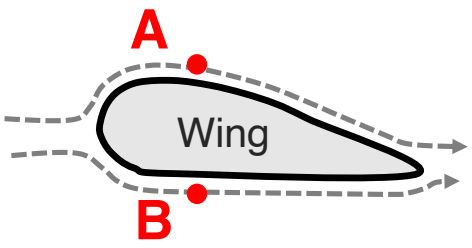
Bernoulli's Effect

Activity 1: Bernoulli Effects

Question Group 1

Question 1

The profile of an airplane wing is shown. Air approaching the wing flows over the top and bottom of the wing.



Air flowing around the wing will be moving faster at location _____.

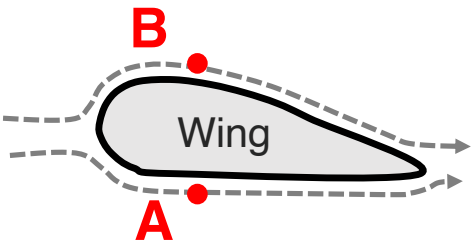
The pressure of the air on the wing will be greatest at location _____.

The result is that _____.

a. there will be a net upward force on the wing.
b. there will be a net downward force on the wing.
c. the wing will be under severe stress and at risk of collapse.

Question 2

The profile of an airplane wing is shown. Air approaching the wing flows over the top and bottom of the wing.



Air flowing around the wing will be moving faster at location _____.

The pressure of the air on the wing will be greatest at location _____.

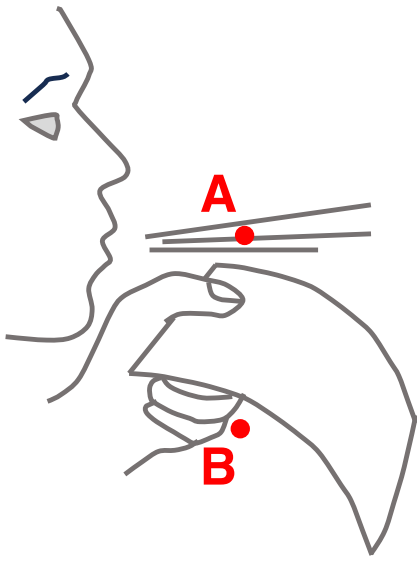
The result is that _____.

a. there will be a net upward force on the wing, lifting the airplane.
b. there will be a net downward force on the wing, lowering the airplane.
c. the wing will be under severe stress and at risk of collapse.

Question Group 2

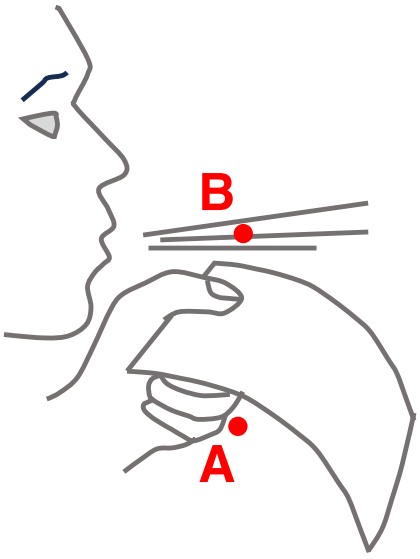
Question 3

During a Physics lab, a student holds a sheet of paper in front of her lips. She directs a steady stream of air across the top of the paper.
The air speed will be greatest at location _____.
The pressure of the air will be greatest at location _____.
The result is that _____.
a. there will be a net upward force on the paper, raising the paper
b. there will be a net downward force on the paper, pushing it more downward
c. the paper will begin flapping wildly and likely be torn into shreads



Question 4

During a Physics lab, a student holds a sheet of paper in front of her lips. She directs a steady stream of air across the top of the paper.
The air speed will be greatest at location _____.
The pressure of the air will be greatest at location _____.
The result is that _____.
a. there will be a net upward force on the paper, raising the paper
b. there will be a net downward force on the paper, pushing it more downward
c. the paper will begin flapping wildly and likely be torn into shreads



Question Group 3

Question 5

Two toy boats are placed side-by-side in a shallow tank of water. Water from a hose is directed between the boats.

The water speed will be greatest at location _____.

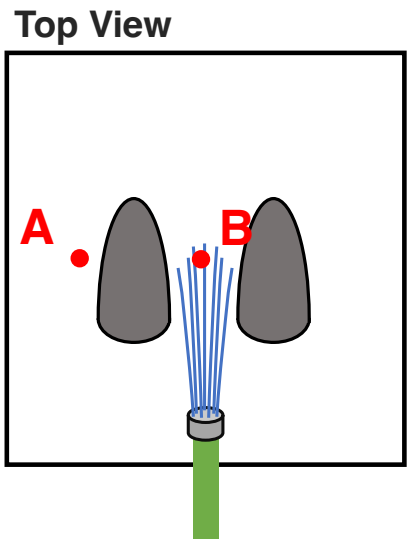
The water pressure will be greatest at location _____.

The result is that _____.

a. the boats will move closer together.

b. the boats will move further apart.

c. the walls of the tank will be under stress and at risk of collapse.



Question 6

Two toy boats are placed side-by-side in a shallow tank of water. Water from a hose is directed between the boats.

The water speed will be greatest at location _____.

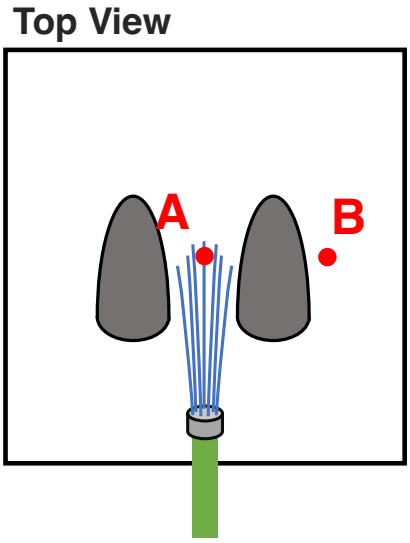
The water pressure will be greatest at location _____.

The result is that _____.

a. the boats will move closer together.

b. the boats will move further apart.

c. the walls of the tank will be under stress and at risk of collapse.



Question Group 3

Question 7

Two toy boats are placed side-by-side in a shallow tank of water. Water from a hose is directed between the boats.

The water speed will be greatest at location _____.

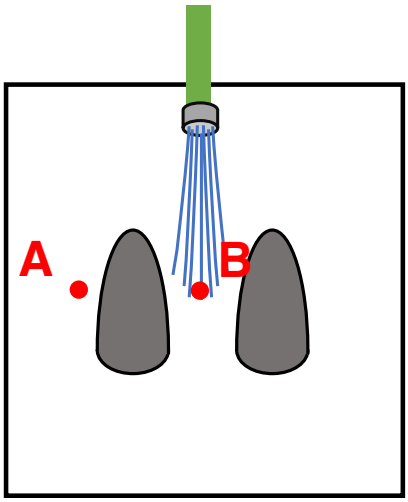
The water pressure will be greatest at location _____.

The result is that _____.

a. the boats will move closer together.

b. the boats will move further apart.

c. the walls of the tank will be under stress and at risk of collapse.



Top View

Question 8

Two toy boats are placed side-by-side in a shallow tank of water. Water from a hose is directed between the boats.

The water speed will be greatest at location _____.

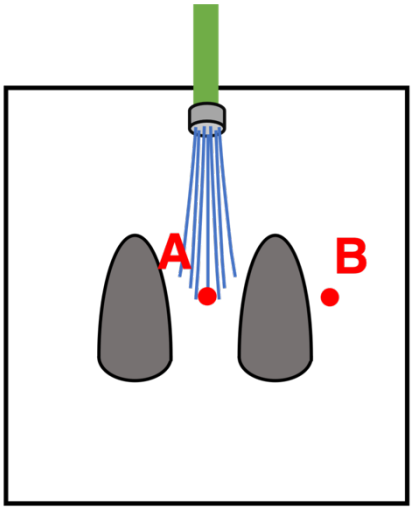
The water pressure will be greatest at location _____.

The result is that _____.

a. the boats will move closer together.

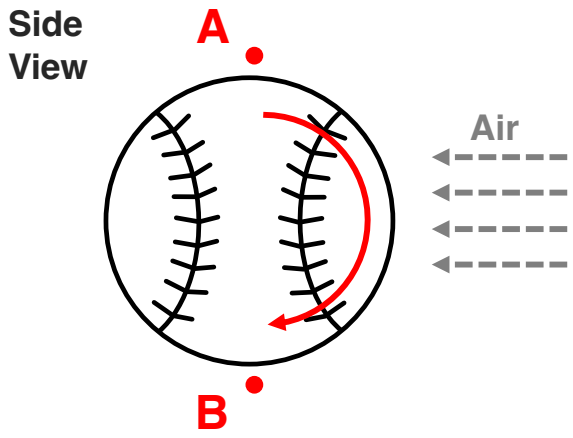
b. the boats will move further apart.

c. the walls of the tank will be under stress and at risk of collapse.



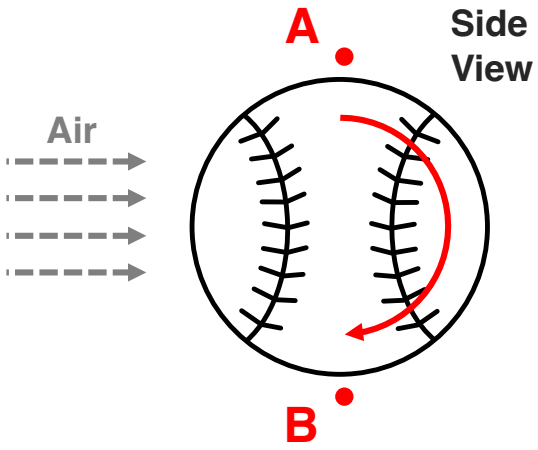
Top View

Question Group 4
Question 9



A spinning baseball is moving to the right through the air. Its spin direction is shown. Air flows around the top and bottom of the ball.
The air speed will be greatest at location _____.
The pressure of the air will be greatest at location _____.
The result is that _____.
a. the ball will sink downward (relative to its projectile path)
b. the ball will rise upward (relative to its projectile path)
c. blur excessively due to its spin, causing the batter to lose sight of it

Question 10



A spinning baseball is moving to the left through the air. Its spin direction is shown. Air flows around the top and bottom of the ball.
The air speed will be greatest at location _____.
The pressure of the air will be greatest at location _____.
The result is that _____.
a. the ball will sink downward (relative to its projectile path)
b. the ball will rise upward (relative to its projectile path)
c. blur excessively due to its spin, causing the batter to lose sight of it

Question 11

A spinning baseball is moving to the right through the air. Its spin direction is shown. Air flows around the top and bottom of the ball.

The air speed will be greatest at location _____.

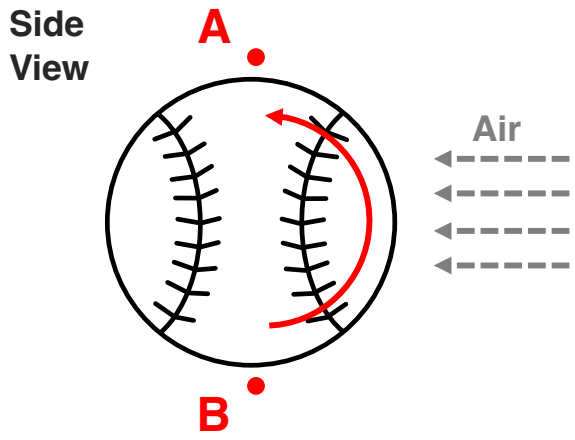
The pressure of the air will be greatest at location _____.

The result is that _____.

a. the ball will sink downward (relative to its projectile path)

b. the ball will rise upward (relative to its projectile path)

c. blur excessively due to its spin, causing the batter to lose sight of it



Question 12

A spinning baseball is moving to the left through the air. Its spin direction is shown. Air flows around the top and bottom of the ball.

The air speed will be greatest at location _____.

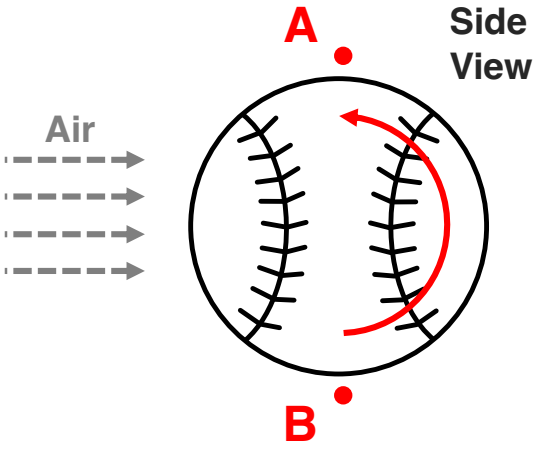
The pressure of the air will be greatest at location _____.

The result is that _____.

a. the ball will sink downward (relative to its projectile path)

b. the ball will rise upward (relative to its projectile path)

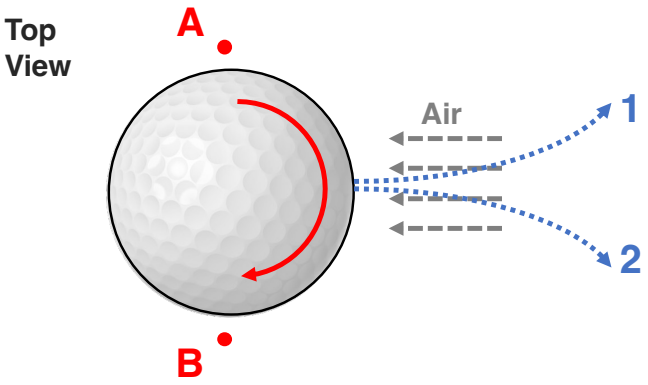
c. blur excessively due to its spin, causing the batter to lose sight of it



Question Group 5

Question 13

A spinning golf ball is moving to the right through the air. Its spin direction is shown. Air flows around the sides of the ball.



The air speed will be greatest at location _____.

The pressure of the air will be greatest at location _____.

The result is that _____.

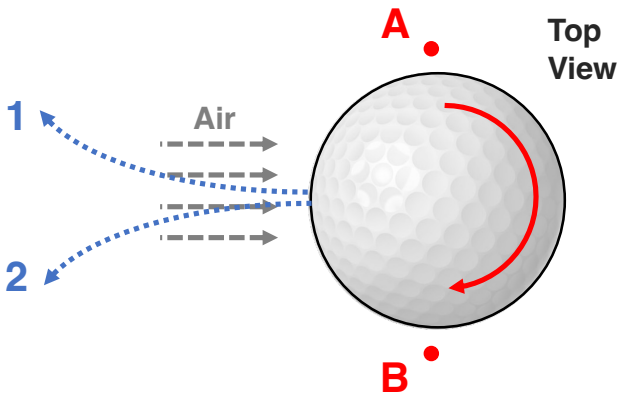
a. the ball will follow a path similar to path 1

b. the ball will follow a path similar to path 2

c. the ball will oscillate back and forth between paths 1 and 2

Question 14

A spinning golf ball is moving to the left through the air. Its spin direction is shown. Air flows around the sides of the ball.



The air speed will be greatest at location _____.

The pressure of the air will be greatest at location _____.

The result is that _____.

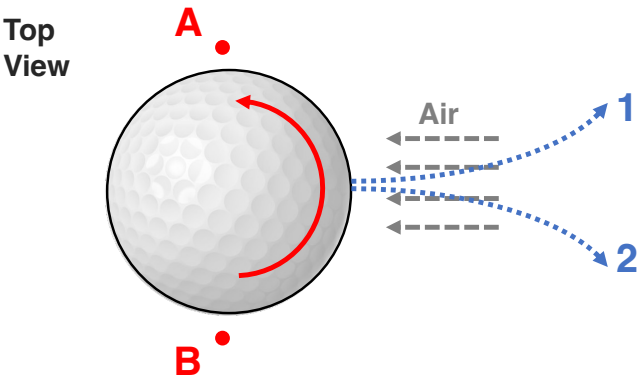
a. the ball will follow a path similar to path 1

b. the ball will follow a path similar to path 2

c. the ball will oscillate back and forth between paths 1 and 2

Question 15

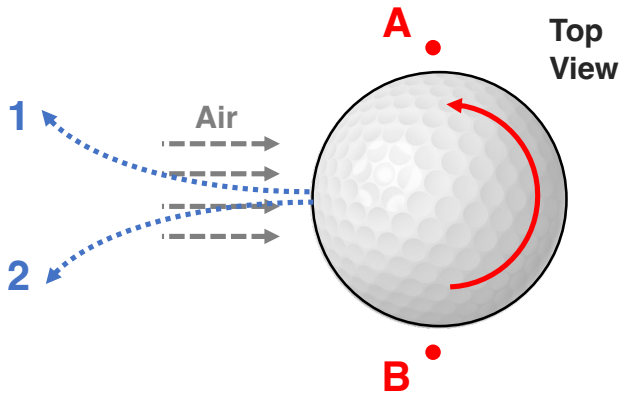
A spinning golf ball is moving to the right through the air. Its spin direction is shown. Air flows around the sides of the ball.



The air speed will be greatest at location _____.
The pressure of the air will be greatest at location _____.
The result is that _____.
a. the ball will follow a path similar to path 1
b. the ball will follow a path similar to path 2
c. the ball will oscillate back and forth between paths 1 and 2

Question 16

A spinning golf ball is moving to the left through the air. Its spin direction is shown. Air flows around the sides of the ball.

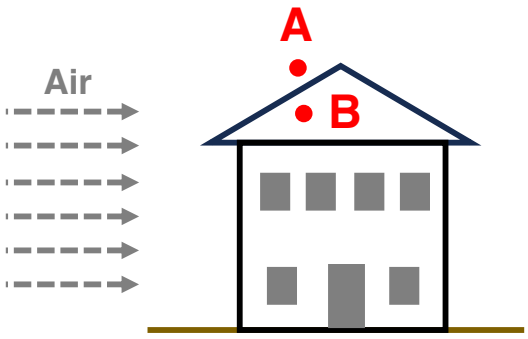


The air speed will be greatest at location _____.
The pressure of the air will be greatest at location _____.
The result is that _____.
a. the ball will follow a path similar to path 1
b. the ball will follow a path similar to path 2
c. the ball will oscillate back and forth between paths 1 and 2

Question Group 6

Question 17

Strong winds during a tornado cause air to flow around the top and sides of an unvented house. The air speed will be greatest at location _____.



The pressure of the air will be greatest at location _____.

The result is that _____.

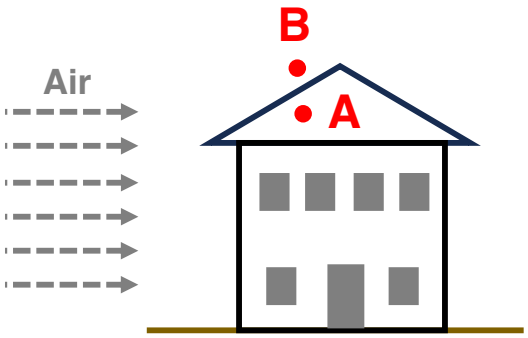
a. the roof will be at risk of being lifted off the home

b. the roof will be secured tightly to the home

c. the contents of the home will blow out the windows

Question 18

Strong winds during a tornado cause air to flow around the top and sides of an unvented house. The air speed will be greatest at location _____.



The pressure of the air will be greatest at location _____.

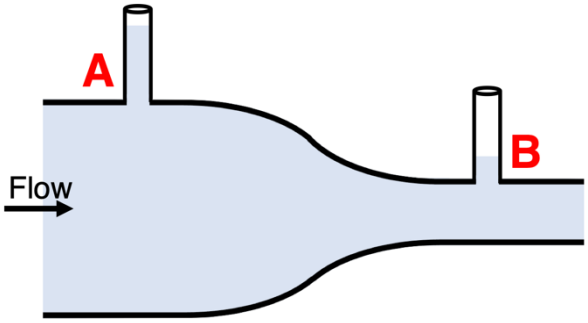
The result is that _____.

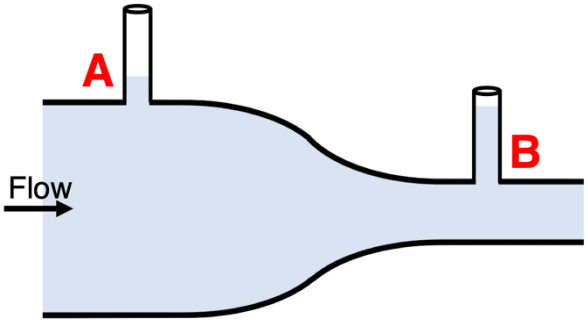
a. the roof will be at risk of being lifted off the home

b. the roof will be secured tightly to the home

c. the contents of the home will blow out the windows

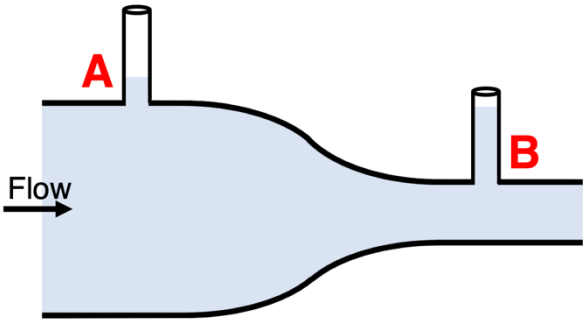
Activity 2: Pressure Meters
Question Group 7
Question 19
Fluid in a pipe flows between regions with different cross-sectional areas. Venturi meters are used to measure the relative fluid pressure at A and B. Tap on the diagram that shows the proper Venturi meter readings.

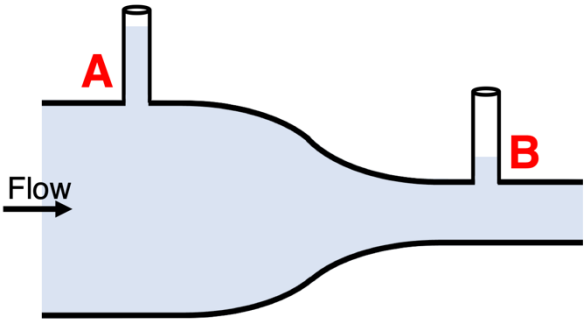




The fluid velocity is greatest at _____.
The fluid pressure is greatest at _____.

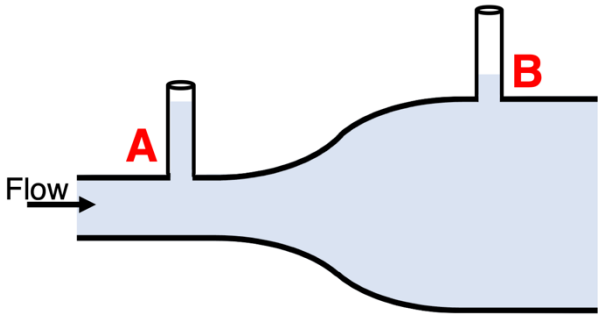
Question 20
Fluid in a pipe flows between regions with different cross-sectional areas. Venturi meters are used to measure the relative fluid pressure at A and B. Tap on the diagram that shows the proper Venturi meter readings.

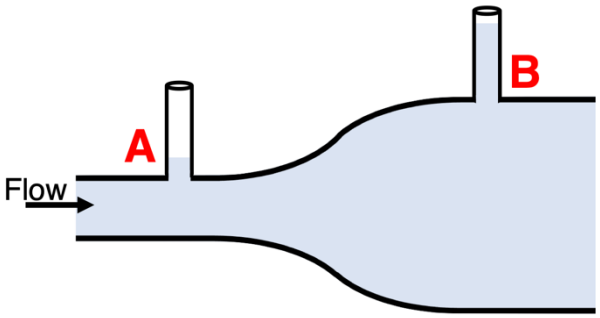




The fluid velocity is greatest at _____.
The fluid pressure is greatest at _____.

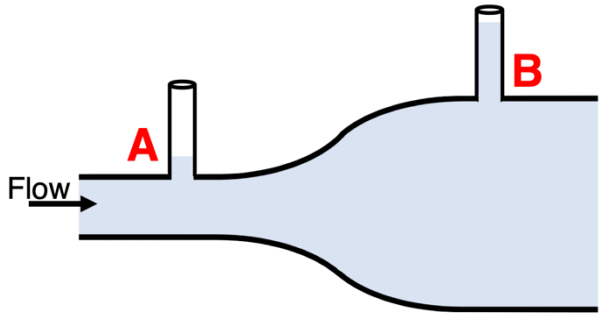
Question Group 8
Question 21
Fluid in a pipe flows between regions with different cross-sectional areas. Venturi meters are used to measure the relative fluid pressure at A and B. Tap on the diagram that shows the proper Venturi meter readings.

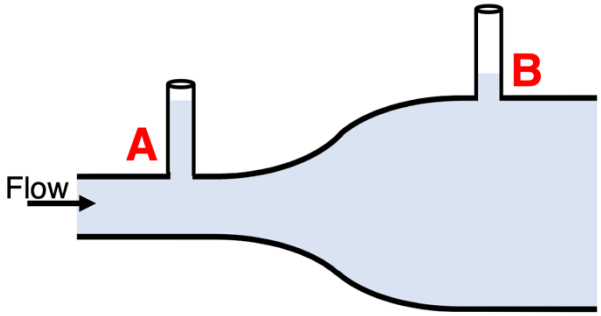




The fluid velocity is greatest at _____.
The fluid pressure is greatest at _____.

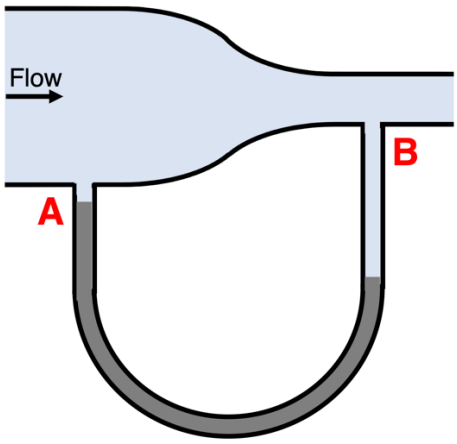
Question 22
Fluid in a pipe flows between regions with different cross-sectional areas. Venturi meters are used to measure the relative fluid pressure at A and B. Tap on the diagram that shows the proper Venturi meter readings.

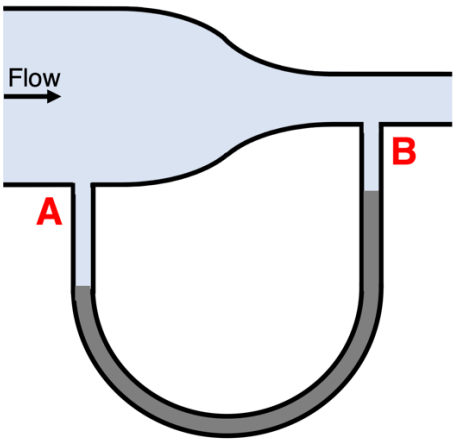




The fluid velocity is greatest at _____.
The fluid pressure is greatest at _____.

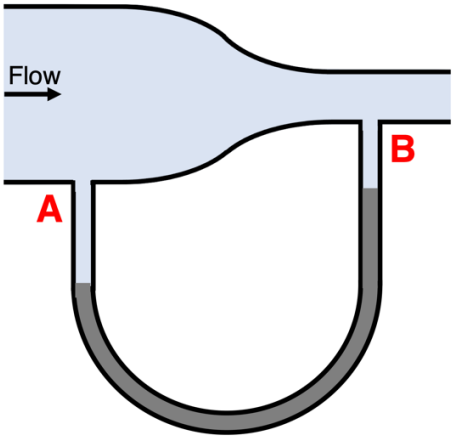
Question Group 9
Question 23
Air in a pipe flows between regions with different cross-sectional areas. Manometers are used to measure the relative fluid pressure at A and B. Tap on the diagram that shows the proper manometer readings.

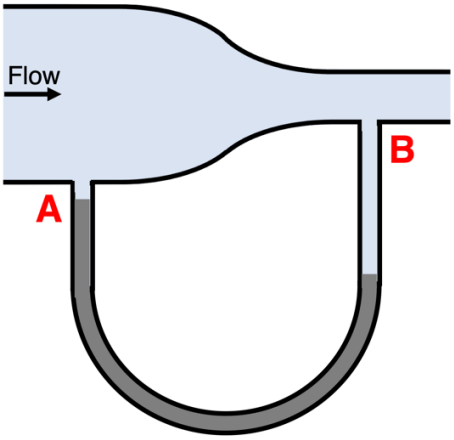




The fluid velocity is greatest at _____.
The fluid pressure is greatest at _____.

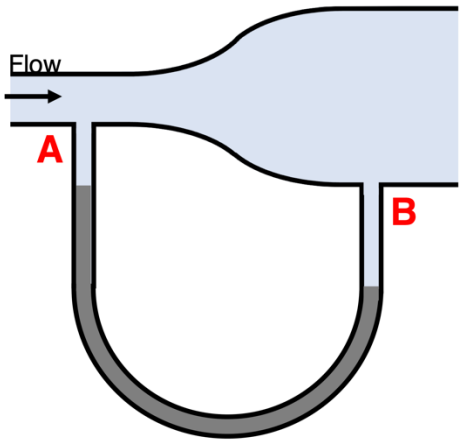
Question 24
Air in a pipe flows between regions with different cross-sectional areas. Manometers are used to measure the relative fluid pressure at A and B. Tap on the diagram that shows the proper manometer readings.

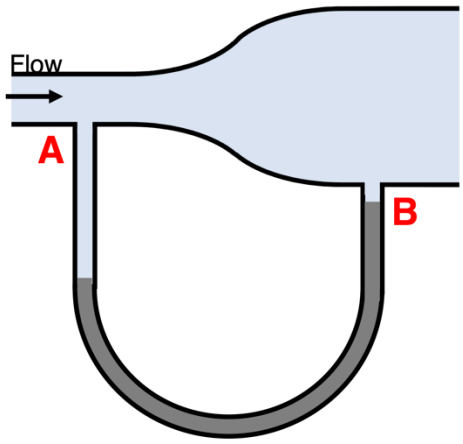




The fluid velocity is greatest at _____.
The fluid pressure is greatest at _____.

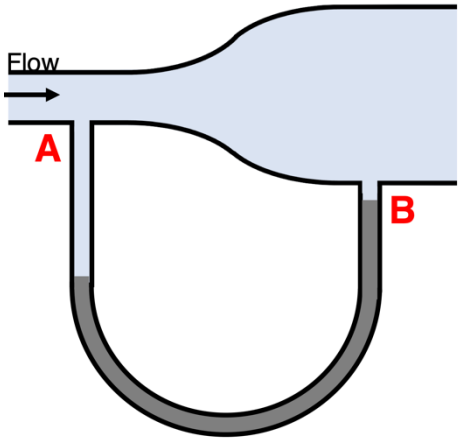
Question Group 10
Question 25
Air in a pipe flows between regions with different cross-sectional areas. Manometers are used to measure the relative fluid pressure at A and B. Tap on the diagram that shows the proper manometer readings.

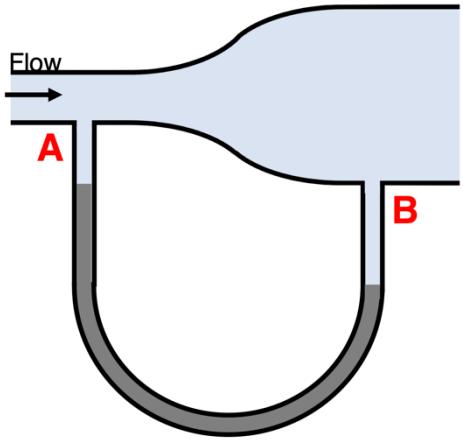




The fluid velocity is greatest at _____.
The fluid pressure is greatest at _____.

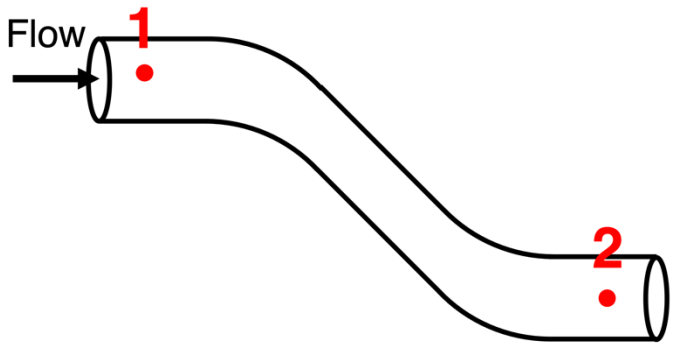
Question 26
Air in a pipe flows between regions with different cross-sectional areas. Manometers are used to measure the relative fluid pressure at A and B. Tap on the diagram that shows the proper manometer readings.





The fluid velocity is greatest at _____.
The fluid pressure is greatest at _____.

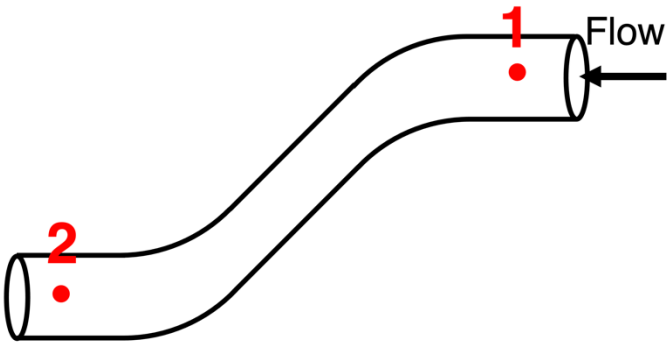
Activity 3: Bernoulli Thinking
Question Group 11
Question 27
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

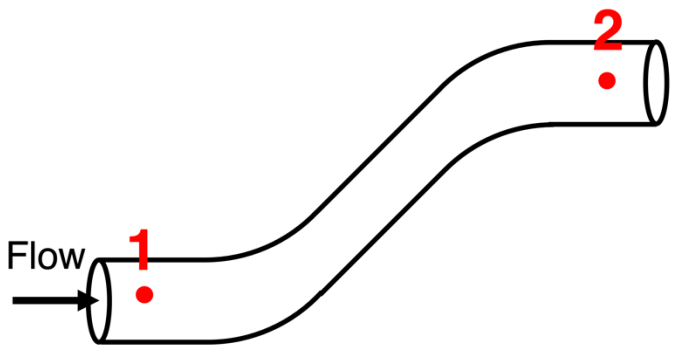
Question 28
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

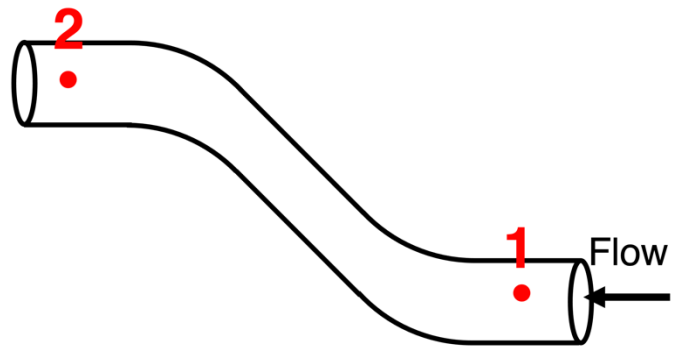
Question Group 12
Question 29
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

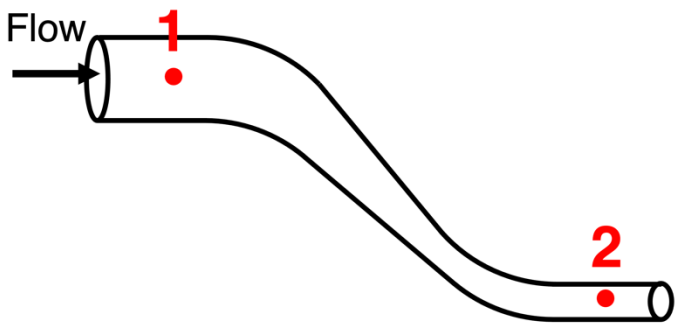
Question 30
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

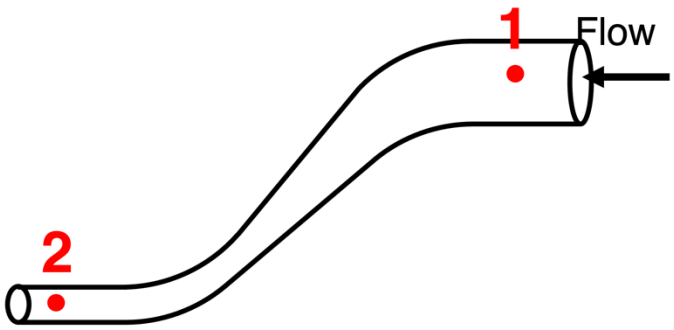
Question Group 13
Question 31
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

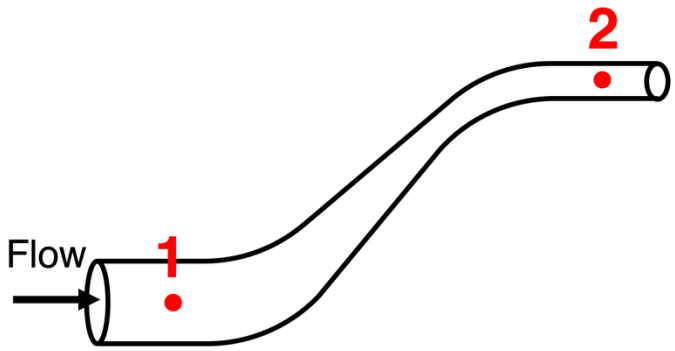
Question 32
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

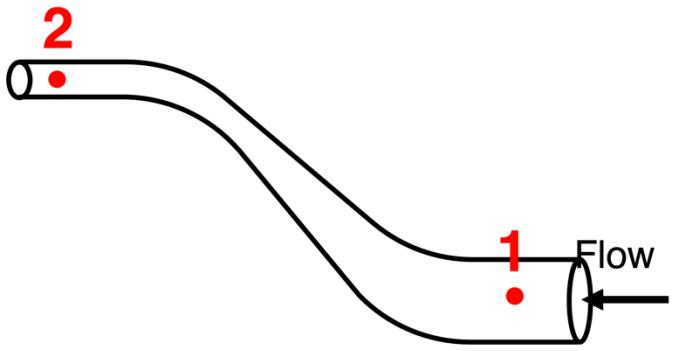
Question Group 14
Question 33
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

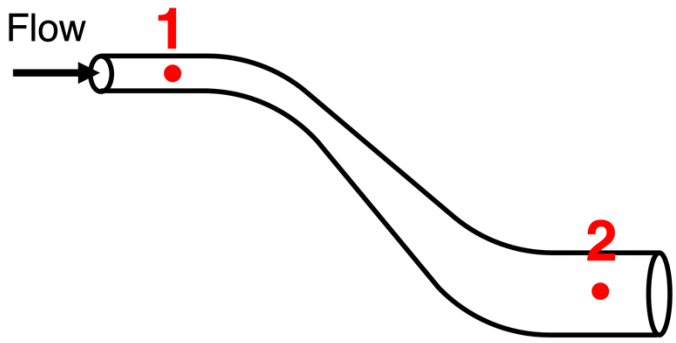
Question 34
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

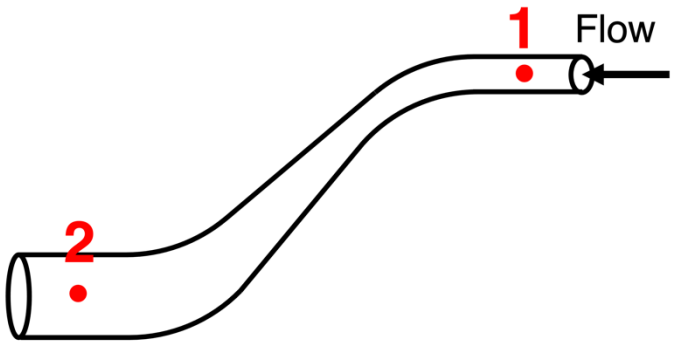
Question Group 15
Question 35
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

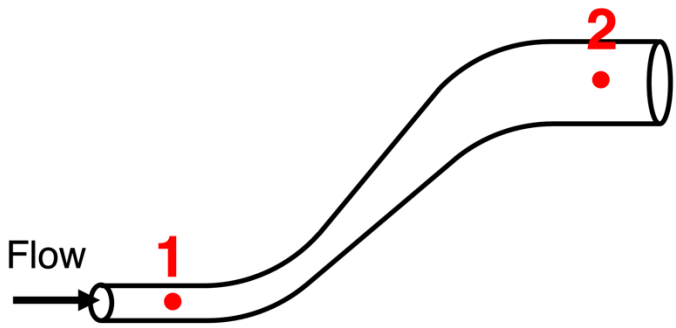
Question 36
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

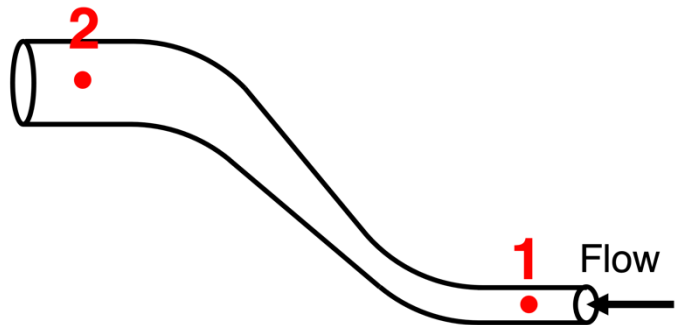
Question Group 16
Question 37
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info

Question 38
A fluid is undergoing steady-state laminar flow through a pipe. Two locations - 1 and 2 - are identified on the diagram.



Use Bernoulli's equation to indicate how the pressure, velocity, and height for locations 1 and 2 compare to one another. (Note: **>** means greater than.)

Velocity:	$v_1 = v_2$	$v_1 > v_2$	$v_1 < v_2$	Not Enough Info
Height:	$h_1 = h_2$	$h_1 > h_2$	$h_1 < h_2$	Not Enough Info
Pressure:	$P_1 = P_2$	$P_1 > P_2$	$P_1 < P_2$	Not Enough Info