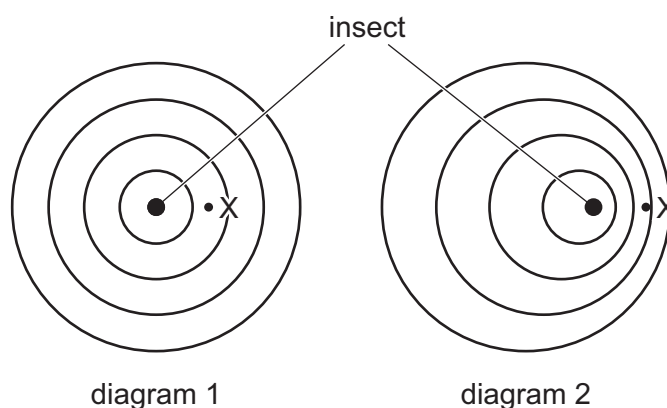


- 25** A stationary insect on the surface of water creates circular waves with its legs, as shown in diagram 1. The insect begins to travel to the right as shown in diagram 2.



Which row describes the change to the waves at X caused by the movement of the insect?

	frequency	wave speed
<b>A</b>	decreases	increases
<b>B</b>	decreases	stays the same
<b>C</b>	increases	increases
<b>D</b>	increases	stays the same

- 26** A toy motorboat moving with constant velocity  $v$  vibrates up and down on the surface of a pond. This causes the boat to act as a source of circular water waves of frequency  $2.0\text{ Hz}$ . The speed of the waves is  $1.5\text{ m s}^{-1}$ .

A man, standing at the edge of the pond, observes that the waves from the boat approach him with a frequency of  $3.0\text{ Hz}$ .

The formula for Doppler effect calculations with sound waves may also be used for water waves.

What is a possible value of  $v$ ?

	speed / $\text{m s}^{-1}$	direction
<b>A</b>	0.50	directly away from the man
<b>B</b>	0.50	directly towards the man
<b>C</b>	0.75	directly away from the man
<b>D</b>	0.75	directly towards the man

- 27** Two progressive waves of frequency  $300\text{ Hz}$  superpose to produce a stationary wave in which adjacent nodes are  $1.5\text{ m}$  apart.

What is the speed of the progressive waves?

- A**  $100\text{ m s}^{-1}$       **B**  $200\text{ m s}^{-1}$       **C**  $450\text{ m s}^{-1}$       **D**  $900\text{ m s}^{-1}$