

# ROCKET SCIENCE:

## A Beginner's Guide To Launch

### ROCKET

**1 Payload:** Satellite or spacecraft carried by a rocket.

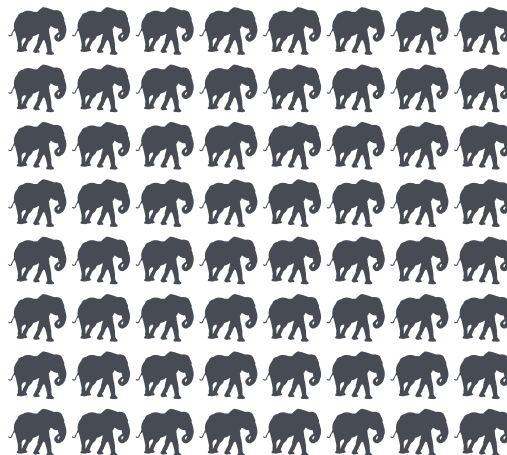
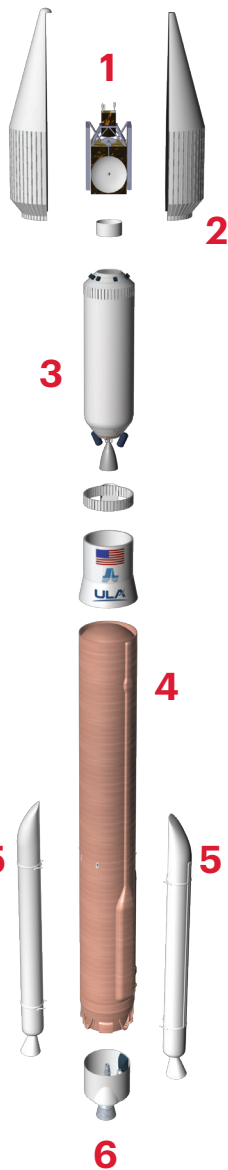
**2 Payload Fairing:** Encloses the delicate satellite or spacecraft and protects it from the Earth's atmosphere.

**3 Upper Stage:** The upper stage is ignited after the booster is jettisoned to push the payload to the required separation point.

**4 First Stage:** The booster engine is shut down and then the first stage jettisons to allow the upper stage to continue.

**5 Solid Rocket Boosters:** Solid rocket boosters, ignited at liftoff, give the rocket extra thrust to lift larger payloads.

**6 Main Engine:** Produces thrust that lifts the rocket off the ground.



### ROCKET WEIGHT

At liftoff, a ULA rocket weighs more than 80 African elephants

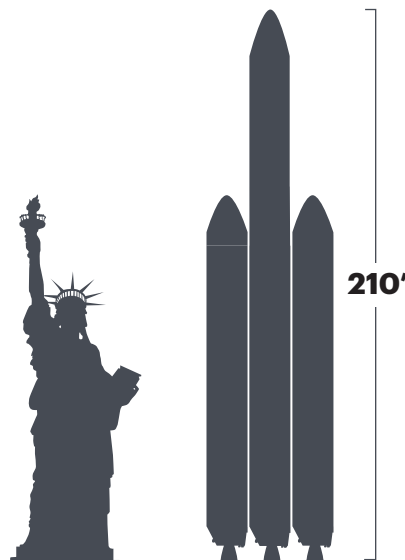
### ROCKET SPEED

ULA rockets travel at approximately: 22,000 mph or 22x faster (1,000 mph) than a fighter jet



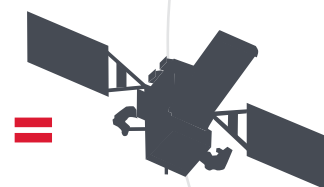
### ROCKET HEIGHT

The average ULA rocket is 210 feet tall or about 1.5x the height of the Statue of Liberty



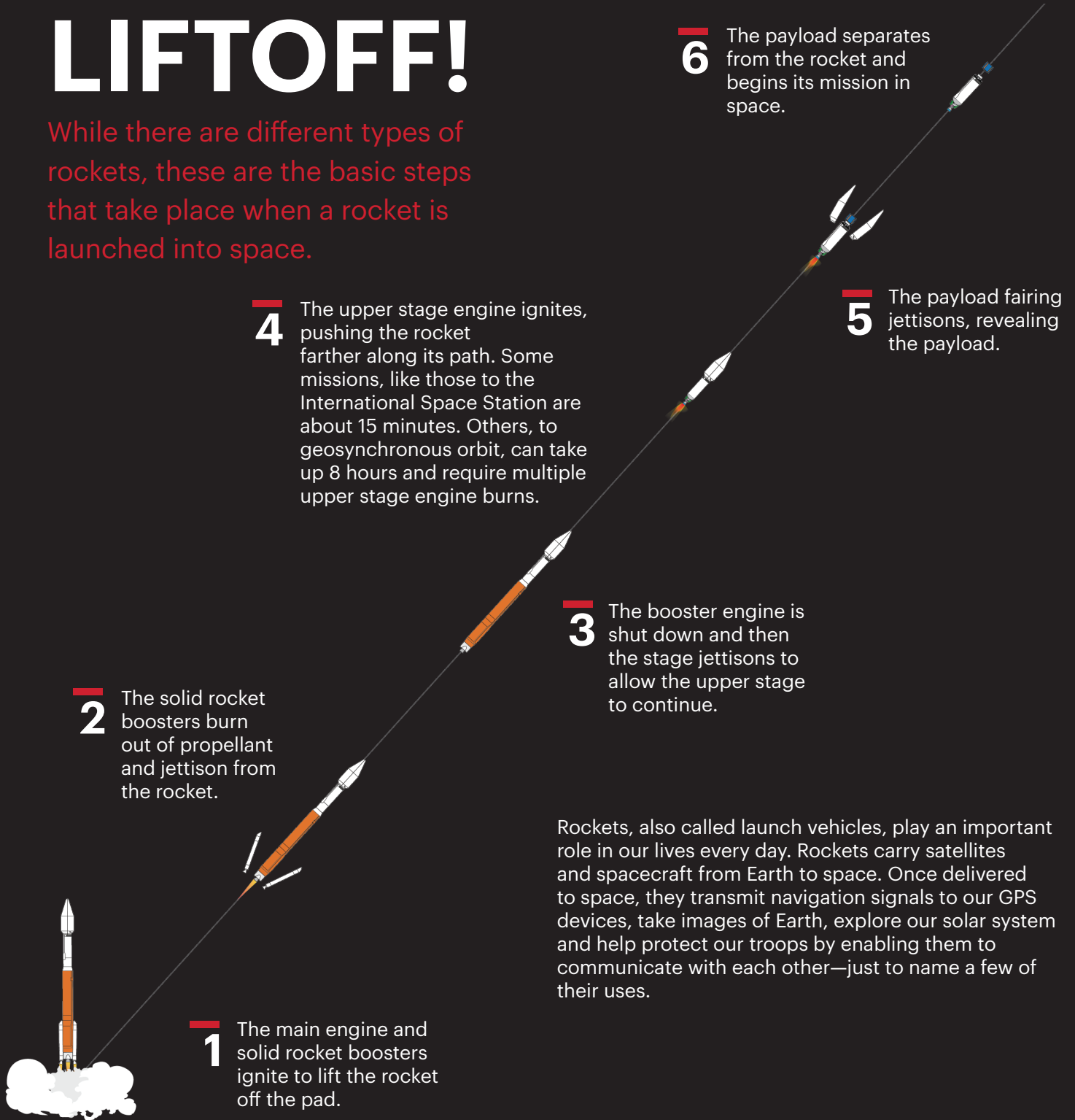
### PAYLOAD WEIGHT

ULA rockets have launched 50,000-lb spacecraft



# 3 - 2 - 1... LIFTOFF!

While there are different types of rockets, these are the basic steps that take place when a rocket is launched into space.



Rockets, also called launch vehicles, play an important role in our lives every day. Rockets carry satellites and spacecraft from Earth to space. Once delivered to space, they transmit navigation signals to our GPS devices, take images of Earth, explore our solar system and help protect our troops by enabling them to communicate with each other—just to name a few of their uses.

