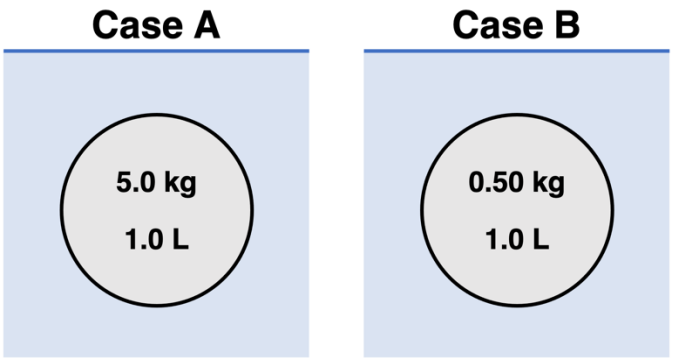
Sinking, Floating, and Hanging

Activity 1: Case Studies

Question Group 1

Question 1

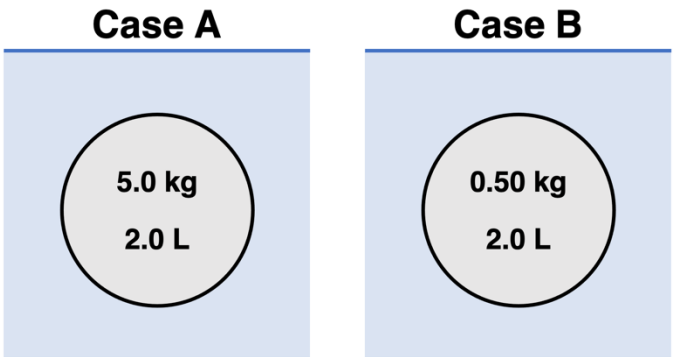
Two solid objects with **different mass** and the **same volume** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 2

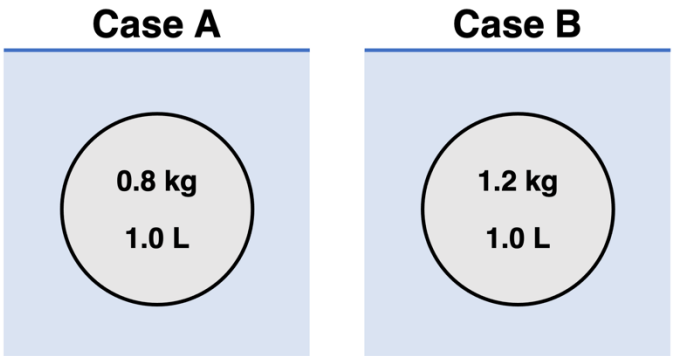
Two solid objects with **different mass** and the **same volume** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 3

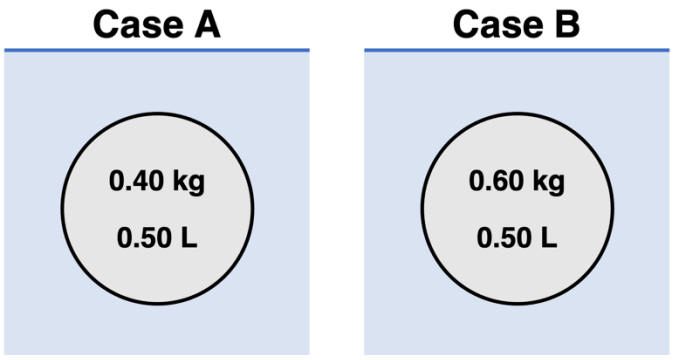
Two solid objects with **different mass** and the **same volume** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

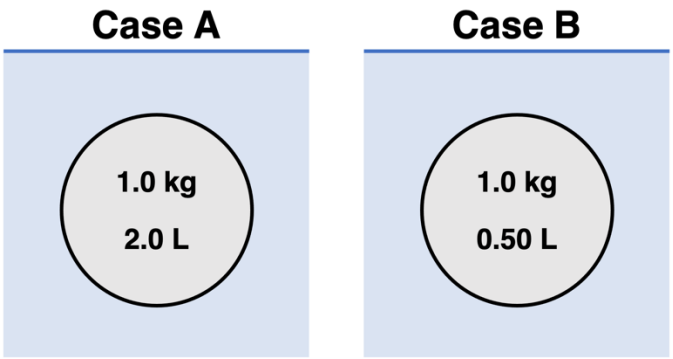
Question 4

Two solid objects with **different mass** and the **same volume** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



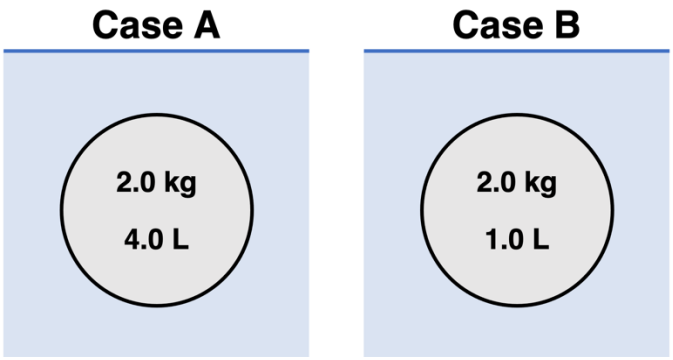
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question Group 2
Question 5
Two solid objects with the **same mass** and **different volumes** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

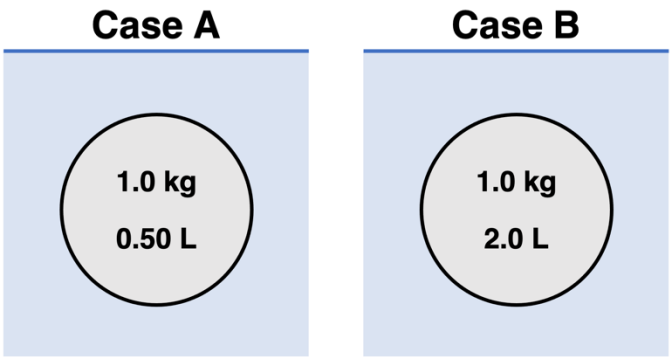
Question 6
Two solid objects with the **same mass** and **different volumes** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 7

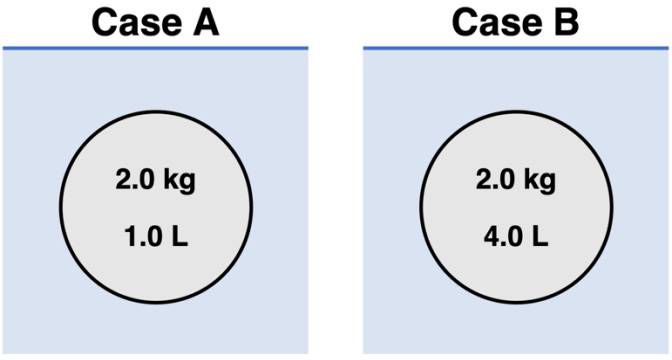
Two solid objects with the **same mass** and **different volumes** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

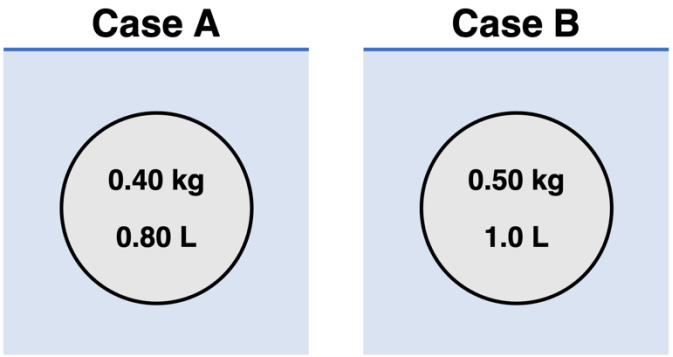
Question 8

Two solid objects with the **same mass** and **different volumes** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



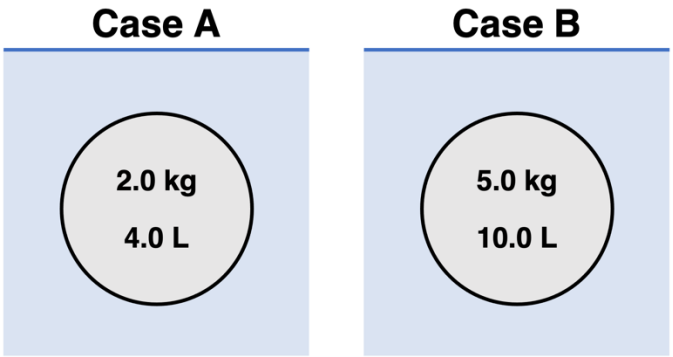
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question Group 3
Question 9
Two solid objects with the **same mass-to-volume ratio** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



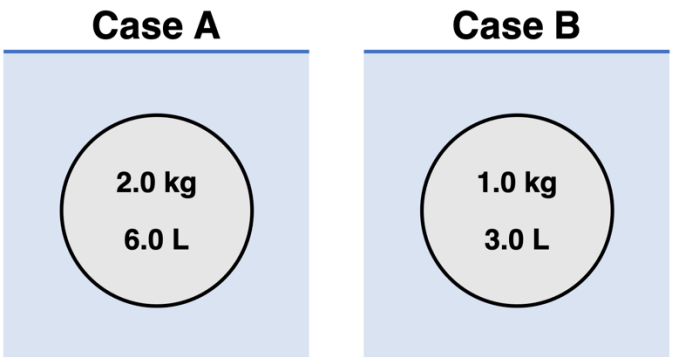
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 10
Two solid objects with the **same mass-to-volume ratio** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



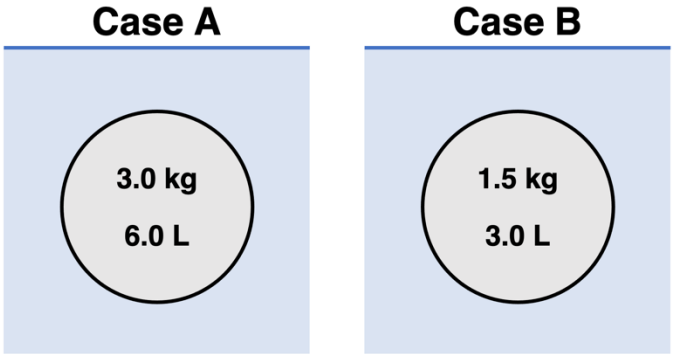
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 11
Two solid objects with the **same mass-to-volume ratio** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



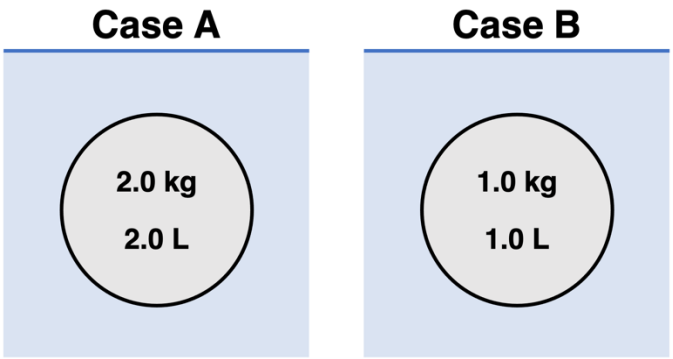
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 12
Two solid objects with the **same mass-to-volume ratio** are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



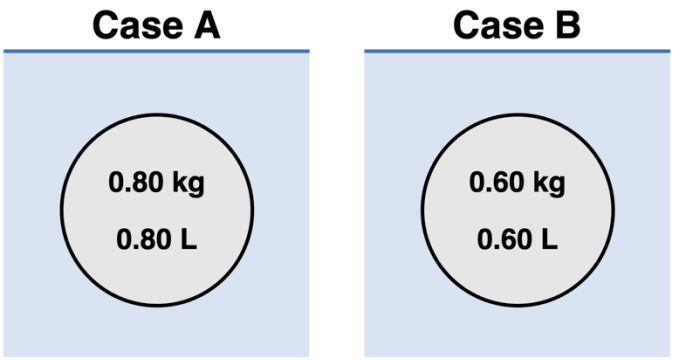
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question Group 4
Question 13
Two solid objects with the **same mass-to-volume** ratio are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

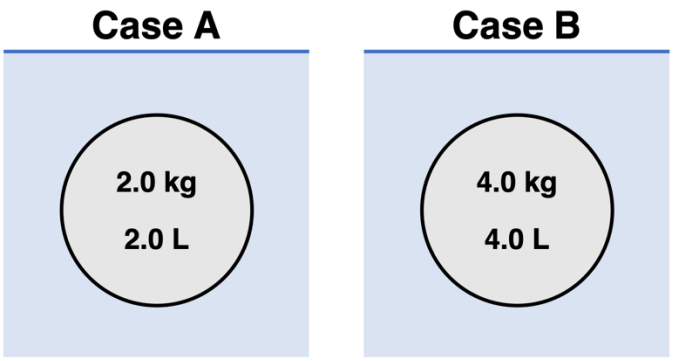
Question 14
Two solid objects with the **same mass-to-volume** ratio are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 15

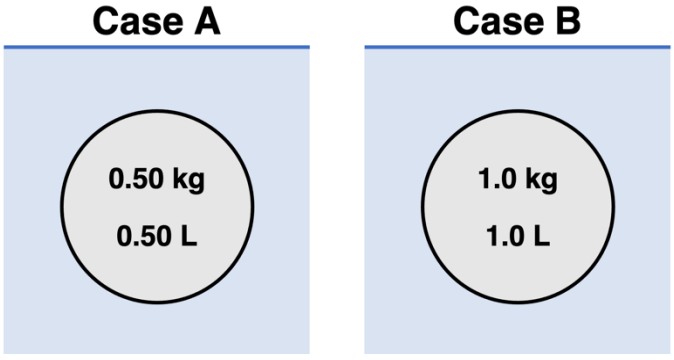
Two solid objects with the **same mass-to-volume** ratio are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

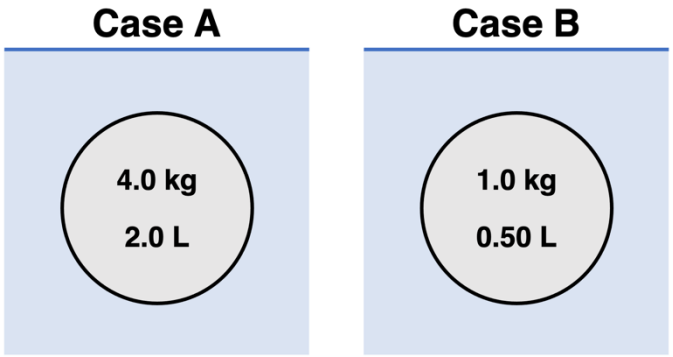
Question 16

Two solid objects with the **same mass-to-volume** ratio are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



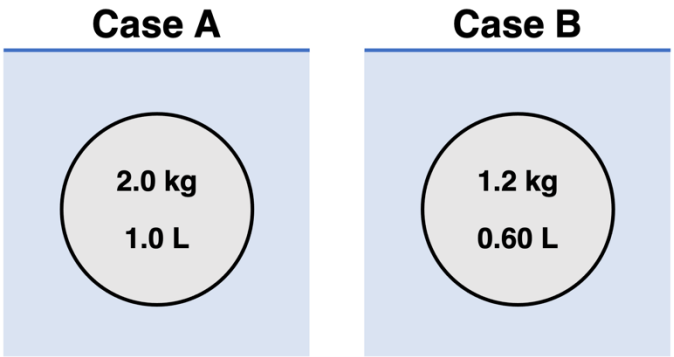
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question Group 5
Question 17
Two solid objects with the **same mass-to-volume** ratio are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

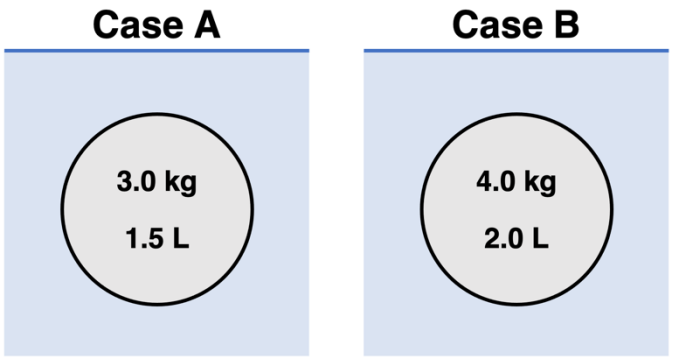
Question 18
Two solid objects with the **same mass-to-volume** ratio are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 19

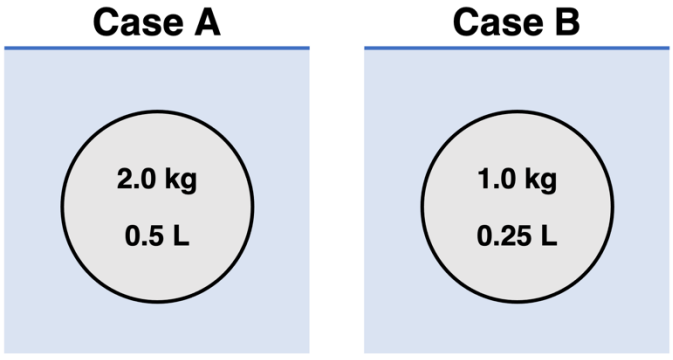
Two solid objects with the **same mass-to-volume** ratio are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

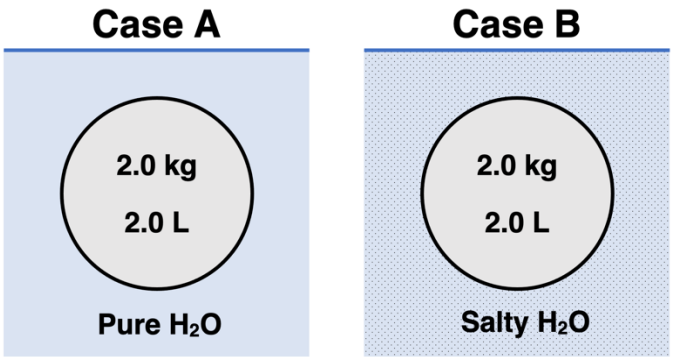
Question 20

Two solid objects with the **same mass-to-volume** ratio are submerged under water and released. Their mass and volumes are shown. Assume **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.



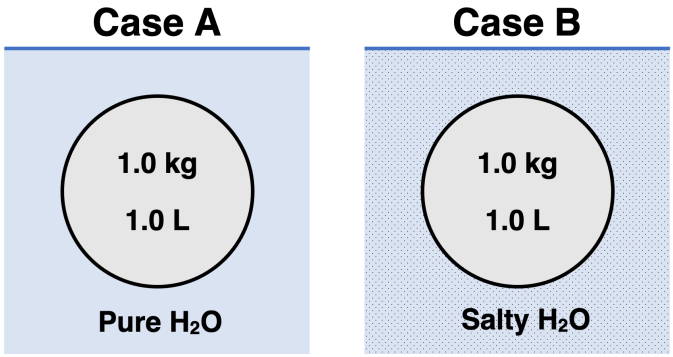
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question Group 6
Question 21
Two solid objects with the **same mass** and the **same volume** are submerged in two **different aqueous environments** and released. Their mass and volumes and environments are shown.



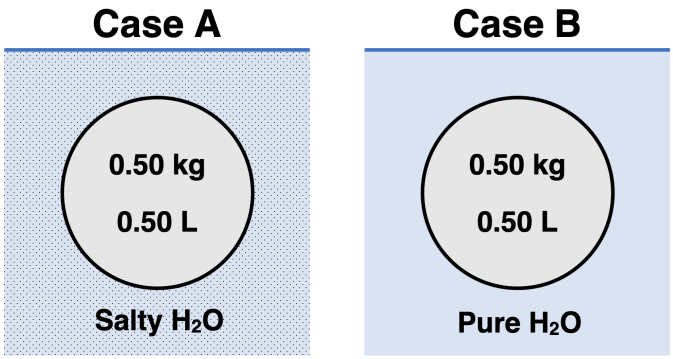
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 22
Two solid objects with the **same mass** and the **same volume** are submerged in two **different aqueous environments** and released. Their mass and volumes and environments are shown.



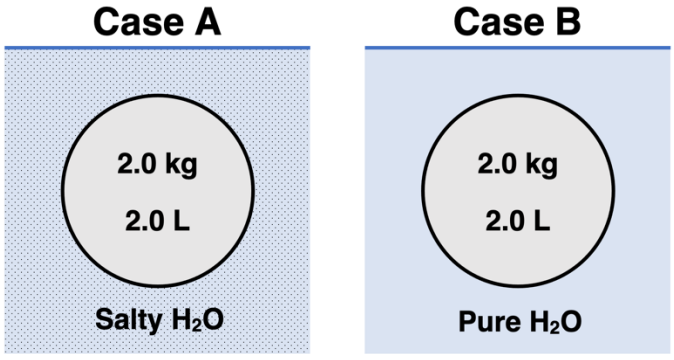
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 23
Two solid objects with the **same mass** and the **same volume** are submerged in two **different aqueous environments** and released. Their mass and volumes and environments are shown.



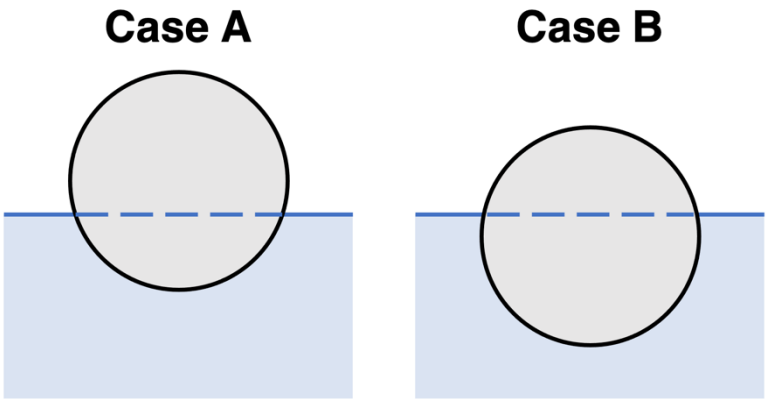
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Question 24
Two solid objects with the **same mass** and the **same volume** are submerged in two **different aqueous environments** and released. Their mass and volumes and environments are shown.



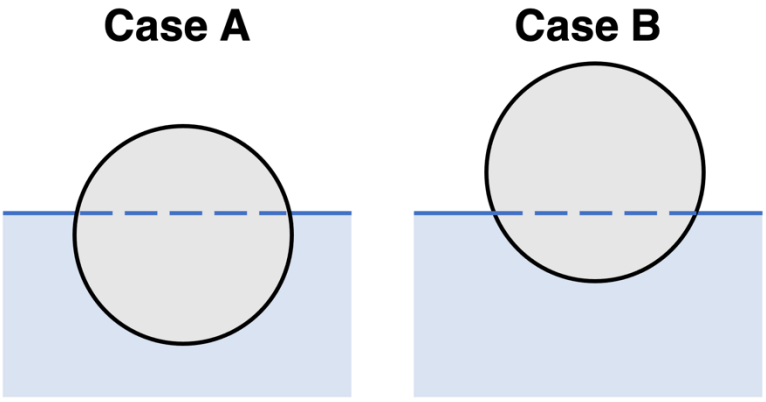
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest (when submerged)? (A, B, Same for Each)
In Case A, the object will _____. (float, sink, hang)
In Case B, the object will _____. (float, sink, hang)

Activity 2: Case Studies
Question Group 7
Question 25
Two solid objects having the **same shape** and the **same volume** but made of **different materials** float on top of the water surface as shown.



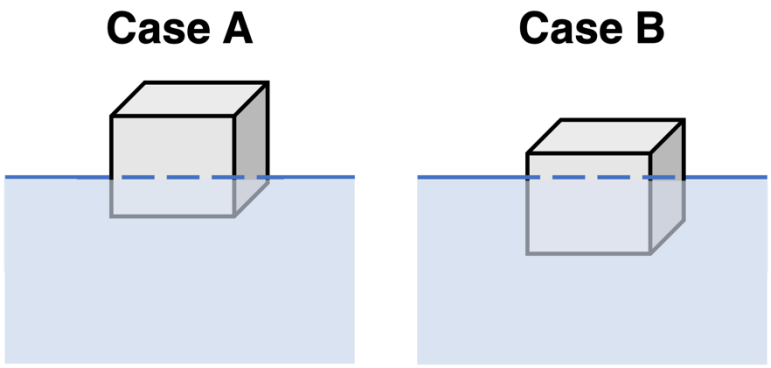
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 26
Two solid objects having the **same shape** and the **same volume** but made of **different materials** float on top of the water surface as shown.



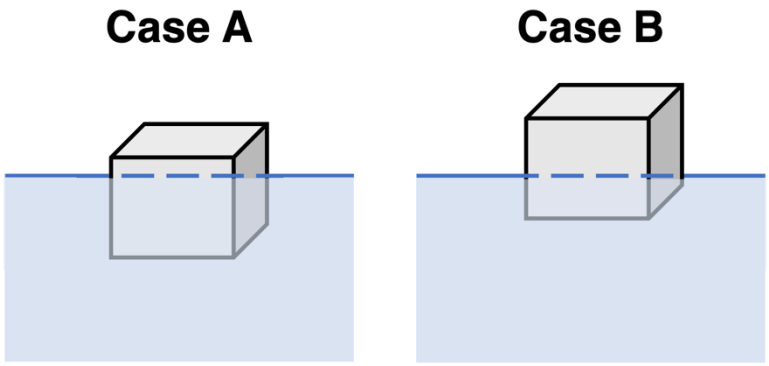
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 27
Two solid objects having the **same shape** and the **same volume** but made of **different materials** float on top of the water surface as shown.



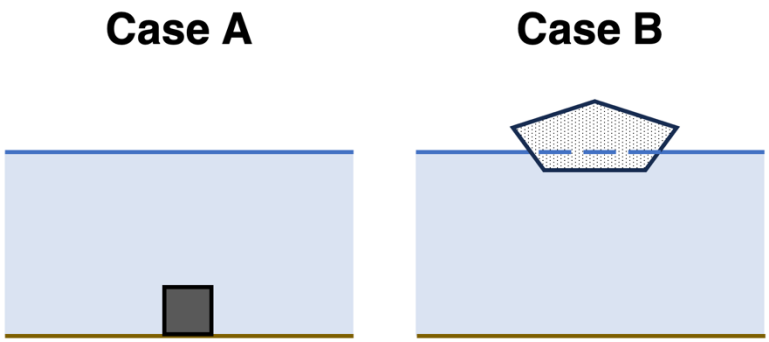
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 28
Two solid objects having the **same shape** and the **same volume** but made of **different materials** float on top of the water surface as shown.



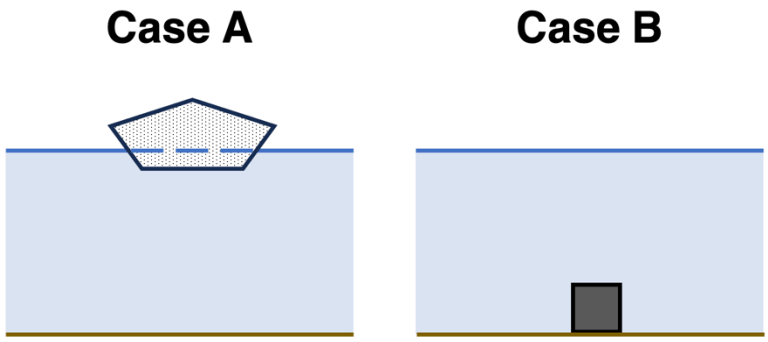
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question Group 8
Question 29
Two objects having the **same mass** but a **different shape** are placed on top of the water surface. One is solid and the other is hollow. One sinks and the other floats.



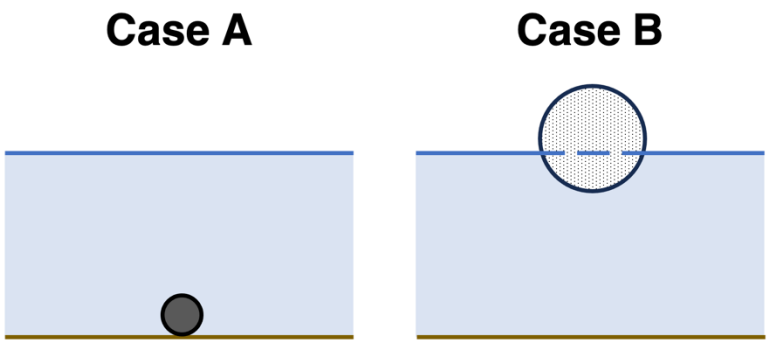
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 30
Two objects having the **same mass** but a **different shape** are placed on top of the water surface. One is solid and the other is hollow. One sinks and the other floats.



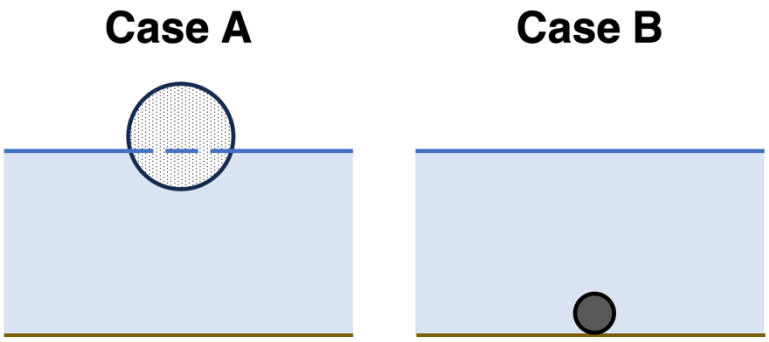
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 31
Two objects having the **same mass** but a **different shape** are placed on top of the water surface. One is solid and the other is hollow. One sinks and the other floats.



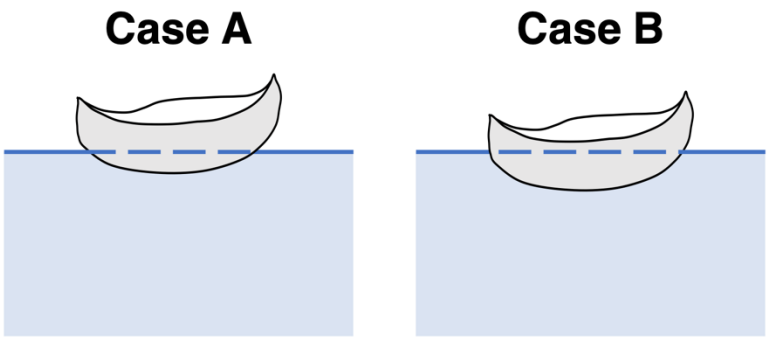
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 32
Two objects having the **same mass** but a **different shape** are placed on top of the water surface. One is solid and the other is hollow. One sinks and the other floats.



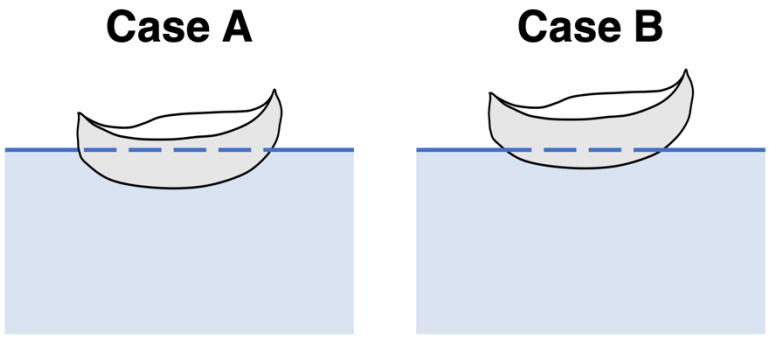
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question Group 9
Question 33
Two objects having the **same shape** and the **same volume** but **different mass** float on top of the water surface as shown.



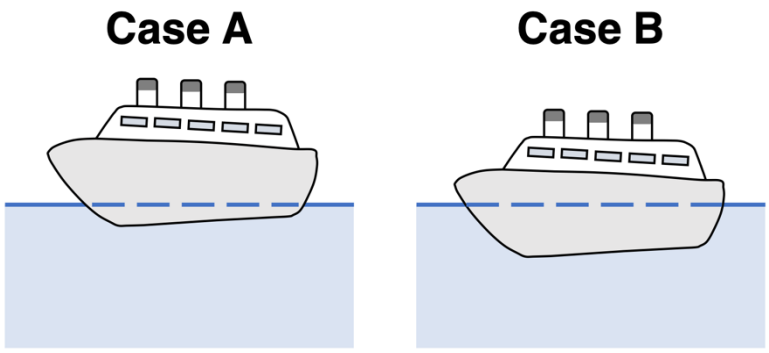
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 34
Two objects having the **same shape** and the **same volume** but **different mass** float on top of the water surface as shown.



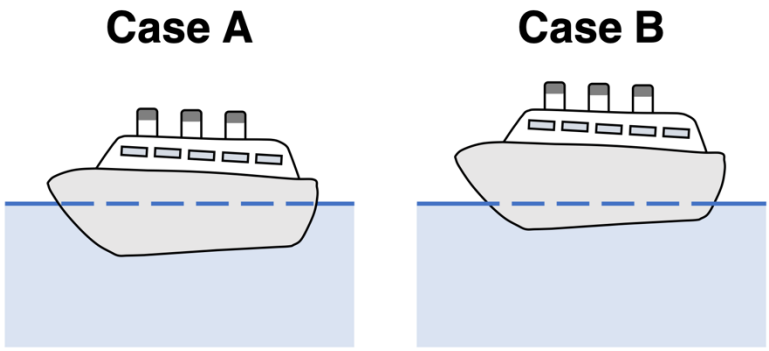
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 35
Two objects having the **same shape** and the **same volume** but **different mass** float on top of the water surface as shown.



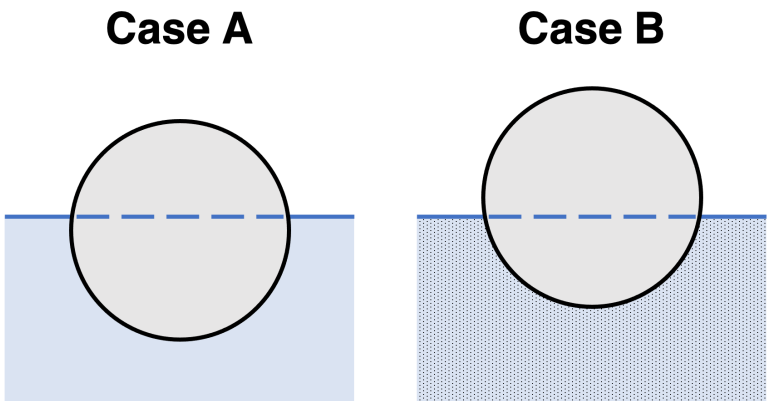
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 36
Two objects having the **same shape** and the **same volume** but **different mass** float on top of the water surface as shown.



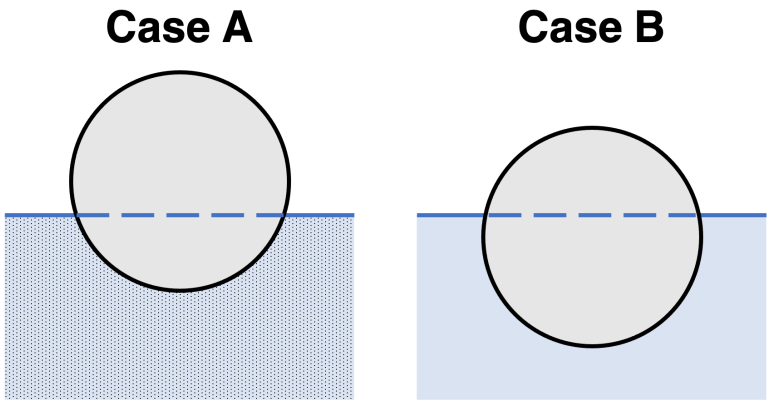
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question Group 10
Question 37
Two objects having the **same mass** and the **same volume** float on top of the water surface. In one case, the water is pure water and in the other case, the water is concentrated with dissolve salt.



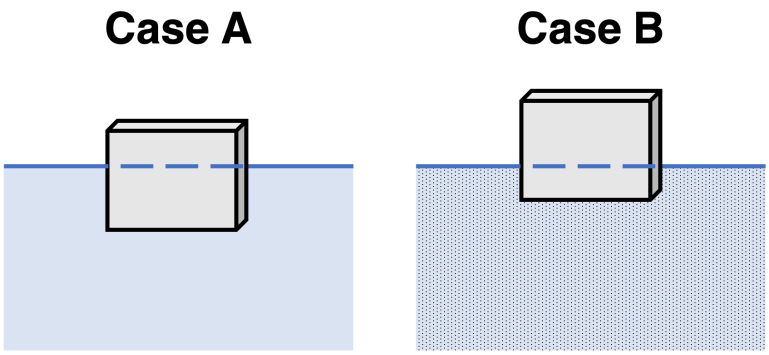
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 38
Two objects having the **same mass** and the **same volume** float on top of the water surface. In one case, the water is pure water and in the other case, the water is concentrated with dissolve salt.



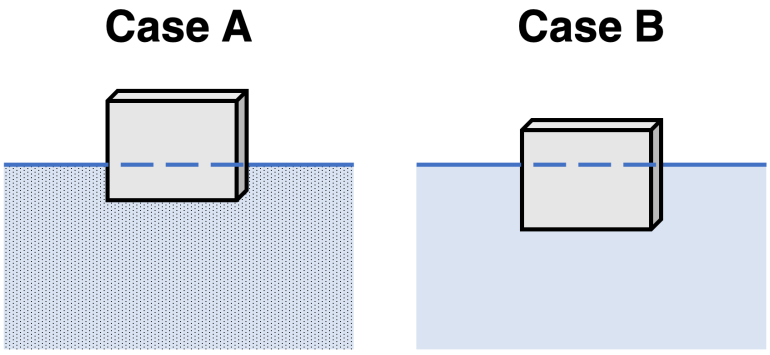
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 39
Two objects having the **same mass** and the **same volume** float on top of the water surface. In one case, the water is pure water and in the other case, the water is concentrated with dissolve salt.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 40
Two objects having the **same mass** and the **same volume** float on top of the water surface. In one case, the water is pure water and in the other case, the water is concentrated with dissolve salt.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

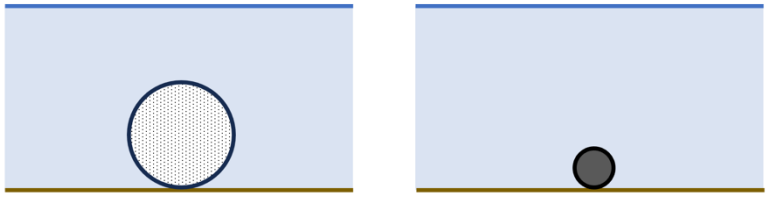
Question Group 11
Question 41
Two objects made of the **same material** and having the **same mass** sink to the bottom of the water's container. In one case the object is solid and in the other case the object is hollow.

Case A **Case B**

In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

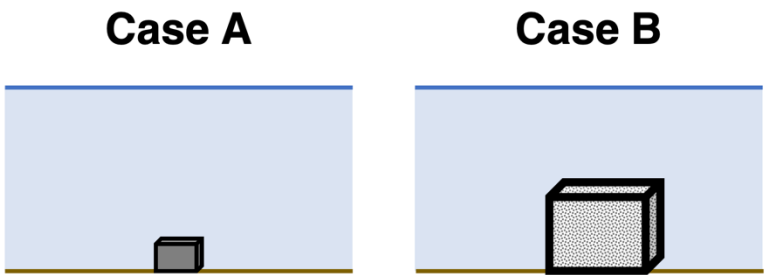
Question 42
Two objects made of the **same material** and having the **same mass** sink to the bottom of the water's container. In one case the object is solid and in the other case the object is hollow.

Case A **Case B**



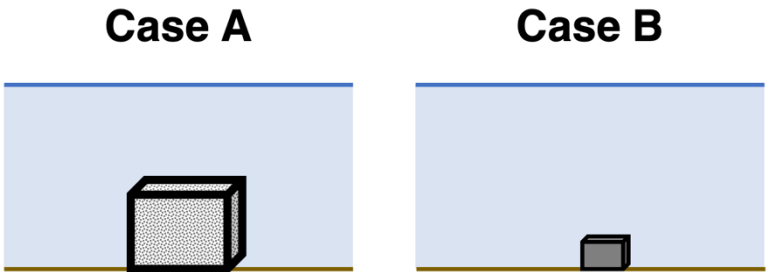
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 43
Two objects made of the **same material** and having the **same mass** sink to the bottom of the water's container. In one case the object is solid and in the other case the object is hollow.



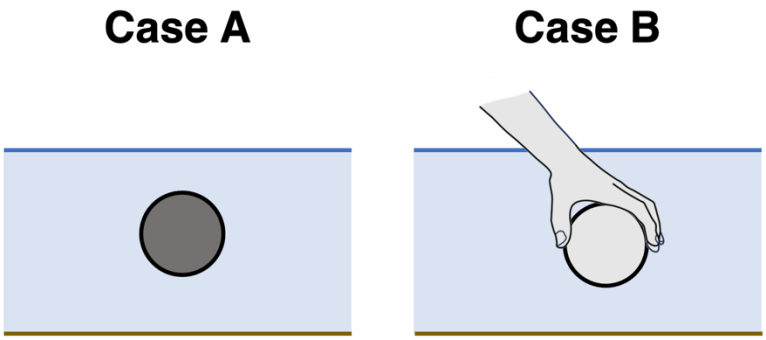
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 44
Two objects made of the **same material** and having the **same mass** sink to the bottom of the water's container. In one case the object is solid and in the other case the object is hollow.



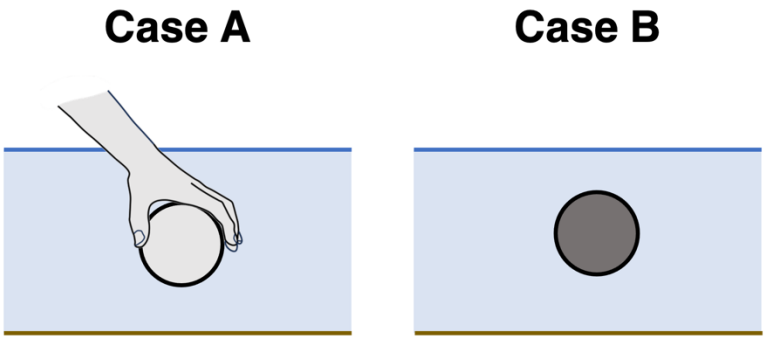
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question Group 12
Question 45
Two objects having a **different mass** but the **same volume** are submerged below the water's surface. In one case, the object *hangs* motionless and in the other case, a downward force must be exerted on the object to keep it submerged.



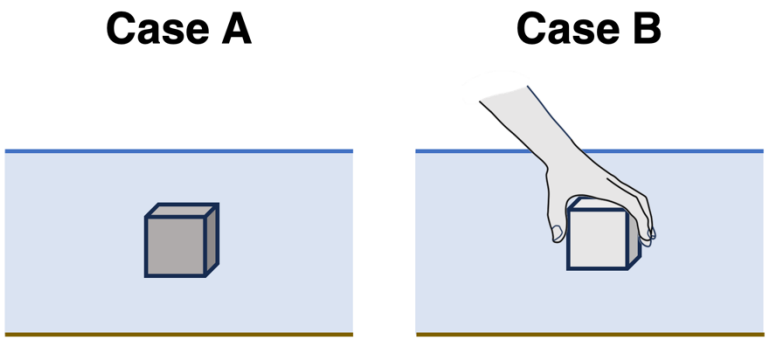
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 46
Two objects having a **different mass** but the **same volume** are submerged below the water's surface. In one case, the object *hangs* motionless and in the other case, a downward force must be exerted on the object to keep it submerged.



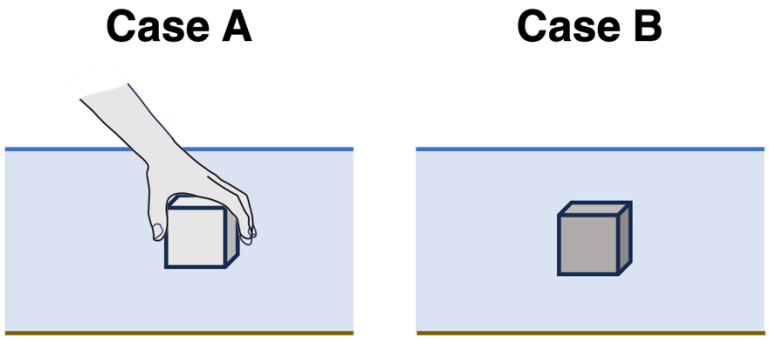
In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 47
Two objects having a **different mass** but the **same volume** are submerged below the water's surface. In one case, the object *hangs* motionless and in the other case, a downward force must be exerted on the object to keep it submerged.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Question 48
Two objects having a **different mass** but the **same volume** are submerged below the water's surface. In one case, the object *hangs* motionless and in the other case, a downward force must be exerted on the object to keep it submerged.



In which case is the F_{grav} the greatest? (A, B, Same for Each)
In which case is the $F_{buoyant}$ the greatest? (A, B, Same for Each)
In which case is the average density of the object the greatest? (A, B, Same for Each)

Activity 3: The Force Beneath You
Question Group 13
Question 49
An object that weighs 50.0 N and has a volume of 2.5 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 50
An object that weighs 40.0 N and has a volume of 2.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 51
An object that weighs 60.0 N and has a volume of 3.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 52
An object that weighs 30.0 N and has a volume of 1.5 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question Group 14
Question 53
An object that weighs 20.0 N and has a volume of 2.5 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 54
An object that weighs 10.0 N and has a volume of 1.5 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 55
An object that weighs 25.0 N and has a volume of 3.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 56
An object that weighs 30.0 N and has a volume of 4.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question Group 15
Question 57
An object that weighs 20.0 N and has a volume of 2.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 58
An object that weighs 25.0 N and has a volume of 2.5 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 59
An object that weighs 30.0 N and has a volume of 3.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 60
An object that weighs 40.0 N and has a volume of 4.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question Group 16
Question 61
An object with a mass of 2.5 kg and has a volume of 1.5 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 62
An object with a mass of 3.0 kg and has a volume of 2.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 63
An object with a mass of 4.0 kg and has a volume of 3.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 64
An object with a mass of 6.0 kg and has a volume of 4.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question Group 17
Question 65
An object with a mass of 1.5 kg and has a volume of 2.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 66
An object with a mass of 2.0 kg and has a volume of 2.5 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 67
An object with a mass of 3.0 kg and has a volume of 4.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 68
An object with a mass of 4.0 kg and has a volume of 5.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question Group 18

Question 69

An object with a mass of 1.5 kg and has a volume of 1.5 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 70

An object with a mass of 2.0 kg and has a volume of 2.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 71

An object with a mass of 3.0 kg and has a volume of 3.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.

Question 72

An object with a mass of 4.0 kg and has a volume of 4.0 L is fully submerged under water and then released. Identify the values of F_{grav} and the maximum $F_{buoyant}$ (when fully submerged). Select the most accurate free-body diagram. Then identify whether the object will sink, float, or hang (in neutral buoyancy). Use **g** = 10.0 N/kg and ρ_{water} = 1.0 kg/L.