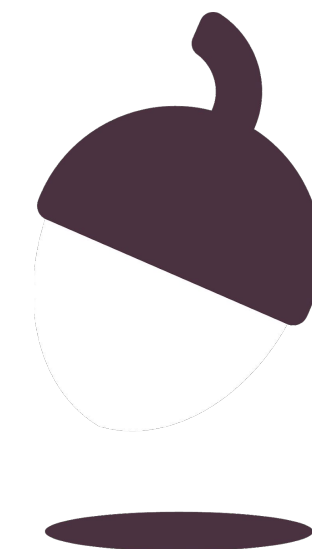


Combined Science - Physics - Key Stage 4 - Waves

Combined Science Review - worksheet

Miss Walrond



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Answer these questions after watching the lesson. Click through the slides to look at the answers when you're done.
At the end of this document are some of the tasks from within the lesson in case you want to print these.

- 1. TV satellites use short wavelength radio waves (microwaves) to receive and send signals.

Explain why these waves have to be used rather than long wavelength radio waves.

.....

.....

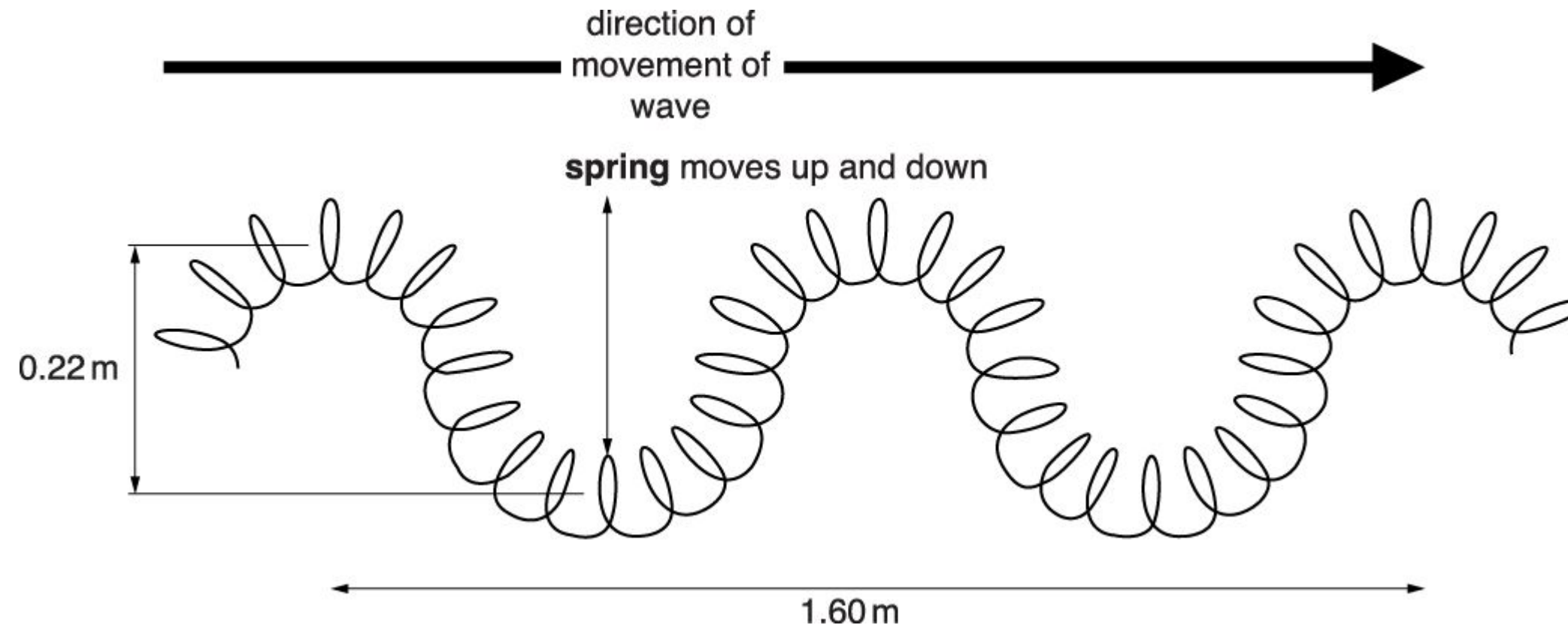
.....

.....[2]



2. P waves and S waves are different.

P waves are longitudinal and S waves are transverse. Look at the diagram of a model of a wave made with a slinky spring.



The wave is made by moving the spring up and down with a frequency of 1.2 Hz.

Look at the diagram.

i. Calculate the speed of the wave. answer m/s [2]

ii. What is the amplitude of the wave?

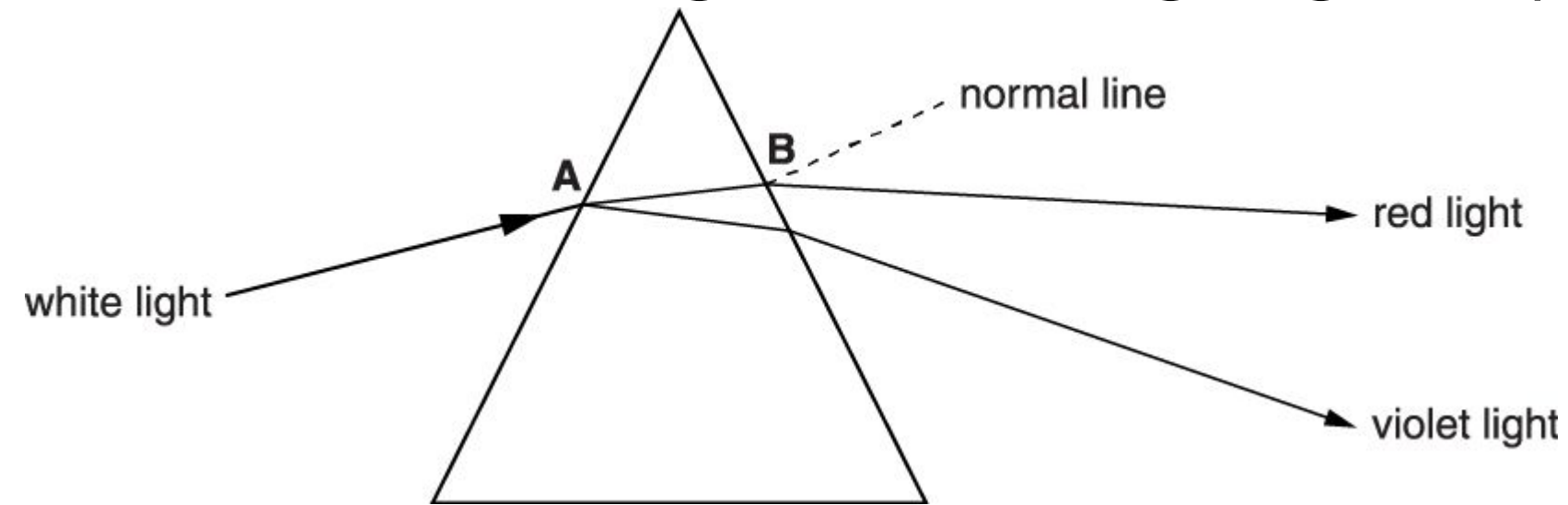
Choose from:

0.11 m 0.22 m 0.80 m 1.60 m 1.82 m [1]



Higher tier only

3. Look at the diagram. It shows white light entering a glass prism at A.



The red light refracts away from the normal at B.

Use ideas about waves to explain why this happens.

[2]





Question			Answer/Indicative content	Marks
1			<p>any 2 from</p> <p>short waves penetrate atmosphere / Long waves don't penetrate atmosphere / AW [1]</p> <p>long waves absorbed or refracted or reflected (by atmosphere) [1]</p> <p>(therefore) short waves reach the receiver / long waves don't reach the receiver [1]</p>	2



Question			Answer/Indicative content	Marks
2		i	speed = 0.96 (m/s) [2] but if answer is incomplete then 0.80 × 1.2 [1]	2
		ii	0.11(m) [1]	1



Question			Answer/Indicative content	Marks
3			<p>change in wave speed / refractive index [1]</p> <p>but</p> <p>(in air) wave speed increases / lower refractive index / ora [2]</p>	2



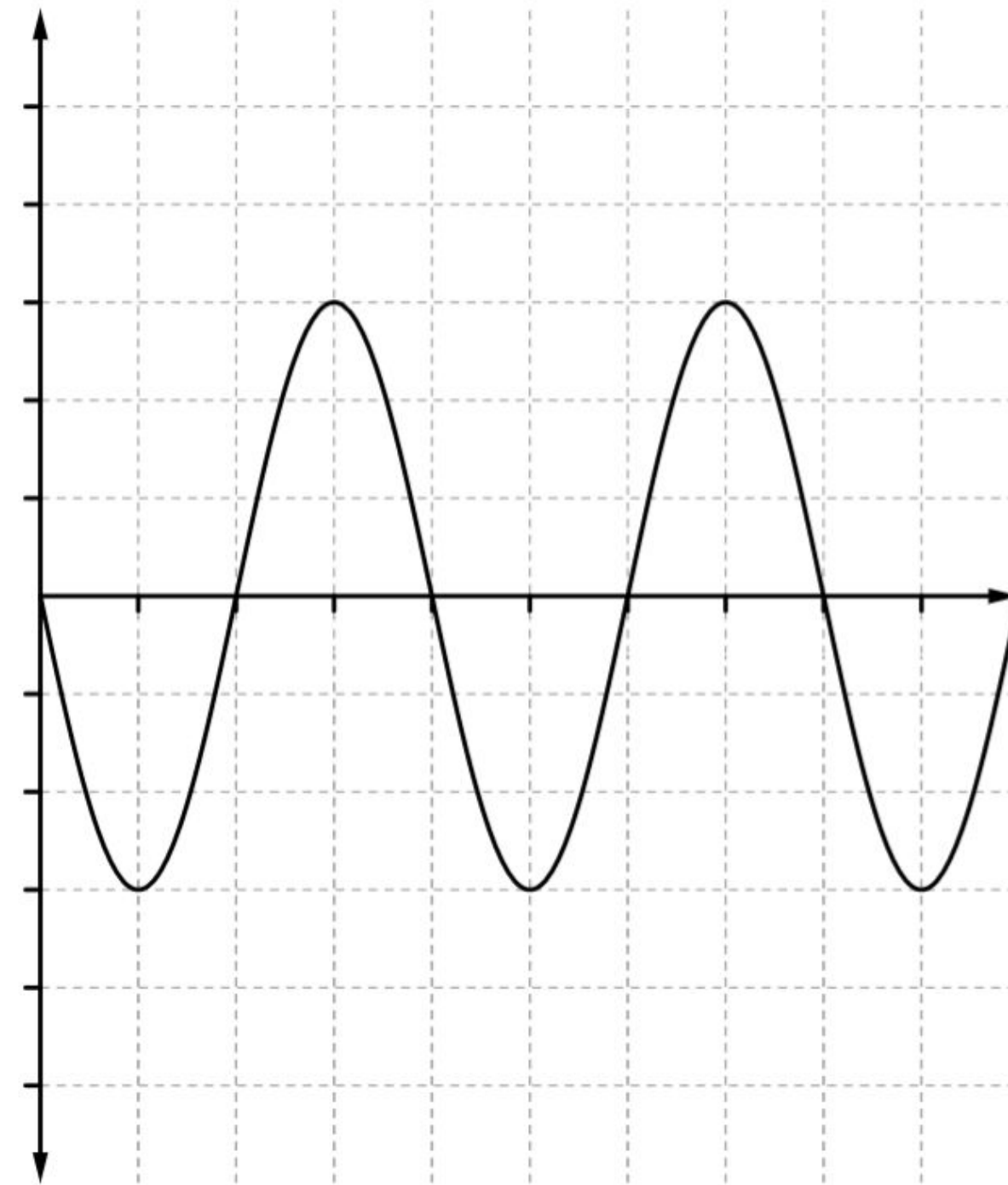
Questions from within the lesson



Properties of waves

1. Copy the diagram and add these labels:
 - Peak
 - Wavelength
 - Trough
 - Amplitude
2. How many waves are shown?
3. If these waves were produced in 10 s, what is the frequency?
4. What is the period?

Displacement (m)



Credit: Mr Benyohai



Answering common questions

Compare radio and sound waves

Compare means similarities and differences

1. Type of wave
2. Oscillations
3. Speed
4. Medium
5. Interaction with surfaces

1. Sound waves are longitudinal.

Radio waves are transverse.

2. The oscillations in a longitudinal wave are...

Whereas in a radio wave they are...

3. Sound travels at...

Whereas radio waves....

4. Sound can only travel when...

But radio waves can...

5. Both waves will...

6. And both waves transfer...



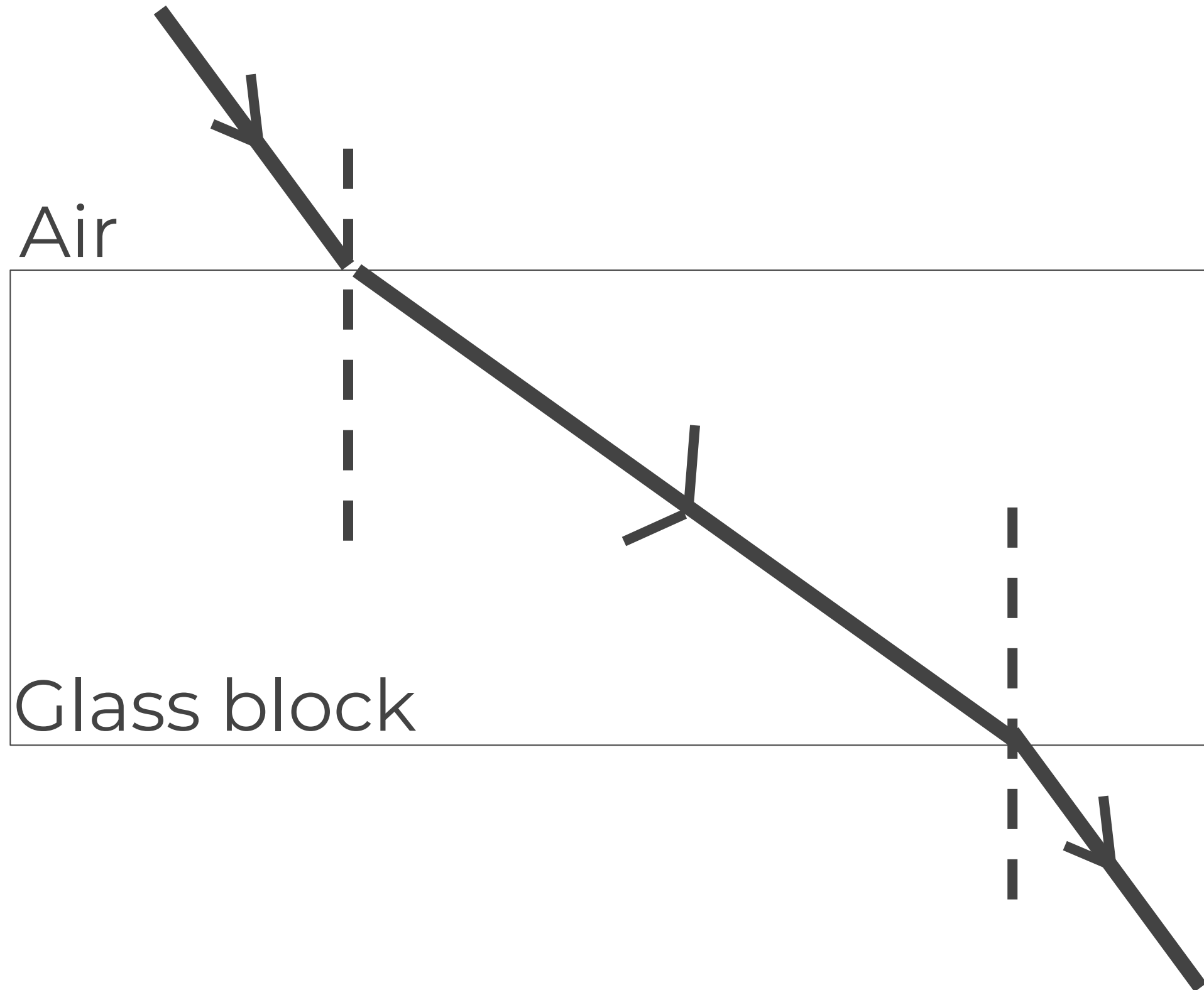
Can you spot the 6 mistakes?

1. Set the motor to go as fast as possible to create plenty of waves.
2. Shine a light from underneath the tank onto a piece of white paper.
3. Video the waves for 1 hour and count how many waves pass a particular point.
4. Divide this number by 3600 (seconds) to get the frequency.
5. Take a photo of the waves on the piece of paper.
6. Measure the distance between two consecutive shadows once, use a ruler.
7. This is the wavelength in centimetres.
8. Divide wavelength by frequency to get the wave speed in m/s.



Can you spot the mistake?

Redraw this diagram correctly and label the 4 angles



Redraw your corrected diagram here

