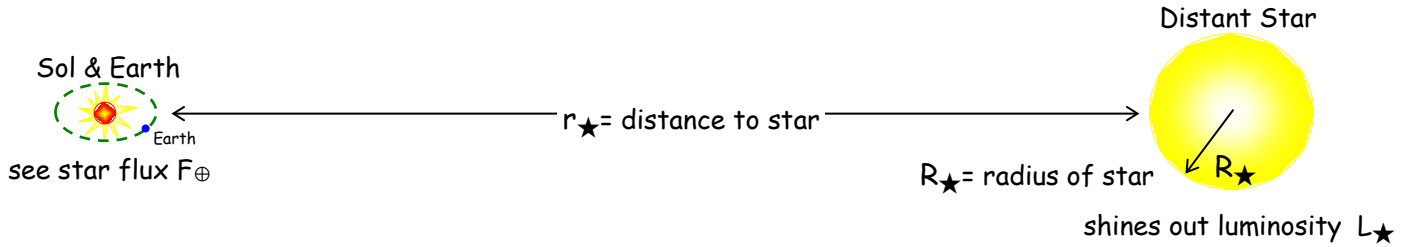


STAR MAGNITUDES, LUMINOSITIES, AND FLUXES



LUMINOSITY AND MAGNITUDES⁵⁶

²The luminosity of a star can be found using that of the sun and their magnitudes: $M_{SOL} = \underline{\hspace{2cm}}$

LUMINOSITY COMPARED TO SOL FROM MAGNITUDES $L_{\star,sl} = \left(10^{\left(\frac{M_{SOL} - M_{\star}}{2.5}\right)}\right)$ Solar Luminosities Eqn. (1)

LUMINOSITY IN WATTS $L_{\star,W} = L_{\star,sl} \times (3.827 \times 10^{26})$ Watts Eqn. (2)

WARNING!! USE X10^x OR EE KEY (NOT x10^(26) SEQUENCE!)

THE FLUX OF A STAR AT EARTH

The relationship between the luminosity of a star and the flux received at Earth is given by the inverse square law,

STAR FLUX AT THE EARTH $F_{\oplus} = \frac{L_{\star,W}}{4\pi(r_{\star}^2)}$ Eqn. (3)

Annotations: L_star must be in Watts! (pointing to L_star,W); r_star must be in meters! (pointing to r_star^2)

using 1 light year = 9.46×10^{15} meters and $L_{SOL} = 3.83 \times 10^{26}$ Watts, complete the table²⁸.

STAR	FIELD GUIDE TO THE STARS AND PLANETS APPENDIX A2			CALCULATED			
	V	M _V	r _* (ly)	r _* meters	L _{★,SOL} (Eqn. 1) solar lums	L _★ (Eqn. 2) Watts	F _⊕ (Eqn. 3) W/m ²
Capella (α Aur)	0.08	-0.8	42				
Castor (α CMa)	1.94	0.6	52				
Pollux (α CMa)	1.14	1.1	34				
Procyon (α CMi)	0.38	2.8	11				
Sirius (α CMa)	-1.46	1.5	9				
Rigel (β Ori)	0.12	-6.6	773				
Aldebaran (α Tau)	0.85	-0.8	65				

Does one of these stars impress you? Who and Why? Should we start warning people about possible star-burn²?

Don't Skip This!