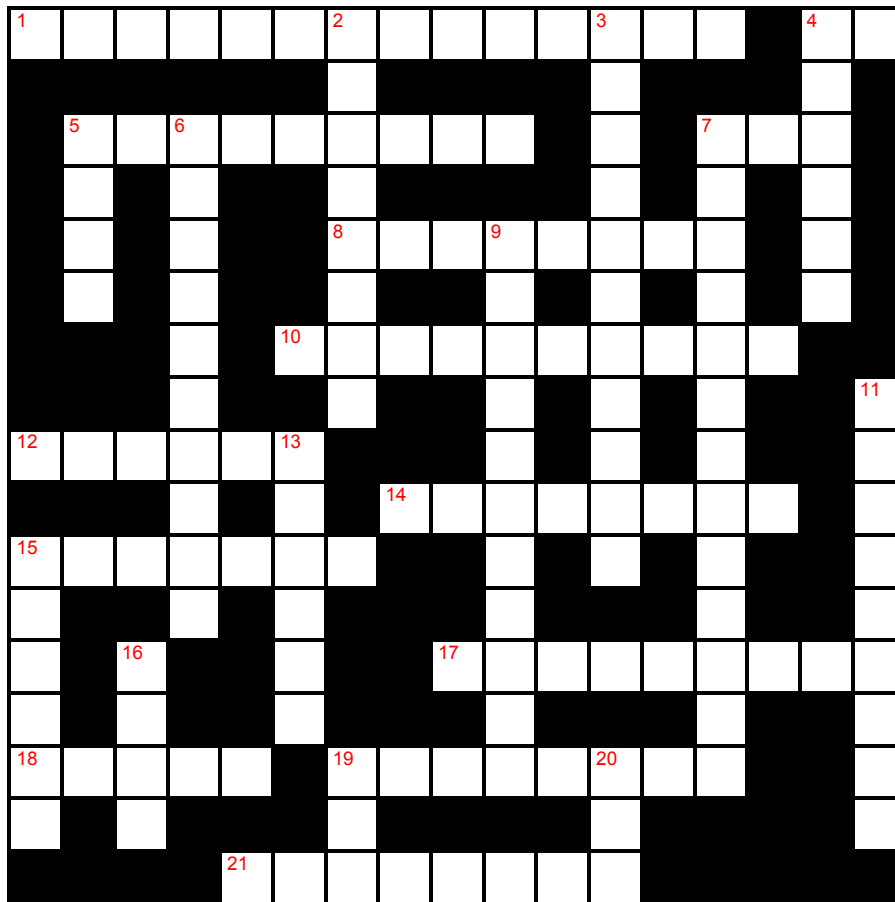


# Astronomy\_17x17\_2008-10-19

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## Across

**1** Points in the vicinity of two massive bodies where each others' respective gravities balance. (8,6)

**4** The constant equal to the ratio of the circumference of a circle to its diameter, which is approximately

3.141593. (2)

**5** A unit of mass equivalent to the mass of the Sun. 1 solar mass = 1  $M_{\text{sun}}$  =  $2^{1033}$  grams. (5,4)

**7** The Chandra X-ray Observatory. It was launched by the Space Shuttle in July 1999, and named for S. Chandrasekhar.

(3)

**8** A metric unit of length equal to one ten billionth of a meter (or 0.0001 micron); used to specify wavelengths of electromagnetic radiation. (8)

**10** The distance between adjacent peaks in a series of periodic waves. (10)

**12** The gaseous state of hot ionized material consisting of ions and electrons and present in the stars and fusion reactors. (6)

**14** Electromagnetic radiation with wavelengths longer than visible light but shorter than

- radio waves. (8)
- 15** An elementary particle with 0 charge and mass about equal to a proton; enters into the structure of the atomic nucleus. (7)
- 17** A property of a wave that describes how many wave patterns or cycles pass by in a period of time. (9)
- 18** Optical device that produces an intense monochromatic beam of coherent light. (5)
- 19** A shift in the spectra of distant galaxies toward longer wavelengths. (3,5)
- 21** The lightest and most abundant element. (8)
- its own gravity; it is composed of neutrons. (7,4)
- 4** The smallest (quantum) unit of light/electromagnetic energy. (6)
- 5** A celestial body of hot gases that radiates energy derived from thermonuclear reactions in the interior. (4)
- 6** The rate at which a star or other object emits energy, usually in the form of electromagnetic radiation. (10)
- 7** An effect that demonstrates that photons have momentum. (7,6)
- 9** Violent eruptions of gas on the Sun's surface. (5,6)
- Earth. Opposite of perigee. (6)
- 15** An immense cloud of gas (mainly hydrogen) and dust in interstellar space. (6)
- 16** A measure of the total amount of material in a body. (4)
- 19** The unit of plane angle equal to the angle at the center of a circle subtended by an arc equal in length to the radius (approximately 57.295 degrees). (3)
- 20** An atom with one or more electrons stripped off, giving it a net positive charge. (3)

## Down

- 2** Electromagnetic radiation emitted during radioactive decay and having an extremely short wavelength. (5-3)
- 3** A star that has collapsed under
- 11** The distance that light travels in a vacuum in 1 year; 5.88 trillion miles or 9.46 trillion kilometers. (5,4)
- 13** Apoapsis in Earth orbit; the point in its orbit where a satellite is at the greatest distance from the