

祝各位研友马到成功，金榜题名

## 2012年光学答案

1. (1) 光由光密介质进入光疏介质；入射角大于临界角  $\theta_c = \arcsin \frac{n'}{n}$

(2) 无穷远；200

(3)  $6\times$

(4)  $70''$  ;  $35''$

(5) 2mm

(6) 球差，彗差，像散，场曲，畸变；位置色差，倍率色差

2.略。

$$3. \text{解: (1) 移动前: } \left. \begin{array}{l} \left| \frac{A'B'}{AB} \right| = \frac{1}{2} \text{ 即 } \frac{y'}{y} = -\frac{1}{2} = \frac{l_1'}{l_1} \text{ 故 } l_1' = -\frac{1}{2}l_1 \\ \text{由 } \frac{1}{-l_1} + \frac{1}{l_1'} = \frac{1}{f'} \end{array} \right\} \Rightarrow l_1' = 1.5f'$$

$$-l_1 = 3f'$$

$$(2) \text{ 移动后: } \left. \begin{array}{l} \left| \frac{A''B''}{AB} \right| = 1 \text{ 即 } \frac{y''}{y} = -1 = \frac{l_2'}{l_2} \text{ 故 } l_2' = -l_2 \\ \text{由 } \frac{1}{-l_2} + \frac{1}{l_2'} = \frac{1}{f'} \end{array} \right\} \Rightarrow l_2' = 2f', \quad -l_2 = 2f'$$

$$\text{又 } \Delta x = -l_1 - (-l_2) = 100 \text{ 故 } 3f' = 2f' + 100 \Rightarrow f' = 100 \text{mm}$$