Notes for Eclipses and Tides

Moon's Orbit

- Takes 27 days and 8 hours to complete one orbit of Earth (Often more than one full moon a month – called a blue moon)

Solar Eclipse

- Occurs when the Earth moves into Moon's shadow (New Moon)
- Umbra – darkest part of the shadow
- Penumbra – lighter part of the shadow
- Total solar eclipse only occurs in the umbra (path of totality)

Lunar Eclipse

- Occurs when the Moon is in Earth's shadow (Full Moon)
- Full lunar eclipse – moon appears red since only red light waves make it through Earth's atmosphere.

Tides

- Tides are mostly caused by the Moon because it is closer than the Sun
- Most of Earth experiences two high tides each day, 12 hours apart.
- One high tide is due to gravity from the Moon and the other is due to centrifugal force.

Spring Tides

- When the full or new Moon is lined up with the Sun, their gravitational effects on Earth are combined.
- Highest of the high tides and the lowest of the low tides or greatest range between high and low tides.
- High spring tides = worst time for hurricanes to hit land.

Neap Tides

- When the moon is perpendicular to the Sun (quarter moons), their gravitational forces compete, causing just moderate high and low tides.