

# ⭐ 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