

Space X Mars mission proposal

Elon Musk's SpaceX space transport company is spending millions of dollars to redevelop the tail-down reusability of its Falcon 9 rocket into an ambitious vehicle to settle humans on Mars

ITS – INTERPLANETARY TRANSPORT SYSTEM

Interplanetary Spaceship

Raptor engines: 9
Height: 49.5m
Width: 17m
Uses: 12

Take-off

①

② Separation

Returns for relaunch

③ Earth orbit: Several fuel tankers rendezvous to fill ship for Mars voyage

Tankers return to Earth for reuse

Ship flies back to Earth

⑦

④ Ship continues to Mars at 100,000km/h

Enters Martian atmosphere, 1,700°C

⑤ Lands on Mars: Three centre Raptor engines perform final descent burn

In situ propellant production for return voyage

⑥

EARTH

Plan

MARS

Rocket booster

Raptor engines: 42
Height: 77.5m
Width: 12m
Uses: 1,000

Gross lift-off mass: 10,500 tonnes

21 engines
14 engines
7 engines

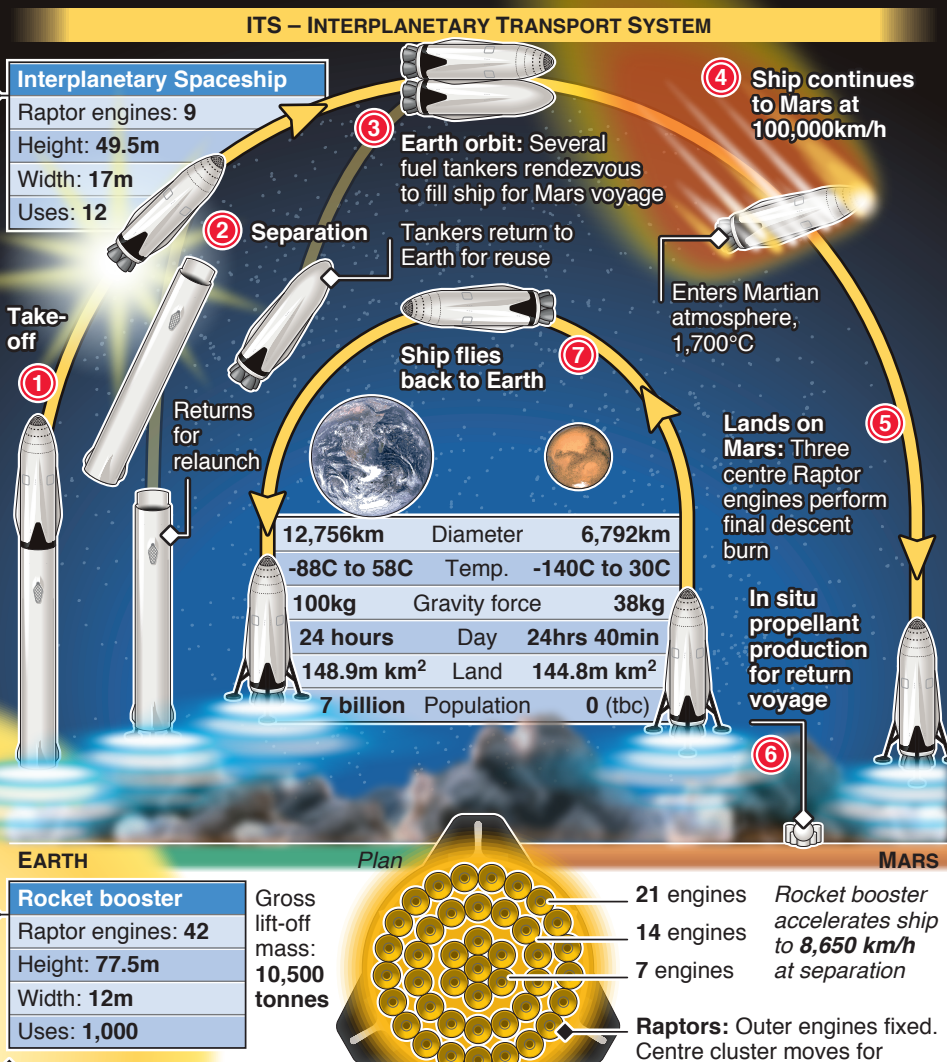
Rocket booster accelerates ship to 8,650 km/h at separation

Raptors: Outer engines fixed. Centre cluster moves for steering

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Human (to scale)

Apollo 11 Saturn V (to scale)



Sources: SpaceX, wire agencies