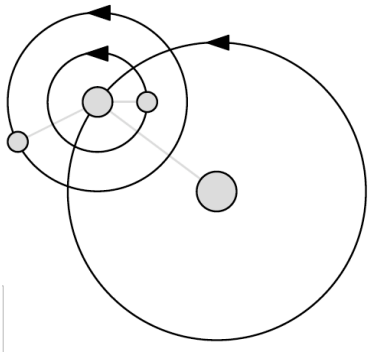

2019

Martian Motion

Aim To simulate the motion of Mars around the sun and the martian moons Deimos and Phobos around Mars.

Materials 1 stop watch 3 lengths of rope

Method In this simulation, each team member represents one of the heavenly bodies. The period of Mars' orbit around the sun is 50 s. The periods in seconds of Phobos and Deimos are determined by Kepler's law:

$$\text{Period}^2 = 64 \times \text{radius}^3$$

The radii of the orbits of Phobos and Deimos are 1 m and 1.842 m, respectively.

Conditions

- Team members start in a straight line in order Sun, Mars, Phobos, Deimos and orbit in an anticlockwise sense.
- The ropes are there to maintain the correct relative distances.
- No timing device other than the stopwatch provided may be used.

Time limit 15 minutes planning & practice followed by the judged motion.

Ranking The ranking order will be determined by the accuracy of the team member's motion during a two minute judging period.

Team ☐ ***Result*** ☐

Do not write below line

Rank ☐