

Name: \_\_\_\_\_

DISC: \_\_\_\_\_

Score: \_\_\_\_ / 20

## Instructions:

- Do your own work.
- Answer the questions below in the space provided.
- **You must show all of your work to receive credit for these problems**
- Please place a box around your answers.
- Remember to give the correct units with all numerical answers

Q1

Q2

Q3

Q4

10

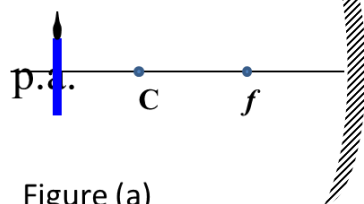
10

5

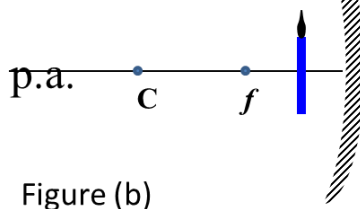
5

1. Consider the concave mirrors and sets of objects below:

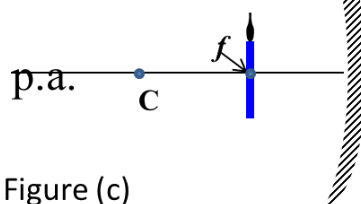
Object 15 cm from mirror



Object 2 cm from mirror



Object at focus



SPEED OF LIGHT	$c = 3 \times 10^8 \text{ m/s}$
LAW OF REFLECTION	$\theta_i = \theta_r$
MIRROR EQN	$\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$
MAGNIFICATION	$m = -d_i/d_o$
CENTER OF CURVATURE	10 cm

## Useful Information for Problem 1

Ray-Traces (6 pts.):

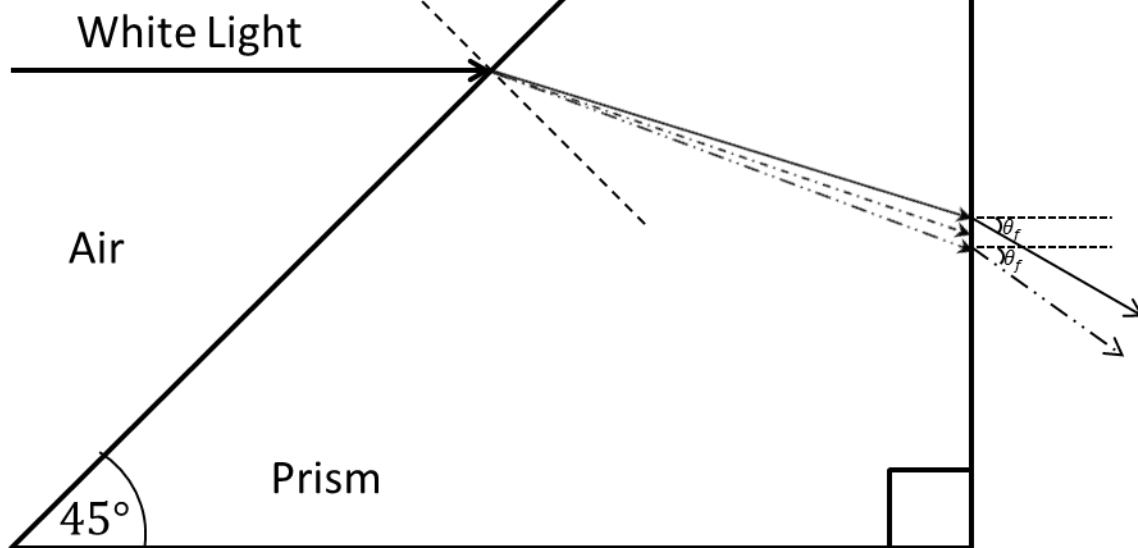
- a) Draw the ray-trace diagrams for *at least two* (2) principle rays to locate the image in each diagram.
- b) Fill in the following table (use extra page when necessary):

Table (4 pts.):

FIGURE	IMAGE TYPE	IMAGE LOCATION	MAGNIFICATION
a	REAL/VIRTUAL		
b	REAL/VIRTUAL		
c	REAL/VIRTUAL		

2. Consider the *right* prism below:

—————  $n_{red} = 1.5$   
 - . - . - .  $n_{green} = 1.6$   
 - · - · - ·  $n_{blue} = 1.7$



LAW OF REFLECTION	$\theta_i = \theta_r$
SNELL'S LAW	$n_1 \sin \theta_1 = n_2 \sin \theta_2$
INDEX OF REFRACTION AIR	$n_{air} = 1$
<b>Useful Information for Problem 2</b>	

Fill in the following table of *refracted* angles:

QUANTITY	VALUE
White Light	$\theta_i = 45^\circ$
Blue $\theta_r$	
Green $\theta_r$	
Red $\theta_r$	
For Blue Light: $\theta_f$ the angle the light exits the prism	
For Red Light: $\theta_f$ the angle the light exits the prism	

Table (10 pts):

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