

SCORE
(5 pts max)

**ASTRONOMY 5
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 ($D_o = 7$ mm)?

$(50/7)^2 = 51$ x

5. What is the magnification you would get with the eyepiece in the *refracting* telescope displayed at the front of the lab?

$1200/25 = 48$ x

6. What is the magnification you would get with the eyepiece in the *reflecting* telescope displayed at the front of the lab?

$750/40 = 18.75$ x

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?

$(150/35)^2 = 18.4$ x

8. Is a 6 mm eyepiece an acceptable choice in a telescope with an objective focal length (F_o) of 1500 mm and an objective diameter (D_o) of 150 mm?

Yes, the telescope can support such a high mag (limit $150 \times 2 = 300x$)

(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'?

| | |
|------------|-----------|
| binoculars | telescope |
|------------|-----------|

10. For a given telescope, which eyepiece will give a larger Field of View
- $F_e = \underline{20}$ mm, $F_e = \underline{26}$ mm or $F_e = \underline{40}$ mm?

| |
|-------|
| 40 mm |
|-------|