Name: _____ DISC: _____ Score: _____ / 20

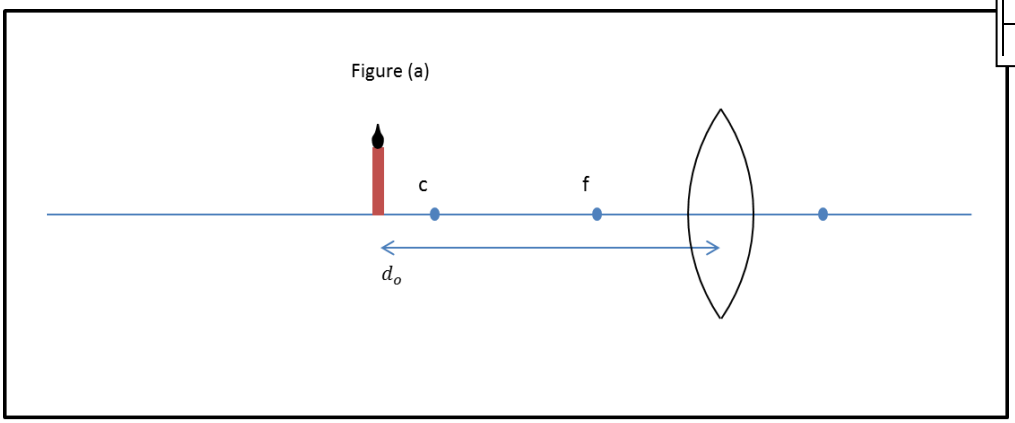
Instructions:

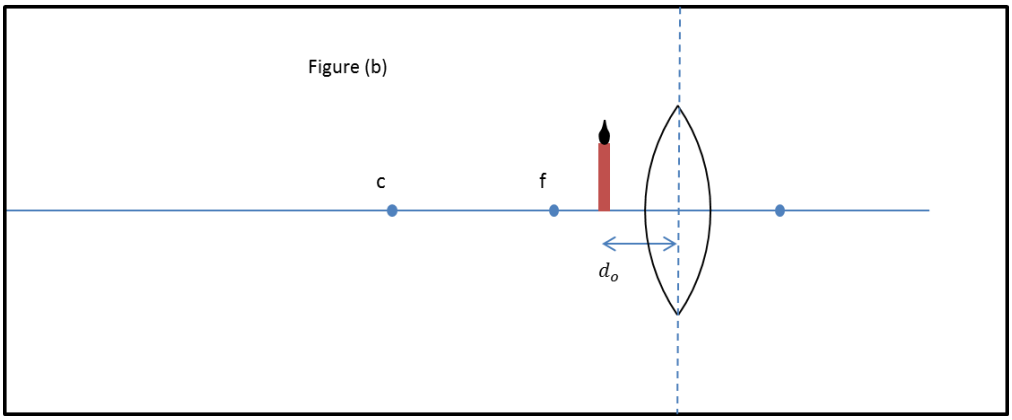
- Do your own work.
- Answer the questions below in the space provided.
- ***You must show all of your work to received credit for these problems***
- Please place a box around your answers.
- Remember to give the correct units with all numerical answers

Q1	Q2	Q3	Q4
10	10	5	5

SPEED OF LIGHT	$c = 3 \times 10^8 m/s$
LENS EQN	$\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$
MAGNIFICATION	$m = -d_i/d_o$
FOCAL LENGTH	$10\ cm$

1. Consider the convex lenses and sets of candle below:





Ray-Traces (2 pts.):

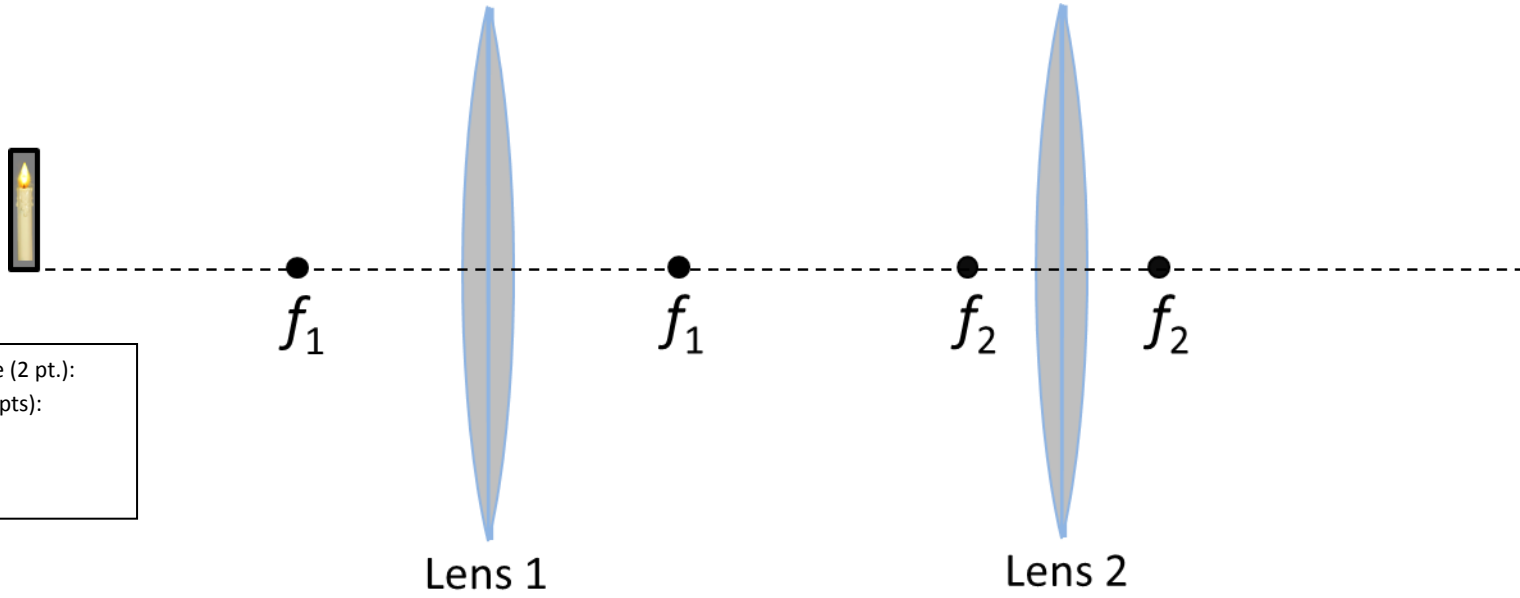
a) Draw the ray-trace diagrams for *at least two (2)* principle rays to locate the image in each diagram.

b) Fill in the following table:

Table (8 pts.):

FIGURE	IMAGE TYPE	IMAGE LOCATION	ORIENTATION	MAGNIFICATION
a: $d_o = 25\ cm$	REAL/VIRTUAL/NO IMAGE		UPRIGHT/INVERTED/NO IMAGE	
b: $d_o = 5\ cm$	REAL/VIRTUAL/NO IMAGE		UPRIGHT/INVERTED/NO IMAGE	

2. Consider the two-lens system below:



Ray Trace (2 pt.):
Table (8 pts):

a) Use the ray-tracing technique to find the location of the image.

b) Use the thin-lens equations to fill in the values requested in the table. The candle is at $d_o = 25\ cm$ to the left of Lens 1. The lenses are separated by $d_{spe} = 30\ cm$.

LENS	FOCAL LENGTHS	IMAGE TYPE	IMAGE LOCATION	ORIENTATION	MAGNIFICATION
1	$f_1 = 10\ cm$	REAL/VIRTUAL/NO IMAGE		UPRIGHT/INVERTED/NO IMAGE	
2	$f_2 = 5\ cm$	REAL/VIRTUAL/NO IMAGE		UPRIGHT/INVERTED/NO IMAGE	

This page intentionally left blank