

Grade 6 - Facts for Science

Scientific Investigation

1. Constants are parts of the experiment that remain the same.
2. An inference is a proposed explanation for an observation.
3. Manipulated (independent) variable is a factor that is intentionally changed in an experiment by the investigator.
4. Mass is the amount of matter that makes up an object. It does not change when its location changes.
5. There are two types of observations, qualitative (using your senses) and quantitative (involves measurements and numbers).
6. A responding (dependent) variable is a factor that is affected as a result of changing the manipulated (independent) variable.
7. Volume is the amount of space an object takes up or occupies.
8. All scientific measurement is done through the metric system. The basic unit of mass is grams, volume is liters, and length (distance) is meters.
9. To find length, use a metric ruler. To find volume of an irregular object use a graduated cylinder. To find mass use a triple beam balance.
10. The scientific method is a series of steps that scientist use to answer question and solve problems.
11. Stating the problem is the first step in the scientific method. One asks a question that can be answered through scientific investigation.

12. A hypothesis is an educated guess, a proposed answer to your problem. The manipulated (independent) variable, and the responding is the (dependent) variable.
13. Classification is a way of organizing by using characteristics.
14. Predictions are things you think will happen in the future based on past observations and experiences.

Matter

15. All matter has mass (the amount of matter), weight, volume (the space the matter takes up), and density (mass divided by volume).
16. Matter can be identified by its physical properties such as color, shape, and texture.
17. A physical change occurs when there is a change in the physical properties, but the chemical properties remain the same. An example would be when matter changes form phase to phase.
18. A chemical change occurs when matter interacts with matter to form a new substance.
19. The Bohr model arranges electrons in orbits around the nucleus.
20. An electron is a negatively charged subatomic particle that orbits the nucleus of an atom.
21. A proton is a positively charged subatomic particle that is part of the nucleus of an atom.
22. A neutron is a neutrally charged subatomic particle that is part of the nucleus of an atom.
23. An atom is the smallest particle of an element.
24. An element is the simplest pure substance.

25. A compound is a pure substance formed by combining two or more elements. It can only be separated by chemical means.
26. A mixture is a combination of compounds and/or elements that can be separated by physical means.
27. Democritus was an ancient Greek philosopher who theorized that all matter is composed of atoms.
28. Aristotle was an ancient Greek philosopher who theorized that all matter came from 4 elements, Fire, Earth, Air, and Water.
29. John Dalton was an English scientist who developed the atomic theory which states that all elements are composed of atoms.
30. Rutherford discovered that atoms were mostly empty space when he shot particles through a thin sheet of gold.
31. A Periodic Table charts all the known elements in how they react.
32. The large letter on the chart represents the symbol for the name of the element.
33. The atomic number represents the number of protons in an atom.
34. The atomic mass represents the number of protons and neutrons in an atom.
35. The number of neutrons in an atom can be determined by subtracting the atomic number from the atomic mass.
Atomic mass-atomic number= number of neutrons.

Energy

36. Kinetic energy is energy of motion. The amount of energy depends on the mass and velocity of the moving object.

37. Potential energy is energy stored in an object. Energy can be stored chemically or based on position.
38. The sun is the original source of all energy.
39. In order to do work, energy is transformed from one form to another. This is the law of conservation of energy.
40. Greenhouse effect is the Earth's heating due to the gases trapped in the atmosphere.
41. Electrical energy is generated by kinetic energy of moving electrons in solar, mechanical, and chemical sources.
42. Sources from which energy is available include fossil fuels, wind, water, solar, mechanical, and chemical sources.
43. Non-renewable resource may not be used more than one time such as coal, gas, oil, and natural gas.
44. Renewable resources are ones which can be used again and again, such as the sun, wind, and waves

Earth/Space

45. Our Sun is a medium sized star that is the center of the solar system.
46. The seasons are caused by the relationship of the tilt of the Earth's axis to its position around the Sun.
47. The moon appears to go through phases because of a person's perspective from the Earth as the moon revolves. One side is always lit, but we can only see part of it depending on its position.
48. The phases of the moon are, new, waxing crescent, first quarter, waxing gibbous, full, waning gibbous, last quarter, and waning crescent.
49. The period of revolution is when an object travels around another. For a planet, one revolution is one year.

50. The period of rotation is one spin on an axis. For a planet one rotation is one day.
51. A solar eclipse occurs when the moon passes between the earth and the sun, casting a shadow on the earth.
52. A lunar eclipse occurs when the earth passes between the moon and the sun, blocking the sunlight from the moon.
53. A neap tide occurs when the moon is perpendicular from the sun. The lowest of the tides.
54. A spring tide occurs when the moon is in line with the sun. The highest of the tides.
55. There are approximately two high tides and two low tides in each 24- hour cycle.
56. The gravitational pull of the moon attracts the molecules of water and soil that compose the Earth.
57. The first 4 planets are Mercury, Venus, Mars, and the Earth. These are the inner rocky planets.
58. The six remaining planets, Saturn, Jupiter, Uranus, Neptune, and Pluto are the outer gaseous planets.
59. John Glen was the first astronaut to circle the earth.
60. Neil Armstrong was the first man on the moon.
61. The space station is a joint effort to create living quarters in space.