

Young's Double Slit Drills

- 1 Monochromatic yellow light of wavelength 571 nm is passed through a double slit of separation 0.111 mm onto a screen 6.74 m away. How far away from the central maximum is the fourth-order dark fringe?
- 2 Monochromatic orange light of wavelength 602 nm is passed through a double slit of separation 0.156 mm onto a screen 3.09 m away. What order nodal line is 4.17 cm from the central maximum?
- 3 Monochromatic red light of wavelength 736 nm is passed through a double slit of separation 0.176 mm onto a screen 4.51 m away. What order nodal line is 6.6 cm from the central maximum?
- 4 Monochromatic red light of wavelength 667 nm is passed through a double slit of separation 0.102 mm onto a screen 9.92 m away. How far away from the central maximum is the fifth-order minimum?
- 5 Monochromatic violet light of wavelength 421 nm is passed through a double slit of separation 0.147 mm and creates a pattern with 25.2 cm between the first and eighth nodal lines. How far away from the source is the screen?
- 6 Monochromatic red light of wavelength 709 nm is passed through a double slit of separation 0.208 mm onto a screen 9.12 m away. How far away from the central maximum is the third-order antinodal line?
- 7 Monochromatic violet light of wavelength 439 nm is passed through a double slit of separation 0.24 mm and creates a pattern with 3.15 cm between the first and seventh minima. How far away from the source is the screen?
- 8 Monochromatic red light of wavelength 640 nm is passed through a double slit of separation 0.239 mm onto a screen 8.41 m away. What order bright fringe is 2.25 cm from the central maximum?
- 9 Monochromatic red light of wavelength 695 nm is passed through a double slit of separation 0.239 mm onto a screen 9.55 m away. How far away from the central maximum is the first-order bright fringe?
- 10 Monochromatic orange light of wavelength 599 nm is passed through a double slit of separation 0.1 mm onto a screen 6.83 m away. What order maximum is 16.4 cm from the central maximum?

Note: $3.4E4 = 3.4 \times 10^4$

Answers:

1. The fourth-order dark fringe is $1.21E-1$ m away from the central maximum. 2. The fourth-order nodal line is $4.17E-2$ m away from the central maximum. 3. The fourth-order nodal line is $6.60E-2$ m away from the central maximum. 4. The fifth-order minimum is $2.92E-1$ m away from the central maximum. 5. The screen is 11.01 m away. 6. The third-order antinodal line is $9.33E-2$ m away from the central maximum. 7. The screen is 2.46 m away. 8. The first-order bright fringe is $2.25E-2$ m away from the central maximum. 9. The first-order bright fringe is $2.78E-2$ m away from the central maximum. 10. The fourth-order maximum is $1.64E-1$ m away from the central maximum.