

STANDING WAVES - ANSWERS

The grid below shows a periodic wave moving to the right along a string when $t = 0$. The period of the wave is T . One crest is labelled as P.

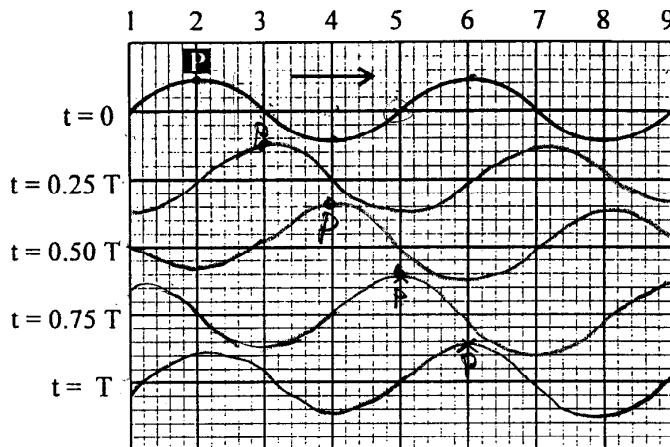
1. What is the value of λ ? 4 UNITS

2. Through what fraction of λ e.g. $1/4 \lambda$, $3/8 \lambda$ will crest P have moved when:

$t = 0.25 T$ 1-UNIT $t = 0.50 T$ 2-UNITS $t = 0.75 T$ 3-UNITS $t = T$ 4-UNITS

3. At what numbered position will crest P be centred when:

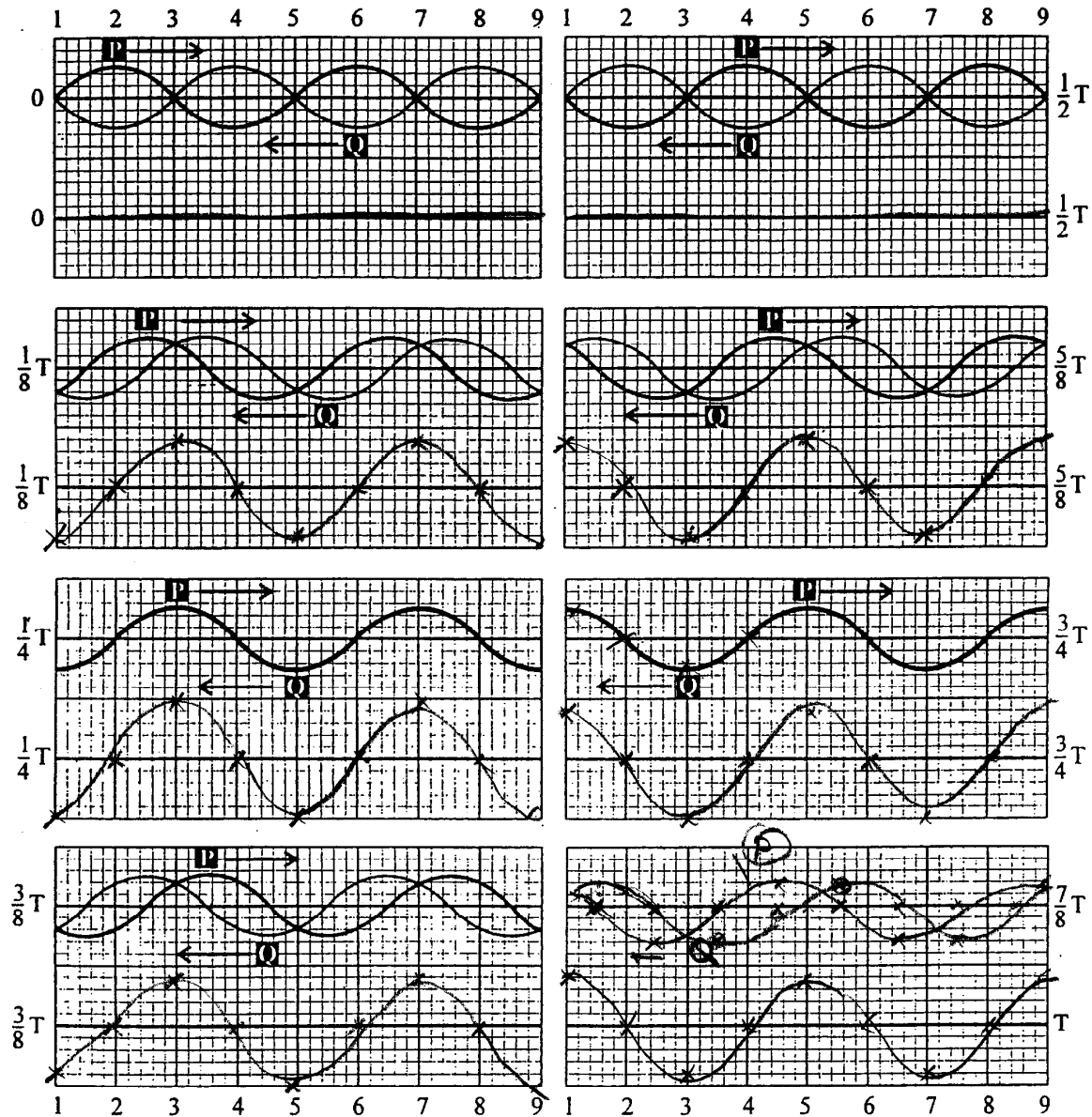
$t = 0.25 T$ 3 $t = 0.50 T$ 4 $t = 0.75 T$ 5 $t = T$ 6 ?



4. Draw the position of the wave at each of the four times shown on the grid.

A second periodic wave with the same amplitude and period is now moving through the string to the left. One trough is labelled as Q. The positions the waves would occupy if each was the only one present, are drawn at regular time intervals.

5. Superimpose the two waves at $t = 0$ for several points along the string and hence determine the shape of the string at $t = 0$. Draw the total wave form on the second of the thick horizontal lines on each grid. Repeat for the times $t = 1/8 T$ to $t = 3/4 T$.



6. Look for a pattern in the behaviour of the string. Use it to draw on the bottom right hand grid, the total wave form in the string when $t = 7/8 T$ and $t = T$.

7. Describe the behaviour of points 2, 4, 6 and 8.

These are nodal points