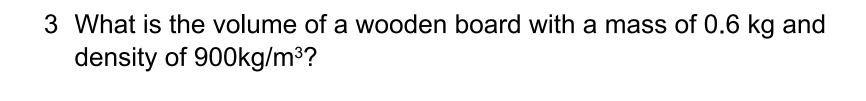


2 What is the mass of a rectangular shaped ice block with dimensions of 0.04m x 0.05m x 0.03 m if the density of ice is 917 kg/m³?



4 An iron block has a mass of 175.5 kg and volume of 0.0225 m³. What is its density?

5 The density of copper is 8900 kg/m³. What is the specific gravity of copper?

A concrete brick with dimensions of 0.80 x .30 x .2 m³ has a density of 2300 kg/m³. What is its mass?

7 The density of mercury is 13600 kg/m³. What must the volume of a container be in order to store 4 kg of mercury?

A 500-mL (0.0005m³) beaker has a mass of 250 g when empty and 645 g when filled with an unknown liquid. What is the density of the liquid?

9 What is the approximate mass of air in the physics classroom with dimensions 6.5 x 4.2 x 3.0 m³ if the density of air is 1.29 kg/m³?

A liquid has a specific gravity of 0.68. What is the density of the liquid?

11 A 150 N force is applied to an area of 0.2 m². What is the pressure due to this force?

An aluminum cylinder with a cross-sectional area 0.07 m² is placed vertically on a table-top. What is the weight of the cylinder if it exerts a 1400 Pa of pressure on the table-top?

What is the covered area by a 49 N object that exerts a pressure of 1200 Pa?

14 A 100 N wooden block has dimensions of 0.5 m x 0.4 m x 0.1 m. What is the maximum pressure the block can exert on a floor?

A 750 N boy stands on snowshoes. Each snowshoe has an area of 0.125 m². What is the pressure on the snow?

A 600 N force is applied to an area of 0.15 m². What is the pressure due to this force?

17 A copper cylinder with a cross-sectional area 0.034 m² is placed vertically on a table-top. What is the weight of the cylinder if it exerts an 800 Pa of pressure on the table-top?

What is the covered area by a 168 N object that exerts a pressure of 8200 Pa?

A 600 N metal block has dimensions of 0.3 m x 0.25 m x 0.1 m. What is the minimum pressure the block can exert on a floor?

A contact surface between a wagon wheel and railroad rails is 0.0025 m². What pressure does the wagon exert on rails if its mass is 30,000 kg?

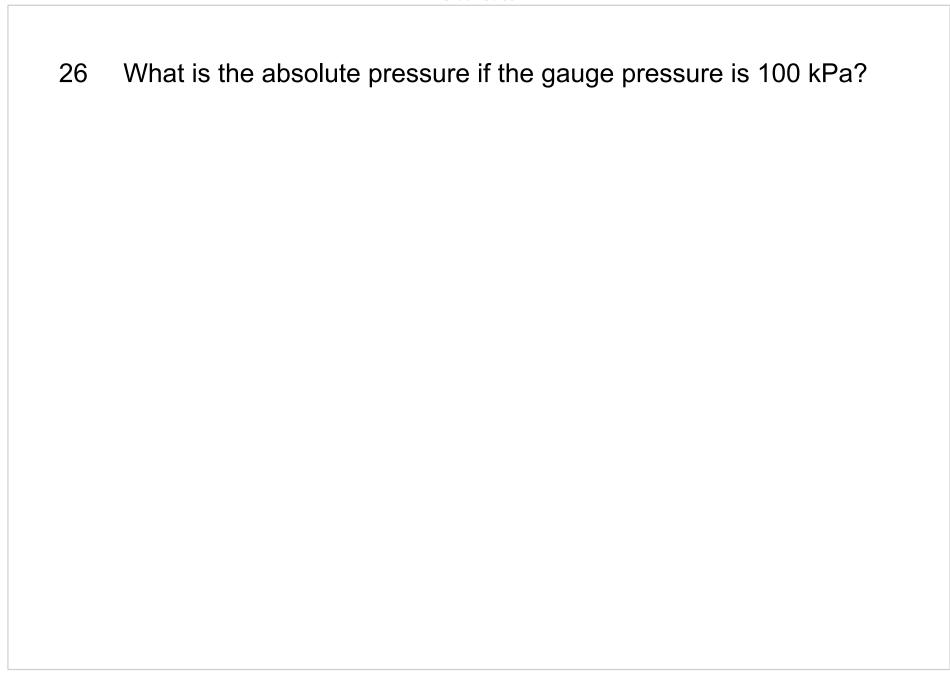
A 10-cm tall glass is filled with water (density 1000 kg/m³). What is the water pressure at the bottom of the glass?

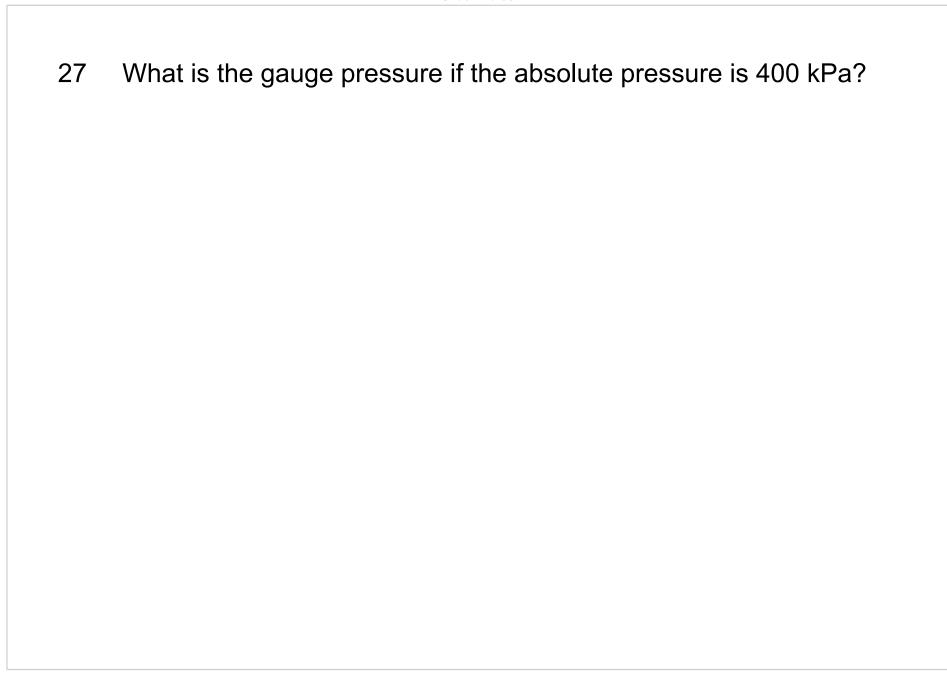
A diver can withstand a maximum pressure of 3x10⁵ Pa. What maximum depth he can reach in seawater (density 1025 kg/m³)?

A graduated cylinder is filled with mercury (density 13,600 kg/m³). The distance between the surface of the mercury and the bottom of the cylinder is 25 cm. What is the mercury pressure at the bottom of the cylinder?

A diving bell can withstand a maximum pressure of 2.5x10⁶ Pa. What maximum depth can the bell reach in seawater (density 1025 kg/m³)?

A circular window in a submarine has a diameter of 40 cm. The window can withstand a maximum force of 5.6x10⁵ N. What is the maximum depth in the sea (density 1025 kg/m³) to which the submarine can submerge without breaking the window?





What is the absolute pressure 2.5 m below sea surface (density 1025 kg/m³)?

A 400 N force is applied to the small piston of a hydraulic machine. The area of the small piston is 4 cm² and the area of the large piston is 36 cm²? What maximum force can be supported by the large piston?

The large piston of a hydraulic machine with an area of 120 cm² supports an object with a weight of 10,000 N. What is the force applied to the small piston with the area 30 cm²?

What is the gauge pressure at the bottom of a pool 1.9 m deep? (water density 1000 kg/m³)

The gauge pressure at the bottom of "Marinas Trench" is 1.2x10⁸ Pa. What is the distance between the surface of the ocean and the bottom of the Trench? (assuming the seawater density stays unchanged 1025 kg/m³)

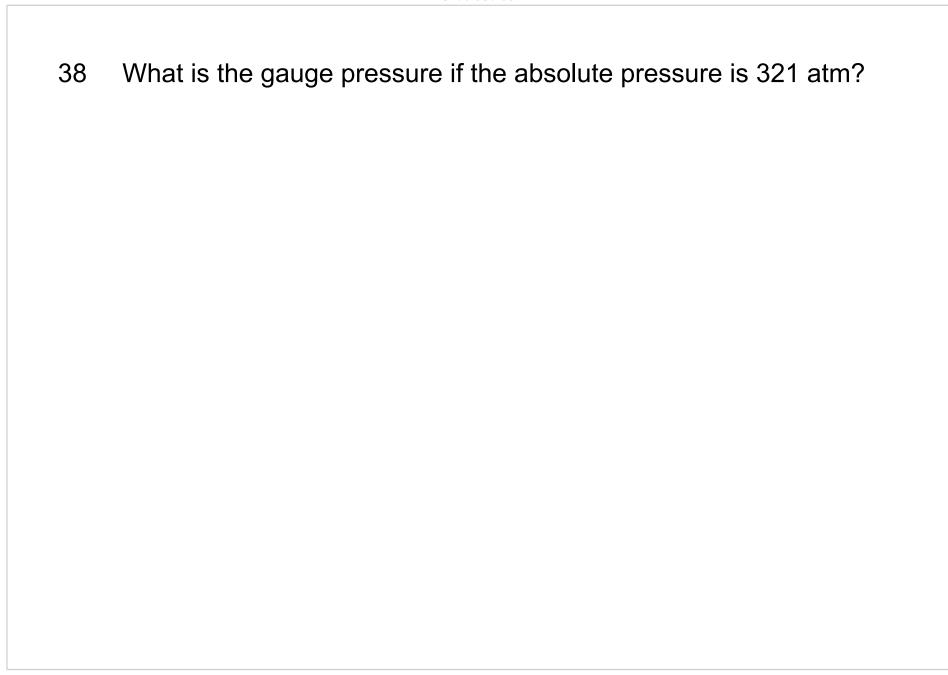
What gauge pressure must a pump produce to pump water from the ground level to the top of Empire State Building 381 m tall? (density 1000 kg/m³)

What is the depth of a lake if the gauge pressure at the bottom is 11x0⁵ Pa? (density 1000 kg/m³)

A pool has a bottom area of 20 m² and is filled with water (density 1000 kg/m³)to a height of 2 m. What is the force on the bottom of the pool applied by water?

A hatch of a diving bell has a circular shape with a diameter of 1.6 m. The hatch can withstand a maximum force of 4.8x10⁵ N. What is the maximum depth in a lake (density 1000 kg/m³) the bell can reach without destroying the hatch?

What is the absolute pressure if the gauge pressure is 3.2 atm? 37



What is the absolute pressure 1.8 m below the surface of a lake (density 1000 kg/m³)?

The small piston of a hydraulic lift has an area of 6 cm² and its large piston has an area of 54 cm². A 50 N force is applied to the small piston. What is the weight of the load can be lifted by the large piston?

The small piston of a hydraulic lift has an area of 25 cm² and the large piston has an area of 625 cm². What force must be applied to the small piston in order to lift a car weighing 14,000 N?

42 A metallic object weighs 50 N in air and 40 N in water. What is the buoyant force of the water?

An object has a volume of 1.8 m³. What is the buoyant force on the object when it is completely submerged into water (density 1000 kg/m³)?

An object has a volume of 4.5 m³ and a weight of 50,000 N. What will its weight be in water (density 1000 kg/m³)?

If the density of iron is 7800 kg/³, what is the buoyant force on the 234 kg iron block in water (density 1000 kg/m³)?

A 1500 N object floats in water. What is the weight of displaced water?

A 30,000 N ice foe floats in sea water (density 1025 kg/m³). What is the submerged volume of the floe?

A wooden block floats in water with a half of its volume beneath the surface. What is the density of wood?

An ice floe has a rectangular shape with a surface area of 40 m² and 0.1 m thick. What is the maximum mass of a polar bear can sit on the floe before sinking? (ice density 900 kg/m³, sea water density 1025 kg/m³)

A 650 N diver weighs 500 N in sea. What is the buoyant force of the sea water?

An object has a volume of 3.2 m³. What is the buoyant force on the object when it is completely submerged into sea (density 1025 kg/m³)?

An object has a volume of 3.4 m³ and a weight of 45,000 N. What will its weight be in water (density 1000 kg/m³)?

If the density of copper is 8900 kg/³, what is the buoyant force on the 356 kg copper block in water (density 1000 kg/m³)?

A 2400 N object floats in water. What is the weight of displaced water?

A 50 N wooden block floats in water (density 1000 kg/m³). What is the submerged volume of the block?

A wooden block floats in water with three-quarter of its volume beneath the surface. What is the density of wood?

An ice floe has a rectangular shape with a surface area of 3 m² and 1 m thick. What is the maximum mass of a polar bear can sit on the floe before sinking? (ice density 900 kg/m³, sea water density 1025 kg/m³)

A wooden raft has a rectangular shape with a surface area of 36 m² and 0.5 m thick. What is the maximum number of a rescue team with an average mass of each person 75 kg can cross a river by using the raft? (wood density 600 kg/m³, water density 1000 kg/m³)

Water flows through a pipe of cross-sectional area 2 cm² at a rate of 2.5 m/s. The cross-sectional area of the pipe is increased to 10 cm². What is the water rate in the wider section of the pipe?

Water flows through a pipe of cross-sectional area 16 cm² at a rate of 12 m/s. The cross-sectional area of the pipe is decreased to 4 cm². What is the water rate in the narrow section of the pipe?

Water flows through a horizontal pipe at a speed of 15 m/s and pressure 410⁵ Pa. The pipe widens and the water speed drops to a 5 m/s. What is the pressure in the wider section of the pipe?

Water flows through a horizontal pipe at a speed of 8 m/s and pressure 3.4x10⁵ Pa. The pipe narrows and the water speed goes up to a 16 m/s. What is the pressure in the narrow section of the pipe?

A container holds water at a depth of 12 m. There is a hole in the bottom of the container. At what speed will water flow out of the hole?

64 Water flows through a pipe of cross-sectional area 3 cm² at a rate of 36 m/s. The cross-sectional area of the pipe is increased to 27 cm². What is the water rate in the wider section of the pipe?

65 Water flows through a pipe of cross-sectional area 48 cm² at a rate of 6 m/s. The cross-sectional area of the pipe is decreased to 12 cm². What is the water rate in the wider section of the pipe?

66 Water flows through a horizontal pipe at a speed of 24 m/s and pressure 4.2x10⁵ Pa. The pipe widens and the water speed drops to a 6 m/s. What is the pressure in the wider section of the pipe?

Water flows through a horizontal pipe at a speed of 14 m/s and pressure 8.4x10⁵ Pa. The pipe narrows and the water speed goes up to a 42 m/s. What is the pressure in the narrow section of the pipe?

68 A water tank is filled with water. There is a faucet on the side wall of the container 6 m below the surface of water. What will the speed of water flow be when the faucet is opened?