ASTRONOMY 2
THIRD HOUR SESSION “E”
ACTIVITY: Introduction to Telescopes and Binoculars

NAME

KEY-E

DATE

ID#

1. List the three ‘powers’ of a telescope discussed in class.
   - Magnification
   - Light Gathering
   - Resolving

2. What is the highest magnification power of the four binoculars displayed in class?
   - 25x (Binos C)

3. Which of the above mentioned binoculars has the greatest light gathering power (LGP) (A, B, C or D)?
   - D (20x80)

4. What is the light gathering power of binocular _B_ (from question 3), compared to your eye (D_0 = 7 mm)?
   - \((50/7)^2 = 51 \times\)

5. What is the magnification you would get with the eyepiece in the refracting telescope displayed at the front of the lab?
   - \(1200/9 = 133.3 \times\)

6. What is the magnification you would get with the eyepiece in the reflecting telescope displayed at the front of the lab?
   - \(750/25 = 30 \times\)

7. How much (times) more light gathering power does the telescope with the largest objective displayed have in comparison to one of the objective lenses of binocular __A__ from question 3?
   - \((150/35)^2 = 18.4 \times\)

8. Is a ___5___ mm eyepiece an acceptable choice in a telescope with an objective focal length (F_0) of ___1500___ mm and an objective diameter (D_0) of ___120___ mm?
   - No, the telescope can’t support such a high mag (limit 120^2 =240x)

(Questions continue on back)
9 If a pair of binoculars has a Field of View (FOV) of ___5__° and a telescope with a particular eyepiece has a FOV of 0.5°, which will give the best view of the Beehive Cluster which has an angular size of 1.5°? Which will give the best view of the globular star cluster M13 which has an angular size of 20'?  

<table>
<thead>
<tr>
<th>binoculars</th>
<th>telescope</th>
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10. For a given telescope, which eyepiece will give a ___smaller____ Field of View - F_e = __20__ mm, F_e = __26__ mm or F_e = __40__ mm?

| 20 mm |