

In-class activity 5

Assemble Your Group

1. Find your assigned group members, and sign in below.

Team member: _____

Team member: _____

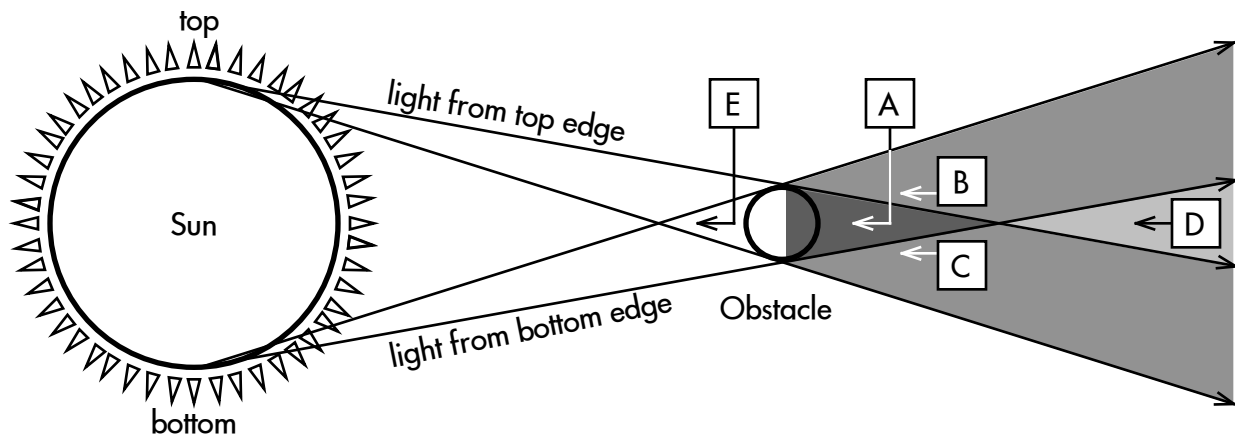
Team member: _____

Team member: _____

Shadow Zones

2. (Cf. Seeds and Backman, *ASTRO3*, Brooks/Cole Cengage Learning (2018), p. 29, Fig. 2-9, and p. 32, Fig. 2-12.) The diagram (not to scale) below shows the side view of the different shadow zones that are created by an obstacle that blocks light from the sun, and five different locations [A]-[E] in space to observe from. (This obstacle may either be Earth or the moon.)

Answer the following questions by circling your answers. For some questions you may circle more than one answer, or no answers.



(a) *Umbra*. Location [A] receives light from the

top edge
middle
bottom edge

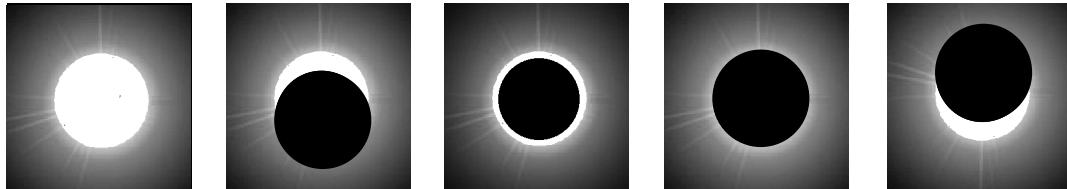
 of the sun.

(b) *Penumbra*. Location [B] receives light from the

top edge
middle
bottom edge

 of the sun.

- (c) *Penumbra.* Location [C] receives light from the $\begin{matrix} \text{top edge} \\ \text{middle} \\ \text{bottom edge} \end{matrix}$ of the sun.
- (d) "*Negative shadow.*" Location [D] receives light from the $\begin{matrix} \text{top edge} \\ \text{middle} \\ \text{bottom edge} \end{matrix}$ of the sun.
- (e) *No shadow.* Location [E] receives light from the $\begin{matrix} \text{top edge} \\ \text{middle} \\ \text{bottom edge} \end{matrix}$ of the sun.
- (f) Match the following views that would be seen from each location [A]-[E] in space. Remember that the diagram on the previous page is seen from the side.

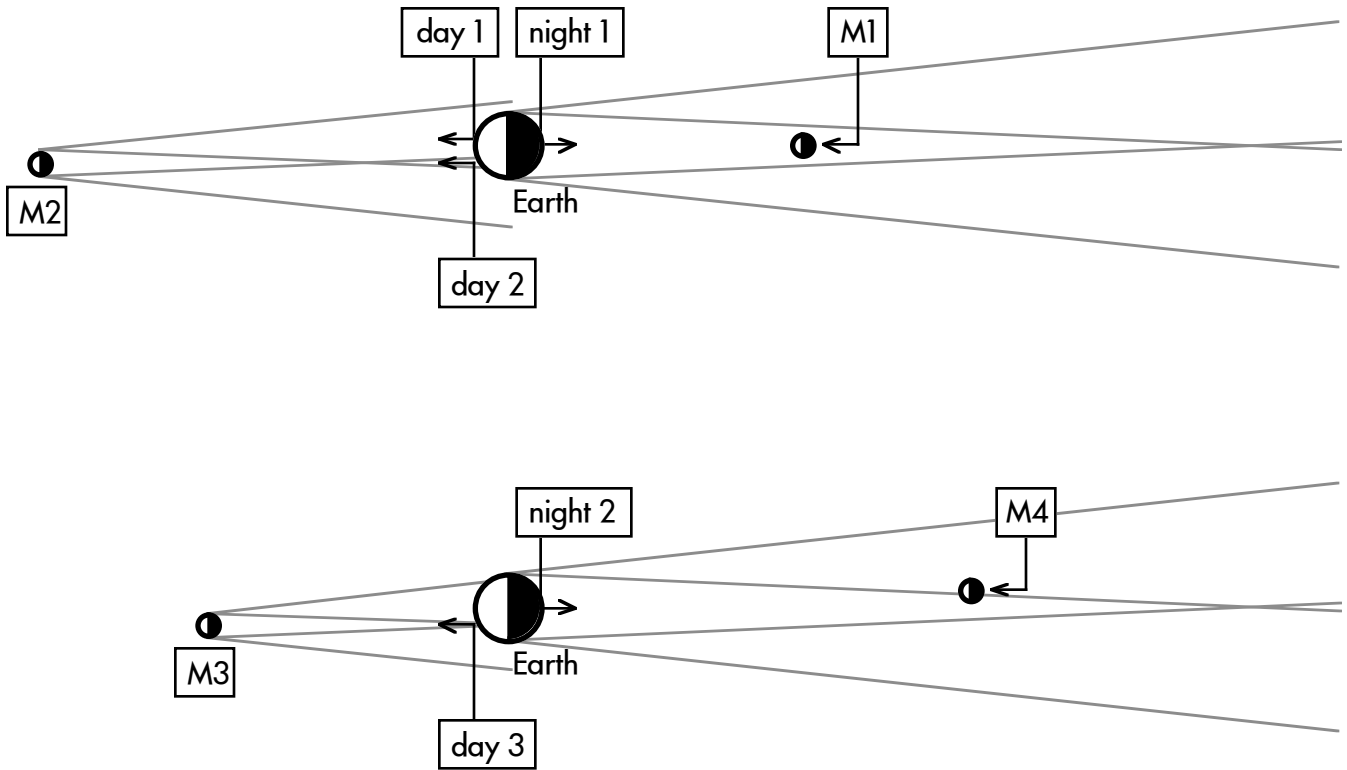


Observer: [E]

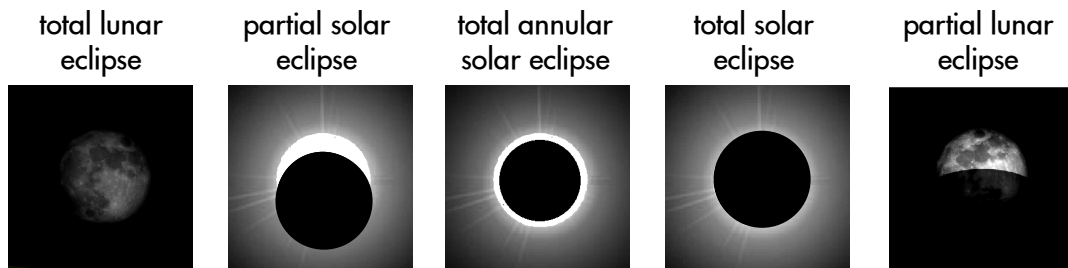
- (g) For the above views, draw circles around the total solar eclipses.
- (h) For the above views, draw squares around the partial solar eclipses.
- (i) For the above views, draw dashed squares around the annular solar eclipses.

Moon-Earth-Observer Eclipse Configurations

3. This diagram (not to scale) shows side views of different locations of the moon [M1-M2-M3-M4], as seen from different observers on Earth [day 1-day 2-day 3-night 1-night 2]. The sun is located to the left, far off of the page.



Match the views below with the observer location on Earth [day 1-day 2-day 3-night 1-night 2], along with the location of the moon [M1-M2-M3-M4].



Observer: [night 1] _____ _____ _____ _____

Moon: [M1] _____ _____ _____ _____