Unit 01: Introduction to Fluid Statics and Flow Phenomena

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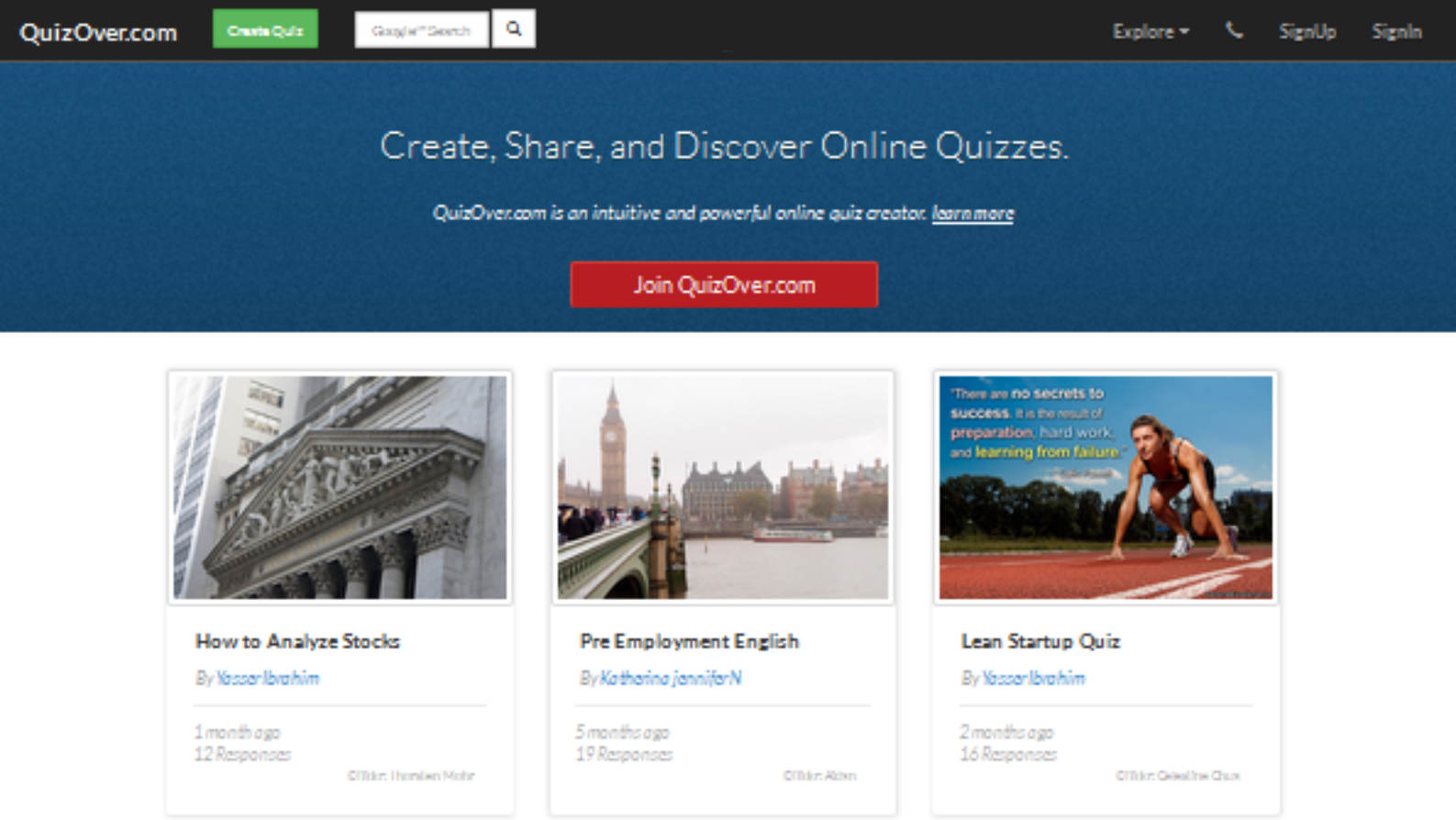

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Stephanie Redfern and Tuan Dinh. Fluid Mechanics. The Saylor Foundation, http://www.saylor.org/courses/me201/

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4. Chapter: Unit 01: Introduction to Fluid Statics and Flow Phenomena

1. Unit 01: Introduction to Fluid Statics and Flow Phenomena Questions

4.1.1. Which of the following situations might be much better described by...

Author: Stephanie Redfern

Which of the following situations might be much better described by compressible flow than incompressible flow?

Please choose only one answer:

- Water flow over Niagra Falls
- Air flow over a supersonic plane
- Oil flow through a lubrication layer
- Air flow in your lungs

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4.1.2. Which of the following best describes the continuum hypothesis for ...

Author: Stephanie Redfern

Which of the following best describes the continuum hypothesis for a fluid?

Please choose only one answer:

- A fluid deforms continuously.
- Fluid properties do not undergo a jump at a boundary.
- Pressure changes as a continuous function in space.
- The properties of a small averaging volume are the same as those for a macroscopic fluid.

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4.1.3. Which of the following best characterizes a "fluid"?

Author: Stephanie Redfern

Which of the following best characterizes a "fluid"?

Please choose only one answer:

- A fluid flows under the influence of a pressure gradient.
- A fluid deforms in response to stress.
- A fluid has viscosity.
- A fluid ceases to flow if there is no pressure gradient.

Check the answer of this question online at QuizOver.com:
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4.1.4. Which of the following is an appropriate unit for fluid density?

Author: Stephanie Redfern

Which of the following is an appropriate unit for fluid density?

Please choose only one answer:

- m[sup]3[/sup]/kg
- kg/ft[sup]2[/sup]
- mkg/s
- lb[sub]m[/sub]/yard[sup]3[/sup]

Check the answer of this question online at QuizOver.com:
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4.1.5. Ice has a density of 0.91667 g/cm[sup]3[/sup]. Seawater has a surfa...

Author: Stephanie Redfern

Ice has a density of 0.91667 g/cm[sup]3[/sup]. Seawater has a surface density of about 1.03 g/cm[sup]3[/sup]. Which of the following best represents the fraction of an iceberg that appears above the water surface according to this data?

Please choose only one answer:

- 9%
- 14%
- 18%
- 11%
- 33%

4.1.6. Over which of the following length scales is the continuum hypothes...

Author: Stephanie Redfern

Over which of the following length scales is the continuum hypothesis invalid for air at standard temperature and pressure (STP)?

I. inches

II. 0.1 nanometers

III. 10 nanometers

IV. 1 micron

Please choose only one answer:

- I and IV only
- I only
- I, III, and IV only
- I, II, III, and IV

4.1.7. What is the static pressure at a depth of 100 meters under sea wate...

Author: Stephanie Redfern

What is the static pressure at a depth of 100 meters under sea water on Earth?

Please choose only one answer:

- 10 atm
- 8000 torr
- 100,000 Pa
- 1000 psi
- 10 Pa

4.1.8. Which of the following best describes the relative magnitudes of th...

Author: Stephanie Redfern

Which of the following best describes the relative magnitudes of the vapor pressures of water from a small droplet and from a flat surface?

Please choose only one answer:

- The vapor pressure from a flat surface is larger than that from a droplet.
- The vapor pressure from a droplet is equal to that from a flat surface.
- The vapor pressure from the droplet is larger than that from a flat surface.
- The vapor pressure from a small droplet is very, very small.

4.1.9. Which of the following is appropriate units for dynamic viscosity? ...

Author: Stephanie Redfern

Which of the following is appropriate units for dynamic viscosity? I. Pa s II. kg/(m s) III. psi hr IV. torr min

Please choose only one answer:

- I, II, III, and IV
- II only
- I and II only
- IV only
- I only

4.1.10. Which of the following statements best describes the difference bet...

Author: Stephanie Redfern

Which of the following statements best describes the difference between a pathline and a streakline?

Please choose only one answer:

- A pathline corresponds to the locations of displacements resulting from instantaneous labeling at a point and continuous observation, and the streakline corresponds to the converse.
- A streakline results from the locations of displacements resulting from instantaneous labeling at a point and continuous observation, and the pathline corresponds to the converse.
- There is no difference.
- The streakline and the pathline characterize different flow speeds.