Name: _____ Practice Ph11 3-4

1. The theory of relativity was largely developed by which of the following scientist(s):
   a) Michelson and Morley
   b) Lorentz
   c) Ivan Bergstromsky
   d) Einstein

2. Which one of the following statements is true about the special theory of relativity?
   a) two events which are simultaneous to one observer are simultaneous to another observer
   b) the laws of physics are the same in all inertial reference frames
   c) the mass of an object is observed to decrease as its speed increases
   d) time is observed to pass more quickly in a reference frame moving relative to you

3. Two events that are simultaneous to one observer will also be simultaneous to a second observer who moves with respect to the first at constant velocity only if
   a) the two points are widely separated
   b) the two events occur at the same point in space
   c) the relative velocity is greater than c
   d) the relative velocity is at everyday speeds

4. The statement "THE LAWS OF NATURE ARE THE SAME IN ALL REFERENCE FRAMES MOVING UNIFORMLY WITH RESPECT TO EACH OTHER" is called;
   a) Simultaneity Principle
   b) Relativity Principle
   c) Lorentz Contraction
   d) Einstein's Law

5. The Sun circles the Earth. This statement is:
   a) a valid statement depending on your frame of reference.
   b) absolutely true.
   c) absolutely false.

6. Compared to clocks in a stationary reference frame, clocks in a moving reference frame run ...
   a) faster
   b) slower
   c) at the same speed

7. A woman standing on the ground sees a rocket ship move past her at 95% the speed of light. Compared to when the rocket was at rest, the woman views the rocket's length as…
   a) the same length
   b) longer
   c) shorter

8. Clocks on a space ship moving near the speed of light appear to run slow when viewed from …
   a) the earth
   b) the space ship
   c) both places
   d) neither place

9. Relativity equations for time, length, and mass hold true for…
   a) every day low speeds
   b) relativistic speeds
   c) both of the above
   d) none of the above

10. A star emits light at c. Our rocket travels toward the star at 0.5 c. What speed would the rocket measure for the beam of light?
   a) 0.5 c
   b) 0 c
   c) 1.5 c
   d) 1.0 c

11. A spaceship travels at 0.5 c away from the earth and shoots a beam of light back to the earth. The speed of light relative to the earth is;
   a) 1.5 c.
   b) 0.5 c.
   c) 1.0 c.
   d) none of the above.

12. If you were on a rocket traveling at 0.5 c away from a bright star, the stars light would pass you at:
   a) 0.5 c
   b) 1.5 c
   c) between 0.5 c and c
   d) c

13. A flashgun which gives out light at 300000000 m/s is fired forward on a 25 m/s train. The speed of the light as seen by an observer on the ground is:
   a) 300 000 000 m/s – 25 m/s
   b) 300 000 000 m/s
   c) 25 m/s
   d) 300 000 000 m/s + 25 m/s

14. An astronaut travels from earth to the planet Westium, a distance of 25 ly, at an average speed of 0.6 c. How much would she age during this trip?
   a) 33 y
   b) 42 y
   c) 31 y
   d) 15 y