PHYSICS - NICASTRO ***AN EXPERIMENT IN "NUMBER CRUNCHING"***

During this "lab exercise", you will investigate gravitational relationships that exist between the sun and/or the planets of our solar system, using Newton's Universal Law of Gravitation and Kepler's Laws of Planetary Motion. You will calculate various orbital relationships of natural and man-made satellites around some planets.

Below you will find a table of data that you will need to complete this lab.

PLANET	AVE. RADIUS OF ORBIT (MI.) (A.U.)	PERIOD OF REVOLUTION (EARTH DAYS) (E.Y.)	ROTATION PERIOD DAYS	HRS	MIN	MASS(KG) OF PLANET	PLANETARY RADIUS(MI)
MERCURY	35,991,000 (.387)	88.0 (.241)	58	15	30	$3.29(10^{23})$	1515
VENUS	67,267,000 (.723)	224.7 (.615)	243			$4.85(10^{24})$	3760
EARTH	93,000,000 (1.000)	365.3 (1.000)		23	56	$5.98(10^{24})$	3963
MARS	$1.417(10^{8})$ (1.523)	687.0 (1.881)		24	37	$6.39(10^{23})$	2109
JUPITER	$4.838(10^{8})$ (5.202)	4331.8 (11.858)		9	3	$1.89(10^{27})$	44419
SATURN	$8.886(10^{8})$ (9.555)	10,760.0 (29.455)		10	39	$5.66(10^{26})$	37448
URANUS	$1.787(10^{9})$ (19.218)	30,684.0 (83.997)		17	14	$8.65(10^{25})$	15881
NEPTUNE	$2.800(10^{9})$ (30.110)	60,188.3 (164.764)		16	6	$1.02(10^{26})$	15387
PLUTO	$3.671(10^{9})$ (39.470)	90,466.8 (247.651)	6	9	17	$1.19(10^{22})$	714

Mass of sun: $1.99(10^{30})$ kg

Radius of sun: $7.00(10^{8})$ m