Ponder the Portage County Skies with Paul

Sky events for February 2008

1 Venus within 1° of Jupiter @ 07:00
2 Mariner 10 uses gravity of Venus to speed up on its journey for Mercury (1974)
6 Mercury is in inferior conjunction @ noon
6 New Moon @ 21:44
7 Apollo 14 returns from Moon (1971)
13 Moon at perigee (230,043 miles from Earth)
13 First Quarter Moon @ 21:33
15 Galileo Galilei born (1564)
20 TOTAL LUNAR ECLIPSE
20 Full Moon @ 21:30
21 Moon passes 3° south of Saturn @ 06:00
24 Saturn is at opposition @ 04:00
25 Mercury passes 1.3° north of Venus @ 21:00
27 Moon @ apogee (251,309 miles from Earth)
28 Last Quarter Moon @ 20:18
29 Scotland established this day as one when a woman could propose marriage to a man! If he refused, he was required to pay a fine.

What event is the most rare this month?

Actually, since the next Total Lunar Eclipse will be in 2 years and Friday Feb. 29th only occurs every 28 years, Friday Feb. 29th is.

Why does Feb. have 29 days on leap years?

In 44 B.C. Augustus Caesar wanted a day named after him (Sextilis became August) like Julius did (Quintilis became July) but August only had 30 days so *Augustus borrowed a day from February* (the month of purification) and swapped the number of days in the next two pairs of months so there would not be three months in a row with 31.

What should I know about this month's lunar eclipse?

A lunar eclipse occurs when the moon travels through Earth's shadow. Usually the moon passes just above or below Earth's shadow but this time it will pass through it. Earth's atmosphere acts like a lens throwing a red shadow beyond the distance of the moon. Thus the moon will turn red when it is in this part of the Earth's shadow. The Moon will start entering the shadow at 19:43 (just subtract 12 to get p.m. time, thus 7:43 p.m.); 78 minutes later totality will occur @ 22:01; and totality last 51 minutes or until 22:52; followed by another 78 minutes to leave the shadow.

Why doesn't my satellite dish have to move to follow the satellite in space?

Your satellite dish is moving with the rotation of the Earth. The satellite your dish is pointing at is in geo-synchronous orbit (22,600 miles up) thus orbits the Earth at the same rate the Earth spins.

When a satellite in geo-synchronous orbit gets old, do they return it to Earth?

No, the satellite would not have near enough fuel to bring it back to Earth (it would take as much fuel to slow down the satellite as it did to get it going that fast). Instead they use the remaining fuel to throw it higher so it is out of the way of this crowded, highest reality orbit.

Is there another way to slow a satellite down without using fuel?

Yes, MESSENGER (MErcury Surface, Space ENvironment, GEochemistry, and Ranging satellite) is using "gravity assist" in reverse by flying along in front of a planet to give up some of its energy to the planet. Messenger flew past Mercury last month but has to lose some additional energy to Earth, Venus, and Mercury again before its speed is low enough to start orbiting Mercury's weak gravity in 2011.

This kind of reminds me of the fact that a negative times a negative equals a positive, WHY DOES a negative times a negative equal a positive?

This is a tough question compared to your previous questions. One way to prove this is:

Given: (1 + -1) = 0
Prove (-1) (-1) = 1
(1 + -1) = 0

multiplying by (-1) gives:
(-1) (1 + -1) = (-1) (0)
distributing (-1)(1) + (-1)(-1) = 0
-1 + (-1)(-1) = 0
adding 1 to both sides yields: (-1)(-1) = 1

OR just note the extension of the pattern:

3 X -3 = -9
2 X –3 = -6
1 X –3 = -3
0 X –3 = 0
-1 X –3 = 3
-2 X –3 = 6

GNATS