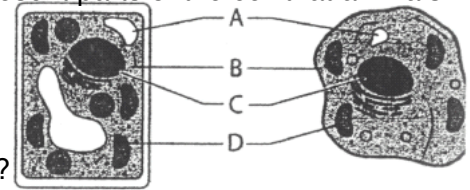


- 1 The structures labeled A, B, C, and D in the diagram above represent parts of the cell that animals



and plants have in common. Which are the structures labeled D?

- A nuclei
- B vacuoles
- C ribosomes
- D mitochondria

- 2 Cellular respiration occurs in nearly all living cells. It is essential to life because it

- A provides oxygen.
- B removes wastes.
- C stores energy.
- D releases energy.

- 3 Which of the following occurs in all living cells?

- A Photosynthesis makes sugar molecules.
- B Enzymes speed up chemical reactions.
- C Respiration produces oxygen and water.
- D Fats and oils combine to form lipids.

- 4 Which structure is found in a plant cell, but not in an animal cell?

- A nucleus
- B cell membrane
- C chloroplast
- D cytoplasm

- 5 What is one difference between plant and animal cells?

- A Only plant cells have cell walls.
- B Only animal cells have cell membranes.
- C Only animal cells have a nucleus.
- D Only plant cells have vacuoles.

6 An animal cell contains organelles called

- A chloroplasts.
- B mitochondria.
- C chlorophyll.
- D cell walls.

7 Which of the following cell structures directs all of the cell's activities?

- A mitochondrion
- B ribosome
- C Golgi body
- D nucleus

8 Which of the following are found in the nucleus of a cell?

- A chloroplasts
- B chromosomes
- C Golgi apparatus
- D mitochondria

9 Before cell division occurs, the cell's genetic material is duplicated. Where does this process occur?

- A along the cell wall
- B in Golgi apparatus
- C in the nucleus
- D outside the cell membrane

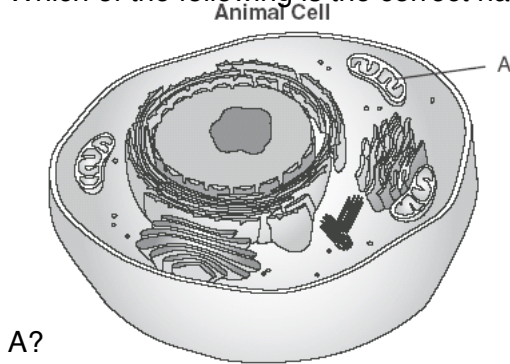
10 Chloroplasts : photosynthesis :: mitochondria : ?

- A replication
- B transpiration
- C protein synthesis
- D cellular respiration

11 What is the function of a chloroplast?

- A It protects and supports the cell.
- B It controls what enters and leaves the cell.
- C It packages and transports proteins.
- D It captures energy and uses it to make food.

12 Which of the following is the correct name and function of structure



- A nucleolus; ribosome assembly
- B mitochondrion; converts energy stored in food into compounds the cell can use
- C mitochondrion; regulates the movement of materials into and out of the cell
- D nucleolus; converts energy stored in food into compounds the cell can use

13 Both plant cells and animal cells contain mitochondria. What process, therefore, happens in both types of cells?

- A digestion
- B photosynthesis
- C cellular respiration
- D transpiration

14 In the mitochondria of cells, oxygen is used to

- A make sugar from carbon dioxide.
- B prepare cells for mitosis.
- C get energy from sugar.
- D make copies of DNA.

15 Photosynthesis occurs in

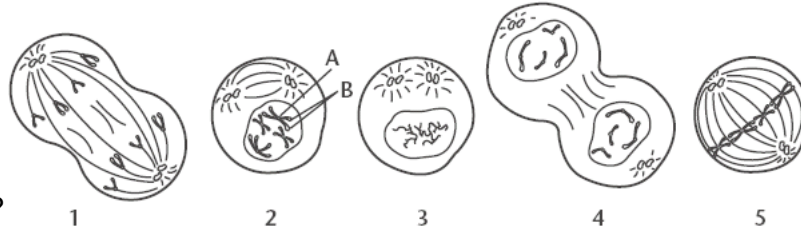
- A mitochondria in plant cells.
- B mitochondria in animal cells.
- C chloroplasts in plant cells.
- D chloroplasts in animal cells.

16 Mitosis is part of which cell process?

- A cell respiration
- B cell division
- C cell cycle
- D protein synthesis

17 The diagrams show the process by which a cell's nucleus divides to form two identical nuclei. What is

Cell Division

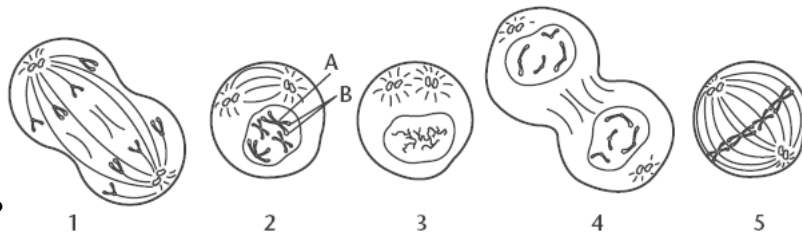


this process called?

- A mitosis
- B meiosis
- C interphase
- D sexual reproduction

18 The diagram does not show the stages of the process in order. Which number corresponds with

Cell Division

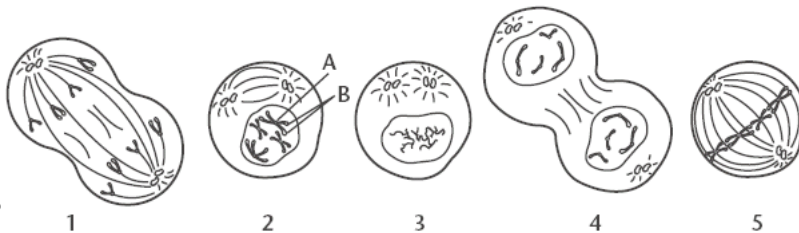


anaphase?

- A 1
- B 2
- C 3
- D 4

19 Which number in the diagram corresponds to the last stage of the

Cell Division



process?

- A 2
- B 3
- C 4
- D 5

- 20 At the end of mitosis, chromosomes provide each daughter cell with
- A half the parent's genetic material.
 - B an exact copy of the parent's genetic material.
 - C twice the amount of the parent's genetic material.
 - D four times the amount of the parent's genetic material.
- 21 As a result of mitosis in a human body cell, each of the two nuclei formed has which of the following?
- A 12 chromosomes
 - B 92 chromosomes
 - C 23 chromosomes
 - D 46 chromosomes
- 22 A sunflower and an amoeba are both living organisms. How is the structure of a sunflower different from the structure of an amoeba?
- A The cells in the sunflower are specialized.
 - B The cells in the sunflower do not work together.
 - C The cells in the sunflower are smaller.
 - D The cells in the sunflower do not form organs.
- 23 In multicellular organisms, cells specialize in performing certain functions. Cells that are packed with endoplasmic reticula, Golgi bodies, and ribosomes probably have which of the following functions?
- A covering and protecting
 - B digestion and waste removal
 - C forming support structures
 - D producing, packaging, and exporting proteins
- 24 The process by which cells become specialized is known as
- A replication.
 - B endocytosis.
 - C homeostasis.
 - D differentiation.
- 25 Which is the function of a chromosome?

- A causes an animal cell to pinch into two cells
- B forms a cell plate between two plant cells
- C holds a cell's centromeres together
- D carries a cell's genetic material to new cells

26 Where in a cell is DNA located?

- A in chloroplasts and mitochondria
- B in ribosomes on endoplasmic reticula
- C in strands of chromatin in the nucleus
- D in vacuoles and cytoplasm

27 A cell must have a complete set of DNA because DNA

- A contains the cell's genetic material.
- B converts sunlight to sugar in photosynthesis.
- C packages and transfers proteins.
- D produces energy from stored food.

28 The pupil controls how much light enters the eye. Which of the following controls the size of the pupil?

- A retina
- B iris
- C cornea
- D lens

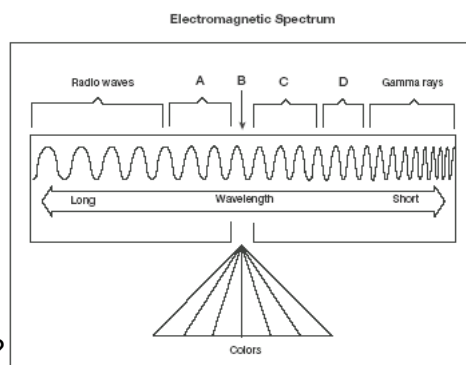
29 In a normal eye, the focal length of the lens is equal to the distance from the lens to the retina. The objects you see are at a greater distance. Therefore, you can conclude that the eye produces

- A images that are right side up.
- B virtual images.
- C unfocused images.
- D real images.

30 In a person who is nearsighted, the lens produces an image located

- A directly on the retina.
- B behind the retina.
- C in front of the retina.
- D inside the lens.

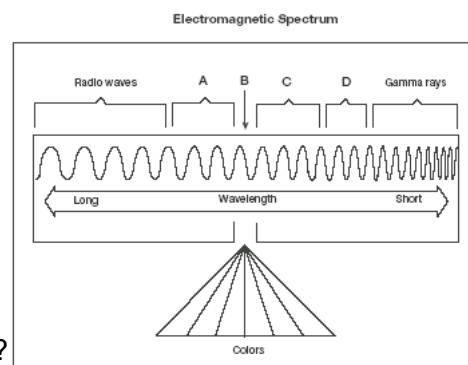
31



Visible light is represented by which letter?

- A A
- B B
- C C
- D D

32

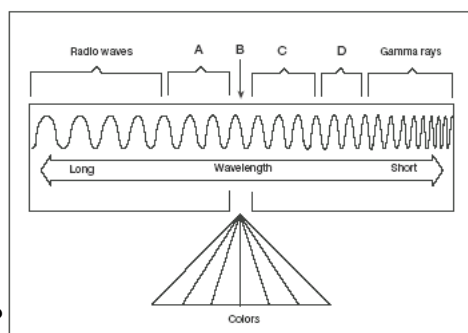


Which of the following has a lower frequency than visible light?

- A X-rays
- B radio waves
- C gamma rays
- D ultraviolet rays

33 According to the diagram, which type of electromagnetic radiation has the longest

wavelength?



- A radio
- B gamma
- C infrared
- D ultraviolet

- 34 The color of an opaque object is determined by the wavelengths of light the object
- A transmits.
 - B diffracts.
 - C refracts.
 - D reflects.
- 35 Before you can see an object, the object must
- A change the frequency of light.
 - B produce cone cells.
 - C reflect or emit light.
 - D refract light.
- 36 What must occur in order for you to see?
- A Light must be refracted by a medium.
 - B Light must enter your eye.
 - C Your eye must diffract light.
 - D Your eye must emit light.
- 37 Which statement is *true* of light passing through a single medium?
- A It will separate into different colors.
 - B It will slow down and eventually stop.
 - C It will travel in a curved path.
 - D It will travel in a straight line.
- 38 If you place a pencil halfway into a glass of water, the pencil will appear bent. Why does this occur?
- A The density of the water causes the pencil to bend.
 - B Some light is reflected as it enters the water from the air.
 - C Light bends as it passes between air and water.
 - D Light passes through the glass in a straight line.

- 39 A material's index of refraction is a measure of how much a ray of light bends when it enters that material. The higher the index of refraction of a medium, the more the medium bends light. Light *does not* bend when it travels between which two materials listed in the table?

Refraction of Light	
Medium	Index of Refraction
Air	1.00
Water	1.33
Corn oil	1.47
Glycerol	1.47
Glass	1.52
Diamond	2.42

- A air and water
 - B corn oil and water
 - C diamond and glass
 - D corn oil and glycerol
- 40 How do a microscope's lenses work?
- A Each concave lens bends light to make the object appear larger.
 - B Each convex lens bends light to make the object appear larger.
 - C Each convex lens bends light to make the object become larger.
 - D The reflection of each concave lens makes the object appear larger.
- 41 Which part of the eye refracts and focuses light?
- A cornea
 - B retina
 - C pupil
 - D iris
- 42 What type of image does a camera lens produce?
- A objective
 - B real
 - C reflected
 - D virtual
- 43 Which are the primary colors of visible light?

- A red, green, blue
- B pink, aqua, gold
- C black, white, brown
- D cyan, yellow, magenta

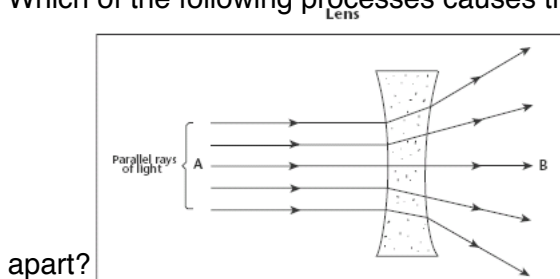
44 Eyes have specialized cells that perform different functions. What do the cells known as cones enable you to see?

- A colors
- B distances
- C black and white
- D brightness and dimness

45 What happens when white light passes through a prism?

- A It is absorbed, making the prism appear black.
- B It is reflected and remains white.
- C It is scattered, producing a fuzzy image.
- D It is separated into the colors of the spectrum.

46 Which of the following processes causes the light rays in the diagram to spread

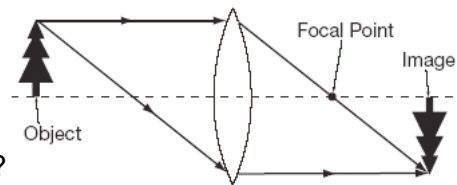


- A deflection
- B diffraction
- C reflection
- D refraction

47 When a wave hits a surface through which it cannot pass, it bounces back. This interaction with the surface is called

- A interference.
- B diffraction.
- C reflection.
- D refraction.

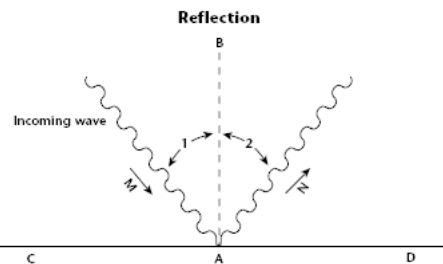
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What type of image is being produced by the lens?

- A real
- B real
- C virtual
- D enlarged

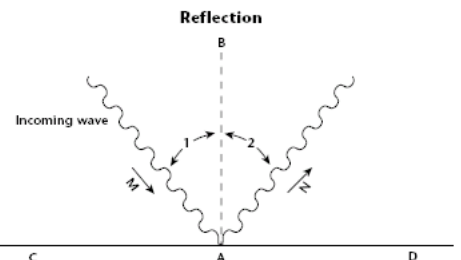
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What is the name of angle 1?

- A angle of incidence
- B angle of reflection
- C focal length
- D index of refraction

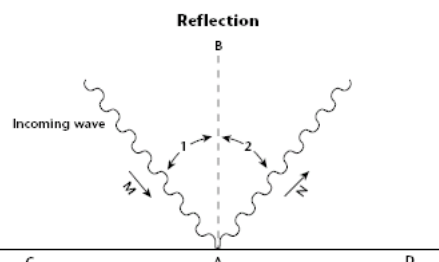
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What principle explains the relationship between angles 1 and 2?

- A law of reflection
- B law of refraction
- C law of relativity
- D law of virtual images

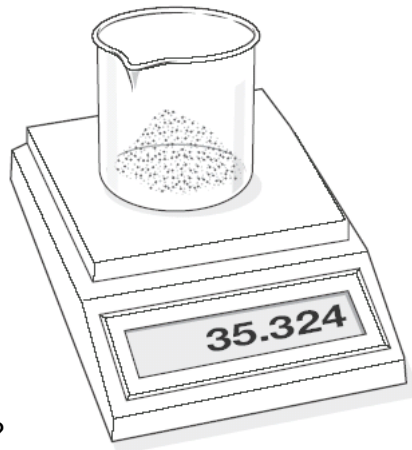
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What do you know about angles 1 and 2?

- A Angle 1 is smaller than angle 2.
- B Angle 1 is larger than angle 2.
- C Angle 1 and angle 2 are the same size.
- D Angle 1 is 30° , and angle 2 is 60° .

52



What is this instrument measuring?

- A the mass of the material in the beaker
 - B the volume of the material in the beaker
 - C the mass of the material and the beaker
 - D the volume of the material and the beaker
- 53 Derrick wants to conduct an investigation to determine which liquid clothes detergent cleans best. What tools will he need to conduct his investigation?
- A beakers, graduated cylinders, stirring rods, and safety goggles
 - B calculators, petri dishes, and test tubes
 - C computer probes, spring scales, and timing devices
 - D microscopes, thermometers, and balances
- 54 What would a graduated cylinder be used to measure?
- A time
 - B length
 - C mass
 - D volume

- 55 The table shows approximate amounts of gases inhaled and exhaled by humans. What conclusion can you draw from the data?

Gases in Inhaled and Exhaled Air		
Gas	Inhaled Air	Exhaled Air
Nitrogen	78%	78%
Oxygen	21%	16%
Carbon dioxide	0.03%	4%

- A Inhaled air contains less oxygen and more carbon dioxide than exhaled air.
 B Inhaled air contains more oxygen and less carbon dioxide than exhaled air.
 C Inhaled air contains more oxygen and more carbon dioxide than exhaled air.
 D Inhaled air contains the same amount of oxygen and carbon dioxide as exhaled air.
- 56 After mitosis and cytokinesis, each daughter cell ends up with a single set of chromosomes identical to the set that was contained in the parent cell. That fact tells us that

- A spindle fibers form when the nuclear envelope breaks.
 B chromosomes form from chromatin in the nucleus.
 C the chromosome number doubled during these processes.
 D spindle fibers attach to chromosomes at their centromeres.

- 57 From the data in the table, a student concluded that female alligators were most likely to hatch at cooler temperatures. Her conclusion can be evaluated as

Incubation Temperature	Male Eggs Hatched	Female Eggs Hatched
25.2C	0	95
28.4C	8	42
30.6C	51	15
32.8C	112	0

- A valid because the number of female alligators that hatched increased with increasing incubation temperature.
 B valid because the number of female alligators that hatched increased with decreasing incubation temperature.
 C invalid because at 32.8C, male alligators hatched more often than female alligators.
 D invalid because at 25.2C, female alligators hatched more often than male alligators.
- 58 Which of the following should you remember when you present your interpretation of lab results?
- A Never use a pie chart to present your data.
 B Always be prepared to answer questions about your decisions.
 C Leave out the data that does not support your conclusion.
 D Leave out any wrong paths that forced you to redefine your hypothesis.

- 59 Which of the following is *not* an important rule for communicating in science?
- A Take notes as you work, including any changes you make in your experiment.
 - B Distinguish between your observations and your inferences.
 - C Be prepared to answer questions about the choices you make.
 - D Data that do not support a hypothesis may be adjusted, if you know the hypothesis is correct.
- 60 Natasha is writing a lab report for an experiment she performed in class. She writes, "Our results show that cells divide faster at higher temperatures than at lower temperatures." Which section of the lab report should contain this sentence?
- A hypothesis
 - B list of materials
 - C conclusion
 - D observations