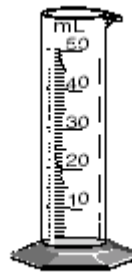


February 10, 2004

Grade 5 Science SOL 4.1-5.1 Scientific Process and Measurement

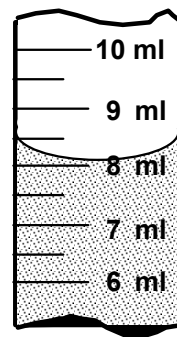
- Mass is usually measured with a:
 - beaker
 - ruler
 - graduated cylinder.
 - balance scale
- To measure volume you could use a:
 - telescope
 - microscope
 - graduated cylinder
 - balance scale
- You could measure distance in:
 - grams
 - kilograms
 - kilometers
 - ounces
- Mass is:
 - how much space an object takes up
 - how much matter is in an object
 - an object's length
- Volume is:
 - how much space an object takes up
 - how much matter is in an object
 - an object's length
- The mass of an object can be measured in:
 - miles
 - grams
 - inches
 - amps
- Weight and mass seem to measure the same thing. How are mass and weight different?
 - both measure an object's "heaviness", but weight is a measure of the pull of gravity on an object and mass is how much matter is in the object.
 - mass means volume and weight means how heavy something is.
- To find the temperature during an experiment you would use a:
 - graduated cylinder
 - thermometer
 - spring scale
 - balance scale
- What is the length of this line: _____
 - approx. 3 grams
 - approx 3 m
 - approx 3 cm
 - approx 3 mm



- This graduated cylinder is used for measuring:
 - mass of liquid
 - volume of liquid
 - weight of liquid
- This graduated cylinder measures in these units:
 - liter
 - milliliters
 - grams

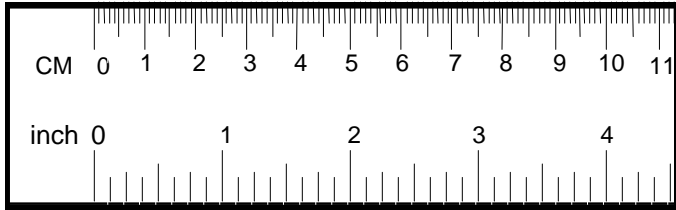


- The instrument above measures:
 - volume
 - mass
 - length
- The instrument above is called a:
 - scale
 - balance
 - beaker
- Volume of liquid (or capacity) is normally measured in:
 - milligrams, grams, and kilograms
 - milliliter and liters
 - millimeters, centimeters, and meters
- The picture below shows a portion of a graduated cylinder partly filled with liquid.



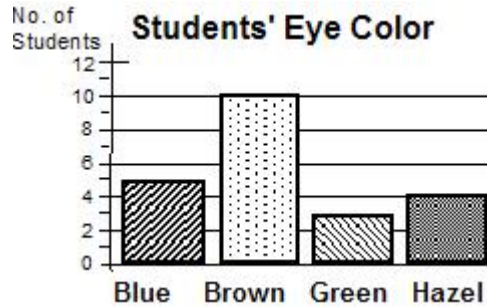
- About how much liquid is in the cylinder?
 - 7.0 ml
 - 7.5 ml
 - 8.0 ml
 - 8.5 ml

17. Which measuring tools and units would be best for measuring the mass of a dime?
- a thermometer –°F
 - a balance – in grams
 - a beaker – in milliliters



18. About how many centimeters are there in two inches?

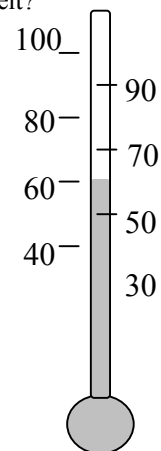
- about 5
 - about 2
 - $\frac{1}{2}$
19. How much would you estimate your teacher weighs?
- about 4 kg
 - 60-100 kg
 - over 200 kg
20. How long is your thumb?
- about 4 g
 - about 4 cm
 - about 4 mm
21. Which of the following is a testable hypothesis that you could prove correct in an experiment?
- Powders dissolve more easily in hot water than in cool water
 - Elements differ in the number of protons, neutrons and electrons
 - Lightning bugs are very pretty
22. In an experiment, what are constants?
- things in an experiment that change
 - things in an experiment that don't change
 - number of times you repeat an experiment
 - tools you use in your experiment
23. When scientists repeat experiments in the exact same way a number of times, what is this called?
- extrapolation
 - hypothesis
 - repeated trials
 - predictions



24. Based on the graph, which statement is true?

- There are less than 17 students in the class.
 - There are $\frac{1}{2}$ as many students with blue eyes as students with brown eyes
 - More than 10 students have green eyes.
25. What do you think the mass of nickel is?
- 5 liters
 - 5 kilograms
 - 5 grams
 - 5 meters

26. This thermometer shows the temperature in the spring. Is it in Celsius or Fahrenheit?



27. In an experiment with plants, what instrument would be best to measure the height of the plants?

- metric measuring wheel
- metric ruler
- graduated cylinder
- balance

For a class investigation, an electromagnet has been constructed by wrapping coils of wire around a nail and connecting the ends of the wire to a battery. Students will investigate the effects of the number of turns of the coil, on the strength of the magnet, as measured by how many paper clips will be picked up.



28. What's the independent variable in this experiment?
- the voltage of the current
 - number of turns of the coil
 - a direction of the current flow
 - the size of the nail
29. What is a possible hypothesis for this investigation?
- The longer the circuit is closed, the more paper clips will be attracted.
 - The more turns of coil, the more current will flow.
 - Increasing the number of turns increases the strength of the magnet.
 - The larger the nail, the more paper clips it can pick up.
30. Which of the following variables should be kept constant for this investigation?
- battery voltage, length of wire and size of the nail
 - the number of turns of the wire around the nail
 - the battery voltage
 - the battery voltage, the number of turns around the nail, the time of day
31. An experiment is being done to determine how light affects the growth of small zinnia plants. One plant is placed in full sunlight, the second in a shaded area, the third in an unlit closet. What is the independent variable in the experiment?
- The type of plants
 - The amount of light
 - The growth of the plant
 - The type of soil
 - The length of the experiment
32. When conducting this experiment, which of the following procedures should be followed?
Choose all that apply.
- 3 different types of plants should be used
 - the plants should be in the same size pots.
 - the same type and amount of soil should be used in each pot.
 - 3 plants of the same size and type should be used
 - the experiment should be conducted more than once (repeated trials)
33. The hypothesis of this experiment could be:
- "plants grow differently under different conditions"
 - "if a zinnia plant is placed in direct sunlight, it will grow taller than similar plants given little or no sunlight.
 - Many things, including sunlight, affect the growth of a plant.
34. The constants in my plant experiment are:
Choose all that apply.
- the amount of sunlight
 - the type of pot used
 - the type of soil used
 - the amount of water given to the plant
 - the size and type of plants used
35. Good experiments have more than one independent variable.
- True
 - False
36. An experiment should only be done once, or you might come up with different and confusing results.
- True
 - False
37. When scientists repeat experiments in the exact same way a number of times, what is this called?
- hypothesis testing
 - repeated trials
 - sloppy experimentation
38. In an experiment, there should be only one _____. Everything else should be a _____.
- constant - independent variable
 - control - independent variable
 - independent variable - constant
 - trial - proven
39. Which is not an observation?
- My cat is black and white.
 - My cat is fat.
 - My cat is hungry.
 - My cat is eating.
40. Which is an inference? (an inference is a conclusion you can draw from your observations)
- My cat is black and white.
 - My cat is fat.
 - My cat is hungry.
 - My cat is eating.

41. A(n) _____ is a forecast about what may happen in some future situation.
- inference
 - prediction

42. A(n) _____ is a conclusion based on observations of events that have already happened.
- inference
 - prediction

43. "Kilo" in kilogram and kilometer means:
Choose all that apply.
- hundred (a kilometer is 100 meters)
 - thousand (a kilometer is 1000 meters)

44. "Milli" in millimeters, milliliters, and milligram means:
Choose all that apply.
- hundredth (a millimeter is 1/100 of a meter)
 - thousandth (a millimeter is 1/1000 of a meter)

45. Ice melts at: Choose all that apply.
- 32 degrees F
 - 32 degrees C
 - 0 degrees C
 - 0 degrees F

46. Water boils at:
Choose all that apply.
- 100 degrees F
 - 100 degrees C
 - 212 degrees F
 - 212 degrees C

47. Which units can be used to measure length or distance
Circle all that apply.

inches	liters
yards	pounds
miles	kilometers
ounces	quarts
meters	gallons
millimeters	centimeters
kilograms	feet
grams	

48. Which units can be used to measure mass?
Choose all that apply.
- | | |
|-------------|-------------|
| grams | liters |
| yards | pounds |
| miles | kilometers |
| ounces | quarts |
| meters | gallons |
| millimeters | centimeters |
| kilograms | tons |

49. Which can be used to measure volume or capacity?
Choose all that apply.

grams	liters
yards	pounds
miles	kilometers
ounces	quarts
meters	gallons
milliliters	centimeters
kilograms	tons
cups	

50. Which of these are metric measurements?

Choose all that apply.

grams	liters
yards	pounds
miles	kilometers
ounces	quarts
meters	gallons
milliliters	centimeters
kilograms	tons
cups	

51. A balance measures:

- mass
- volume
- length

52. A graduated cylinder or a beaker measures:

- volume
- mass
- length

53. What is mass?

- How big an object is.
- The amount of matter in an object - Measured with a balance
- How much space an object takes up