calculate the wavelength of water waves which, on passing throug a gap 50cm wid, create a diffraction pattern such that the angle between the center of the pattern and the second-order minimum is 60°

Solution

We use the formula

$$d \sin \theta = n\lambda$$

where d is the gap size; θ is the angle; n is the order number; λ is the wavelength.

So

$$\lambda = \frac{d \sin \theta}{n} = \frac{0.5 * \sin 60}{2} = 0.2165\ m$$

Answer: 0.2165m.