

Solution

1. Assuming we fully illuminate the grating from the previous problem ($d = 2.5 \mu\text{m}$), how big must it be to resolve the Na lines (589 nm, 589.6 nm)?

a. 0.12 mm

b. 1.2 mm

c. 12 mm

2. How many interference orders can be seen with this grating?

a. 2

b. 3

c. 4

3. Which will reduce the maximum number of interference orders?

a. Increase λ

b. Increase d

c. Increase N

$m \leq d/\lambda$, so increase λ , or decrease d .

Changing N does not affect the number of orders.