

Chem Bell Work, January 15–18, 2018

Measurement, Accuracy, Precision,
Units

Chem, Bell Work, Monday, Jan 15

1. Fill in the blanks: Math is about numbers and
(a)

science is about measurements .
(b)

2. A field is 100 meters long. What is the quantity
(property) being measured?

The length of a field or distance.

3. What are the units of measurement? **meters**

4. What is the magnitude (size) of the measurement?
100

5. What is the measurement? **100 meters**

6. In chemistry the unit used to measure mass (how
heavy something is) is grams and the unit we use
to measure volume is liters .

Chem, Bell Work, Tuesday, Jan 16 (front)

1. What is meant by precision or precise measurements?

- **Precision refers to the closeness of a set of measurements.**
- ***Precision is the ability reproduce a measurement.***
(ex: 1.49, 1.48, 1.51, 1.52 are close to 1.50)
- *If we weigh a 1.5 kilograms bag of sugar five times, each weight is close to 1.5 kg:*
- *Example: 1.51 kg, 1.51 kg, 1.50kg, 1.49 kg, 1.49 kg*

2. What is meant by accuracy or accurate measurements?

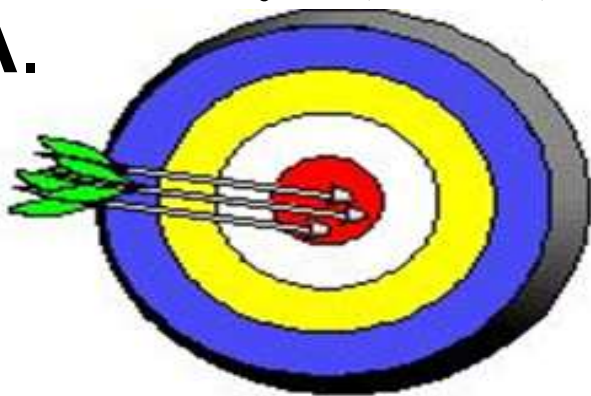
Accuracy refers to the closeness of measurements to the correct or accepted value of the quantity measured.

- Example: the true value of mass of the sugar is 1.5 kilograms so a measurement close to 1.5 kg is accurate.

3. Draw the targets. Label as precise, accurate, both or neither.

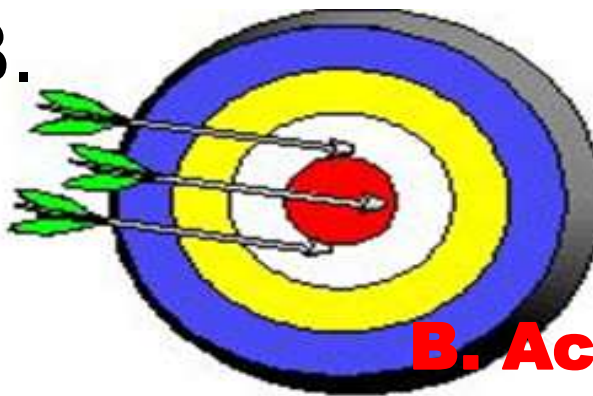
Bull's eye (center) = the true value

A.



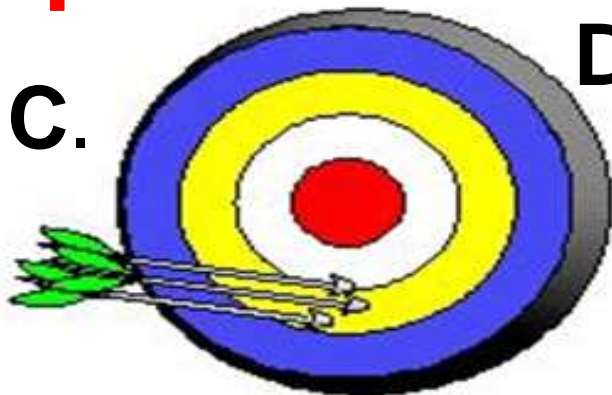
A. Both precise & accurate

B.



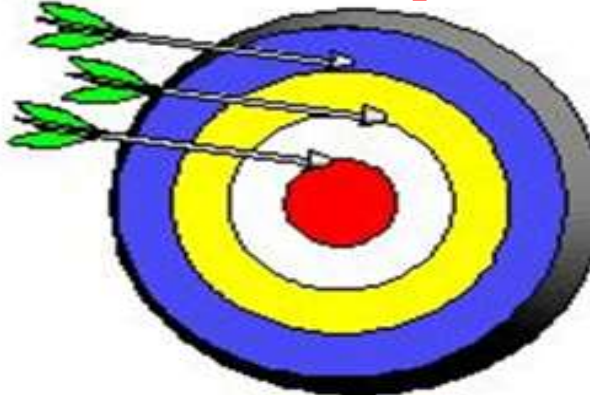
B. Accurate but not precise

C.

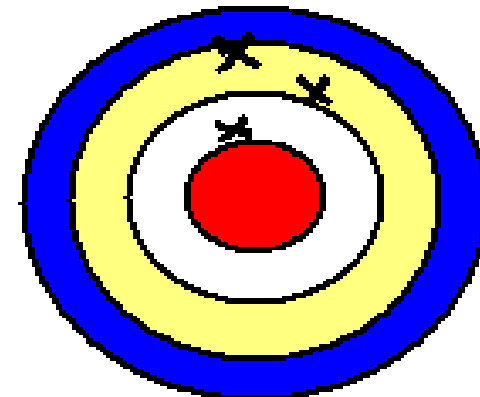


C. Precise but not accurate

D.



D. Neither precise nor accurate



Physics Bell Work, Wednesday, Jan 17

Mass Data of Sample

	Trial 1	Trial 2	Trial 3	Trial 4	
Student A	1.43 g	1.52 g	1.47 g	1.42 g	Range 0.10
Student B	1.43 g	1.40 g	1.46 g	1.44 g	Range 0.06
Student C	1.54 g	1.56 g	1.58 g	1.50 g	Range 0.08
Student D	0.86 g	1.24 g	1.52 g	1.42 g	Range 0.66

1. Four students each measured the mass of a 1.43 g sample four times. Which student has the the greatest accuracy and precision.

a. Student A

c. Student C

b. Student B

d. Student D

Bell Work, Thursday, 1/18/18

Identify the unit that would be most appropriate for:

1. expressing the mass of a car

- a. Grams b. micrograms c. milligrams **d. kilograms**

2. expressing the length of a bacterial cell.

- a. Nanometers b. kilometers c. centimeters **d. micrometers**

3. measuring the volume of a 5 drops of water

- a. liters b. kiloliters **c. milliliters** d. microliters e. centiliters

4. Width of a gymnasium meter (m)

5. Length of a finger centimeter (cm)

6. Thickness of a nickel millimeter (mm)

7. The mass of a coin gram (g)

8. The mass of a human cell microgram (μg)