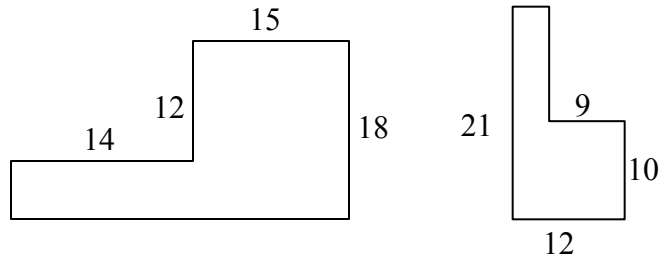


Geometry HW: Similarity - 5

1. Quadrilateral *DUCK* is similar to quadrilateral *SWAN*: $DUCK \sim SWAN$. Complete the following:

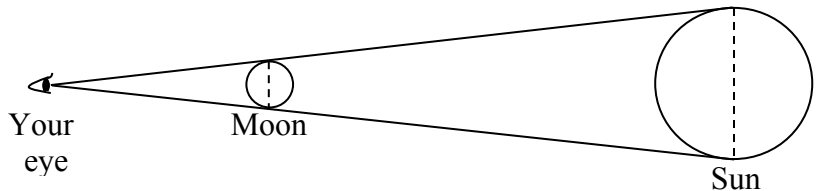
a. $\angle K \cong ?$ b. $\frac{DU}{SW} = \frac{DK}{?}$

2. Are the two polygons shown similar? Justify your answer. Assume all angles are right angles.



3. During a total solar eclipse, the moon comes between the earth and the sun and almost perfectly covers the sun as shown in the diagram (not even close to scale). The distance from the earth to the sun is about 150,000,000 km, the distance from the earth to the moon is about 390,000 km and the diameter of the sun is about 1,400,000 km.

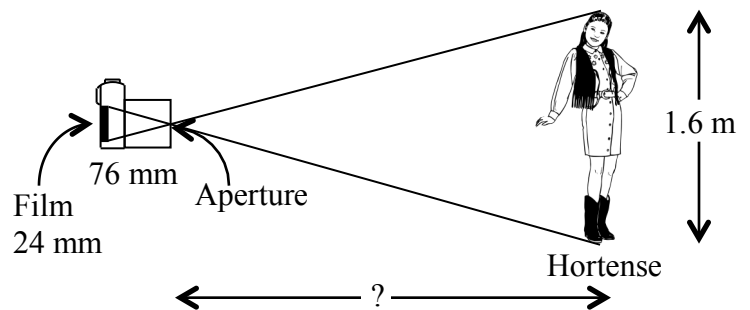
a. Explain why the two triangles in the diagram are similar.



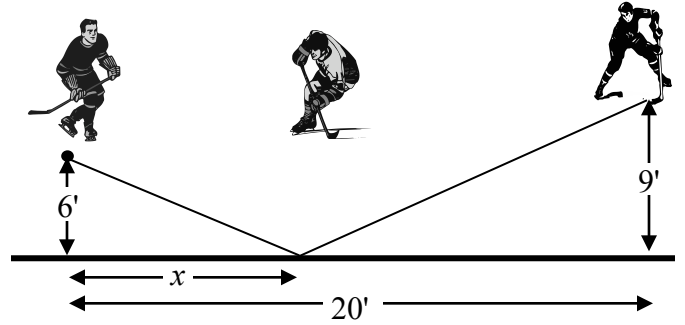
b. Use the data to estimate the diameter of the moon to the nearest 100 km.

4. A bright light is atop a 16 foot tall light pole. At midnight, 6 foot tall Rufus McKook stands 30 feet from the base of the light pole. How long is his shadow on the ground?

5. A film camera is used to take a picture of Hortense. Rays of light travel in straight lines from Hortense through an aperture (small hole) in the lens and then onto the film. The part of the film where the image will be made is 24 mm high and 76 mm behind the aperture. Hortense is 1.6 m tall. How far away from the camera must Hortense stand so that her whole image will fit on the film?



6. A hockey player passes the puck to a teammate by bouncing it off the boards. The player is 6 feet out from the boards; his teammate is 20 feet down the rink and 9 feet out from the boards. How far down the boards should the puck hit to reach the teammate?



7. Brigitte wants to find the height of the Eiffel tower. It is a cloudy day so she can't use shadows. Instead, she measures off a distance of 250 meters from the center of the base of the tower, then takes out her compact and lays the mirror face up on the ground. She stands back until she can just see the top of the tower reflected in the mirror at which point she is 143 cm back from the mirror. If Brigitte's eyes are 172 cm off the ground, how high does she calculate the Eiffel Tower to be? Note: A property of light is that the angle it makes going toward the mirror is the same as the angle it makes after reflecting.

