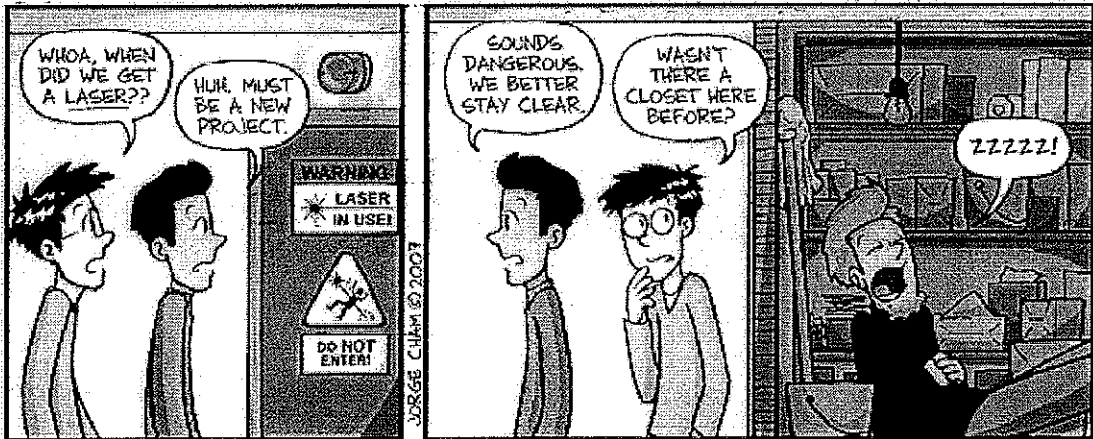


Science 8  
Optics Unit Test

Name: \_\_\_\_\_

1. You have the whole block to write the test.
2. You may use a 1 pg handwritten "cheat sheet" to assist you.
3. You may not use other notes or the textbook during the test.
4. You must write in black pen, blue pen or pencil.
5. Please answer all questions.



## Section 1: Fill in the Blank

Use the following words to fill in the blanks; each word will be used only once, some words will not be used at all:

Amplitude  
Astigmatism  
Cone  
Cornea  
Crest  
Far sighted  
Focus  
Frequency  
Hertz  
Incident ray  
Iris

Medium  
Microscope  
Near sighted  
Normal  
Opaque  
Optic nerve  
Photon  
Pupil  
Reflected ray  
Reflection  
Refracted ray

Refraction  
Retina  
Rod  
Sclera  
Telescope  
Translucent  
Transparent  
Trough  
Wave  
Wavelength

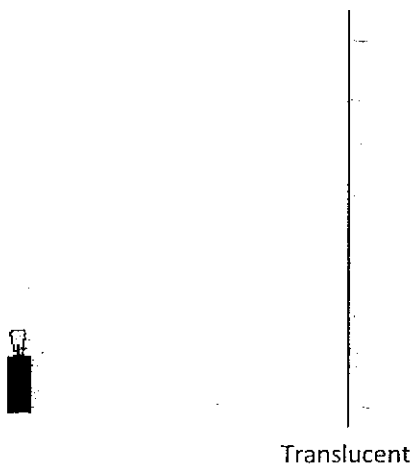
1. The distance in a wave from one crest to the next is that wave's \_\_\_\_\_.
2. A measure of frequency (cycles per second) is \_\_\_\_\_.
3. A sound wave travels through the air. The sound wave's \_\_\_\_\_ is the air.
4. A particle of light is a \_\_\_\_\_.
5. If some light passes through a material but is scattered that material is \_\_\_\_\_.
6. If no light passes through a material, that material is \_\_\_\_\_.
7. Before a ray of light hits a mirror it is called the \_\_\_\_\_.
8. The imaginary line at a right angle to the mirror is the \_\_\_\_\_.
9. If light changes speeds by moving from one medium into another it will bend, this process is called \_\_\_\_\_.
10. The part of the eye which has colour and which controls how much light enters the eye is called the \_\_\_\_\_.
11. If someone can see close objects but not distant objects they are \_\_\_\_\_.
12. The condition when someone's cornea is irregularly shaped is called \_\_\_\_\_.
13. A(n) \_\_\_\_\_ is used to see objects farther away than would normally be possible.
14. In the human eye we \_\_\_\_\_ by changing the shape of the lens, in a camera we do this by changing the distance between the lens and the recorder.

**Section 2 Diagrams:**

15. Draw and label a diagram of a wave showing (and labeling) the crest, trough, amplitude, wavelength, and rest position.

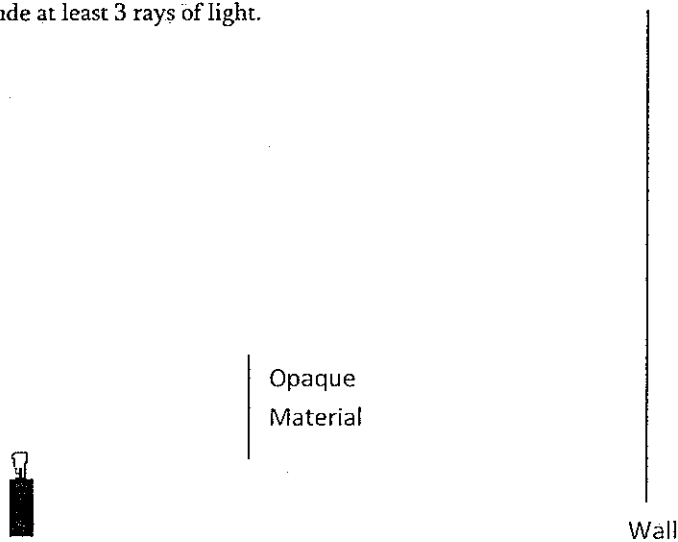
1/6

16. Complete the ray diagram of light leaving a candle and hitting a translucent material; include at least 3 rays of light.



1/2

17. Complete the ray diagram showing the formation of a shadow, be sure to label the area on the wall where the shadow occurs; include at least 3 rays of light.



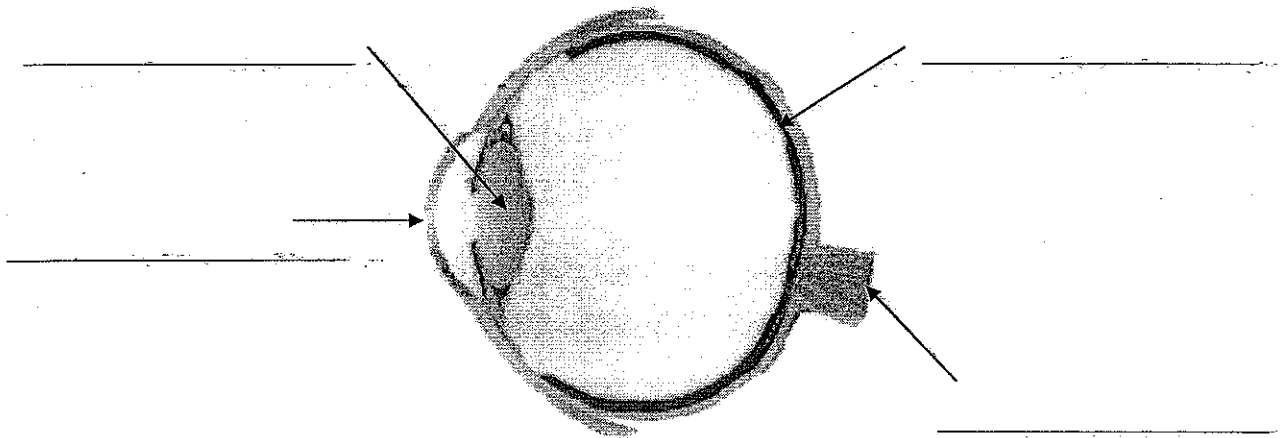
1/2

18. Draw a ray diagram showing light refracting as it moves from air into water, be sure to include and label the incident ray, the refracted ray, the normal and the angle of refraction. Note: light moves slower in water than in air.



5

19. Label the diagram of an eye below using the terms: optic nerve, cornea, lens, and retina.



20. Draw and label a convex and a concave lens.

4



2

### Section 3 Matching and Short Answer:

21. Match the lens with the type of image it produces (2 spaces will be left blank)

A: EXAMPLE	Upright, smaller	
B: Concave lens	Upright, same size	
C: Convex lens (object between lens and focal point)	Upright, enlarged	
D: Convex lens (object between one and two focal lengths from lens)	EXAMPLE	A
E: Convex lens (object more than two focal lengths from lens)	Inverted, smaller	
	Inverted, same size	
	Inverted, enlarged	

/4

22. List a common use for each type of mirror

Plane Mirror	
Concave Mirror	
Convex Mirror	

/3

23. List three devices which extend human vision (i.e. things to see in ways they could not with the naked eye).


/3

24. List the eight 8 parts of the electromagnetic spectrum in order from longest wavelength to shortest, and give a common use for each (the first one has been done for you.)

Type of electromagnetic radiation	Use
Radio waves	AM/FM Radio

25. What do waves transport?

/15

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26. A wave has frequency of 2 Hz, how many wave crests will pass in 10 seconds?

/1

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/1

27. 30 waves pass under a boat in 60 seconds, what is the frequency of the waves in Hertz?

1

28. A wave has amplitude of 5 meters, what is the difference in height between its crest and trough?

1

29. If speed stays the same but wavelength is increased, how will a wave's frequency change?

1

30. John and Susan sing a song at the same volume. Susan has a higher frequency voice than John. Whose voice is transmitting more energy?

1

31. Finish the Law of Reflection below:

The angle of incidence is equal to the \_\_\_\_\_

1

32. When all the colours of light are mixed together, what is the resulting colour?

1

33. What colour of visible light has the longest wavelength?

1

34. Explain what happens when white light strikes a red shirt (be sure to use the words reflect and absorb.)

2

35. What kind of vision are cone cells used for?

1

36. How does the lens in the human eye change when we focus on distant objects?

1

37. What kind of lens is used to correct the vision of near sighted people?

1

38. Explain why humans have "blind spots."

2

**Section 4: Bonus, attempt only after all other questions have been completed.**

39: If you became totally blind, what changes would you have to make in your life? Would there be activities you enjoy which you wouldn't be able to do anymore?

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