

## Speed of Light Assignment

Use  $v = d/t$

1 AU =  $1.50 \times 10^{11}\text{m}$

1 light year =  $9.46 \times 10^{15}\text{m}$

1 parsec = 3.26 light years or  $3.09 \times 10^{16}\text{m}$

**Show all your work! Use significant digits! Show all work on looseleaf.**

1. How long would it take for light to travel  $3.00 \times 10^3$  metres?
2. How long does it take light to travel from the sun to the Earth if the distance to the sun is  $1.49 \times 10^{11}\text{m}$ ?
3. How far away is a star if it takes its light 12.5 years to reach the Earth?
4. Mercury is  $5.79 \times 10^7\text{km}$  from the sun. How long does it take light to reach Mercury from the sun? [Hint: change km to m]
5. The star Vega is 8.1 parsecs from the Earth. If we could travel at the speed of light, how long would it take to make a round trip to Vega?
6. It takes light  $1.25 \times 10^5$  hours to reach the Earth from a star. How far away is the star?
7. It takes light 4369 days to reach the Earth from  $\tau$  Ceti. What is the distance to this star in parsecs?
8. How long does it take light to reach us from  $\epsilon$  Indi, a star that is  $7.10 \times 10^5$  AU from Earth?