

- 9) If the parallax angle for Star A ( $p_A$ ) is 1 arcsecond, what is the distance from the Sun to Star A? (Hint: Use parsec as your unit of distance.) Label this distance on the diagram.

- 10) Is a parsec a unit of length or a unit of angle? It can't be both.

**Note:** Since the distance from the Sun to even the closest star is so much greater than 1 AU, we can consider the distance from Earth to a star and the distance from the Sun to that star to be approximately equal.

### Part III: Distances

- 11) Consider the following debate between two students regarding the relationship between parallax angle and the distance we measure to a star.

**Student 1:** If the distance to the star is more than 1 parsec, then the parallax angle must be more than 1 arcsecond. So a star that is many parsecs away will have a large parallax angle.

**Student 2:** If we drew a diagram for a star that was much more than 1 parsec away from us, the triangle in the diagram would be pointier than the one we just drew in Part II. That should make the parallax angle smaller for a star farther away.

Do you agree or disagree with either or both of the students? Explain your reasoning.

- 12) On your diagram from Part II, draw a second star along the dotted line farther from the Sun than Star A and label this faraway star "Star B." Repeat steps 7 and 8 from Part II, except label the parallax angle for this Star B with  $p_B$ .

- 13) Which star, the closer one (Star A) or the farther one (Star B), has the larger parallax angle?

- 14) Check your answers to Questions 6 and 11 and resolve any discrepancies.