



HOW LONG IS A MARS YEAR?

A year for a planet is the time it takes to orbit the Sun once. On Earth a year lasts around 365 days. But how long does a year last on Mars?

Use the formula below. We can assume the orbits are circular and get results that are approximately correct.

Planet Speed Formula:

$$v^2 = GM \left(\frac{1}{r} \right)$$

v is the speed of the planet in $m s^{-1}$
 r is the distance of the planet from the centre of the Sun, **in metres**

The Mass of the Sun (M) = $1.99 \times 10^{30} \text{ kg}$

$G = 6.7 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$

For Mars, $r = 227,920,000 \text{ km}$



What about all the other planets? Find the length of a year for each of the planets below.

Planet	Distance from centre of Sun, in km
Mercury	57,910,000
Venus	108,210,000
Earth	149,600,000
Jupiter	778,570,000
Saturn	1,433,530,000
Uranus	2,872,460,000
Neptune	4,495,060,000

BONUS: Pluto is no longer considered to be planet. It was discovered as a planet in 1930 but was then downgraded to be a 'dwarf planet' in 2006. Was Pluto a planet for more or less than one Pluto year?

For Pluto, $r = 5,906,380,000$ km