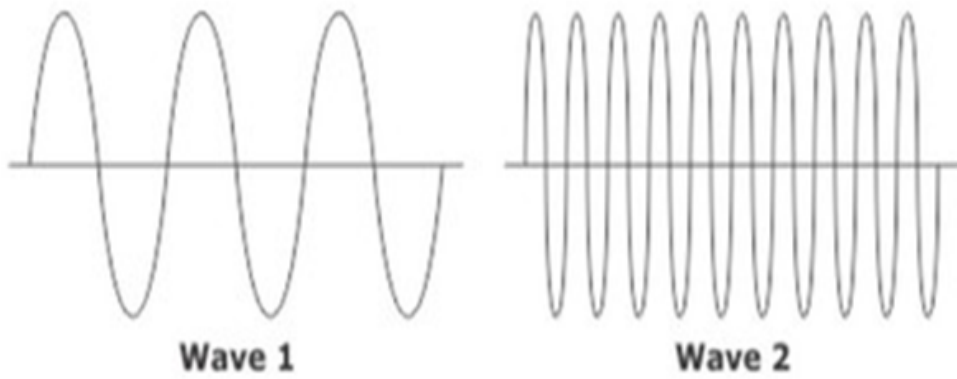


Form	BA - 2, Science, Grade 7, SY24-25
Identifier	F-FMYYQ4_C66168

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C54614
Identifier	I-SCI-F-390_C54614
Standards	SCI.6-8.MS-PS4-1

The diagram below shows two different waves: Wave 1 and Wave 2

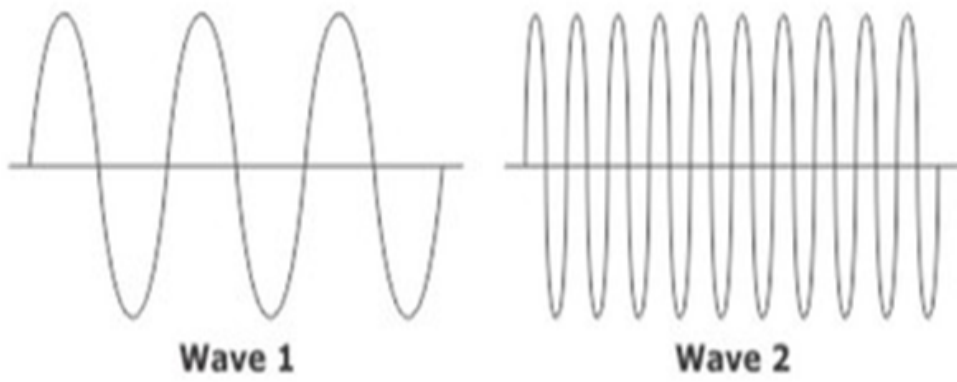


Which of the following claims is **BEST** supported by the evidence shown in the waves diagram?

- A Both waves have the same frequency.
- B Both waves have the same wavelength.
- C Wave 2 has more energy than Wave 1.
- D Wave 1 has a lower amplitude that Wave 2.

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C85191
Identifier	I-SCI-F-390_C85191
Standards	SCI.6-8.MS-PS4-1

The diagram below shows two different waves: Wave 1 and Wave 2

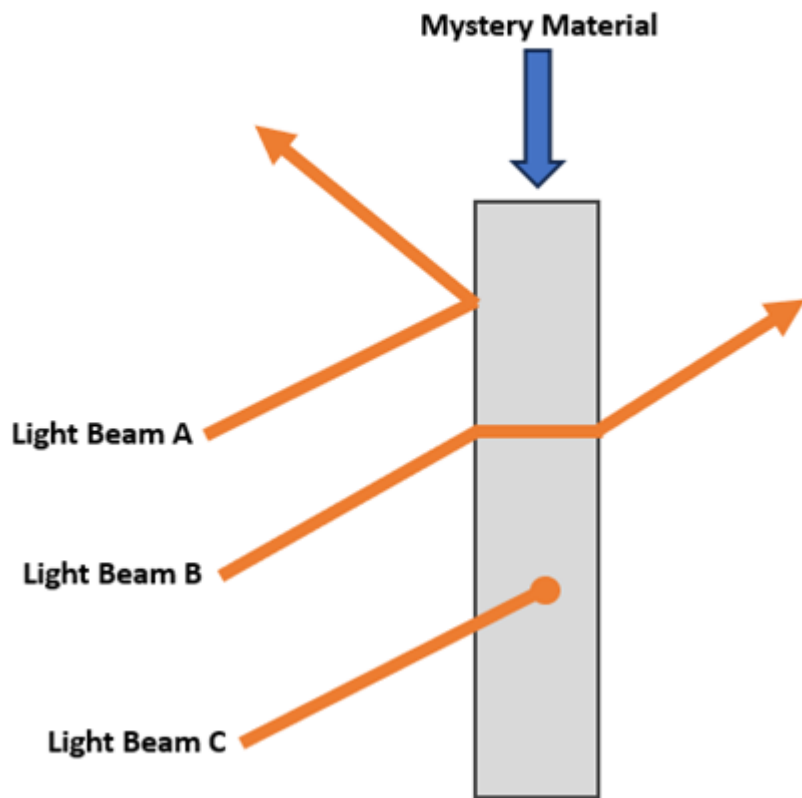


What pattern is the same for both Wave 1 and Wave 2?

- A Both waves have the same number of troughs and crests.
- B Both waves have the same amount of energy.
- C Both waves that provide evidence for waves to move through a liquid.
- D Both waves of the same amplitude.

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C65756
Identifier	I-SCI-F-390_C65756
Standards	SCI.6-8.MS-PS4-2

Shown in the diagram below, three different orange lasers (Light Beams A, B, and C) are pointed at a mystery material. The light behavior is indicated in the diagram.

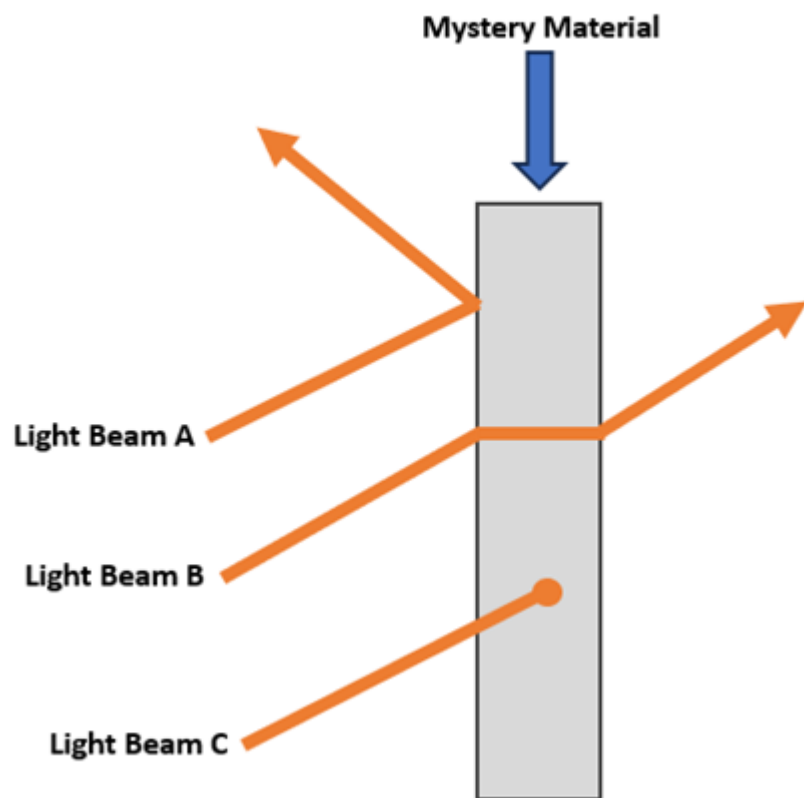


Based on this information, which of the Light Beams will have the **greatest** effect on the mystery material?

- A Light Beam B will have the greatest effect on the mystery material because it will remove energy from the mystery materials as the light beam is transmitted through the material.
- B Light Beam C will have the greatest effect on the mystery material because Light Beam C will transfer energy directly to the mystery material molecules when Light Beam C is completely absorbed.
- C Light Beam A will have the greatest effect on the mystery material because as Light Beam A hits the surface, the energy from Light Beam A will be transferred to the material.
- D Light Beam C will have the greatest effect on the mystery material because Light Beam C will absorb more energy from the mystery material than the other beams of light.

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C35906	
Identifier	I-SCI-F-390_C35906	
Standards		SCI.6-8.MS-PS4-2

Shown in the diagram below, three different orange lasers (Light Beams A, B, and C) are pointed at a mystery material. The light behavior is indicated in the diagram.



Which of the following description **BEST** describes the behavior of the light?

- A Light Beam B is being completely reflected as evidenced by the bend in the beam and will transfer very little energy to the mystery material.
- B Light Beam A is being completely reflected and will have the greatest effect on the mystery material because Light Beam A will transfer all of the Light Beam A energy directly to the mystery material molecules as Light Beam A reflects off the mystery material.
- C Light Beam C is being completely absorbed by the mystery material but will not transfer energy to the materials because Light Beam C is a red light. Light Beam C is being completely absorbed by the mystery material but will not transfer energy to the materials because Light Beam C is a red light.
- D Light Beam B is being transmitted through the mystery material and is bent slightly by the material but will not transfer much energy to the mystery material.

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C67042
Identifier	I-SCI-F-390_C67042
Standards	SCI.6-8.MS-PS4-3

According to recent scientific studies, Wi-Fi technology plays a crucial role in transmitting digital information using radio wave pulses. Wi-Fi, short for Wireless Fidelity, enables electronic devices such as smartphones, laptops, and tablets to connect to the internet without the need for wired connections. The process involves the conversion of binary data, such as text, images, and videos, into radio wave pulses that travel through the air. These radio wave pulses carry the encoded information to a receiver, where it is decoded back into its original digital form. Through this transmission, designed technologies utilize waves to facilitate seamless communication between devices over short to medium distances.

What happens to binary data such as text, images, and videos during Wi-Fi transmission?

- A It is converted into electrical signals.
- B It is stored in a temporary memory.
- C It is converted into radio wave pulses.
- D It is deleted from the device.

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C37456
Identifier	I-SCI-F-390_C37456
Standards	SCI.6-8.MS-PS4-3

According to recent scientific studies, Wi-Fi technology plays a crucial role in transmitting digital information using radio wave pulses. Wi-Fi, short for Wireless Fidelity, enables electronic devices such as smartphones, laptops, and tablets to connect to the internet without the need for wired connections. The process involves the conversion of binary data, such as text, images, and videos, into radio wave pulses that travel through the air. These radio wave pulses carry the encoded information to a receiver, where it is decoded back into its original digital form. Through this transmission, designed technologies utilize waves to facilitate seamless communication between devices over short to medium distances.

What is the role of radio wave pulses in Wi-Fi technology?

- A To power electronic devices
- B To transmit digital information through the air
- C To cool down devices
- D To create images on a screen

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C04129
Identifier	I-SCI-F-390_C04129
Standards	SCI.6-8.MS-PS3-3



A team of students is testing different materials for a cooler to store ice. Which method would **BEST** help them determine which material minimizes heat transfer?

- A Measure the mass of the materials.
- B Place the same amount of ice in coolers made of each material and measure how long the ice takes to melt.
- C Weigh the ice before and after it is placed in each cooler.
- D Compare the temperature of the ice in each cooler every 10 minutes.

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C78805
Identifier	I-SCI-F-390_C78805
Standards	SCI.6-8.MS-PS3-3



Why would using a material with a high thermal conductivity be a poor choice for minimizing heat transfer in an insulated box?

- A It would increase the temperature inside the box.
- B It would trap heat inside the box.
- C It would allow heat to move through the material quickly.
- D It would stop all heat transfer completely.

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C36884
Identifier	I-SCI-F-390_C36884
Standards	SCI.6-8.MS-PS3-4

Sherri set up a science investigation to explore temperature change in objects made of different materials. She heated the four objects listed in the table below to the same temperature (50°C).

Sherri recorded which material heated to 50°C first, second, third, and fourth (last).

Material	Mass	Order in Which Samples Heated
Iron	5 kg	1 st to heat to 50° C
Wood	5 kg	2 nd to heat to 50° C
Glass	5 kg	3 rd to heat to 50° C
Aluminum	5 kg	4 th to heat to 50° C

Conductors are materials that transfer thermal energy quickly. Insulators are materials that transfer thermal energy slowly or do not transfer much thermal energy at all. Which statement **BEST** compares the matter of two of the objects?

- A Iron is a better insulator than wood.
- B Glass is a better insulator than aluminum.
- C Iron is a better conductor than glass.
- D Glass is a better conductor than wood.

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C34301
Identifier	I-SCI-F-390_C34301
Standards	SCI.6-8.MS-PS3-4

Sherri set up a science investigation to explore temperature change in objects made of different materials. She heated the four objects listed in the table below to the same temperature (50°C).

Sherri recorded which material heated to 50°C first, second, third, and fourth (last).

Material	Mass	Order in Which Samples Heated
Iron	5 kg	1 st to heat to 50° C
Wood	5 kg	2 nd to heat to 50° C
Glass	5 kg	3 rd to heat to 50° C
Aluminum	5 kg	4 th to heat to 50° C

Which statement **BEST** describes the relationship between the temperature and the kinetic energy of the molecules in each sample in this investigation?

- A As the temperature increases, the particles begin to move slower, decreasing the kinetic energy of the sample.
- B As the temperature increases, the particles begin to move faster, decreasing the kinetic energy of the sample
- C As the temperature increases, the particles begin to move slower, increasing the kinetic energy of the sample.
- D As the temperature increases, the particles begin to move faster, increasing the kinetic energy of the sample.

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C75080
Identifier	I-SCI-F-390_C75080
Standards	SCI.6-8.MS-PS3-5

A baseball coach is working with his young T-ball players on how to hit the ball off a tee. One of his players grabs a bat, steps up to the tee, and takes a mighty swing at the ball. The ball leaves the tee with a speed of 20 m/s.



Which statement regarding the transfer of energy in this situation is most correct?

- A Kinetic energy is transferred from the tee and ball to the bat.
- B Kinetic energy is transferred from the bat to the ball.
- C Potential energy is transferred from the bat to the player and then the ball.
- D There is no energy transfer in this situation.

Item	I-SCI-F-S000042-BA1-Q17_C21210
Identifier	I-SCI-F-S000042_C21210
Standards	SCI.9-12.HS-PS3-5

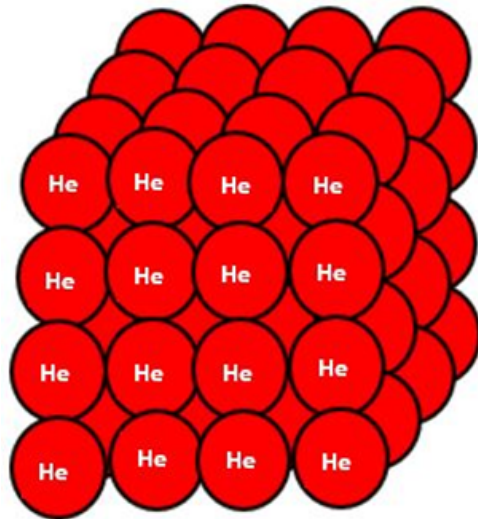
Which scenario **BEST** supports the claim that energy is transferred when kinetic energy changes?

- A A heated metal rod cooling down when placed in water
- B A stationary rock at the bottom of a hill
- C An apple hanging motionless from a tree
- D A light bulb shining steadily in a lamp

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C37601
Identifier	I-SCI-F-390_C37601
Standards	SCI.6-8.MS-PS1-4

Brittany is observing a model of helium, in which the molecules are being held under extreme pressure.

The model is shown below:



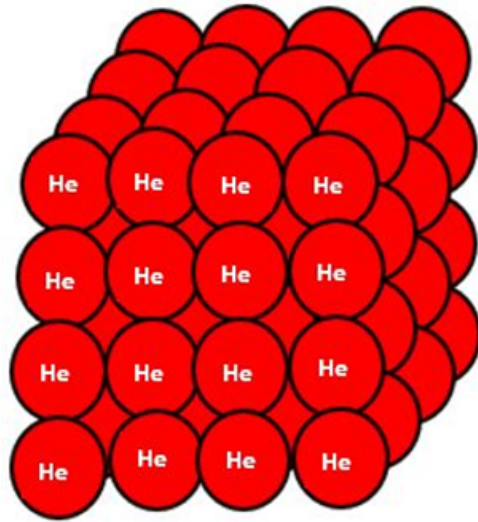
How would the model change if the pressure were reduced and thermal energy was added to the system?

- A Thermal energy would be converted to kinetic energy and the molecules would vibrate and separate.
- B The thermal energy would be absorbed by the helium molecule and the sample would get colder.
- C The helium would ignite as thermal energy added to this system would cause combustion.
- D The thermal energy would be converted to potential energy.

Item	I-SCI-F-390_FCPS_7th Grade Unit BA-2_SY2024-2025_Helm_C21058
Identifier	I-SCI-F-390_C21058
Standards	SCI.6-8.MS-PS1-4

Brittany is observing a model of helium, in which the molecules are being held under extreme pressure.

The model is shown below:



How does removing thermal energy affect the particles of a gas?

- A The particles move faster and spread out.
- B The particles move slower and come closer together.
- C The particles would stay in the same position.
- D The particles become larger.