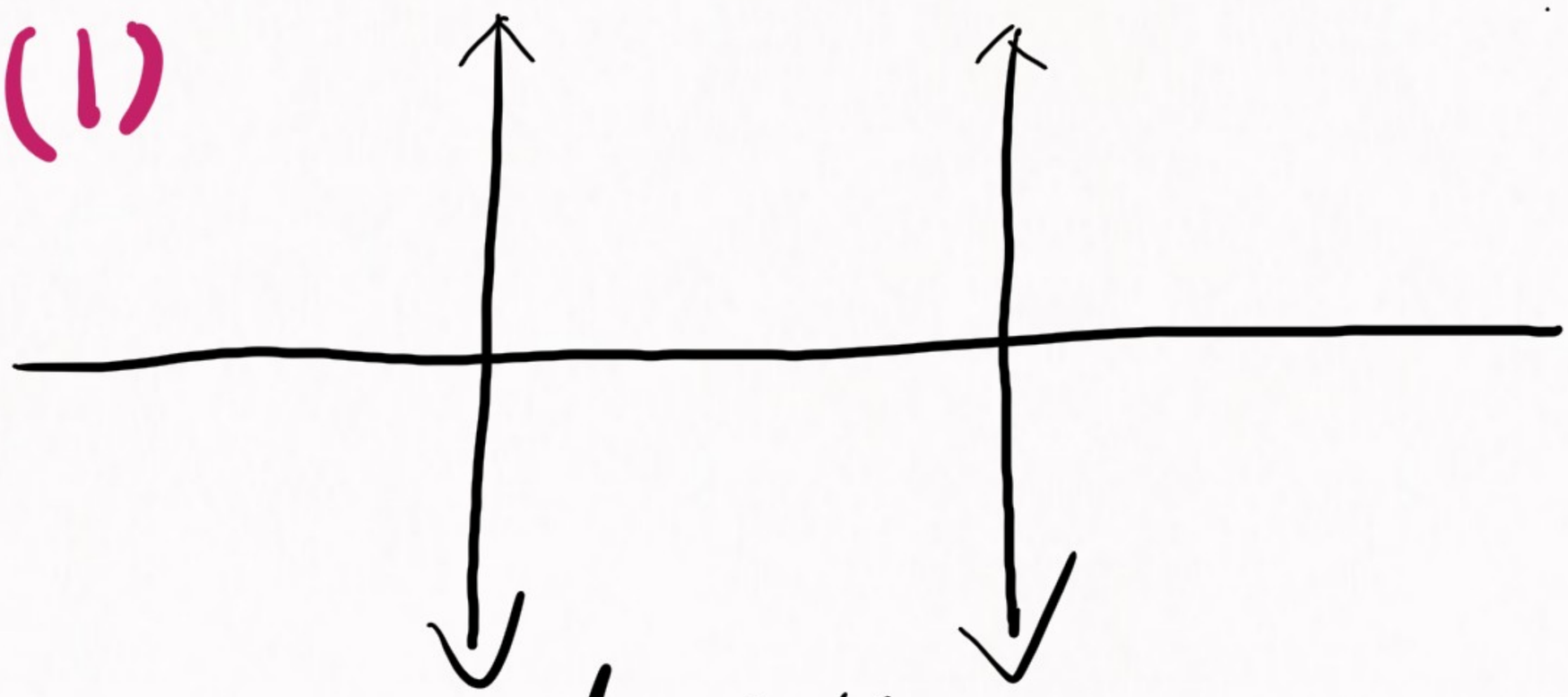
一.(1)



$R=59.2$ $d=14.4$

$n'=1.519471$

(1)

$$f_1=\frac{nR}{n'-n}=113.962$$

$$f_1'=n'f=173.162$$

$$\Delta=-(173.162+173.162-14.4)$$

$$=-331.924$$

$$F'=-\frac{f_1'f_2'}{\Delta}=59.453$$

$$HH'=f_2'\frac{d}{\Delta}=4.944$$

$$L_2=54.509$$

-.(2)

$$f_1 = \frac{nR}{n'-n} = 114.932$$

$$f_1' = n'f = 174.132$$

$$\Delta = -(174.132 + 174.132 - 14.4)$$

$$= -333.864$$

$$F' = \frac{f_1' f_2'}{\Delta} = 59.9446$$

$$H_2'H' = f_2' \frac{d}{\Delta} = -4.9572$$

$$l_2 = 54.9874$$

-.(3)

$$f_1 = \frac{nR}{n'-n} = 114.552$$

$$f' = n' f = 173.752$$

$$\Delta = -(173.752 + 173.752 - 14.4)$$

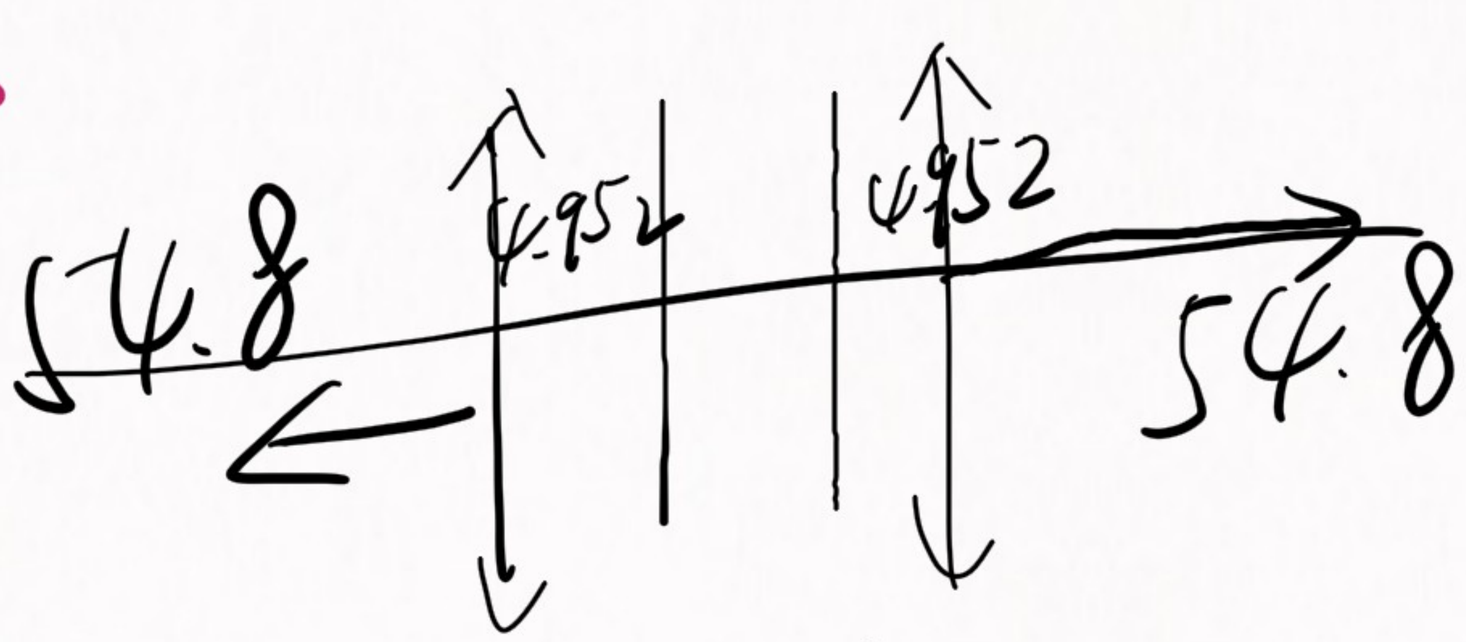
$$= -333.104$$

$$H_2'H' = f_2' \frac{d}{\Delta} = -4.952$$

$$F' = \frac{f_1' f_2'}{\Delta} = 59.752$$

$$l_2 = 54.800$$

二、



$d=14.4$

$f_1=114.55$ $f_1'=173.75$

$f_2=173.75$ $f_2'=114.55$

$\Delta=-333.104$

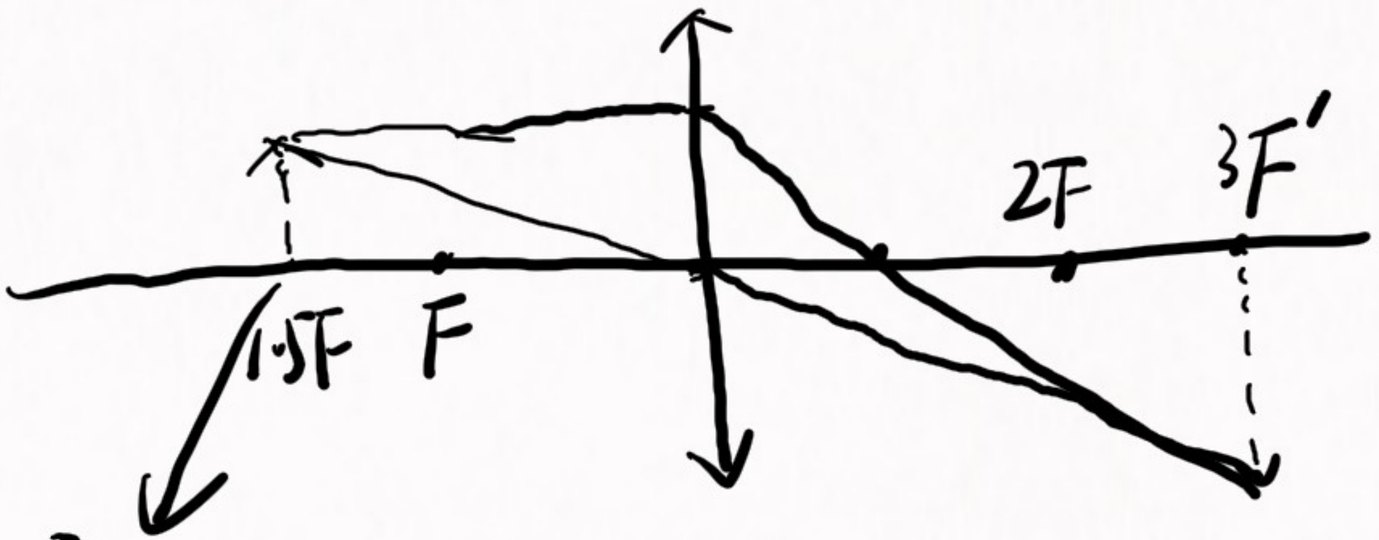
$F'=F=59.752$ ☆

$H_2H'=f_2'\frac{d}{\Delta}=-4.952$

$H_1H=f_1\frac{d}{\Delta}=-4.952$

作图法解题二：

放大：



1) 平行光线过焦点、

2) 相似三角形得：像点在3F'

2) 物像高：1=2.

由相似三角形.

4) 物点在1.5F.

则 $L_1 = 1.5 \times 59.752 - 4.952 = 84.676$

$L_2 = 3 \times 59.752 - 4.952 = 174.304$

同理：缩小有 $L_1 = 174.304$, $L_2 = 84.676$.

因为正角量为20mm，维数选择128.

故孔径和屏尺寸均选择25.6mm.

放大一倍后，为得到大小适中的图象：屏尺寸选择100mm.

同理，缩小一倍，可取屏尺寸30mm以便观察

到不同的图形大小.

最后：从截图中可读出，误差的均值与标准均很小，

图形大小符合要求，可知结果满足题意.