1. State the two postulates of Special Relativity.

2. Watch the following video explaining the Michelson-Morley experiment:
   https://www.youtube.com/watch?v=7qJoRNseyLQ
   Answer the following questions in the space below:
   What hypothesis was the Michelson-Morley experiment trying to test?
   How did they test the hypothesis?
   What was the result of the experiment?

3. According to Special Relativity, what should happen to the length of an object that is moving at a constant velocity?

4. According to Special Relativity, what should happen to the time as measured by a clock that is moving at a constant velocity?

5. Two trains move in opposite directions. Both move at a speed of 300km/h. From the point of view of someone sitting in one of the trains, what speed do they see the other train approaching them? Calculate it first using the formula for addition of velocities in Newton's theory and after that calculate it using Einstein's corrected formula for the addition of velocities. (where $c = 3 \times 10^8$ m/s)

6. Now suppose that both trains move at the speed of light c in opposite directions. From the point of view of someone sitting in one of the trains, what speed do they see the other train approaching them? Calculate it first using the formula for addition of velocities in Newton's theory and after that calculate it using Einstein's corrected formula for the addition of velocities. (don't need to plug in numbers for the velocities, just use symbol c and simplify formulas as much as you can)

7. Watch this video explaining the twin paradox in Special Relativity:
   https://www.youtube.com/watch?v=ERgwVm9qWKA
   If we believed Newton's theory was the correct one, what would the difference in age of the twins after the trip be?

   Why there seems to be a paradox in Einstein's theory?

   How is this paradox resolved?