

Rotational Velocity

Do you often wake up in the morning and thank God for the day? Have you ever thought to thank Him that the day is 24 hours long??

Consider this...

- The fact that our planet takes approximately 24 hours to make one complete revolution has a tremendous impact on the moderation of our surface temperatures and thus, our ability to survive here
- For example, we are approaching the time of the year when it would not be unheard of (here in Houston) to experience a 40 degree temperature swing during the course of one single day, say 40 degrees in the early morning but near 80 degrees by late afternoon
- Now, imagine if our “day” were stretched far beyond that 24hr period, what would happen? Well, the “cool” side of the earth would spend more time in darkness and thus be allowed to cool even more, whereas the “warm” side would stay in sunlight for a longer period thus allowing it to grow warmer than what we would consider “normal”
- Let’s take this to the extreme by looking at some real temperature numbers from one of our neighboring planets, Mercury.
- Now, there are a couple of key facts about Mercury that are relevant to our study here. Number one, Mercury is the closest planet in our solar system to the Sun. In fact, it is only about 1/3 the distance from the Sun to Mercury as it is from the Sun to our own planet. So, naturally you would expect for Mercury to experience much higher temperatures on its surface than we do. And you would be right. Around its equator, the temperature of the surface of Mercury can reach a stifling 800 degrees Fahrenheit. To put this into perspective, the melting temperature of lead is only about 620 degrees F.
- Ok Levi, so what, we all had 3rd grade science class and we know that it’s hot on Mercury. Well here’s the “so what”... Do you know how long a solar “day” lasts on Mercury? It turns out, the amount of time that it takes for Mercury to make one full rotation (or in other words for one day to pass) is **176 Earthen days**. That’s almost half of a year! So, because of this extremely slow rotation, a very interesting phenomenon occurs on Mercury. Can you guess what it is? We just talked about how hot it gets on Mercury but what about how cold?? Remember the big 40-degree temperature swings we mentioned here in Houston? Well how about a fluctuation of over 1000 degrees!! That’s right, on the dark side of Mercury the temperature can drop to below -280 degrees F. For comparison, the lowest naturally occurring temperature on the face of our own planet was recorded in 1983 in Antarctica at a measly -128 degrees F.
- **It actually gets far colder on Mercury, which is practically touching the Sun, than it does anywhere on our own planet largely because of the difference in rotational speed. Thanks be to God for the length of our days!**