1 - (0625-S 2012-Paper 1 (Core)/1-Q20) - *WAVES AND SOUNDS*

What is the unit of wavelength?

A hertz

B metre

C metre per second

D second

2 - (0625-S 2012-Paper 1 (Core)/2-Q20) - *WAVES AND SOUNDS*

Which row shows the nature of light waves, sound waves and X-rays?

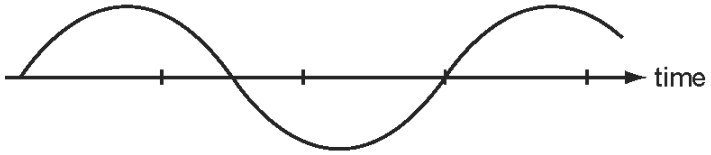
	light waves	sound waves	X-rays
A	longitudinal	longitudinal	transverse
B	longitudinal	transverse	longitudinal
C	transverse	longitudinal	transverse
D	transverse	transverse	longitudinal

3 - (0625-S 2012-Paper 1 (Core)/3-Q20) - *WAVES AND SOUNDS*

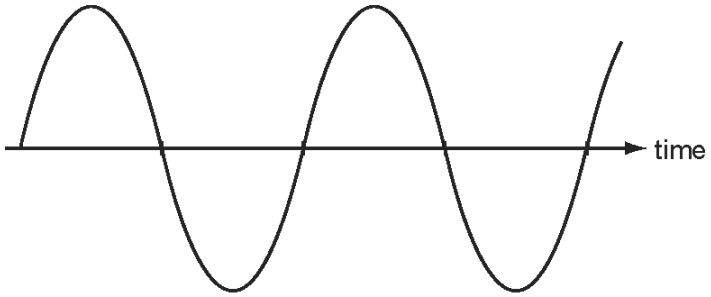
The diagrams represent the waves produced by four sources of sound. The scales are the same for all the diagrams.

Which sound has the highest frequency?

A

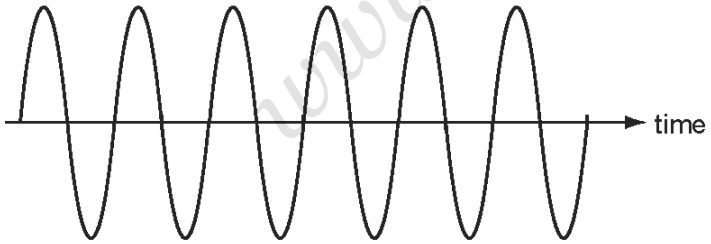


B



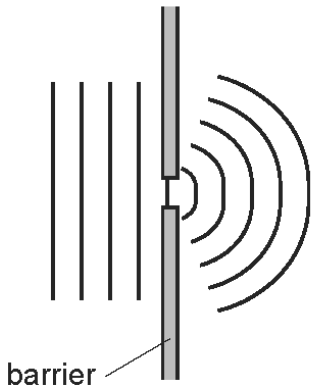
C

D



4 - (0625-S 2012-Paper 1 (Core)/2-Q21) **-** *WAVES AND SOUNDS*

The diagram shows plane water waves passing through a narrow gap in a barrier.



The waves spread out on the far side of the barrier.

Which property of waves does this illustrate?

A diffraction

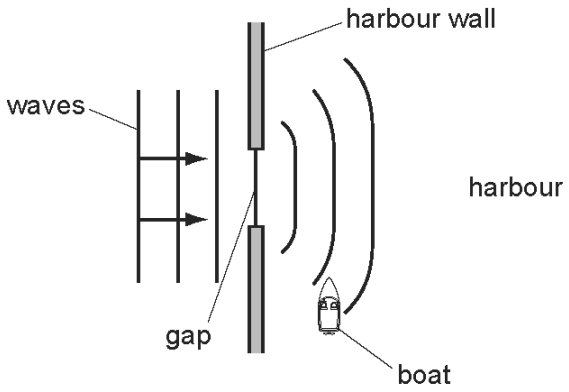
B reflection

C refraction

D vibration

5 - (0625-S 2012-Paper 1 (Core)/1-Q22) - *WAVES AND SOUNDS*

The diagram shows water waves passing through a gap in a harbour wall. The waves curve round the wall and reach a small boat in the harbour.



What is the name of this curving effect, and how can the gap be changed so that the waves are less likely to reach the boat?

	name of effect	change to the gap
A	diffraction	make the gap slightly bigger
B	diffraction	make the gap slightly smaller
C	refraction	make the gap slightly bigger
D	refraction	make the gap slightly smaller

6 - (0625-S 2012-Paper 1 (Core)/1-Q25) - *WAVES AND SOUNDS*

A girl stands at a distance from a large building. She claps her hands and a short time later hears an echo.

Why is an echo produced when the sound waves hit the building?

A The sound waves are absorbed.

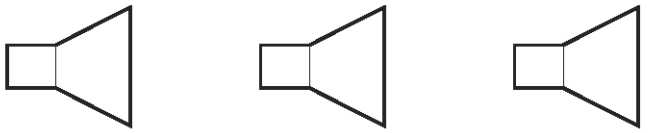
B The sound waves are diffracted.

C The sound waves are reflected.

D The sound waves are refracted.

7 - (0625-S 2012-Paper 1 (Core)/2-Q26) - *WAVES AND SOUNDS*

Three loudspeakers vibrate at different frequencies of 5 hertz, 25 kilohertz and 50 kilohertz.



5 hertz 25 kilohertz 50 kilohertz

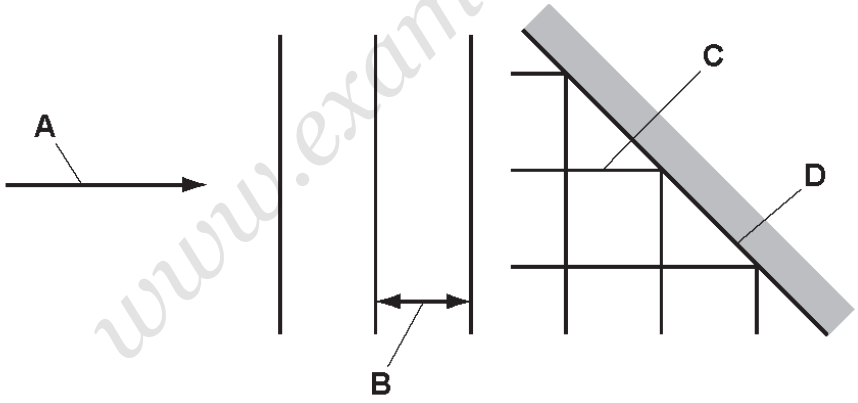
Which row shows whether the vibrations from each loudspeaker can be heard by a human?

	5 hertz	25 kilohertz	50 kilohertz
A	no	no	no
B	no	yes	no
C	yes	no	yes
D	yes	yes	yes

8 - (0625-W 2012-Paper 1 (Core)/1-Q21) - *WAVES AND SOUNDS*

The diagram shows plane waves reflected by a plane surface.

Which line represents a wavefront?



9 - (0625-W 2012-Paper 1 (Core)/2-Q21) - *WAVES AND SOUNDS*

A swimmer is sitting on a rock at the sea shore looking at passing waves. He notices that five complete wavelengths pass him in 20 s.

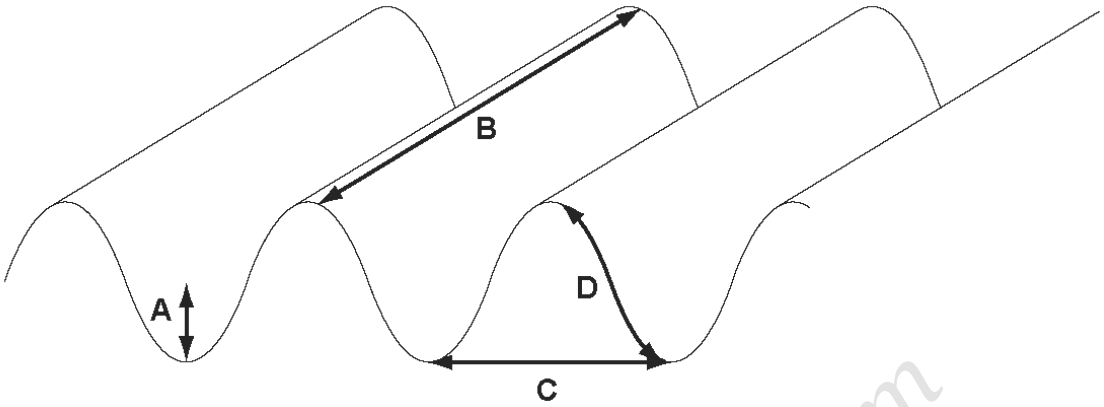
What is the frequency of this wave?

A 0.25 Hz **B** 4.0 Hz **C** 15 Hz **D** 100 Hz

10 - (0625-W 2012-Paper 1 (Core)/3-Q21) - *WAVES AND SOUNDS*

The diagram shows a water wave in a ripple tank.

Which line represents a wavefront?



11 - (0625-W 2012-Paper 1 (Core)/2-Q22) - *WAVES AND SOUNDS*

In a test, a car horn is found to be too loud and the pitch of the note is too high.

What information does this give about the amplitude and the frequency of the sound wave produced?

	amplitude	frequency
A	too large	too large
B	too large	too small
C	too small	too large
D	too small	too small

12 - (0625-W 2012-Paper 1 (Core)/3-Q22) - *WAVES AND SOUNDS*

Which statement about radio waves is correct?

A They travel as longitudinal waves.

B They travel at the same speed as sound waves.

C They travel by means of molecular vibration.

D They can travel through a vacuum.

13 - (0625-W 2012-Paper 1 (Core)/2-Q23) - *WAVES AND SOUNDS*

A girl notices that when she shouts into a cave she hears an echo.

Which wave property causes the echo?

A diffraction

B dispersion

C reflection

D refraction

14 - (0625-W 2012-Paper 1 (Core)/3-Q25) - *WAVES AND SOUNDS*

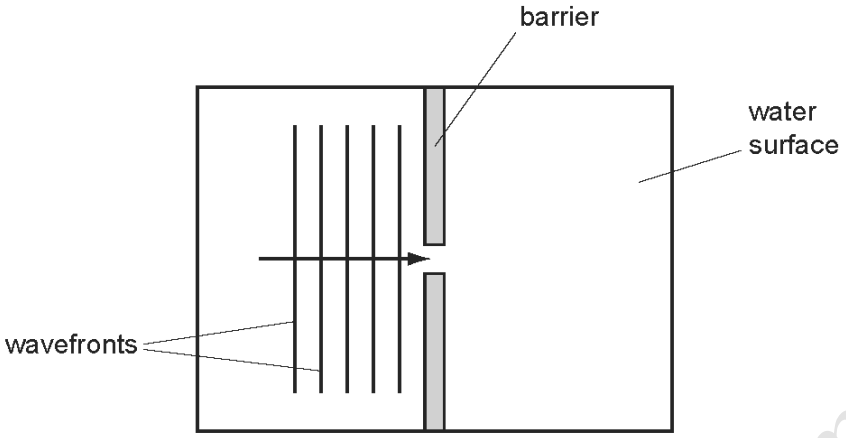
Sound waves may cause an echo.

What happens to sound waves to cause an echo and what is the nature of sound waves?

	what an echo is caused by	nature of sound waves
A	reflection	longitudinal
B	reflection	transverse
C	refraction	longitudinal
D	refraction	transverse

15 - (0625-S 2013-Paper 1 (Core)/2-Q19) - *WAVES AND SOUNDS*

The diagram shows the surface of water in a ripple tank. A wave is travelling in the direction of the arrow towards a gap in a barrier.

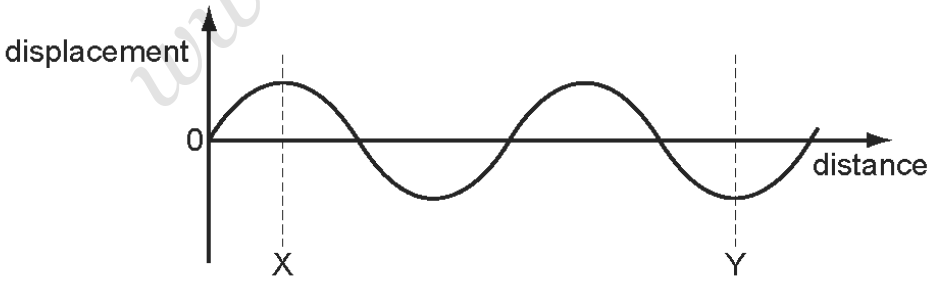


What happens to the wave as it passes through the gap, and what happens to the shape of the wavefronts after passing through the gap?

	what happens at the gap	shape after passing through the gap
A	diffraction	curved
B	diffraction	straight
C	refraction	curved
D	refraction	straight

16 - (0625-S 2013-Paper 1 (Core)/1-Q20) - *WAVES AND SOUNDS*

The diagram represents a wave.

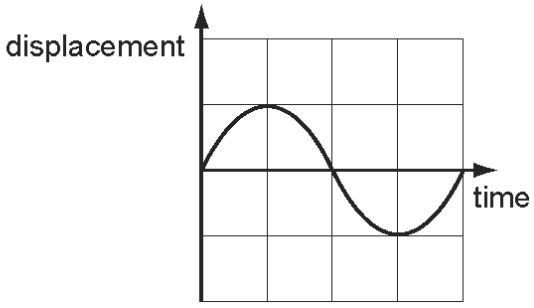


How many wavelengths are there between X and Y?

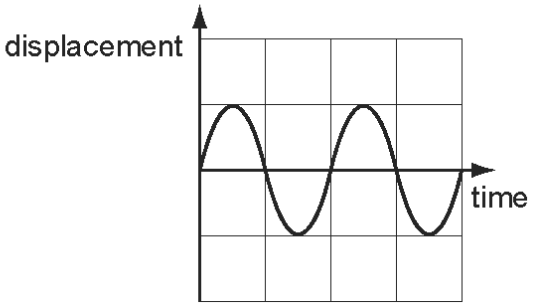
A $\frac{2}{3}$ **B** 1 **C** $1\frac{1}{2}$ **D** 3

17 - (0625-S 2013-Paper 1 (Core)/1-Q24) - *WAVES AND SOUNDS*

The diagrams represent two sound waves. The scales in the two diagrams are the same.



sound wave 1



sound wave 2

Which statement describes the waves?

A The waves have different loudness and different pitch.

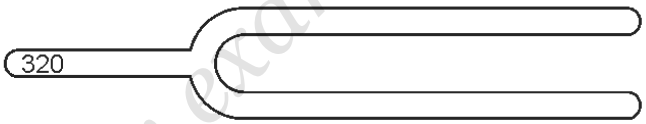
B The waves have different loudness but the same pitch.

C The waves have the same loudness and the same pitch.

D The waves have the same loudness but different pitch.

18 - (0625-S 2013-Paper 1 (Core)/2-Q24) - *WAVES AND SOUNDS*

A tuning fork is marked with the number 320.



This indicates the size of the frequency.

What does this mean?

A The length of the tuning fork is 320 mm.

B The note from the tuning fork will last for up to 320 s.

C The sound waves produced by the tuning fork travel at 320 m / s.

D The tuning fork vibrates 320 times every second.

19 - (0625-S 2013-Paper 1 (Core)/1-Q25) - *WAVES AND SOUNDS*

A student claps once when standing 100 m away from a large wall.

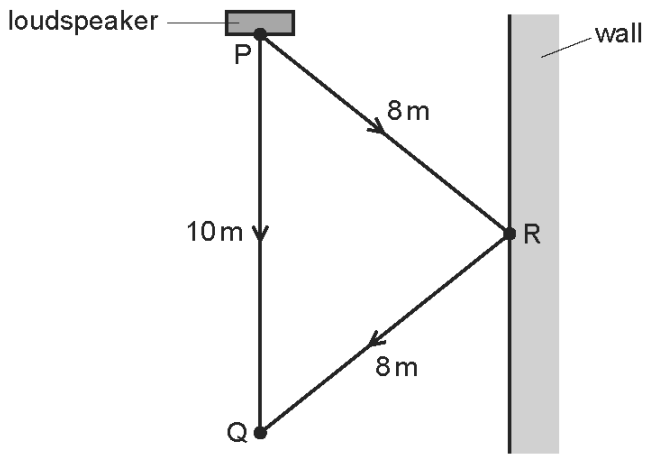
The speed of sound in air is 330 m / s.

How long after clapping does the student hear an echo?

A 0.30 s **B** 0.61 s **C** 1.7 s **D** 3.3 s

20 - (0625-S 2013-Paper 1 (Core)/2-Q25) - *WAVES AND SOUNDS*

Some sound from a loudspeaker at P travels directly to Q. Sound also reaches Q after being reflected from a wall at R.



The speed of sound is 330 m / s.

What is the **difference** in time for a sound to travel from P to Q by the two routes?

A $\left(\frac{6}{330}\right)$ s **B** $\left(\frac{16}{330}\right)$ s **C** (6×330) s **D** (16×330) s

21 - (0625-W 2013-Paper 1 (Core)/1-Q19) - *WAVES AND SOUNDS*

Which row shows an example of a transverse wave and an example of a longitudinal wave?

	transverse	longitudinal
A	light	radio
B	radio	sound
C	sound	water
D	water	light

22 - (0625-W 2013-Paper 1 (Core)/1-Q20) - *WAVES AND SOUNDS*

A boy throws a small stone into a pond. Waves spread out from where the stone hits the water and travel to the side of the pond.

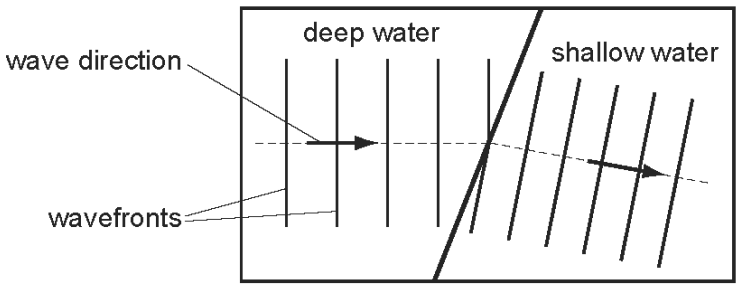
The boy notices that eight waves reach the side of the pond in a time of 5.0 s.

What is the frequency of the waves?

A 0.20 Hz **B** 0.63 Hz **C** 1.6 Hz **D** 40 Hz

23 - (0625-W 2013-Paper 1 (Core)/3-Q20) - *WAVES AND SOUNDS*

Water waves may be used to demonstrate refraction by making them pass into water of a different depth.



Why does the water wave change direction as it passes into the shallow water?

A The frequency of the wave decreases.

B The frequency of the wave increases.

C The speed of the wave decreases.

D The speed of the wave increases.

24 - (0625-W 2013-Paper 1 (Core)/1-Q24) - *WAVES AND SOUNDS*

When the volcano Krakatoa erupted in 1883, it was heard 5000 km away.

Which statement about the sound from the volcano is **not** correct?

A If such a loud sound were to be made today, an astronaut orbiting in space (a vacuum) at a height of 400 km could hear it.

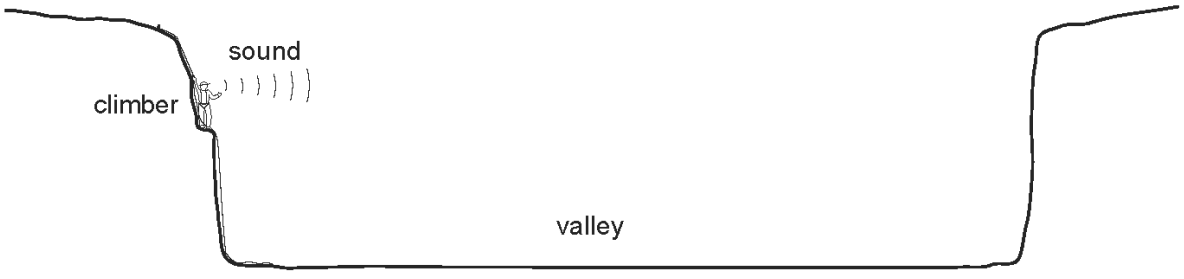
B People further from the volcano heard the sound later than people nearer to the volcano.

C The amplitude of the sound waves would have been smaller further from the volcano.

D The sound was very loud because a lot of energy was transferred to vibrations of the air.

25 - (0625-W 2013-Paper 1 (Core)/3-Q24) - *WAVES AND SOUNDS*

To estimate the width of a valley, a climber starts a stopwatch as he shouts. He hears an echo from the opposite side of the valley after 1.0 s.



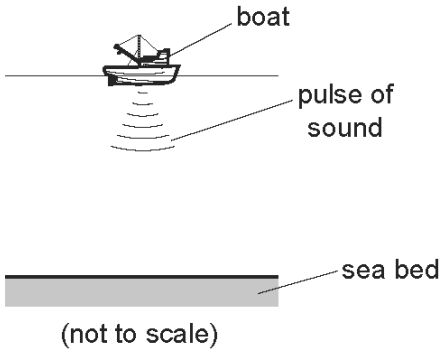
The sound travels at 330 m/s.

What is the width of the valley?

A 82.5 m **B** 165 m **C** 330 m **D** 660 m

26 - (0625-W 2013-Paper 1 (Core)/1-Q25) - *WAVES AND SOUNDS*

A loudspeaker on a boat produces a pulse of sound in the sea. The echo of the pulse is received back at the boat after 3.0 s. The depth of the sea under the boat is 2250 m.



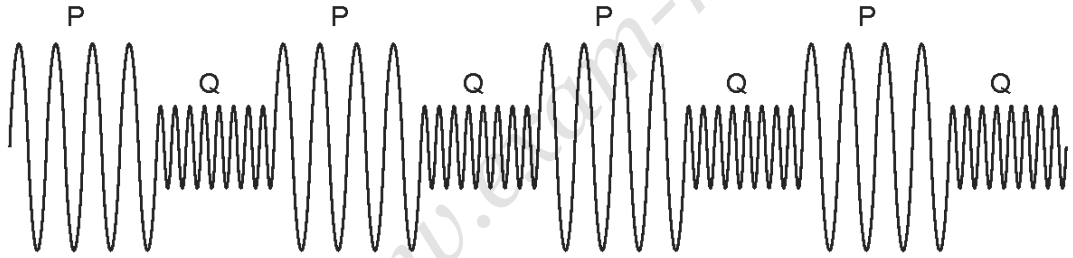
From this information, what is the speed of sound in the sea water?

A 330 m/s **B** 750 m/s **C** 1500 m/s **D** 6750 m/s

27 - (0625-W 2013-Paper 1 (Core)/3-Q25) - *WAVES AND SOUNDS*

A police car sounds its siren when travelling to an emergency. The siren produces two different sounds P and Q, which are emitted alternately.

The diagram represents the sound waves emitted by the siren.



Which of the two sounds P and Q is the louder and which has the higher pitch?

	louder sound	sound of higher pitch
A	P	P
B	P	Q
C	Q	P
D	Q	Q

28 - (0625-S 2014-Paper 1 (Core)/3-Q18) - *WAVES AND SOUNDS*

A boy blows a whistle that has a frequency of 10 000 Hz. The boy's friend cannot hear the sound from the whistle. The friend has normal hearing.

What could be a reason why he cannot hear the sound?

A The amplitude is too large.

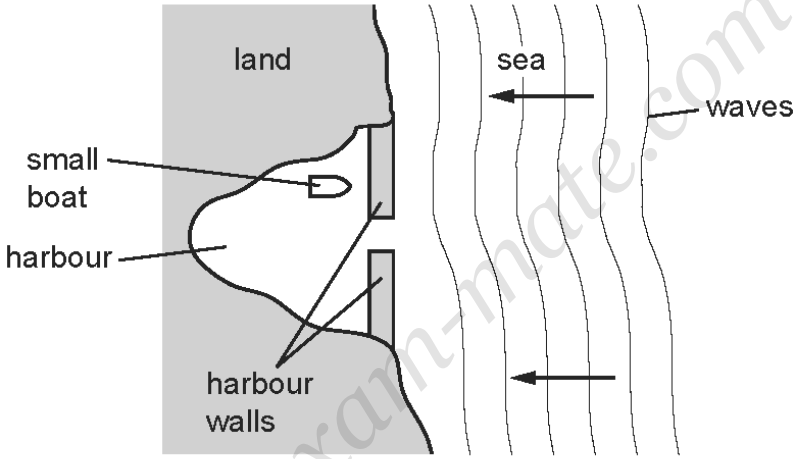
B The amplitude is too small.

C The frequency is too high.

D The frequency is too low.

29 - (0625-S 2014-Paper 1 (Core)/1-Q19) - *WAVES AND SOUNDS*

A small boat in a harbour is protected from waves on the sea by harbour walls.



Some waves can curve round the harbour walls and reach the boat.

What is the name of this effect?

A diffraction

B dispersion

C reflection

D refraction