Mars – the Red Planet, the “abode of life”

Mars – in fiction, fantasy and film
Percival Lowell, Lowell Observatory and the “canals” on Mars
Mars — the real planet

1.5 AU from Sun
Diameter ~ ½ Earth
Mass ~ 1/10 Earth
Density 3.9 gm/cm$^3$
Period 687d ~ 2 yrs
Rotation 24h 37m
Inclination 24°
Surface gravity 38% Earth

Atm — thin, low density

CO$_2$ 95%
N 3%
A 2%
H$_2$O trace — clouds, ice caps

Cold, dry planet — weak greenhouse
Max 70F summer, Min -140F
Exploration of Mars

Mariner 9  1971
Viking lander 1976
Pathfinder  1997 (Rovers)
Curiosity    2012

Surface features
Great rift valley
Giant volcanoes
Impact craters
Sinuous channels
Ice caps
Valles Marineris -- great rift in crust
Giant Volcanoes

Olympus Mons 15 miles high

Mount Everest 5 1/2 miles high

Mauna Kea 6 1/3 miles high

Vertical scale exaggerated 2 times
Water on Mars? YES!

Sinusoidal channels
Laminated terrain
Ice Caps
The Surface
Rovers --

Spirit and Opportunity
Martian Moons

Phobos

Deimos
Life on Mars?
Recent NASA announcement -- water on Mars

Flowing water! -- during summer

Very salty – briny – due to minerals dissolved in water