

It looks like you confused the effect of a and b in $y = a \sin bx$. The amplitude of this graph is 2, while the amplitude of $y = 4 \sin 2x$ is 4. This graph has 4 cycles in the interval $[0, 2\pi]$, or a period of $\frac{\pi}{2}$. The period of $y = 4 \sin 2x$ is π .