3.2 Assessment

Match each term on the left with the best descriptor on the right. Each descriptor may be used only once.

Term	Descriptor
1. ____ crest	A. a particle of light or other type of electromagnetic radiation
2. ____ trough	B. the lowest point of a wave
3. ____ photon	C. the highest point of a wave
4. ____ amplitude	D. distance from trough to trough
5. ____ frequency	E. height of crest from the centre line of the wave
6. ____ wavelength	F. number of complete wavelengths that pass a point in one second

Circle the letter of the best answer for questions 7 to 17.

7. Which statement(s) about electromagnetic radiation is (are) true?

A. All types of electromagnetic radiation can travel through empty space.

B. All types of electromagnetic radiation are invisible as they travel through empty space.

C. All types of electromagnetic radiation travel at the same speed through empty space.

D. all of the above

8. Why is visible light used to model all types of electromagnetic radiation?

A. It is fairly easy and safe to study.

B. It becomes visible when it interacts with matter.

C. It has many properties in common with other types of electromagnetic radiation.

D. all of the above

9. The ray model of light depends on the fact that

A. light is made up of photons according to the particle model of light.

B. light is made up of waves according to the wave model of light.

C. light follows a straight-line path as it travels from a source.

D. light gets dimmer as it moves farther from a source.

10. A ray diagram

A. is a diagram that involves light rays.

B. can be used to predict the location, size, and shape of shadows.

C. pictures a light ray as a straight line with an arrow on one end.

D. all of the above

11. Which of the following is a way to measure a wavelength?

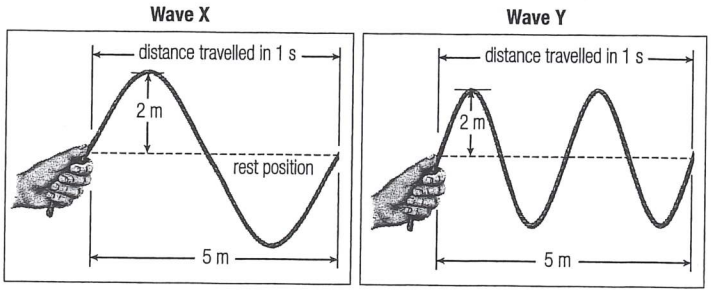
A. the distance from crest to crest

B. the distance from trough to centre line

C. the distance from the top of a crest to the bottom of a trough

D. the distance covered by one wave in 1 s

Use the following diagrams to answer questions 12 and 13.



12. Wave X has a longer wavelength than Wave Y.

A. The statement is supported by the diagrams.

B. The statement is not supported by the diagrams.

C. You cannot tell by looking at the diagrams.

13. Which statement is correct?

A. Both Wave X and Wave Y have the same amplitude.

B. Both Wave X and Wave Y have the same wavelength.

C. Both Wave X and Wave Y have the same frequency and wavelength.

D. Neither amplitude nor wavelength is the same for both Wave X and Wave Y.

14. Which colour of visible light has the shortest wavelength?

A. red

B. violet

C. yellow

D. orange

15. Which of the following statements about photons is true?

A. Each photon carries variable amounts of energy.

B. Photons carry more energy as the frequency of electromagnetic radiation decreases.

C. Photons carry more energy as the wavelength of electromagnetic energy decreases.

D. None of these statements is true.

16. Which of the following statements about blue and red light is true?

A. Photons of blue light carry more energy than photons of red light.

B. Blue light has a lower frequency and a shorter wavelength than red light.

C. Blue light has a higher frequency and a longer wavelength than red light.

D. Photons of blue light carry less energy than photons of red light.

17. Which models are needed to explain the properties of light?

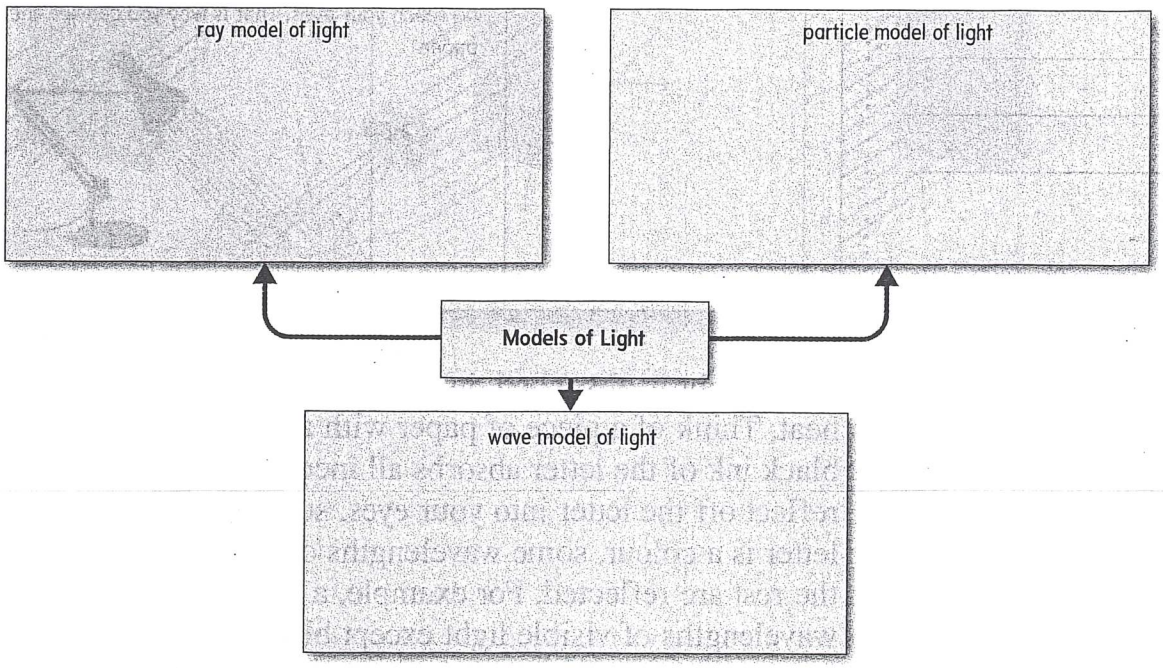
A. the particle model of light and the wave model of light

B. the particle model of light, the wave model of light, and the ray model of light

C. the particle model of light and the ray model of light

D. the wave model of light and the ray model of light

18. Complete the following concept map for the three models of visible light.



3.3 Assessment

Match each term on the left with the best descriptor on the right. Each descriptor may be used only once.

Term	Descriptor
1. ____ reflection	A. This occurs as light passes through an object.
2. ____ refraction	B. The process in which light changes direction as it travels from one medium into another.
3. ____ scattering	C. This occurs when light bounces off a surface and travels in another direction.
4. ____ absorption	D. Responsible for dark surfaces getting hot on sunny days.
5. ____ transmission	E. Reason why objects seen through translucent materials are blurry.

Circle the letter of the best answer for questions 6 to 14.

6. Which of the following objects will transmit the most light?

A. a clear glass window

B. a chunk of gold

C. a piece of wood

D. a white piece of paper

7. Which of the following objects will absorb the most light?

A. sunglasses

B. a black hockey puck

C. a white stone

D. a clear plastic bag

8. Which of the following objects is the least opaque?

A. a tent

B. a granite counter top

C. a plastic sandwich bag

D. a fabric shower curtain

9. A pencil in a glass half full of water appears broken at the water line due to which process?

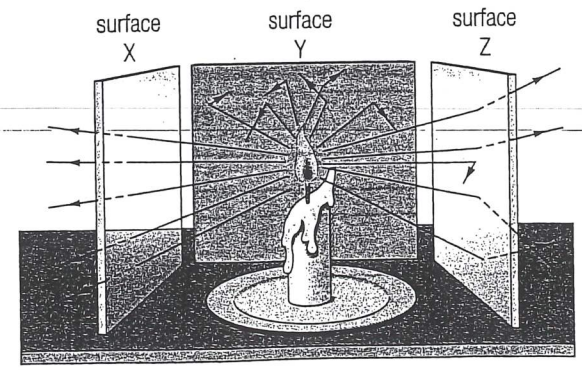
A. reflection

B. refraction

C. absorption

D. transmission

Use the following diagram to answer questions 10 to 13.



10. Which of the surfaces is transparent?

A. Surface X

B. Surface Y

C. Surface Z

D. Surface Y and Surface Z

11. Which of the surfaces transmits the fewest light rays?

A. Surface X

B. Surface Y

C. Surface Z

D. Surface X and Surface Z

12. Which of the surfaces is most likely made of frosted plastic or glass?

A. Surface X

B. Surface Y

C. Surface Z

D. Surface X and Surface Y

13. Which statement correctly describes Surface Y?

A. It transmits all light.

B. It scatters all light.

C. It absorbs all light.

D. It allows no light to pass through it.

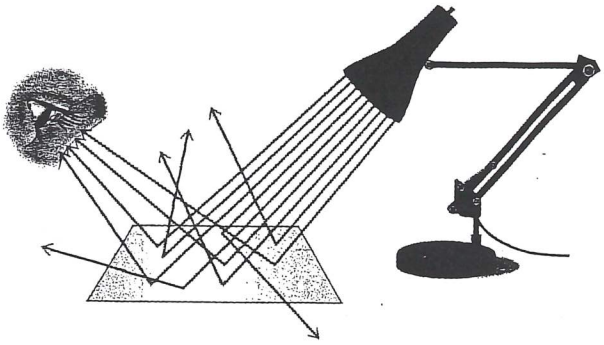
14. Which of the following processes is shown in the diagram on the right?

A. refraction

B. reflection

C. absorption

D. transmission



15. Complete a spider chart/map for the different ways that light interacts with different materials and surfaces. The graphic organizer has been partially completed to help guide you.