Young's Double Slit Drills

1 Monochromatic blue light of wavelength 462 nm is passed through a double slit of separation 0.214 mm and creates a third-order maximum 2.14 cm from the central maximum. How far away from the source is the screen?

2 Monochromatic light is passed through a double slit of separation 0.243 mm onto a screen 10.23 m away, creating a pattern with 9.7 cm between the first and fifth minima. What colour is the light?

3 Monochromatic light is passed through a double slit of separation 0.126 mm onto a screen 4.87 m away, creating a fifth-order bright fringe 8.56 cm from the central maximum. What colour is the light?

4 Monochromatic blue light of wavelength 466 nm is passed through a double slit of separation 0.217 mm and creates a fourth-order bright fringe 5.37 cm from the central maximum. How far away from the source is the screen?

5 Monochromatic green light of wavelength 546 nm is passed through a double slit onto a screen 5.42 m away, creating a third-order antinodal line 6.25 cm from the central maximum. What is the slit separation?

6 Monochromatic green light of wavelength 559 nm is passed through a double slit of separation 0.185 mm and creates a third-order minimum 8.87 cm from the central maximum. How far away from the double slit is the screen?

7 Monochromatic yellow light of wavelength 575 nm is passed through a double slit of separation 0.224 mm onto a screen 2.65 m away. What is the spacing between the bright fringes?

8 Monochromatic yellow light of wavelength 582 nm is passed through a double slit of separation 0.163 mm and creates a first-order maximum 3.64 cm from the central maximum. How far away from the source is the screen?

9 Monochromatic light is passed through a double slit of separation 0.118 mm onto a screen 10.35 m away, creating a fifth-order dark fringe 23.1 cm from the central maximum. What colour is the light?

10 Monochromatic yellow light of wavelength 575 nm is passed through a double slit of separation 0.189 mm onto a screen 5.04 m away. What order minimum is 2.3 cm from the central maximum?

Note: 3.4E4 = 3.4 x 1C

Answers:
1. The screen is 3.31 m away. 2. The light is blue (461 nm). 3. The light is violet (443 nm). 4. The screen is 6.25 m away. 5. The slits are 0.142 mm apart. 6. The screen is 11.74 m away. 7. The bright fringes are 6.80E-3 m apart. 8. The screen is 10.19 m away. 9. The light is yellow (584 nm). 10. The second-order minimum is 2.30E-2 m away from the central maximum.