The AhaBulb Party Game

STUFF EVERY CAP AEROSPACE CADET SHOULD KNOW

How to play (30 seconds)

1. The reader reads a card and its three answers out loud.
2. Everyone says "One, two, three, Goldilocks!" and holds up 1, 2, or 3 fingers.
3. The reader flips the card and reads the answer and the Why.
4. Everyone who was right takes a point.
5. The reader reads the joke with a straight face. Anyone laughs or groans? The reader takes a point. Nobody got it right? The reader takes a point.
6. Pass the deck left. Most points when the points run out wins.

What you need

These cards and the point tokens on the last two pages. No tokens? Use coins, buttons, pebbles, or marshmallows. 3 to 10 players, ages 8 and up.

Expert rule: Bet It

Before the reader flips the card, you may put one of your points on your answer. Right: take your normal point plus one extra. Wrong: your bet goes back to the pile. That's it.

Printing

Print single-sided, on cardstock if you have it. Cut on the dashed lines. Each card is a 3.5 x 5 inch index card. The answer half is upside down on purpose, so the table can't peek.

Cards 1 to 50 of 495. More cards and the free daily online game at sesk.info. Built 2026-10-14.

AEROSPACE

What do Fowler flaps increase when extended?

- **A** Camber and wing area
- **B** Fuel flow and wingspan
- **C** Weight and engine speed

FLIP FOR THE ANSWER

A Camber and wing area

WHY Extending Fowler flaps curves more of the wing and exposes more wing area. Those changes increase lift and also add drag.

STRAIGHT FACE
The flap opened up because the wing needed more space.

SESK.INFO #2566

AEROSPACE

Before the critical angle, what usually happens when angle of attack increases?

- **A** Lift becomes zero
- **B** Only thrust increases
- **C** Lift increases

FLIP FOR THE ANSWER

C Lift increases

WHY A larger angle makes the wing turn more airflow downward, increasing lift before the wing reaches its critical angle. Past that limit, airflow can separate and the wing stalls.

STRAIGHT FACE
The wing studied angles because it wanted to rise in geometry.

SESK.INFO #2565

AEROSPACE

Which Newton law connects downward airflow with an upward reaction?

- **A** Newton's first law
- **B** Newton's third law
- **C** Newton's second law

FLIP FOR THE ANSWER

B Newton's third law

WHY A wing redirects air downward. The air's reaction on the wing helps push the aircraft upward.

STRAIGHT FACE
The wing pushed air down, and the air replied, Up you go!

SESK.INFO #2564

AEROSPACE

What happens to a fluid's pressure when its speed increases?

- **A** It decreases
- **B** It stays fixed
- **C** It increases

FLIP FOR THE ANSWER

A It decreases

WHY Air is a fluid. Bernoulli's principle says faster-moving air has lower pressure, one part of understanding airflow around a wing.

STRAIGHT FACE
Why did the air hurry past the wing? It was under less pressure!

SESK.INFO #2563

AEROSPACE

Which force directly opposes thrust?

A Weight
B Drag
C Lift

FLIP FOR THE ANSWER

B Drag

WHY Thrust pushes or pulls an airplane forward. Drag is aerodynamic resistance acting against that motion.

STRAIGHT FACE
Drag is the force that always says, Not so fast!

SESK.INFO #2570

AEROSPACE

What does an airfoil's chord line connect?

A The wingtips
B The upper and lower surfaces
C The leading and trailing edges

FLIP FOR THE ANSWER

C The leading and trailing edges

WHY A chord is an imaginary straight line across an airfoil. It runs from the front leading edge to the rear trailing edge.

STRAIGHT FACE
The chord line joined the band, but it only played straight notes.

SESK.INFO #2568

AEROSPACE

Which force opposes an airplane's weight in flight?

A Lift
B Drag
C Thrust

FLIP FOR THE ANSWER

A Lift

WHY Gravity pulls the airplane toward Earth, producing weight. Lift acts in the opposite direction and supports the airplane in flight.

STRAIGHT FACE
Lift told gravity, You are really bringing me down.

SESK.INFO #2569

AEROSPACE

Which airplane part is its main body?

A Aileron
B Fuselage
C Propeller

FLIP FOR THE ANSWER

B Fuselage

WHY The fuselage is the central body of an airplane. Wings, the tail assembly, and often the landing gear attach to it.

STRAIGHT FACE
The fuselage is easy to spot because it is the body of evidence.

SESK.INFO #2567

AEROSPACE

Which control surface produces yaw?

- **A** Rudder
- **B** Elevator
- **C** Ailerons

FLIP FOR THE ANSWER

A Rudder

WHY The rudder swings the nose left or right around the vertical axis. The elevator controls pitch, while the ailerons control roll.

STRAIGHT FACE
The rudder knows how to make a good point, left or right.

SESK.INFO #2572

AEROSPACE

Which axis and motion pairing is correct?

- **A** Vertical axis and pitch
- **B** Lateral axis and yaw
- **C** Longitudinal axis and roll

FLIP FOR THE ANSWER

C Longitudinal axis and roll

WHY Roll occurs around the nose-to-tail longitudinal axis. Pitch uses the wingtip-to-wingtip lateral axis, and yaw uses the vertical axis.

STRAIGHT FACE
The airplane brought three axes, but none could chop wood.

SESK.INFO #2571

AEROSPACE

Which atmospheric feature can help a sailplane climb near mountains?

- **A** Calm, still air
- **B** Sinking air behind a ridge
- **C** A mountain wave

FLIP FOR THE ANSWER

C A mountain wave

WHY Wind crossing a mountain range can form waves in the air. A sailplane pilot can use the rising part of a wave to climb.

STRAIGHT FACE
The sailplane waved to the mountain, and the air waved back.

SESK.INFO #2574

AEROSPACE

What is a thermal, the thing sailplane pilots search for?

- **A** A sinking cold-air pocket
- **B** A rising warm-air column
- **C** A steady crosswind

FLIP FOR THE ANSWER

B A rising warm-air column

WHY Sun-warmed ground heats nearby air. That less-dense air rises, and a sailplane can circle in it to gain altitude.

STRAIGHT FACE
The glider liked thermals because they were uplifting company.

SESK.INFO #2573

AEROSPACE

How does an unpowered glider commonly begin a flight?

- **A** A tow airplane pulls it up
- **B** It runs its own engine to climb
- **C** It jumps off a tall tower

FLIP FOR THE ANSWER

A **A tow airplane pulls it up**

WHY A pure glider has no engine to climb from the runway. A powered tow airplane commonly pulls it aloft before releasing the tow rope.

STRAIGHT FACE
The glider asked for a lift, and the towplane took it literally.

SESK.INFO #2575

AEROSPACE

What does a 20-to-1 glide ratio mean?

- **A** It sinks 20 units for each unit forward
- **B** It glides at 20 miles per hour
- **C** It glides 20 units while descending one

FLIP FOR THE ANSWER

C **It glides 20 units while descending one**

WHY Glide ratio compares forward distance with altitude lost. From one mile high in still air, a 20-to-1 glide would cover about 20 miles.

STRAIGHT FACE
The glider loved ratios because they helped it go the distance.

SESK.INFO #2576

AEROSPACE

What makes soaring different from simply gliding downward?

- **A** It exploits rising air
- **B** It dives steeply for speed
- **C** It requires a running engine

FLIP FOR THE ANSWER

A **It exploits rising air**

WHY A gliding aircraft trades altitude for distance. A soaring pilot finds rising air that replaces some or all of the altitude being lost.

STRAIGHT FACE
The glider stayed positive by looking for uplifting air.

SESK.INFO #2577

AEROSPACE

Why can heated air lift a hot-air balloon?

- **A** It becomes denser
- **B** It becomes less dense
- **C** It gains more oxygen

FLIP FOR THE ANSWER

B **It becomes less dense**

WHY Heating spreads air molecules through a larger volume, lowering density. The lighter air inside the envelope is buoyant in the denser surrounding air.

STRAIGHT FACE
Hot air rose because it wanted a higher position.

SESK.INFO #2578

AEROSPACE

How does a balloon pilot mainly influence horizontal direction?

- **A** Turning a large rudder
- **B** Tilting the basket
- **C** Climbing or descending into another wind

FLIP FOR THE ANSWER

C Climbing or descending into another wind

WHY A typical hot-air balloon has little direct steering. Since winds can flow differently at different heights, the pilot changes altitude to choose a useful current.

STRAIGHT FACE
The balloon checked every floor for a better breeze.

SESK.INFO #2579

AEROSPACE

What is the large fabric body of a hot-air balloon called?

- **A** Envelope
- **B** Gondola
- **C** Load tapes

FLIP FOR THE ANSWER

A Envelope

WHY The envelope holds the heated air that provides buoyancy. Below it, the basket or gondola carries the pilot, passengers, fuel tanks, and equipment.

STRAIGHT FACE
The balloon mailed itself skyward in a very large envelope.

SESK.INFO #2580

AEROSPACE

Which action normally makes a hot-air balloon climb?

- **A** Opening the top vent
- **B** Firing the burner
- **C** Cooling the envelope

FLIP FOR THE ANSWER

B Firing the burner

WHY The propane burner heats air inside the envelope, increasing buoyancy. To descend, the pilot can let the air cool or release hot air through the top vent.

STRAIGHT FACE
The burner gave the balloon a warm welcome to the sky.

SESK.INFO #2581

AEROSPACE

Before any people flew, who rode a Montgolfier balloon in a 1783 test?

- **A** Two dogs and a cat
- **B** A monkey and a mouse
- **C** A sheep, a rooster and a duck

FLIP FOR THE ANSWER

C A sheep, a rooster and a duck

WHY In September 1783 the Montgolfier brothers sent up a cage with a sheep, a rooster and a duck in front of King Louis XVI. All three landed safely, and people flew two months later.

STRAIGHT FACE
The Montgolfiers had a lofty family project.

SESK.INFO #2582

AEROSPACE

What aircraft carried people on the first free human flight?

- **A** A Montgolfier balloon
- **B** A Wright Flyer
- **C** A steam helicopter

FLIP FOR THE ANSWER

A A Montgolfier balloon

WHY Pilatre de Rozier and Francois d'Arlandes made the first free human flight over Paris on November 21, 1783, in a Montgolfier hot-air balloon.

STRAIGHT FACE
That first balloon flight really lifted aviation history.

SESK.INFO #2583

AEROSPACE

What is the correct four-stroke engine sequence?

- **A** Compression, exhaust, intake, power
- **B** Intake, compression, power, exhaust
- **C** Power, intake, exhaust, compression

FLIP FOR THE ANSWER

B Intake, compression, power, exhaust

WHY The cylinder draws in fuel and air, compresses it, burns it for power, then pushes out the exhaust. The cycle repeats many times each minute.

STRAIGHT FACE
The engine remembered its four steps because it had good cycle memory.

SESK.INFO #2584

AEROSPACE

How does piston motion reach a reciprocating engine's propeller?

- **A** The valves spin the propeller directly
- **B** The spark plug pulls the blades
- **C** The piston drives the crankshaft

FLIP FOR THE ANSWER

C The piston drives the crankshaft

WHY Combustion drives a piston downward. A connecting rod transfers that motion to the crankshaft, which rotates and powers the propeller.

STRAIGHT FACE
The piston and crankshaft had a moving relationship.

SESK.INFO #2585

AEROSPACE

What is the streamlined cover around an airplane engine called?

- **A** Cowling
- **B** Aileron
- **C** Bulkhead

FLIP FOR THE ANSWER

A Cowling

WHY A cowling covers the engine while presenting a smoother shape to the airflow. Its shape helps reduce aerodynamic drag around the engine installation.

STRAIGHT FACE
The engine wore a cowling because every powerplant needs a good cover story.

SESK.INFO #2586

AEROSPACE

What streamlined enclosure often surrounds a wing-mounted engine?

- **A** A gondola
- **B** A nacelle
- **C** An empennage

FLIP FOR THE ANSWER

B A nacelle

WHY A nacelle is a streamlined housing outside the fuselage. It encloses an engine and associated equipment mounted on a wing or elsewhere.

STRAIGHT FACE
The nacelle gave the engine a room with a wing view.

SESK.INFO #2587

AEROSPACE

Which sequence follows air through a basic jet engine core?

- **A** Burn, compress, cool
- **B** Expand, store, compress
- **C** Compress, burn, drive turbine

FLIP FOR THE ANSWER

C Compress, burn, drive turbine

WHY The compressor raises the air pressure. Fuel burns in that compressed air, and the hot gases expand through a turbine before leaving the engine.

STRAIGHT FACE
The jet engine followed directions because it liked going with the flow.

SESK.INFO #2588

AEROSPACE

What do fast exhaust gases create as they leave a jet engine?

- **A** Thrust
- **B** Weight
- **C** Lift

FLIP FOR THE ANSWER

A Thrust

WHY The engine accelerates hot gases rearward through the tailpipe. The opposite reaction pushes the engine and airplane forward.

STRAIGHT FACE
The exhaust left quickly because it had places to jet.

SESK.INFO #2589

AEROSPACE

What does the throttle control in a basic training airplane?

- **A** Wing flaps
- **B** Engine power
- **C** The rudder

FLIP FOR THE ANSWER

B Engine power

WHY Moving the throttle changes how much fuel-air mixture enters the engine. More mixture usually allows the engine to produce more power.

STRAIGHT FACE
The throttle likes to be in control, but only of the engine.

SESK.INFO #2590

AEROSPACE

Why does a pilot lean the fuel mixture when flying at higher altitude?

- **A** Thinner air needs less fuel
- **B** Thinner air needs more fuel
- **C** It keeps the cabin warm

FLIP FOR THE ANSWER

A Thinner air needs less fuel

WHY Air gets thinner as you climb, so less oxygen enters the engine. The mixture control cuts fuel flow to keep the fuel and air in balance.

STRAIGHT FACE
The mixture leaned out because the mountain air was thin.

SESK.INFO #2591

AEROSPACE

Which measurement lets an altimeter estimate altitude?

- **A** Static air pressure
- **B** Fuel temperature
- **C** Magnetic heading

FLIP FOR THE ANSWER

A Static air pressure

WHY Atmospheric pressure normally decreases as altitude increases. An altimeter compares sensed pressure with its setting and displays an altitude.

STRAIGHT FACE
The altimeter rose through the ranks one foot at a time.

SESK.INFO #2592

AEROSPACE

What two pressures does an airspeed indicator compare?

- **A** Oil and fuel pressure
- **B** Ram and static pressure
- **C** Cabin and tire pressure

FLIP FOR THE ANSWER

B Ram and static pressure

WHY The pitot tube faces the airflow and senses ram pressure. A static port senses undisturbed outside pressure, and their difference indicates airspeed.

STRAIGHT FACE
The pitot tube faced the wind because it liked direct answers.

SESK.INFO #2593

AEROSPACE

Where does an airplane normally park at an airport?

- **A** On the threshold
- **B** Inside the traffic pattern
- **C** On the ramp

FLIP FOR THE ANSWER

C On the ramp

WHY The ramp is the airport parking area. Taxiways connect parking areas with runways, which are reserved for takeoffs and landings.

STRAIGHT FACE
The airplane parked on the ramp because the garage ceiling was too low.

SESK.INFO #2594

AEROSPACE

What is an airport traffic pattern?

- **A** A rectangular path above the airport
- **B** A painted path across the ramp
- **C** A tunnel under the runway

FLIP FOR THE ANSWER

A A rectangular path above the airport

WHY Aircraft follow named legs around a runway so arrivals and departures move predictably. The pattern helps pilots fit into the local traffic flow.

STRAIGHT FACE
The traffic pattern stayed in shape by doing rectangular laps.

SESK.INFO #2595

AEROSPACE

A runway aligned near 270 degrees is usually numbered what?

- **A** 09
- **B** 27
- **C** 36

FLIP FOR THE ANSWER

B 27

WHY Runway numbers represent magnetic heading rounded to the nearest ten degrees, with the final zero removed. A 270-degree direction becomes runway 27.

STRAIGHT FACE
Runway 27 dropped a zero to travel light.

SESK.INFO #2596

AEROSPACE

Which colors identify a mandatory airport instruction sign?

- **A** Black on white
- **B** Yellow on blue
- **C** White on red

FLIP FOR THE ANSWER

C White on red

WHY Mandatory signs mark runway entrances, critical areas, or prohibited areas. Their red background warns pilots that clearance or special care is required.

STRAIGHT FACE
The red airport sign was serious because it had a mandatory meeting.

SESK.INFO #2597

AEROSPACE

What makes an airport controlled?

- **A** An operating control tower
- **B** At least two runways
- **C** Only airline traffic

FLIP FOR THE ANSWER

A An operating control tower

WHY At a controlled airport, tower controllers issue instructions and clearances for local aircraft movements. An uncontrolled airport has no operating tower.

STRAIGHT FACE
The control tower had a high opinion because it saw the whole airport.

SESK.INFO #2598

AEROSPACE

What normally begins an airplane's flight profile before engine start?

- **A** Cruise
- **B** Landing rollout
- **C** Preflight inspection

FLIP FOR THE ANSWER

C Preflight inspection

WHY The pilot walks around the parked airplane and checks items such as fuel, oil, controls, flaps, and landing gear. Taxi and takeoff come later.

STRAIGHT FACE
The pilot walked around the airplane because good flights start on the ground.

SESK.INFO #2600

AEROSPACE

What does approach control help arriving pilots do?

- **A** Taxi to the runway
- **B** Join arriving traffic safely
- **C** Park on the ramp

FLIP FOR THE ANSWER

B Join arriving traffic safely

WHY Approach controllers use radar and radio instructions to organize arriving aircraft. They can assign headings or courses that fit an airplane into other traffic.

STRAIGHT FACE
Approach control is good at introductions, especially to the traffic flow.

SESK.INFO #2599

AEROSPACE

Why do pilots and controllers use the phonetic alphabet on the radio?

- **A** So letters are understood when the radio is hard to hear
- **B** Because it makes radio calls shorter
- **C** Because each country uses a different word list

FLIP FOR THE ANSWER

A So letters are understood when the radio is hard to hear

WHY Letters like B, D and E sound alike over a crackly radio. Saying Bravo, Delta and Echo instead makes each letter easy to tell apart.

STRAIGHT FACE
What did the radio say to the pilot? Over and out of words!

SESK.INFO #2602

AEROSPACE

Which phase normally follows cruise as an airplane prepares to land?

- **A** Descent
- **B** Preflight
- **C** Engine run-up

FLIP FOR THE ANSWER

A Descent

WHY After cruising, the pilot begins losing altitude and prepares for the destination. Approach, landing, taxi, parking, and post-flight steps follow.

STRAIGHT FACE
Cruise handed the flight to descent because it was time to come down to Earth.

SESK.INFO #2601

AEROSPACE

How does the official aviation phonetic alphabet spell the word for the letter A?

- **A** Alpha
- **B** Able
- **C** Alfa

FLIP FOR THE ANSWER

C Alfa

WHY The FAA table uses the international spelling Alfa with an F. The familiar spelling Alpha is not the spelling shown in the aviation table.

STRAIGHT FACE
Why did the letter A go to flight school? It wanted to be Alfa the class.

SESK.INFO #2603

AEROSPACE

How do sectional charts get their names?

- **A** After the state they are printed in
- **B** After a major city in the area they cover
- **C** After the busiest airport in the area they cover

FLIP FOR THE ANSWER

B After a major city in the area they cover

WHY Each sectional covers a big chunk of the country and is named for a major city inside it, like the Chicago or Seattle sectional.

STRAIGHT FACE
Why was the sectional chart so popular? It knew a lot of cities.

SESK.INFO #2604

AEROSPACE

How often are VFR sectional charts updated?

- **A** Every year
- **B** Every 6 months
- **C** Every 56 days

FLIP FOR THE ANSWER

C Every 56 days

WHY Airports, towers and airspace change all the time. The FAA puts out new sectionals every 56 days, so pilots should check that their chart is current.

STRAIGHT FACE
Why did the old chart feel sad? It was out of date and nobody would take it out.

SESK.INFO #2605

AEROSPACE

On a sectional chart, what do contour lines connect?

- **A** Towns on the same highway
- **B** Points at the same elevation
- **C** Airports with the same radio frequency

FLIP FOR THE ANSWER

B Points at the same elevation

WHY A contour line links places that are the same height above sea level. Lines packed close together mean steep hills or mountains.

STRAIGHT FACE
Why did the hill join the map club? It had a lot of contours to share.

SESK.INFO #2606

AEROSPACE

On a sectional chart, what does a Maximum Elevation Figure (MEF) show?

A The highest altitude you may fly

B The airport's field elevation

C The highest terrain or obstacle in that grid box

FLIP FOR THE ANSWER

C The highest terrain or obstacle in that grid box

WHY Sectionals divide the map into quadrants. The MEF represents the highest terrain or vertical obstacle in each quadrant, with an allowance and rounding built into the published figure.

STRAIGHT FACE
Why did the tower brag? It was the highest figure in its box.

SESK.INFO #2610

AEROSPACE

About how many statute miles does one degree of latitude cover?

A About 6 statute miles

B About 69 statute miles

C About 690 statute miles

FLIP FOR THE ANSWER

B About 69 statute miles

WHY Each degree of latitude covers about 111 kilometers, or 69 statute miles. Specifying statute miles avoids confusion with the nautical miles used in aviation.

STRAIGHT FACE
Why was the degree so tired? It ran 69 miles a day.

SESK.INFO #2609

AEROSPACE

Longitude measures distance east or west of what line?

A The prime meridian

B The equator

C The International Date Line only

FLIP FOR THE ANSWER

A The prime meridian

WHY Longitude counts east or west from 0 degrees at the prime meridian. In 1884 nations chose a line through the Royal Observatory in Greenwich, England.

STRAIGHT FACE
Why did the meridian go to Greenwich? It wanted to be in prime time.

SESK.INFO #2608

AEROSPACE

What does latitude measure?

A How far east or west of England

B How high above sea level

C How far north or south of the equator

FLIP FOR THE ANSWER

C How far north or south of the equator

WHY Latitude starts at 0 degrees on the equator and counts up to 90 degrees at the North or South Pole. Lines of latitude run east and west around the globe.

STRAIGHT FACE
Why did the equator stay calm? It had zero latitude for nonsense.

SESK.INFO #2607

AEROSPACE

In a sectional chart's airport data, the number 54 for runway length means what?

- **A** The runway is 54 feet wide
- **B** The longest runway is about 5,400 feet
- **C** The airport is 54 miles away

FLIP FOR THE ANSWER

B The longest runway is about 5,400 feet

WHY To save space, the chart shows the longest runway's length in hundreds of feet. So 54 means about 5,400 feet, though the usable length may be less.

STRAIGHT FACE
Why are runways so calm? They know how to let things land.

SESK.INFO #2612

AEROSPACE

Next to a tower on a sectional chart, what does the number in parentheses show?

- **A** Its height above the ground
- **B** Its height above sea level
- **C** Its radio frequency

FLIP FOR THE ANSWER

A Its height above the ground

WHY Obstacles show two numbers. The top one is the height of the tower's top above sea level (MSL). The number in parentheses below is how tall it is above the ground (AGL).

STRAIGHT FACE
Why did the tower wear parentheses? It wanted to keep its height in brackets.

SESK.INFO #2611

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AhaBulb POINT

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AhaBulb POINT