IB Physics
FA26.1 - Special Relativity

Name_____

Favorite Murrayism_____

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Show your work, circle your answers, and use sig figs to receive full credit.

1. What is the mass of a 0.145 kg (rest mass) baseball going 0.950 c?

2. A bus measures 12.5 m long at rest. What is its speed if it is 12.4 m long?

3. A stopwatch is put into a centrifuge and sped up to 0.850c. In 60.0 seconds (in our frame of reference) how much time will elapse in the centrifuge frame of reference?

4. Joe is on a flatbed car going 0.850 c straight toward you. He throws a baseball forward relative to the flatbed car at 0.620 c. How fast is the baseball moving with respect to you? What if he throws the ball backwards at the same speed in his frame of reference?

5. Joe is on a flatbed car going 0.860 c straight toward you. He throws the baseball forward at some speed in his frame of reference such that you observe the ball going 0.930 c toward you. With what velocity did he throw the ball in his frame of reference?