September

- 02 Moon at northernmost declination: 25.9° N
- O3 Waxing crescent Moon near Beehive Open Star Cluster Viking 2 landed on Mars [1976]
- 05 Venus-Spica conjunction
- 06 New Moon
- 09 Waxing crescent Moon— Venus conjunction
- 11 Moon at perigee: 228,975 miles (368,500 km)
- 12 Moon at descending node SpaceX Crew 3 scheduled launch
- 13 First quarter Moon

 Mercury at greatest eastern
 elongation: 26.8° E
- 14 Neptune at opposition
- 15 Moon at southernmost declination: 26° S
- 16 Waxing gibbous Moon— Saturn Conjunction
- 18 Waxing gibbous Moon— Jupiter Conjunction
- 20 Full Moon

 Mercury—Spica conjunction

 First animals to survive a

 rocket flight (1951)
- 21 H.G. Wells birthday (1866)

- 22 September equinox 19:22 UT (3:22 EDT)
- 26 Moon at ascending node Moon at apogee: 251,407 miles (404,600 km)
- 28 Last quarter Moon
- 29 Moon at northernmost declination: 26.1° N

October

- 01 Waning crescent Moon near Beehive Open Star Cluster
- O2 ESA's BepiColombo Spacecraft flyby of Mercury
- 04 World Space Week (4th-10th)
- 06 New Moon
- 07 Mars at solar conjunction
- 08 Moon at perigee: 225,806 miles (363,400 km)
- 09 Mercury at inferior conjunction
 Waxing crescent Moon—
 Venus conjunction
 Moon at descending node
- 11 Nova-C Falcon launch to Moon
- 12 Moon at southernmost declination: 26.2° S First quarter Moon

- 14 Waxing gibbous Moon— Saturn conjunction
- 15 Waxing gibbous Moon— Jupiter conjunction
- 16 Venus—Antares conjunction Parker solar probe Venus Flyby #5
- 20 Full Moon
 World Statistics Day
- 21 Orionid meteor shower: ZHR = 20
- 23 Moon at ascending node
- 24 Moon at apogee: 252,028
 miles (405,600 km)
 Mercury at greatest western
 elongation: 18.4° W
 Mars Odyssey Orbital
 Insertion (2001)
- 27 Moon at northernmost declination: 26.3° N Waning gibbous Moon near Gemini Twins star Pollux
- 28 Last quarter Moon
 Waning gibbous Moon near
 Beehive Open Star Cluster
- 29 Venus at greatest eastern elongation: 47° E
- 31 Launch of James Webb Space Telescope (JWST)