

دراسة عامة للمجموعة الشمسية

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:(Ecliptic)

:(Eccentricity)

$$e = \frac{\sqrt{a^2 - b^2}}{a}$$

b a

$$E = \frac{R_e - R_p}{R_p}$$

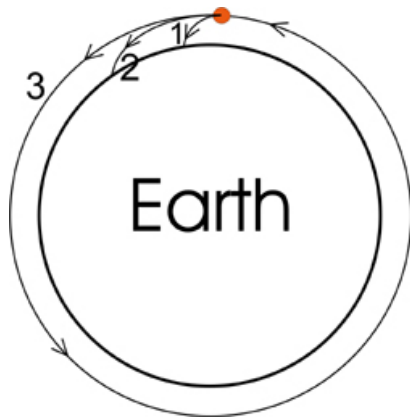
:(Ellipticity)

Rp

Re

(1)

100



:(1)

40000

/ 7.91

h

f

R

M :

h=0

$$v_c = \sqrt{\frac{fM}{R+h}}$$

/ 11.2

$$v_p = v_c \sqrt{2}$$

(Lomonosov)

()

1958

1961

108

(Gagarin)

1969

(Armstrong)

(Luna)



(1968-1934)

(Mars)

(Pioneer)

(Viking)

(Venera)

- -

450

0

3

()

(Oort)

(comets)

)

(76

(/ 30)

.(Meteor shower)

470

(Ceres)

65

5

5



:(2)

)

3

(

(2)

1986 (Mir)

1977

(Voyager)

2006 24

(dwarf planets)

Pluto	Neptune	Uranus	Saturn	Jupiter	Mars	Earth	Venus	Mercury	
1.3×10^{25}	1×10^{29}	8.7×10^{28}	5.7×10^{29}	1.9×10^{30}	6.4×10^{26}	5.98×10^{27}	4.87×10^{27}	3.3×10^{26}	()
0.002	17.1	14.5	95	318	0.1	1	0.8	0.055	(1)
1150	24764	25559	60268	71541	3393	6378	6051	2439	()
0.2	3.9	4	9.5	11.2	0.53	1	0.95	0.38	(1)
0	0.02	0.23	0.1	0.065	0.0052	0.0034	0	0	
6.4	19.2	17.9	10.2	9.84	24.6	23.94	243	58.65	()
0.4	11	7.77	9.05	22.88	3.72	9.78	8.6	3.78	(² /)
1.1	23.3	21.3	35.5	59.6	5	11.2	10.4	4.3	(/)
2.13	1.64	1.29	0.69	1.33	3.95	5.52	5.25	5.43	(³ /)
5913	4497	2871	1427	778	228	150	108	57.9	()
39.5	30	19.2	9.54	5.2	1.52	1	0.72	0.39	(1)
0.25	0.01	0.0461	0.056	0.0483	0.0934	0.0167	0.007	0.2	
17.15	1.77	0.77	2.5	1.3	1.85	0	3.4	7	()
4.7	5.4	6.8	9.6	13	24	30	35	48	(/)
122.46	29.6	97.86	26.73	3.12	25.19	23.45	177.3	2	()
248	164	84	29.5	11.86	1.88	1	224.7	88	()
1.001	1.005	1.01	1.03	1.1	2.14	-	584	155.9	()
3	13	15	31	62	2	1	0	0	