

In-class activity 8

Assemble Your Group

1. Find your assigned group members, and sign in below.

Team member: _____

Team member: _____

Team member: _____

Team member: _____

Telescope Measurements

2. (Cf. Seeds and Backman, *ASTRO3*, Brooks/Cole Cengage Learning (2018), p. 64, Fig. 4.4, and p. 70, Fig. 1a and Fig. 1b.) The following page schematically shows the different types of telescopes¹ used at Cuesta College North County campus. For each telescope, use a ruler to measure the following parameters:

- (a) Primary mirror/lens diameter = D_{primary}
(measure the width of the primary mirror or lens)
- (b) Primary mirror/lens focal length = f_{primary}
(approximately 1× or 2× the tube length)
- (c) Eyepiece lens focal length = f_{eyepiece}
(printed in mm on the eyepiece)

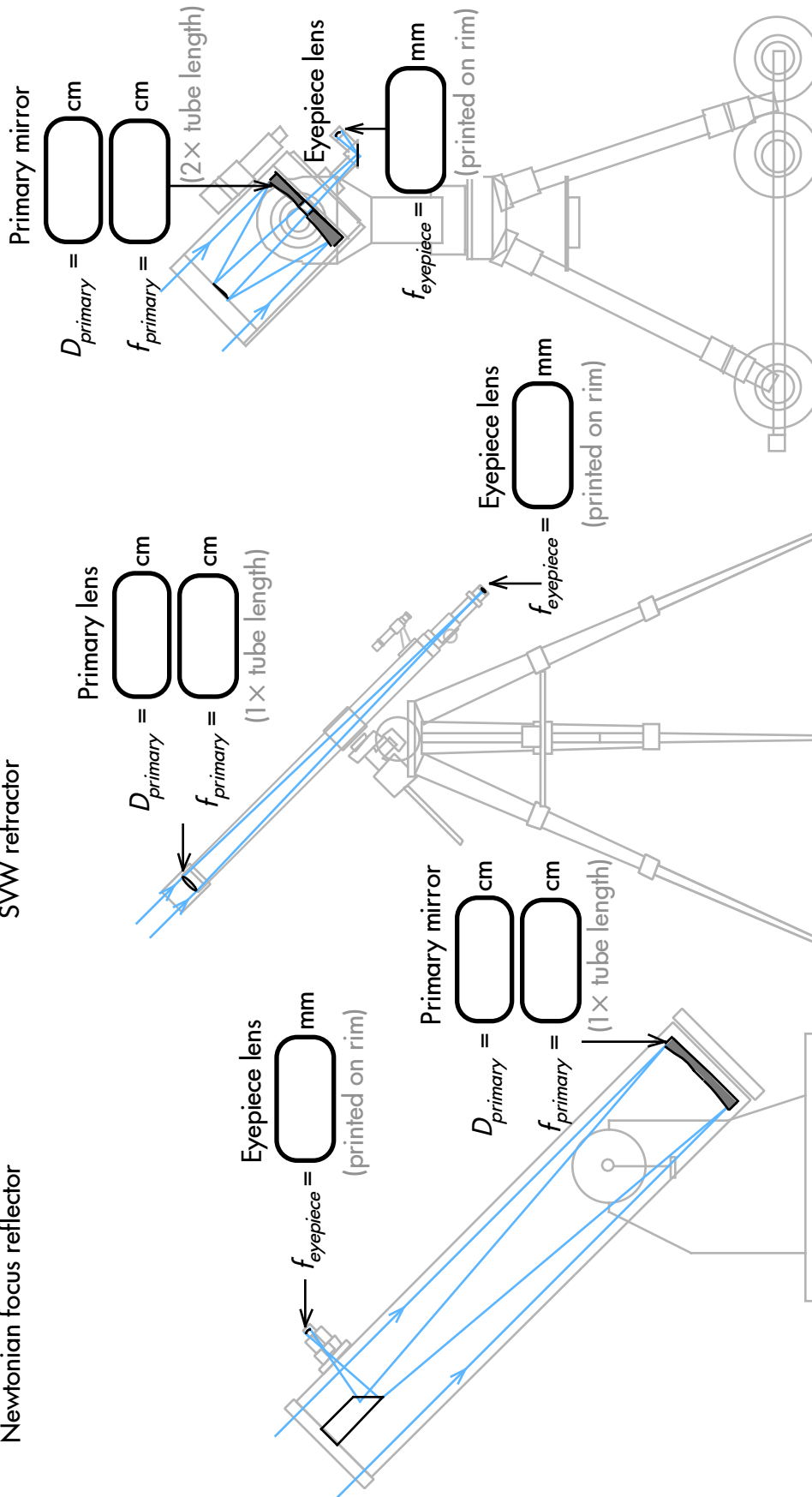
You will use these data later to compare the light-gathering, resolving, and magnifying powers of these telescopes.

¹Simplification: the Meade™ Schmidt-Cassegrain focus reflector is shown without a "corrector plate" lens on the front.

(C) Meade® Schmidt-Cassegrain focus reflector

(A) Orion® Dobsonian-mount Newtonian focus reflector

(B) Mayflower® SVW refractor



Telescope Powers

3. Answer the following questions regarding the light-gathering, resolving, and magnifying powers of telescopes used at Cuesta College North County campus (cf. Seeds and Backman, *ASTRO3*, Brooks/Cole Cengage Learning (2018), pp. 65-68).

- (A) Orion® Dobsonian-mount Newtonian focus reflector.
- (B) Mayflower® SVW refractor.
- (C) Meade® Schmidt-Cassegrain focus reflector.

(a) The *light-gathering power* of a telescope is the ability to collect light to produce bright images. Rank these telescopes from least to most light-gathering power; clearly indicate ties (if any). Briefly explain which measurements were used to make your ranking.

_____ _____ _____
 (least LGP) (most LGP)

Explanation:

(b) The *resolving power* of a telescope is the ability to reveal fine detail. Rank these telescopes from least to most resolving power; clearly indicate ties (if any). Briefly explain which measurements were used to make your ranking.

_____ _____ _____
 (least RP) (most RP)

Explanation:

(c) The *magnifying power* of a telescope is the ability to produce a large image. Since eyepieces are interchangeable, determine specifically which eyepiece should be used with which telescope to produce the greatest magnification, and then briefly explain your answer.

Using the $f_{\text{eyepiece}} = \underline{\hspace{2cm}}$ mm with telescope $\left. \begin{array}{l} \text{(A)} \\ \text{(B)} \\ \text{(C)} \end{array} \right\}$ produces the greatest magnification.

Explanation: