Lecture Notes: Phases of the Moon
Scale of the Sun-Earth-Moon System

Answer the following:

1. **How long does it take for the Earth to make one rotation with respect to the Sun in hours? (solar day)**

2. **How long does it take for the Moon to go from Full Moon to Full Moon?**

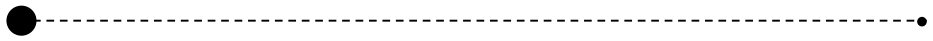
3. **Why is the Moon bright in the night sky?**

4. **How much of the Moon's *total* surface is illuminated by the Sun at any time?**

5. **Earth's diameter is 12,742 km and the Moon's is 3,474 km. About how many times larger is the Earth than the Moon in diameter?**

   The average distance between the Earth and the Moon is 384,399 km. How many times the Earth's *radius* is this distance? (radius = ½ diameter)

This is a rough scale Earth-Moon system (1 Earth diameter = 2mm, Distance is 12 cm):

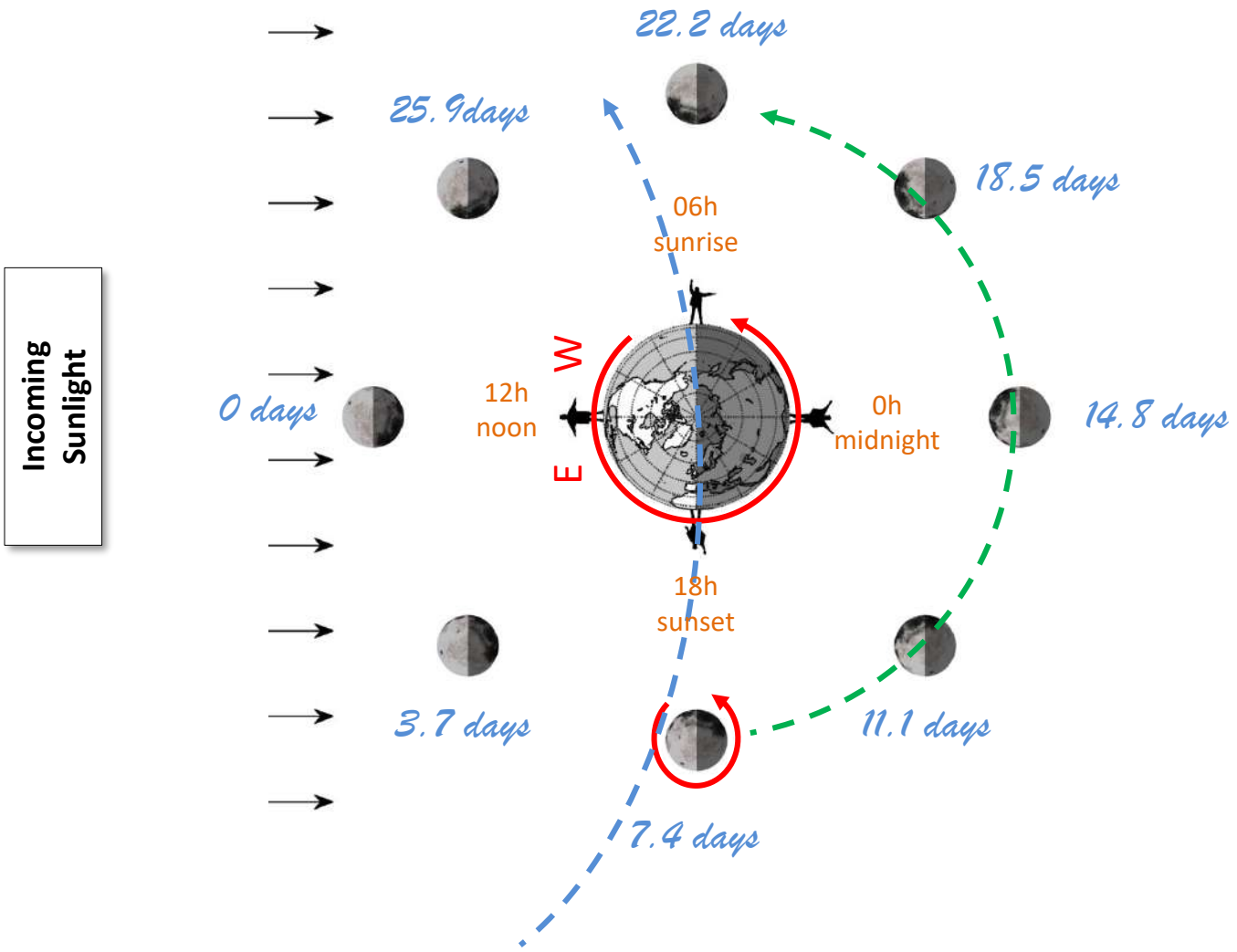


Earth ***Distance = 60 Earth Radii*** ***Moon***

1. **The average distance between the Earth and Sun is 149,598,261 km. How many times the Earth-Moon distance is this?**

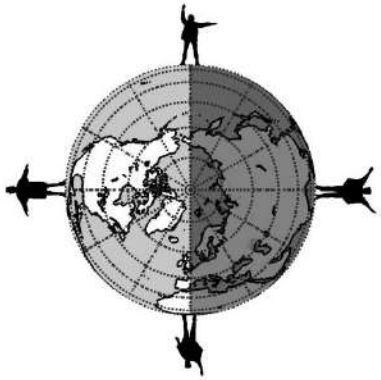
2. **How far away would the Sun be in your scale drawing of the Earth-Moon system (12 cm between Earth and Moon) above?**

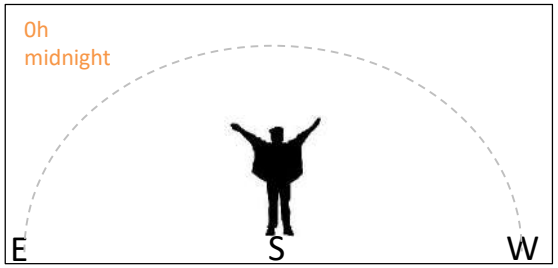
Use this figure as a reference

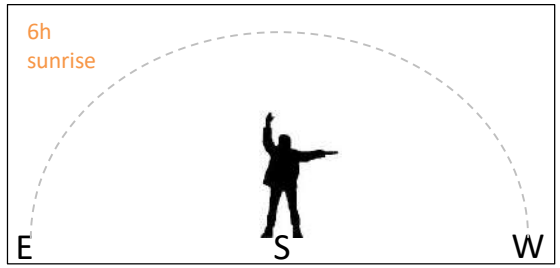


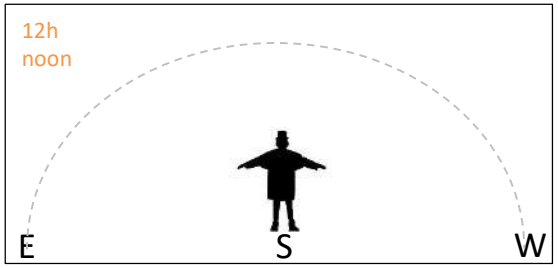
Annotate the following pages by filling in the age of the Moon, the phase of the Moon, and mark on the horizon view boxes the location of the Sun and Moon along it's orbit and the orientation of the phase of the Moon.

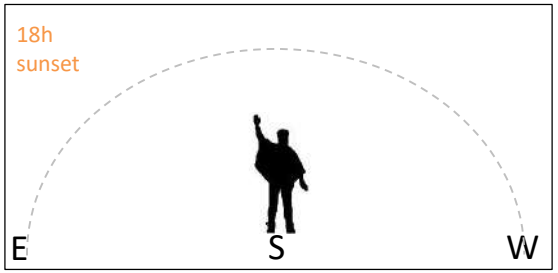
Days since New Moon: ___ Phase: _____











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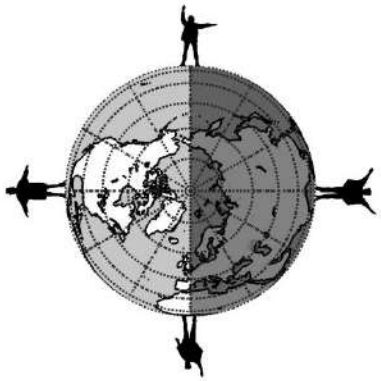

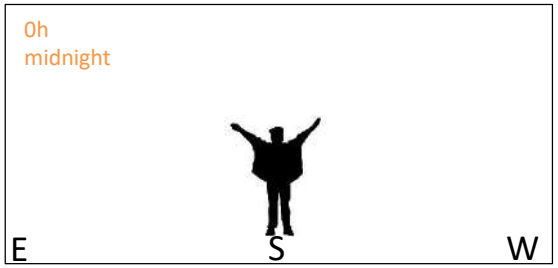

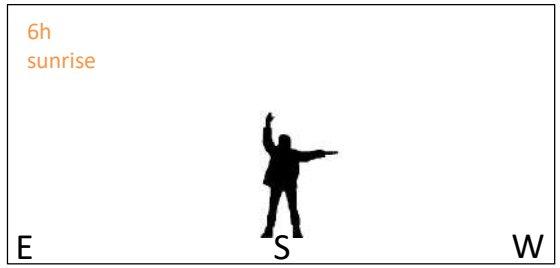

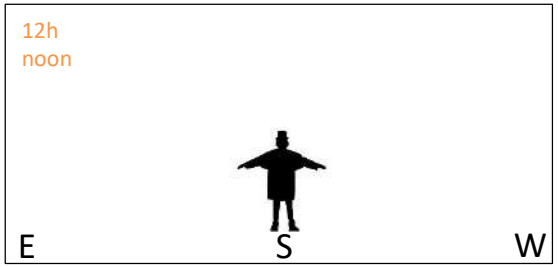

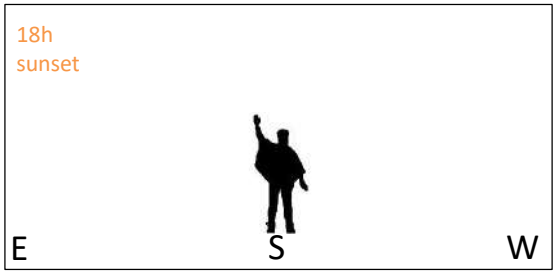

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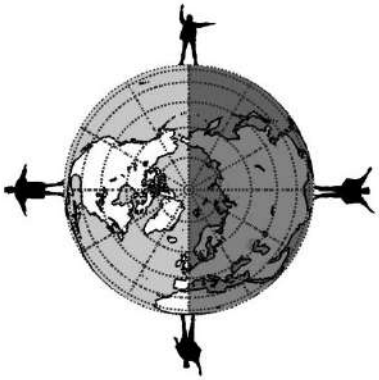

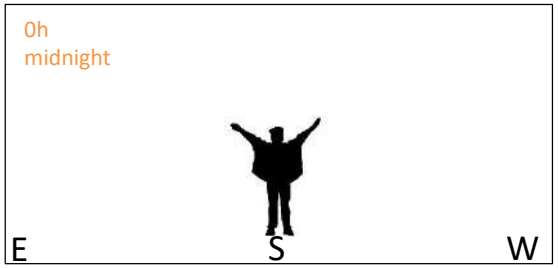

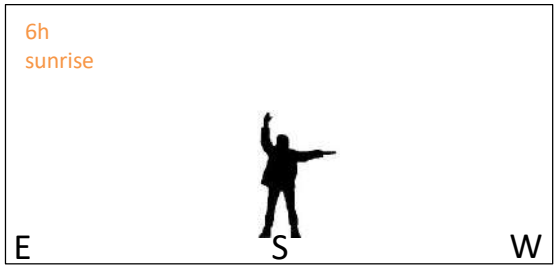

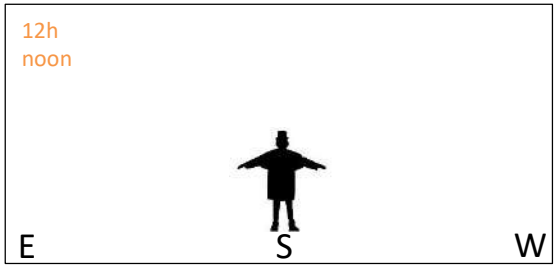

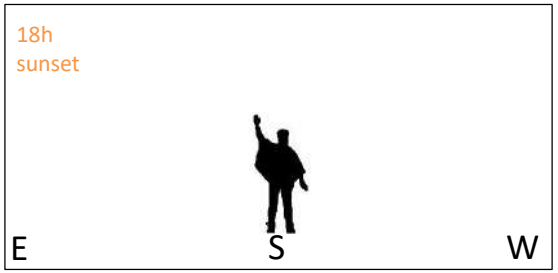

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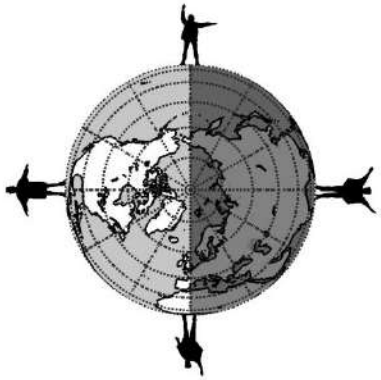

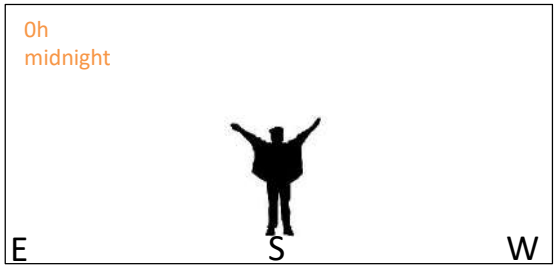

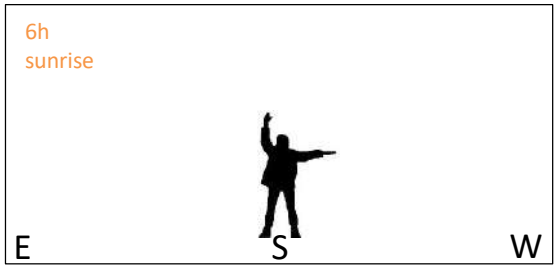

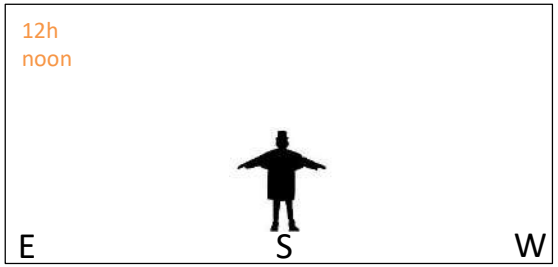

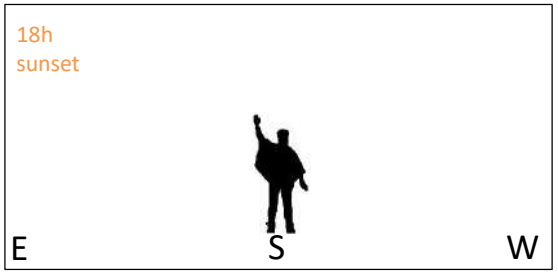

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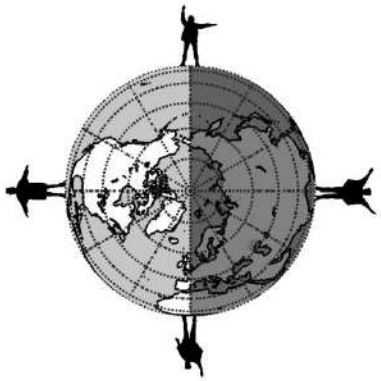

0h
midnight

E S W

6h
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E S W

18h
sunset

E S W

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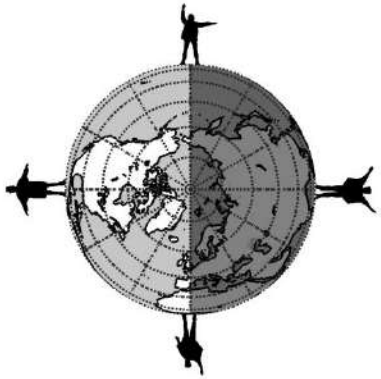

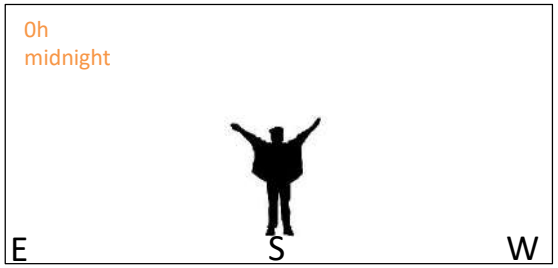

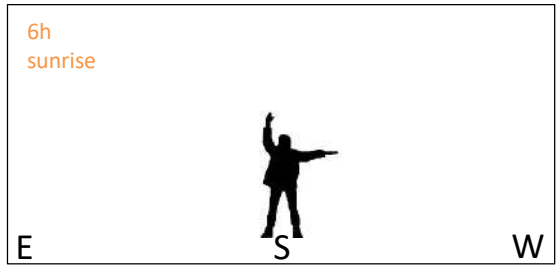

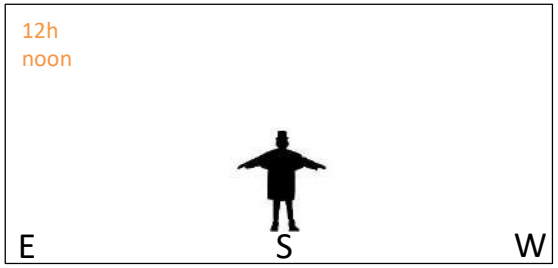

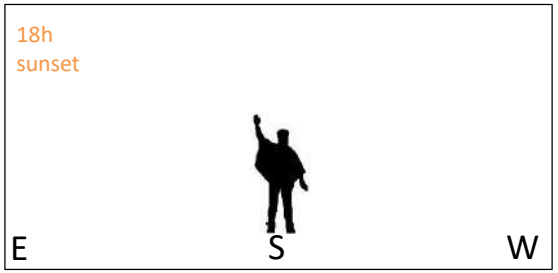

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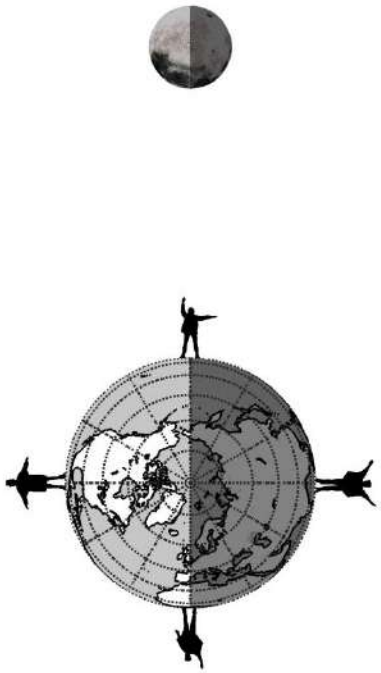

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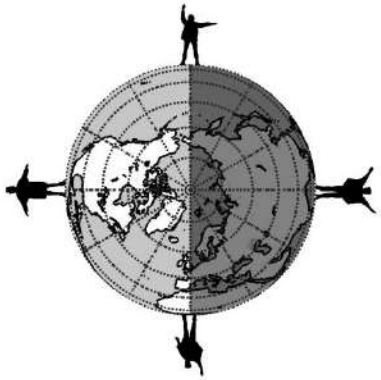

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