

Question 1: A small robot needs to move forward when it sees a red ball. Which programming concept tells the robot what to do only when it sees red?

- a) Loop
- b) Condition
- c) Variable
- d) Comment

Question 2: Which simple machine is a seesaw (teeter-totter) an example of?

- a) Wheel and axle
- b) Lever
- c) Pulley
- d) Inclined plane

Question 3: An engineering team must design a bridge toy that holds maximum weight using popsicle sticks and glue. Which step is part of the engineering design process?

- a) Ignoring the problem and guessing
- b) Testing prototypes and improving the design
- c) Throwing away all materials before starting
- d) Celebrating before building

Question 4: What part of an electric circuit stores electrical energy and can release it later?

- a) Resistor
- b) LED
- c) Capacitor
- d) Switch

Question 5: Which of these is the correct order of steps in a simple scientific experiment?

- a) Make a hypothesis → test → observe → conclude
- b) Test → conclude → observe → make hypothesis
- c) Observe → throw data → guess → celebrate
- d) Conclude → test → observe → hypothesis

Question 6: A classroom robot follows a line on the floor using a sensor. That sensor that detects black line versus white floor is called a —

- a) Light / colour or line sensor
- b) Sound sensor
- c) Water sensor
- d) Temperature sensor

Question 7: Which compound machine combines two or more simple machines?

- a) A single pulley only
- b) A rope
- c) A hammer (simple lever)
- d) A wheelbarrow

Question 8: A group must make a wind-powered toy car. Which energy source will the toy use?

- a) Chemical energy
- b) Wind (renewable kinetic energy)
- c) Nuclear energy
- d) Food energy for the car

Question 9: Which of these is needed to complete an electrical circuit so current flows?

- a) Open switch
- b) Broken wire
- c) Closed loop with power source and load
- d) Air gap in circuit

Question 10: If a scientist repeats an experiment many times and gets similar results, this shows the result is —

- a) Random
- b) Reliable / reproducible
- c) Wrong always
- d) Useless

Question 11: A simple robot uses motors to move its wheels. What are the robot parts that actually make movement happen called?

- a) Actuators (motors are actuators)
- b) Sensors
- c) IDE (program editor)
- d) Wi-Fi router

Question 12: Which simple machine helps raise heavy things by changing the direction of force (for example a flag on a pole)?

- a) Lever
- b) Screw
- c) Wedge
- d) Pulley

Question 13: An experiment compares plant growth in soil A and soil B keeping light and water same. The factor changed is called the —

- a) Dependent variable
- b) Independent variable
- c) Constant
- d) Conclusion

Question 14: Which material is a good conductor of electricity?

- a) Plastic
- b) Rubber
- c) Copper
- d) Wood

Question 15: An engineer wants to make a playground slide safer. Which change is an example of engineering to improve safety?

- a) Making the slide steeper and taller without guardrails
- b) Adding handrails and a gentle slope to reduce speed
- c) Removing the steps to the slide
- d) Painting it with slippery paint

Question 16: Which of these is a programming loop that repeats actions several times?

- a) If statement
- b) For or while loop
- c) Comment
- d) Variable name

Question 17: A child builds a lever and uses a longer arm to lift a heavy rock with less force. What principle is the child using?

- a) Increasing input force always
- b) Mechanical advantage of a lever
- c) Magic
- d) Electricity

Question 18: Which unit is used to measure electric current?

- a) Volts
- b) Amperes
- c) Meters
- d) Joules

Question 19: A team designs a shelter that uses recycled plastic bottles as bricks. This idea is an example of —

- a) Environmental engineering and sustainable design
- b) Wasteful engineering
- c) Making new plastic from trees
- d) Burning plastic to make heat

Question 20: Which device in a circuit turns the light on or off?

- a) Resistor
- b) Switch
- c) Capacitor
- d) Motor

Question 21: Which simple machine is a ramp used to move heavy boxes up to a truck?

- a) Wedge
- b) Inclined plane
- c) Pulley
- d) Gear

Question 22: A scientist keeps temperature, light and water the same for two plant groups but gives fertilizer to only one. The group with fertilizer grows taller. The fertilizer is the —

- a) Dependent variable (height)
- b) Independent variable (treatment)
- c) Control group
- d) Error

Question 23: Which of the following is an example of a compound machine?

- a) Scissors
- b) Screwdriver
- c) Pencil
- d) Rock

Question 24: You build a circuit with a bulb, battery and wire. The bulb glows dimly. Which action would make it brighter (assuming safe small battery)?

- a) Add more resistors in series
- b) Use a battery with higher voltage or reduce resistance
- c) Make the wires longer and thin
- d) Put water in the battery holder

Question 25: Which part of a robot stores the program and data (like a small brain memory)?

- a) Storage / memory
- b) Wheels
- c) Sensor only
- d) Screws

Question 26: Which simple machine is used to split or cut things?

- a) Wedge
- b) Wheel and axle
- c) Pulley
- d) Lever

Question 27: A bridge model collapses underweight. Which shape is often used because it is strong in structures?

- a) Circle
- b) Triangle
- c) Square only
- d) Freeform sponge

Question 28: Which of these materials is an insulator?

- a) Aluminium
- b) Copper
- c) Glass or rubber
- d) Silver

Question 29: A scientist asks, “Does the colour of light affect plant growth?” She shines red light on one group and white light on another while keeping other factors same. What should she record?

- a) Plant height, leaf number, and note observations
- b) Only the colour of pots
- c) The brand of lights only
- d) The weather in another city

Question 30: Which device converts chemical energy into electrical energy?

- a) Motor
- b) Battery
- c) Switch
- d) LED

Question 31: A simple robot needs to avoid bumping into walls. Which programming tool helps it repeat “check sensor and move” many times?

- a) Loop
- b) Comment
- c) Variable name only
- d) Print statement

Question 32: Which machine makes work easier by changing magnitude or direction of the force?

- a) Simple machine
- b) Only heavy machines
- c) Invisible machines
- d) None

Question 33: In an experiment to test which soap cleans better, students use the same stain, same water, and same time for each soap.

These unchanged aspects are —

- a) Variables
- b) Constants
- c) Outcomes
- d) Hypotheses

Question 34: Which part of a circuit reduces current and protects other parts?

- a) Resistor
- b) Switch
- c) Battery
- d) Wire connector

Question 35: A team needs to make a toy that moves using little electricity. They decide to use a small motor and gears to increase torque.

What do gears do?

- a) Gears change speed and torque between motor and wheel
- b) Gears store energy like batteries
- c) Gears measure temperature
- d) Gears are only decorations

Question 36: Which is an important safety rule when building electrical circuits in class?

- a) Use wet hands to handle batteries always
- b) Use the right low-voltage battery and never short-circuit it
- c) Connect many batteries directly across wires with no load forever
- d) Plug high-voltage mains directly into classroom circuit

Question 37: A student uses a parachute to test how fabric area affects fall speed. He repeats the drop many times and records time taken. Which scientific skill is he practicing?

- a) Making and testing a hypothesis and collecting data
- b) Making a sandwich
- c) Playing a game only
- d) Telling stories

Question 38: Which environmental engineering idea helps reduce flooding by letting rain soak into the ground?

- a) Building lots of concrete only
- b) Creating green spaces, permeable pavements and rain gardens
- c) Removing trees from parks
- d) Blocking drains with plastic

Question 39: Which simple machine is a screw most like?

- a) A moving wheel only
- b) An inclined plane wrapped around a cylinder
- c) A pulley only
- d) A wedge only

Question 40: A robot uses infrared sensors to detect obstacles by measuring reflected infrared light. The sensor output is a number that the program reads. That number is an example of —

- a) Data (sensor reading) the program uses to decide actions
- b) A piece of plastic only
- c) A spoken word from robot
- d) A colour of battery

Question 41: Which of these is part of fair testing in experiments?

- a) Changing multiple things at once to see which matters most
- b) Only changing one variable (independent) while keeping others constant
- c) Not recording results at all
- d) Asking friends to guess without testing

Question 42: Which device lights up when electricity flows in one direction and is often used as an indicator in beginner circuits?

- a) LED (Light Emitting Diode)
- b) Motor
- c) Battery only
- d) Resistor

Question 43: An engineering challenge is to design a water filter using sand, gravel and charcoal to clean muddy water. What principle helps here?

- a) Filtration
- b) Making water heavier than rocks
- c) Adding dirt to clean water
- d) Freezing water to make it muddy

Question 44: Which of these helps a robot know its position or orientation?

- a) Compass or gyroscope or wheel encoders
- b) A paintbrush
- c) A ruler only on desk
- d) A spoon

Question 45: Which of the following statements about hypotheses is correct?

- a) A hypothesis is a testable prediction you can design an experiment to check.
- b) A hypothesis is the final conclusion without testing.
- c) Hypotheses are always wrong.
- d) Hypotheses are only for cooking recipes.

Question 46: A student builds a circuit with two identical bulbs in series on a small battery and then adds a third bulb in series. What happens to the brightness of each bulb?

- a) Brightness increases for each bulb when more bulbs are added in series.
- b) Brightness decreases because the same battery voltage is shared and current drops.
- c) Nothing changes at all.
- d) Bulbs become magnets.

Question 47: Which of these is a good engineering design habit?

- a) Sketching ideas, making prototypes, testing, and improving
- b) Building once and never checking if it works
- c) Throwing prototype away without testing
- d) Never asking how to make it better

Question 48: Which simple machine is a wheelbarrow mainly?

- a) Pulley only
- b) Compound machine
- c) Inclined plane only
- d) Screw only

Question 49: A team wants to power a small fan using a solar panel. On a cloudy day the fan runs slowly. Why?

- a) Solar panels produce more electricity in clouds.
- b) Solar panels produce less electricity when sunlight is weak, so output falls.
- c) Clouds make the fan heavier.
- d) Solar panels produce electricity from wind only.

Question 50: Which best describes experimental control in science?

- a) A group where the variable being tested is not applied so you can compare results
- b) The group where everything is changed daily
- c) The group that is thrown away
- d) A group with random toys