Beverly Hills High School -- Physics -- Fall'16 -- Test #1 -- Science Basics -- 90 points

Write TRUE if the statement is true OR write the word that substitutes for the underlined word(s) that would make it true. Writing false only earns partial credit. Simplify all answers. Three points each.

_____ 1) SI stands for <u>Science Internationale</u>.

_____ 2) We can determine how long an object falls for by knowing the <u>height</u> from which it fell.

_____ 3) The SI system unit for mass is the <u>kiloliter</u>.

_____ 4) The type of experimental error that involves the imperfections in the devices we measure with are called <u>random</u> errors.

_____ 5) When a free-falling object accelerates no more, we say it has reached its <u>terminal velocity</u>.

<u>Multiple Choice</u>. Choose the letter that best answers each example. Three points each.

_____ 6) As an object freely falls downward, its

    A) velocity increases. B) acceleration increases.
    C) both of these.   D) none of these.

_____ 7) The gain in speed each second for a freely-falling object is about

    A) 0   B) 5 m/s.   C) 10 m/s   D 980 m/s   E) depends on the initial speed

_____ 8) A scientific statement that can <u>never</u> be changed is a scientific

    A) theory.   B) principle.   C) hypothesis.   D) law.
    E) None of the above choices are correct.

_____ 9) You observe something you do not understand but you have an idea of how it might work. In order to test this idea, you propose to

    A) come to a conclusion.   B) make a hypothesis.
    C) design an experiment.   D) do none of these.

_____ 10) The man given credit for formulating the Scientific Method is

    A) Newton   B) Einstein   C) Shakespeare   D) Galileo

11) Using archery target diagrams, show and label the ideas of accuracy and precision, and both. Five points.

<u>Short Answer/Fill-in</u>. Be neat and complete. Three points each.

12) State three qualities of every successful scientist as given in class:

_____   _____   _____

13) Give the branch of physics you find most interesting and why: _____ because

_____.

14) Give a one sentence description of what science is. _____

_____.

For two points each, change the decimal numbers into scientific notation and vice versa:

15)   384,000,000   16) 9.32×10^3 17) 4.008×10^{-5}

For one point each, write how many significant figures are in each measurement:

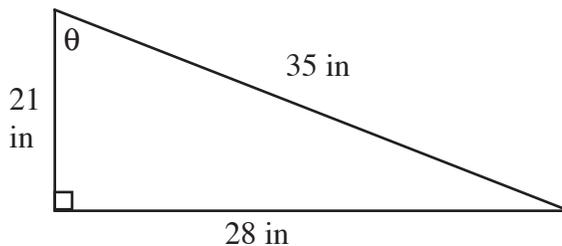18)   53.720 cm   19)   0.000290 s   20)   725.600 g

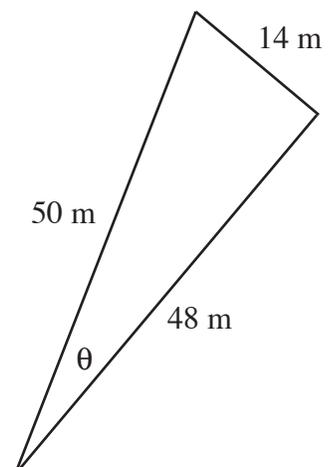Three points on these conversions.

21)   7.05 s = _____ ms   22)   15.6 nL = _____ dL

Three points each here too.

23) Find sin θ, cos θ and tan θ in this right triangle.   24) Find sin θ, cos θ and tan θ in this right triangle.

θ
35 in
21 in
28 in

14 m
50 m
48 m
θ

<u>Calculation Section</u>. Show all equations that you use for full credit. Simplify all answers. Use correct units. Five points apiece.

25) It was a very hot day on the surface of Venus. Your space expedition had been working all day when you looked up at the thermometer which read 752 °F. Your boss yelled at you and asked, "Hey! What's the temperature in Celsius?" What do you tell him?

26) Earlier that day, a workmate dropped a hammer from the top of the rocket he was repairing. You watched it fall from the 720 m rocket a bit slower than it would on Earth. How long would it have taken to fall that distance on Earth?

27) The next morning you were assigned to the lab where a chemist was preparing a <u>very</u> cold alcohol bath. He told you, "This is so cold, it is actually half my normal body temperature in Kelvins!" So what is that temperature in Kelvins?

Three points each.

28) Convert 315° to radians.   29) Convert 3π/5 radians to degrees.

30) As you sit motionless in your chair, you are taking four very rapid trips thru the universe. Name them.

a) _____

b) _____

c) _____

d) _____