

Name: _____ Section: _____

Tuesday, September 8

Quiz 2B

Your starship lands on mysterious planet Z. The radius of the planet is 3.2×10^6 m; and there is no appreciable atmosphere. A small moon moves on a circular orbit with period 42 hours. The distance between the moon and the center of planet Z is 8.0×10^7 m

a. What is the mass of the planet, in kg?

b. What is the magnitude of the acceleration of gravity on the surface of the planet?

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Quiz 2C

In a galaxy far, far away, Darth Vader has set the Death Star in a circular orbit 9.0×10^7 m above the surface of planet Endor, whose circumference at the equator is 2.0×10^8 m. The period of the orbit is 27 hours.

a. What is the mass of Endor?

b. What is the magnitude of the gravitational acceleration on the surface of Endor?

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Quiz 2D

In a galaxy far, far away, Darth Vader sets his starfighter in a circular orbit 34,000 km above the surface of Tatooine. The magnitude of the gravitational acceleration g on the surface of Tatooine is identical to that on Earth, although Tatooine's mass is 1.0×10^{25} kg—a little larger than Earth's.

a. What is the radius of Tatooine?

b. What is the period of Darth Vader's starfighter?