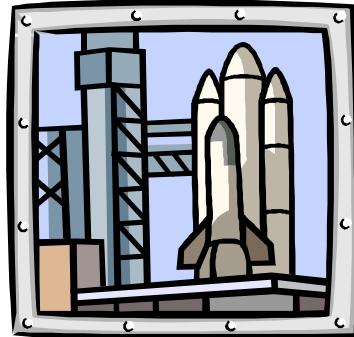


Space Shuttle

NASA Space Shuttles are used as orbiting laboratories where scientists conduct many experiments, take photographs of space, galaxies, and universes. The shuttles are the first vehicles capable of being launched into space and returning to Earth regularly. Shuttles are used to launch satellites and scientific hardware. They are used to launch, retrieve, and repair malfunctioning satellites. Space shuttles are designed to be used 100 times.



Space Shuttle Facts

- they leave the Earth using rocket-powered engines and they return to land as an airplane does
- maximum altitude is 600 miles
- minimum altitude is 155 miles
- they are launched from NASA JFK Space Center in Cape Canaveral, Florida
- about two minutes after launch, the solid rocket boosters complete their firing sequence and separate from the external tank and fall into the ocean using a parachute; they are then retrieved by NASA and reused
- after ten minutes, the liquid fuel rocket booster is released and breaks up in the atmosphere and is unable to be reused again
- in orbit, the Space Shuttle circles the Earth at 17,500 miles per hour
- each orbit is 90 minutes in length; the crew says a sunrise or sunset every 45 minutes
- the insulation used to protect the shuttle is made of 6-inch square tiles of silica; it can withstand temperatures of 2300°F
- the shuttle lands on a 15,000-foot runway, using drag chutes to slow it down and reduce tire and break wear
- the gross launch weight is 4.5 million pounds
- NASA refers to the plane-like part of the shuttle as the Orbiter; it's 121 feet long, has a wingspan of 78 feet and a height of 57 feet
- it can carry a payload of 65,000 pounds into space
- the payload bay is 60 feet long and 15 feet in diameter
- the landing weight of the orbiter ranges from 200,000 to 230,000 pounds
- each engine operates for about 8.5 minutes on each flight; each engine's lifetime is rated at 7.5 hours total
- the external tank holds 1.6 millions pounds (143,060 gallons) of liquid oxygen and 226,000 pounds (526,126 gallons) of liquid hydrogen; this liquid fuel tank is 154 feet long and 28.6 feet in diameter
- the solid rocket boosters contains 1 million pounds of solid propellant; they are each 116 feet long and 12 feet in diameter; they run for 2 minutes in parallel at launch and drop from the Orbiter at 24 miles altitude