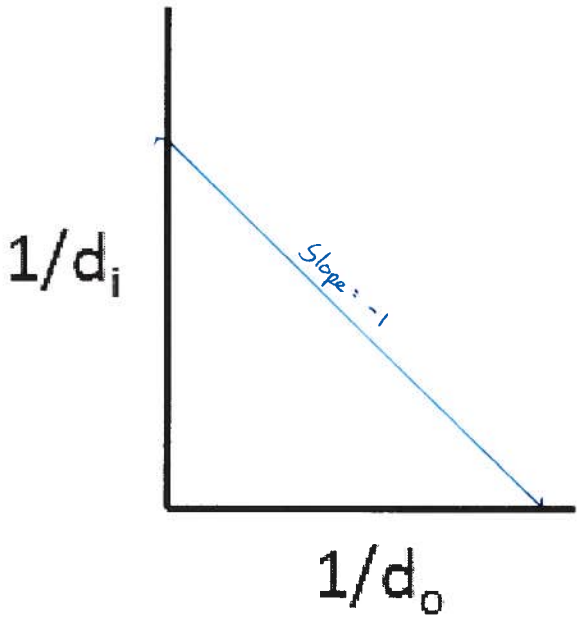
KEY

First Name:_____ Last Name:_____

L08 - Formative Quiz – Graphing Lenses and Mirrors

Q1: Linearize the equation $\frac{1}{f} = \frac{1}{d_i} + \frac{1}{d_0}$ and sketch a quick graph of it below. Explain the significance of the y-intercept. *(1 mark for linearizing equation, 1 mark for graph, 1 mark for y-intercept significance; 3 marks total)*



$\frac{1}{f} = \frac{1}{d_i} + \frac{1}{d_0}$

$\frac{1}{f} - \frac{1}{d_0} = \frac{1}{d_i}$

$\frac{1}{d_i} = (-1)\frac{1}{d_0} + \frac{1}{f}$

$y = (m)x + b$

y-intercept = $\frac{1}{f}$

TURN OVER PAGE TO CONTINUE

KEY

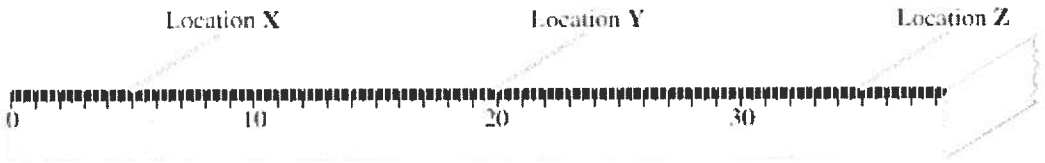
Use the following information to answer Q2:

Students use three of the optical apparatus illustrated below to produce a **focused, real** image in a darkened room. One of the apparatus has a focal length of 7.5 cm.

Optical Apparatus

Sources		Lenses		Mirrors			Diffraction grating	Double-slit apparatus	Screen
									
0	1	2	3	4	5	6	7	8	9

The students place one apparatus at each labelled location on an optics bench, as shown below. The optics bench is scaled in millimeters and labelled in centimeters.



Note: The diagrams are **not** drawn to scale.

FIRST REAL image means NOT convex mirror or diverging lens.

Q2: The apparatus placed at location

X is numbered _____ (Record in the **first** column)
Y is numbered _____ (Record in the **second** column)
Z is numbered _____ (Record in the **third** column)

*(Record you **three-digit** answer in the numerical response boxes below.)*

029, 129, 920, 921
Symmetrical

MARKING:

Beginning	0-1
Progressing	2
Competent	3
Exemplary	4

OPTION #2 is the only one that works. So

What is the source/object?

0 or 1

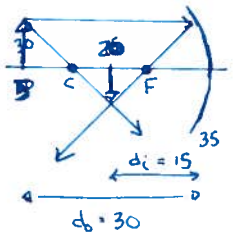
What is the lens?

2

Where is the image?

19

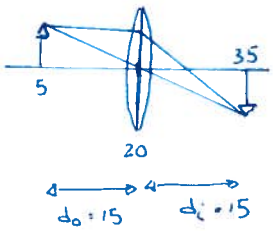
OPTION #1



$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$

$f = 10cm$

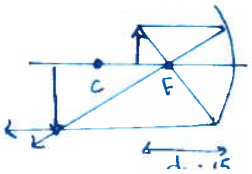
OPTION #2



$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$

$f = 7.5cm$

OPTION #3



$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$

$f = 10cm$