

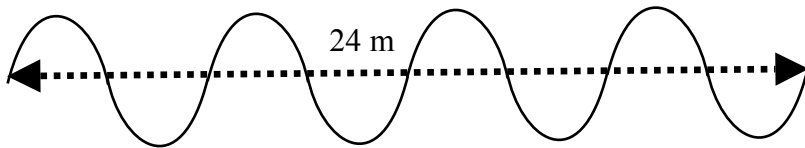
Standard Grade Physics

February Break Homework

Here are six questions you can try over the short break. The answers to the questions will be on my website at www.helpmyphysics.co.uk under Mr Mallon`s Classroom link.

Question 1 Do on Friday

- In the diagram below find the wavelength the water waves given the length of the dotted line is 24 metres.
- Calculate the frequency of the waves if ten waves pass by in 5 seconds.
- Now calculate the speed of the water waves.

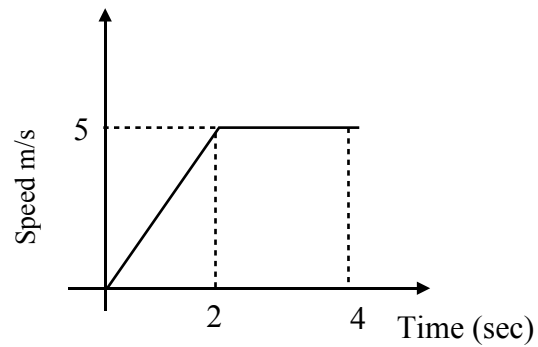


Question 2 Do on Saturday

- During the Apollo moon missions astronauts communicated with each other on a frequency of 33 G Hz. Calculate the wavelength of this electromagnetic wave.
- Draw the shape of the receiver on the orbiting spacecraft which picked up the astronauts signals . Show how the signals were collected.

Question 4 Do on Monday

- a. A car has its speed recorded with a data logger.
Describe the motion of the car over the four seconds.
- b. Calculate the acceleration of the car during the first two seconds.
- c. Find the distance travelled by the car over the four seconds.



Question 5 Do on Tuesday

- a. A radioactive source has an activity of 512 MBq.
Sixteen hours later the radioactive source has an activity of 32 Mbq.
Calculate the half life of the radioactive source.
- b. Explain why gamma rays and not beta particles are used to image blockages inside the human body,

Question 6 Do on Wednesday

- a. A bucket of water of mass 12 kilograms. It is lifted up to a height of 4 metres. Calculate the gravitational potential energy of the bucket of water at 4 metres.
- b. The bucket of water is dropped. Calculate the speed of the water bucket just before it hits the ground.

Question 3 Do on Saturday

- In the circuit below the resistance of the lamp is 12 ohms. It is connected to a 100 ohm resistor.
Find the total resistance of the circuit.
- If the battery has a voltage of 12 volts find the current in the circuit.
- Calculate the power of the lamp.
- A 100 ohm resistor is added in parallel to the 100 ohm resistor already in the circuit.
Explain what happens to the current in the circuit.

