

★ 8th Grade Science Test ★

CAPTURING & CONVERTING ENERGY

1. Which device converts sunlight into electrical energy?
 - A. Solar panel
 - B. Battery
 - C. Wind turbine
 - D. Generator

2. A hydroelectric dam mainly converts:
 - A. Light energy into heat
 - B. Chemical energy into motion
 - C. Water's kinetic energy into electricity
 - D. Sound energy into heat

3. A wind turbine blade spins because of:
 - A. Gravity changes
 - B. Water pressure
 - C. Moving air
 - D. Vibrating particles

4. Which type of energy is captured from ocean waves?
 - A. Chemical
 - B. Nuclear
 - C. Mechanical
 - D. Electrical

5. Which condition increases the energy captured by a turbine?
 - A. Weak winds
 - B. Steady, strong winds
 - C. No wind
 - D. Random airflow

SOUND WAVES

6. Sound travels fastest in:
 - A. Air
 - B. Metal
 - C. Outer space
 - D. A vacuum

7. What property determines the pitch of a sound?
 - A. Amplitude
 - B. Wavelength
 - C. Frequency
 - D. Speed

8. What must occur for sound to be produced?
 - A. Heat transfer
 - B. Vibrations
 - C. Radiation
 - D. Reflection

9. A louder sound has a greater:
 - A. Frequency
 - B. Speed
 - C. Amplitude
 - D. Wavelength

10. Sound cannot travel through:
 - A. Solids
 - B. Liquids
 - C. Gases
 - D. Empty space



LIGHT WAVES

11. Light bending as it enters a new medium is called:
 - A. Reflection
 - B. Refraction
 - C. Absorption
 - D. Diffraction

12. Light traveling in a straight line explains why:
 - A. Prisms form rainbows
 - B. Shadows form
 - C. Light heats objects
 - D. Metal shines

13. Which material is translucent?
 - A. Aluminum foil
 - B. Wax paper
 - C. Clear window
 - D. Wood

14. Which color has the longest wavelength?
 - A. Red
 - B. Blue
 - C. Green
 - D. Violet

15. White light splitting into colors in a prism demonstrates:
 - A. Absorption
 - B. Transmission
 - C. Different wavelengths refract differently
 - D. Reflection



ELECTROMAGNETIC WAVES

16. Unlike sound waves, electromagnetic waves:
 - A. Require matter
 - B. Travel only through gases
 - C. Can travel through space
 - D. Move slower than sound

17. Which EM wave has the most energy?
 - A. Radio
 - B. Microwave
 - C. Infrared
 - D. Gamma

18. Which EM wave is used in TV remote controls?
 - A. Infrared
 - B. Ultraviolet
 - C. Microwaves
 - D. Radio

19. Which type of EM wave is blocked by sunscreen?
 - A. Radio
 - B. UV
 - C. Microwave
 - D. Visible light

20. Which EM wave is used in medical imaging?
 - A. Radio
 - B. X-rays
 - C. Microwaves
 - D. Infrared



WAVELENGTH

21. Wavelength is the distance from:
- A. Crest to crest
 - B. Amplitude to trough
 - C. Source to receiver
 - D. Start to end
22. A wave with a low frequency has a:
- A. Short wavelength
 - B. Long wavelength
 - C. High amplitude
 - D. Low amplitude
23. If wavelength decreases, frequency:
- A. Decreases
 - B. Stays the same
 - C. Increases
 - D. Disappears
24. Which has the shortest wavelength?
- A. Infrared
 - B. Radio
 - C. Microwaves
 - D. Gamma rays
25. Wavelength and energy have what relationship?
- A. Longer wavelength = higher energy
 - B. Shorter wavelength = lower energy
 - C. Shorter wavelength = higher energy
 - D. They are unrelated



GENES / CHROMOSOMES / DNA

26. DNA is found mainly in the:
- A. Nucleus
 - B. Vacuole
 - C. Golgi body
 - D. Ribosome
27. Genes are segments of:
- A. RNA
 - B. Cytoplasm
 - C. DNA
 - D. Protein
28. Chromosomes are made of:
- A. Fat molecules
 - B. Water
 - C. DNA wrapped around proteins
 - D. Sugars
29. A human body cell contains:
- A. 23 pairs of chromosomes
 - B. 12 pairs of chromosomes
 - C. 10 chromosomes
 - D. 1 chromosome
30. DNA contains instructions to build:
- A. Minerals
 - B. Proteins
 - C. Carbohydrates
 - D. Lipids

MITOSIS vs MEIOSIS

31. Mitosis produces:
- A. 2 identical cells
 - B. 4 unique cells
 - C. Sex cells only
 - D. No cells
32. Meiosis results in:
- A. Growth
 - B. Gametes
 - C. Tissue repair
 - D. Cloning
33. Which process increases genetic diversity?
- A. Mitosis
 - B. Meiosis
 - C. Binary fission
 - D. Budding
34. Mitosis is important for:
- A. Producing gametes
 - B. Creating variation
 - C. Repairing damaged tissue
 - D. Performing photosynthesis
35. Crossing over occurs during:
- A. Mitosis
 - B. Fertilization
 - C. Meiosis
 - D. Asexual reproduction



SEXUAL vs ASEXUAL REPRODUCTION

36. Asexual reproduction produces:
- A. Genetically identical offspring
 - B. High variation
 - C. Offspring from two parents
 - D. Slow reproduction
37. A disadvantage of sexual reproduction is:
- A. Requires two parents
 - B. Low variation
 - C. No energy required
 - D. Occurs rarely
38. A benefit of sexual reproduction is:
- A. Offspring are clones
 - B. Increased genetic variation
 - C. Faster reproduction
 - D. Less energy needed
39. Which is an example of asexual reproduction?
- A. Dog breeding
 - B. Plant pollination
 - C. Bacteria dividing
 - D. Frog mating
40. Which is a benefit of asexual reproduction?
- A. More variation
 - B. High survival of all offspring
 - C. Fast reproduction
 - D. Offspring from two parents



MUTATIONS (PROS & CONS)

41. A mutation is a change in:
- A. DNA
 - B. Blood flow
 - C. Protein shape
 - D. Cell wall strength
42. Which mutation effect is harmful?
- A. A trait that increases survival
 - B. A disease-causing change
 - C. A trait that provides camouflage
 - D. Increased variation
43. Which mutation effect is beneficial?
- A. Weaker immune system
 - B. Decreased variation
 - C. Better resistance to diseases
 - D. Cell death
44. Mutations can create more:
- A. Heat energy
 - B. Water molecules
 - C. Variations
 - D. Food
45. A mutation that changes a protein may change a(n):
- A. Trait
 - B. Season
 - C. Sound wave
 - D. Habitat



MENDELIAN GENETICS

46. A recessive allele is represented by a:
- A. Lowercase letter
 - B. Capital letter
 - C. Number
 - D. Symbol
47. If **T = tall** and **t = short**, which is **homozygous recessive**?
- A. TT
 - B. Tt
 - C. tt
 - D. tT
48. A Punnett square predicts:
- A. Guaranteed traits
 - B. Possible traits
 - C. Environmental effects
 - D. Protein production
49. Two heterozygous parents ($Rr \times Rr$) produce a recessive phenotype:
- A. 0%
 - B. 25%
 - C. 50%
 - D. 100%
50. An inherited trait is one that:
- A. Is learned
 - B. Comes from parents
 - C. Occurs only in adults
 - D. Cannot change



NATURAL SELECTION & EVOLUTION

51. Natural selection causes organisms with helpful traits to:
- A. Reproduce more
 - B. Disappear
 - C. Stop changing
 - D. Become identical
52. Finches developing different beak shapes is evidence of:
- A. Mitosis
 - B. Natural selection
 - C. Chemical digestion
 - D. Weathering
53. If fast rabbits escape predators, generations later the rabbit population will:
- A. Become slower
 - B. Become faster
 - C. Stop reproducing
 - D. All become identical
54. Darwin concluded species:
- A. Never change
 - B. Change over long periods
 - C. Change instantly
 - D. Appear randomly
55. The formation of a new species is called:
- A. Meiosis
 - B. Speciation
 - C. Radiation
 - D. Growth



ARTIFICIAL SELECTION & GENETIC ENGINEERING

56. Artificial selection is when:
- A. Nature chooses traits
 - B. Humans choose traits
 - C. Mutations occur
 - D. Meiosis slows
57. Genetic engineering allows scientists to:
- A. Turn DNA off
 - B. Change genes directly
 - C. Stop reproduction
 - D. Increase mutations
58. A **pro** of artificial selection is:
- A. Guaranteed survival
 - B. Creating desirable traits
 - C. Always perfect health
 - D. Unlimited variation
59. A **con** of genetic engineering is:
- A. Improved crop yield
 - B. Possible unknown effects
 - C. Stronger plants
 - D. Healthier animals
60. GM crops may be helpful because they can:
- A. Pollute water
 - B. Grow slower
 - C. Resist pests
 - D. Reduce yield