Pulses Exercise

Do these calculations in the back of your Physics books and just type in the final answer to TWO decimal places.

Exercise 7-1:

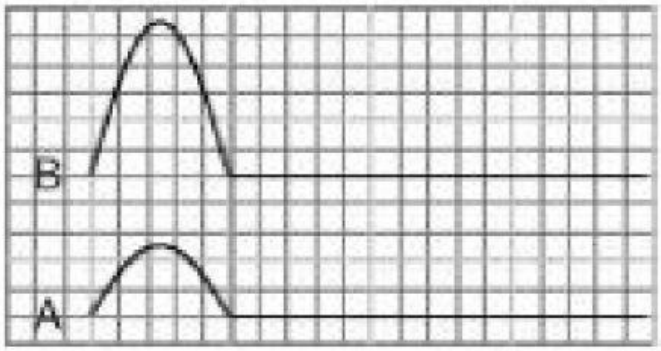
1. A pulse covers a distance of $5\ m$ in 15 seconds. Calculate the speed of the pulse.

2. A pulse has a speed of $5\ cm{\cdot}s^{-1}$. How far does it travel in 2,5 seconds?

3. A pulse has a speed of $0{,}5\ m{\cdot}s^{-1}$. How long does it take to cover a distance of $25\ cm$?

4. How long will it take a pulse moving at $0{,}25\ m{\cdot}s^{-1}$ to travel a distance of $20\ m$?

5. The diagram shows two pulses in the same medium. Which has the higher speed?



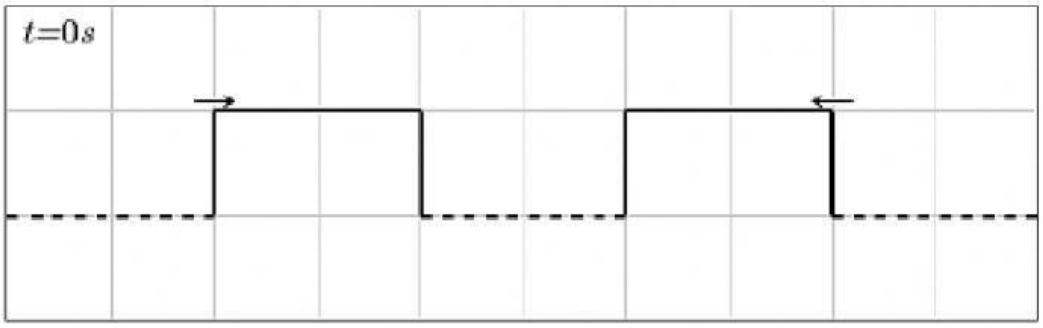
Don't forget to include UNITS in all your answers! (for ms^{-1} just type ms-1)

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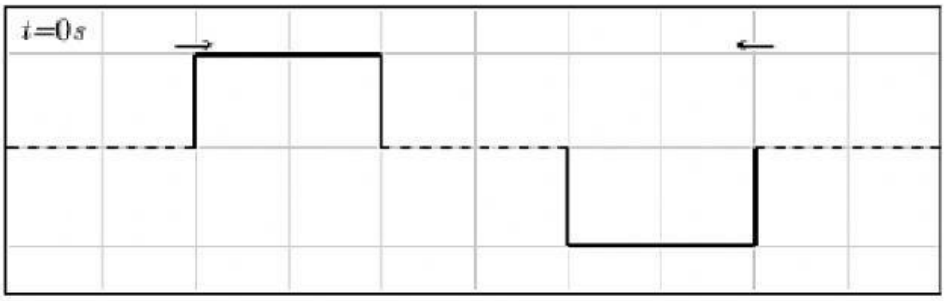
Copy these diagrams into the back of your Physics note book and then complete the questions

Exercise 7-2:

1. For the following pulse, draw the resulting wave forms after 1 s, 2 s, 3 s, 4 s and 5 s. Each pulse is travelling at $1\ \mathrm{m \cdot s^{-1}}$. Each block represents 1 m. The pulses are shown as thick black lines and the undisplaced medium as dashed lines.



2. For the following pulse, draw the resulting wave forms after 1 s, 2 s, 3 s, 4 s and 5 s. Each pulse is travelling at $1\ \mathrm{m \cdot s^{-1}}$. Each block represents 1 m. The pulses are shown as thick black lines and the undisplaced medium as dashed lines.



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End of chapter exercises:

1. A heavy rope is flicked upwards, creating a single pulse in the rope. Make a drawing of the rope and indicate the following in your drawing:

a) The direction of motion of the pulse
b) Amplitude
c) Pulse length
d) Position of rest

2. A pulse has a speed of $2{,}5\ \mathrm{m{\cdot}s^{-1}}$. How far will it have travelled in 6 s?

3. A pulse covers a distance of 75 cm in 2,5 s. What is the speed of the pulse?

4. How long does it take a pulse to cover a distance of 200 mm if its speed is $4\ \mathrm{m{\cdot}s^{-1}}$?

5. In a rope, a pulse of amplitude +20 mm is travelling to the right and a pulse of amplitude -4 mm is travelling to the left.

a) Make a labelled sketch to represent these two pulses.

b) What type of interference will take place when these two pulses meet?

c) Make a labelled sketch to represent the resulting pulse:
i) when they cross each other
ii) after they have crossed each other



LIVEWORKSHEETS

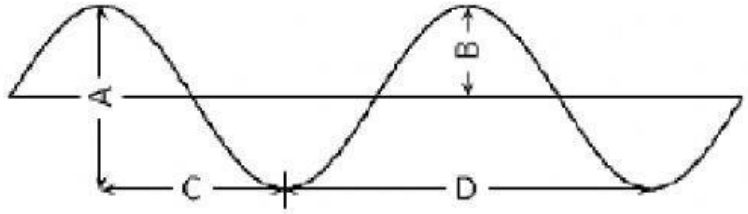
Transverse Waves Exercise

Exercise 8-1:

1. When the particles of a medium move perpendicular to the direction of the wave motion, the wave is called a ..... wave.

2. A transverse wave is moving downwards. In what direction do the particles in the medium move?

3. Consider the diagram below and answer the questions that follow:

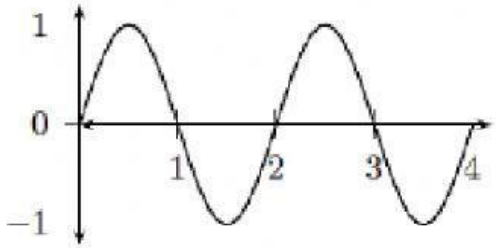


4. Draw 2 wavelengths of the following transverse waves on the same graph paper. Label all important values.

a) Wave 1: Amplitude = 1 cm, wavelength = 3 cm

b) Wave 2: Peak to trough distance (vertical) = 3 cm, crest to crest distance (horizontal) = 5 cm

5. You are given the transverse wave below:



Draw the following:

a) A wave with twice the amplitude of the given wave.

b) A wave with half the amplitude of the given wave.

c) A wave travelling at the same speed with twice the frequency of the given wave.

d) A wave travelling at the same speed with half the frequency of the given wave.

e) A wave with twice the wavelength of the given wave.

f) A wave with half the wavelength of the given wave.

g) A wave travelling at the same speed with twice the period of the given wave.

h) A wave travelling at the same speed with half the period of the given wave.

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6. A transverse wave travelling at the same speed with an amplitude of 5 cm has a frequency of 15 Hz. The horizontal distance from a crest to the nearest trough is measured to be 2,5 cm. Find the
a) period of the wave.
b) speed of the wave.

7. A fly flaps its wings back and forth 200 times each second. Calculate the period of a wing flap.

8. As the period of a wave increases, the frequency increases/decreases/does not change

9. Calculate the frequency of rotation of the second hand on a clock.

10. Microwave ovens produce radiation with a frequency of 2 450 MHz ($1\,\mathrm{MHz} = 10^{6}\,\mathrm{Hz}$) and a wavelength of 0,122 m. What is the wave speed of the radiation?

11. Tom is fishing from a pier and notices that four wave crests pass by in 8 s and estimates the distance between two successive crests is 4 m. The timing starts with the first crest and ends with the fourth. Calculate the speed of the wave.

End of chapter exercises:

1. A wave travels along a string at a speed of $1{,}5\ \mathrm{m \cdot s^{-1}}$. If the frequency of the source of the wave is 7,5 Hz, calculate:
a) the wavelength of the wave
b) the period of the wave

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