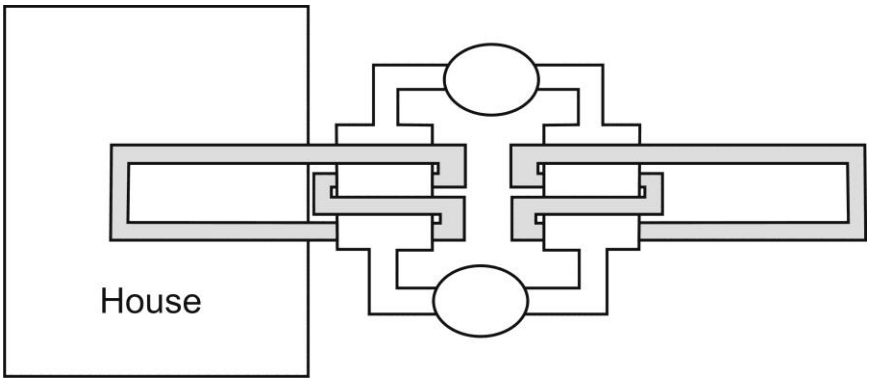
EPS 200 (Stapleton) Name: _____

Final Exam Review, Part II – ANSWERS

Complete the diagram on the right so that it shows a heat pump that is set up to cool a house during the **summer.**



101. Label the compressor, expansion valve, condenser and evaporator.
102. Explain why the evaporator and the condenser need to be in those locations.

103. Use arrows to show the direction of refrigerant circulation.
104. Show where heat enters and exits the heat pump's system.
105. Explain how the heat pump parts would be organized differently in the winter.

The diagrams below show four repeating stages in the cycle of a Stirling Engine.

106. Between stages 1 and 2, you can see by the position of the counterweights that the flywheel rotates 90 degrees clockwise. Why does the flywheel turn?

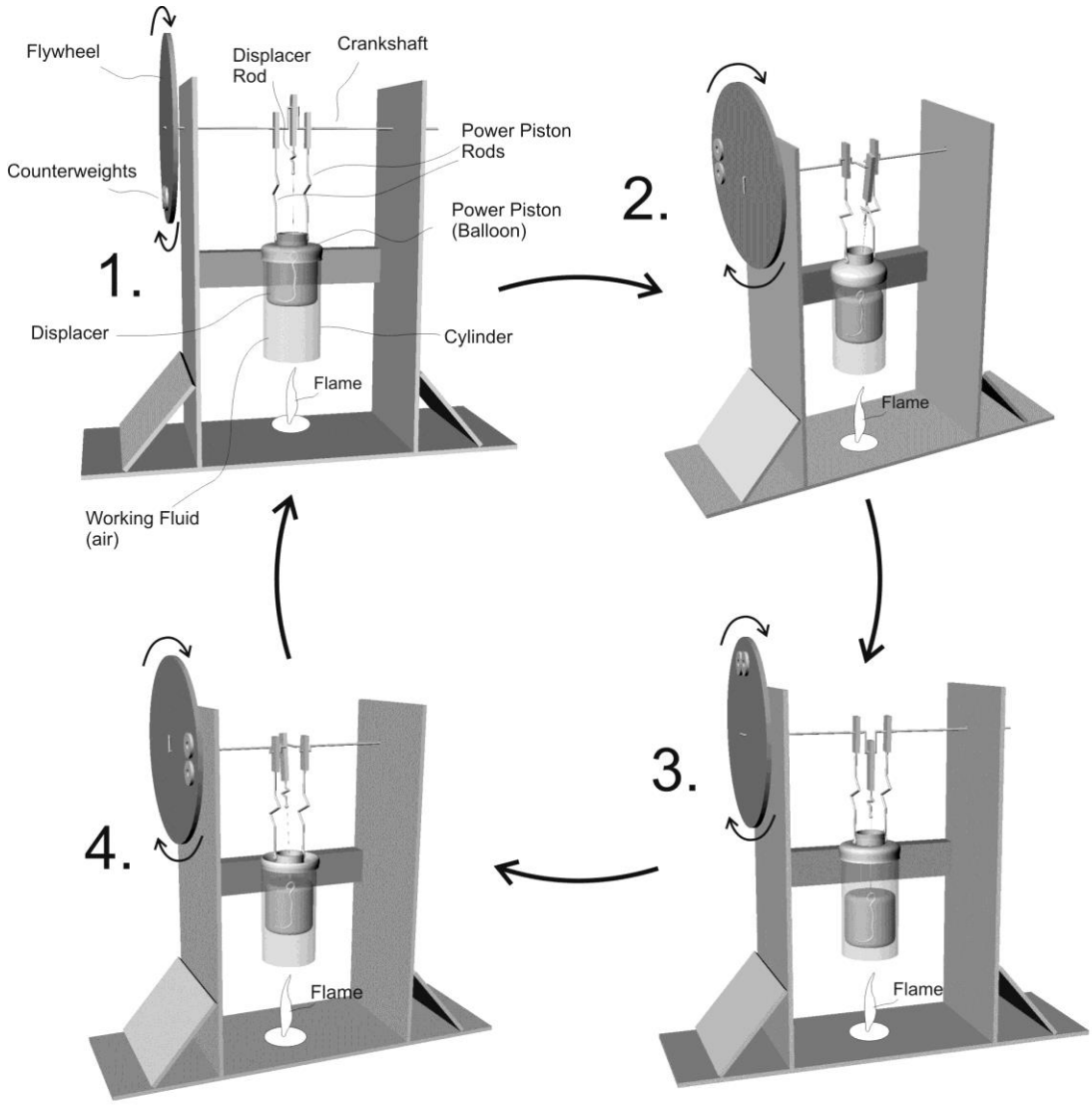
107. Why does the power piston "suck in" between stages 3 and 4?

108. What is the pupose of the flywheel, and between which stages is it most important? Why?

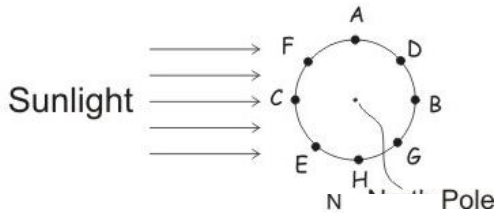
109. If there were no flame, this Stirling Engine could function as a heat pump. Someone could rapidly turn the flywheel as shown in these diagrams (clockwise). If this were done…
   a. Between which stages would compression of the working fluid occur? How can you tell?

   b. Where is the working fluid during the middle of this compression? (top or bottom of the cylinder)
   c. Between which stages would expansion of the working fluid occur? How can you tell?

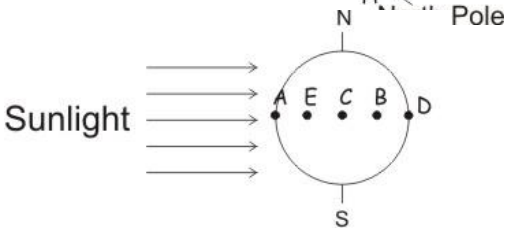
   d. Where is the working fluid during the middle of this expansion? (top or bottom of the cylinder)
   e. Which end of the can would become the colder end, and which end would be the hotter end?



110. Give the approximate time of day at each letter in the first diagram on the right.

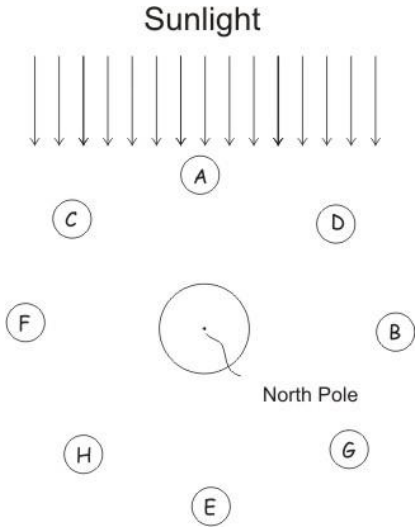


111. Give the approximate time of day at each letter in the second diagram on the right.



112. Draw a waxing gibbous moon.
113. Draw a waning crescent moon.
114. Draw a waxing quarter moon.

115. Identify the phases of moons A, G, and E, in the diagram on the right.

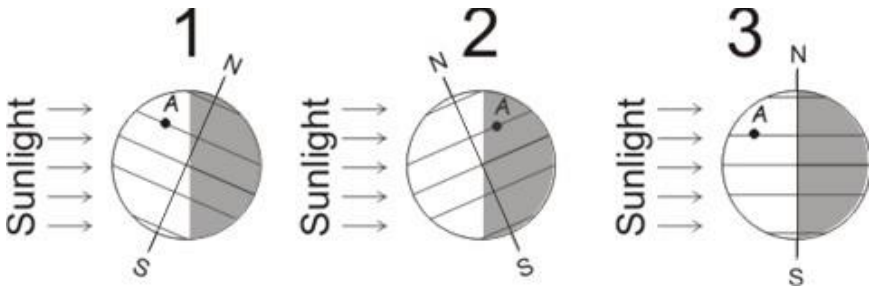


116. Which moon on the right might produce a solar eclipse?
117. Which moon might produce a lunar eclipse?

118. Which moons produce spring (strong) tides?
119. Which moons produce neap (weak) tides?

Consider the diagram below. Approximately how many hours of daylight does latitude A receive when the Earth is in…

120. Position 1? 0 9 12 15 24
121. Position 2? 0 9 12 15 24
122. Position 3? 0 9 12 15 24
123. What is the approximate date when the Earth is in position1?
124. What is the approximate date when the Earth is in position2?
125. If position 3 follows position 2, what is the approximate date for position 3?
126. Provide the approximate date ranges for each of the seasons.



How long (time) does it take each of the following to occur?

127. 1 Earth rotation
128. 1 Earth Revolution (orbit)
129. 1 Moon revolution (orbit)