

**Question 11****(6 marks)**

Salman and Priyanka have identical 1.00 m rulers. Priyanka takes her ruler and sets off in a rocket. She travels past Salman at a speed of  $0.800\,c$ . Their metre rulers are aligned in the direction of Priyanka's travel. Each then measures the length of the other's ruler by carefully determining the position of each end of the ruler at the same instant, and measuring the distance between these positions.

- (a) How long does Salman measure Priyanka's ruler to be? (2 marks)

Answer: \_\_\_\_\_ m

- (b) How long does Priyanka measure Salman's ruler to be? (1 mark)

Answer: \_\_\_\_\_ m

- (c) When Priyanka returns, she and Salman compare the results of their measurements. How are they able to explain their seemingly contradictory results? (3 marks)

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