

213	(a)	$\Delta y = \frac{\lambda L}{d}$ $\Delta y = \frac{577 \times 10^{-9} \times 0.95}{0.35 \times 10^{-3}}$ $\Delta y = 1.57 \times 10^{-3} \text{ m}$	1 1
	(b)	$\Delta y = \frac{\lambda L}{d}$ $L = \frac{d \Delta y}{\lambda}$ $L = \frac{0.35 \times 10^{-3} \times 1.15 \times 10^{-3}}{577 \times 10^{-9}}$ $L = 0.70 \text{ m}$	1 1
214	(a)	$\Delta y = \frac{4.8 \times 10^{-3}}{4}$ $\Delta y = 1.2 \times 10^{-3} \text{ m}$ $d = \frac{\lambda L}{\Delta y}$ $d = \frac{390 \times 10^{-9} \times 1.4}{1.2 \times 10^{-3}}$ $d = 4.55 \times 10^{-4} \text{ m}$	1 1 1
	(b)	$d \sin \theta = m \lambda$ $\theta = \sin^{-1} \left(\frac{m \lambda}{d} \right)$ $\theta = \sin^{-1} \left(\frac{1.5 \times 390 \times 10^{-9}}{4.55 \times 10^{-4}} \right)$ $\theta = 0.074^\circ$	1 1
	(c)	$d \sin \theta = m \lambda$ $m = \frac{d \sin \theta}{\lambda}$ $m = \frac{4.55 \times 10^{-4} \times \sin 0.27}{390 \times 10^{-9}}$ $m = 5.5$ <p>m is a half-integral \therefore a dark fringe is observed.</p>	1 1 1
215	(a)	$d \sin \theta = m \lambda$ $m = \frac{d \sin \theta}{\lambda}$ $m = \frac{0.1 \times 10^{-3} \times \sin 2.3}{670 \times 10^{-9}}$ $m = 6$	1 1
	(b)	$\Delta y_1 = \frac{\lambda_1 L}{d}$ $\Delta y_1 = \frac{670 \times 10^{-9} \times 3.8}{0.1 \times 10^{-3}}$ $\Delta y_1 = 2.55 \times 10^{-2} \text{ m}$ $\Delta y_2 = \frac{\lambda_2 L}{d}$ $\Delta y_2 = \frac{410 \times 10^{-9} \times 3.8}{0.1 \times 10^{-3}}$ $\Delta y_2 = 1.56 \times 10^{-2} \text{ m}$ $\Delta = 2.55 \times 10^{-2} - 1.56 \times 10^{-2}$ $\Delta = 9.88 \times 10^{-3} \text{ m}$	1 1 1