Scientific Milestones in Aviation History

Aviation History · Answer Key · 8 Questions

1. Which principle of physics states that as the speed of a moving fluid increases, the pressure within the fluid decreases, providing the basis for aerodynamic lift?

A) Bernoulli's principle
B) Newton's third law
C) Archimedes' principle
D) The Doppler effect

2. In 1947, Chuck Yeager became the first pilot to officially break the sound barrier. What is the approximate speed of sound at sea level under standard atmospheric conditions?

A) 500 mph
B) 767 mph
C) 1,000 mph
D) 1,200 mph

3. Which invention allowed for the structural cooling of gas turbine jet engines, enabling higher combustion temperatures and increased thermal efficiency?

A) Ramjet intake
B) Afterburner injection
C) Internal turbine blade cooling
D) Variable geometry wings

4. What is the primary function of an airfoil's 'camber' in aerodynamic design?

A) To reduce the weight of the wing
B) To increase the surface area for de-icing
C) To create a pressure differential between the upper and lower surfaces
D) To prevent stall at low speeds

5. Before the advent of jet engines, what was the primary limitation that prevented propeller-driven aircraft from approaching supersonic speeds?

A) Propeller tip stall and shockwave formation
B) Lack of high-octane fuel
C) Inability to pressurize the cockpit
D) Excessive vibrations causing engine failure

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6. Who is credited with formulating the first rigorous mathematical theory of heavier-than-air flight, including the concepts of lift, drag, and thrust?

A) Otto Lilienthal
B) George Cayley
C) Wilbur Wright
D) Samuel Langley

7. What defines the 'critical Mach number' of an aircraft wing?

A) The maximum speed before structural failure
B) The speed at which the airflow over any part of the wing first reaches the speed of sound
C) The speed required to achieve vertical takeoff
D) The velocity at which the landing gear must be retracted

8. Which material innovation in the mid-20th century allowed for significantly higher strength-to-weight ratios in airframe construction compared to traditional aluminum alloys?

A) Carbon fiber reinforced polymers
B) Titanium alloys
C) Tempered glass
D) Plywood laminates

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