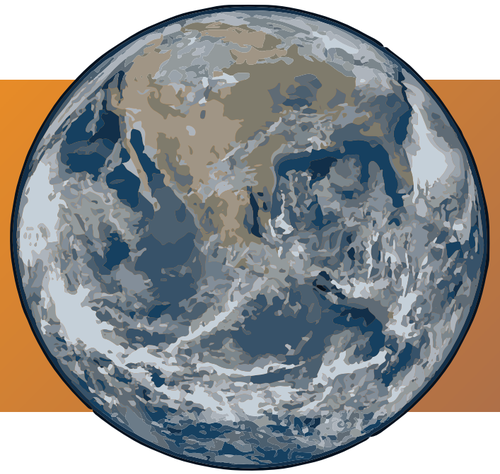
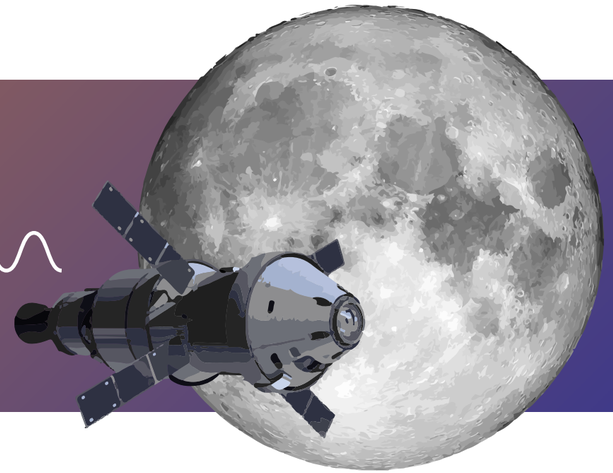
National Aeronautics and
Space Administration



ELECTROMAGNETIC RADIATION

(RADIO WAVES, MICROWAVES)

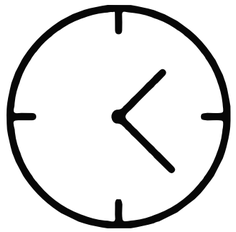


DISTANCE = VELOCITY x TIME

FROM A GROUND STATION ON EARTH

THE SPEED OF LIGHT

ELAPSED BETWEEN
TRANSMISSION AND RECEPTION
(MUST BE VERY PRECISE)



By multiplying the time it takes for a signal from Earth to reach a spacecraft by the speed of light, NASA knows the distance between the spacecraft and Earth, because distance equals velocity multiplied by time. After calculating a few of these distances and performing some geometry, NASA knows where the spacecraft is.

TIME & NAVIGATION

*NOT TO SCALE