Be kind to yourself, and keep practicing!
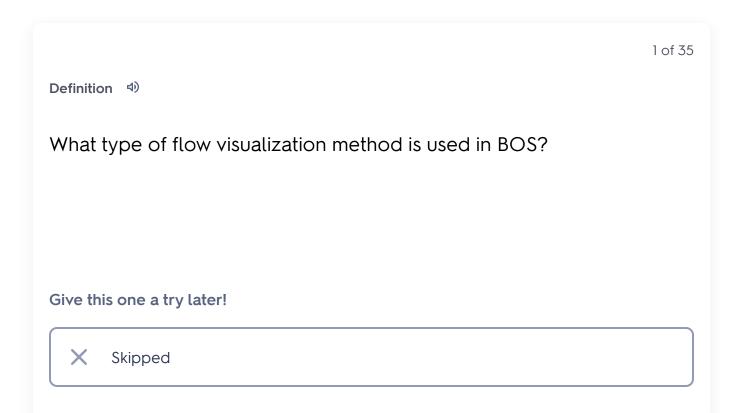
Your time: 1 min

0%

Correct ⊘ 0

Incorrect 35

Next steps

35 missed terms

Practice terms in Learn

Practice your missed terms more until you get them right. ›

Take a new test

Try another test to boost your confidence. ›

Your answers

1 of 35

Definition 🔊

What type of flow visualization method is used in BOS?

Give this one a try later!

✕   Skipped

Correct answer

> ✓ Schlieren

Definition ◁»

Give the most general formula for the 2nd law of thermodynamics.

Give this one a try later!

> ✕ Skipped

Correct answer

> ✓ ds >= (dq)/T

Definition ◁»

Define enthalpy as an equation using the usual notation: _____

Give this one a try later!

> ✕   Skipped

Correct answer

> ✓   h = e + p/rho

Definition 🔊

Carl de Laval was the first to make industrial use of converging-diverging _____.

Give this one a try later!

> ✕   Skipped

Correct answer

> ✓   nozzles

Definition 🔊

Does the 1st law of thermodynamics determine the unique direction of all real processes?

Give this one a try later!

✕   Skipped

Correct answer

✓   No.

Definition 🔊

Total density is invariant in an _____ flow.

Give this one a try later!

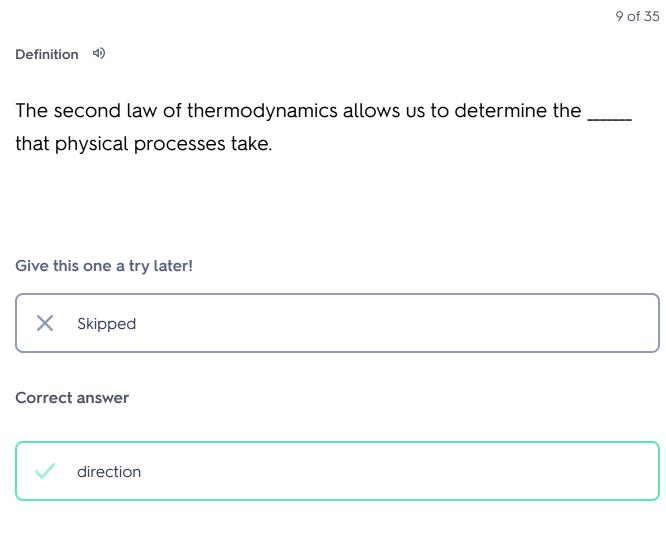✕   Skipped

Correct answer

✓ isentropic

Definition 🔊

Hypersonic flows are for flights Mach numbers in excess of about _____.

Give this one a try later!

✕ Skipped

Correct answer

✓ 5 or 6

Definition 🔊

What can be said about the intermolecular forces between molecules of a perfect gas? They are _____.

Give this one a try later!

> ✕   Skipped

Correct answer

> ✓   negligible, small, very small

Definition 🔊

The second law of thermodynamics allows us to determine the _____ that physical processes take.

Give this one a try later!

> ✕   Skipped

Correct answer

> ✓   direction

Definition 🔊

Name the two-dimensional parameters that govern Gas Dynamics: ratio of specific heats and _____.

Give this one a try later!

✕ Skipped

Correct answer

✓ Mach number

Definition 🔊

One of the most important physical laws that govern high-speed flight is the energy equation, which is just this law of physics:

Give this one a try later!

✕ Skipped

Correct answer

✓   1st law of thermodynamics

Definition 🔊

Write the most common form of the perfect gas law, that is, the one with density: _____

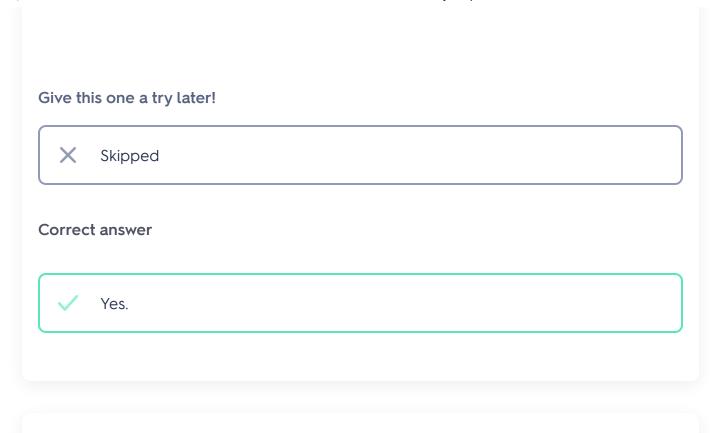**Give this one a try later!**

✕   Skipped

Correct answer

✓ $p = rho * R * T$

Definition 🔊

Does the energy equation play a central role in our study of Gas Dynamics?

Give this one a try later!

✕ Skipped

Correct answer

✓ Yes.

Definition 🔊

For a calorically perfect gas the speed of sound is given by the equation:

Give this one a try later!

✕ Skipped

Correct answer

✓ a = sqrt(gamma * R * T)

Definition 🔊

A calorically perfect gas is one for which: cp and ___ are constant with temperature (give symbol).

Give this one a try later!

✕   Skipped

Correct answer

✓   c sub v, cv

Definition 🔊

_____ flows are characterized by presence of both sub- and super-sonic flows.

Give this one a try later!

✕   Skipped

Correct answer

✓ transonic

Definition 🔊

The critical pressure ratio required to achieve sonic condition is: $p/p_0 = $ _____

Give this one a try later!

✗ Skipped

Correct answer

✓ 0.528

Definition 🔊

Is the propagation of sound waves in a perfect gas an isentropic process?

Give this one a try later!

✕   Skipped

Correct answer

✓   yes.

Definition 🔊

An _____ and reversible process is called isentropic.

Give this one a try later!

✕   Skipped

Correct answer

✓   adiabatic

Definition 🔊

The minimum type of flow characteristic required to go from p to p0 is _____ flow.

Give this one a try later!

> ✕   Skipped

Correct answer

> ✓   isentropic

Definition 🔊

The well-known pressure ratio 0.528 is the minimum p/p0 value required to achieve M = __.

Give this one a try later!

> ✕   Skipped

Correct answer

✓   1

Definition 🔊

The AIAA research paper on BOS photographs of the supersonic flow field generated by Northrop _____ aircraft was presented in the year 2016.

Give this one a try later!

✕   Skipped

Correct answer

✓   T-38

Definition 🔊

The BOS photos of the flow field of a Northrop T-38 aircraft flying at approximately M =~ _____ were taken by NASA Ames and

Give this one a try later!

✕   Skipped

Correct answer

✓   1.08 or 1.02

Definition 🔊

In real-life processes, can the entropy of the system and the surroundings decrease?

Give this one a try later!

✕   Skipped

Correct answer

✓   No.

Definition 🔊

Chuck Yeager's historic first _____ flight took place in the year 1947 at Edwards Air Force Base.

Give this one a try later!

✕   Skipped

Correct answer

✓   supersonic

Definition 🔊

Give the mass conservation equation for a steady, compressible, 1-D flow in terms of flow properties:

Give this one a try later!

✕   Skipped

Correct answer

✓   rho1 * u1 = rho2 * u2

Definition 🔊

Write the relationship between pressure and density for isothermal flows:

Give this one a try later!

✕   Skipped

Correct answer

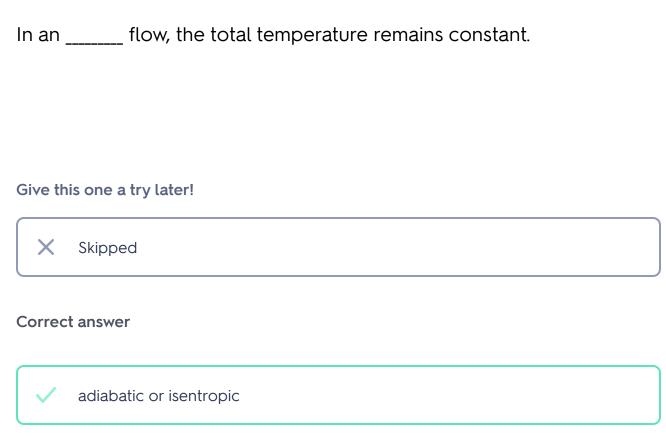✓   p = CT or p is proportional to T

Definition 🔊

Is the speed of sound in a gas higher than that in a liquid?

Give this one a try later!

✕   Skipped

Correct answer

✓   no.

Definition 🔊

In an _____ flow, the total temperature remains constant.

Give this one a try later!

✕   Skipped

Correct answer

✓   adiabatic or isentropic

Definition 🔊

We can calculate the specific gas constant from the _____ gas constant using the molecular weight of the gas.

Give this one a try later!

✕   Skipped

Correct answer

✓   universal

Definition 🔊

Name one of the three most commonly used thermodynamic properties of a gas in gas dynamics:

Give this one a try later!

✕   Skipped

Correct answer

> ✓   p or rho or T

Definition 🔊

The BOS photos of formation fight of two T-38 aircraft show complex ____ interactions as we go from the near field to the far field.

Give this one a try later!

> ✕   Skipped

Correct answer

> ✓   wave

Definition 🔊

Write the proportionality that relates pressure and density for an isentropic flow: _____.

Give this one a try later!

✕   Skipped

Correct answer

✓   p is proportional to rho^gamma, or p = c*p^gamma

Definition 🔊

Name the minimum type of flow characteristic required to go from T to T0: _____ flow.

Give this one a try later!

✕   Skipped

Correct answer

✓   adiabatic

Definition 🔊

In a _____ flow, there are limited regions of influence.

Give this one a try later!

✕ Skipped

Correct answer

✓ supersonic or hypersonic or transonic