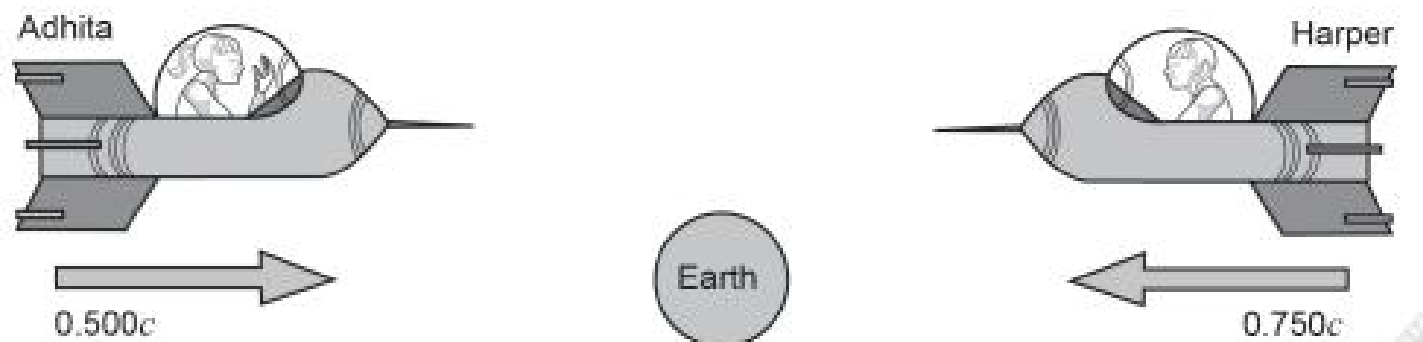


### Question 15

(12 marks)

Two spaceships, captained by Adhita and Harper, are travelling toward each other. They are observed by a person on the Earth to be travelling at the velocities shown in the diagram. Take all velocities to the left as positive.



- (a) Calculate the velocity of Harper as measured by Adhita. (4 marks)

\_\_\_\_\_  $c$

- (b) Harper fires a missile with a velocity of  $0.600c$  with respect to her in the direction of Adhita. Calculate the velocity of the missile as measured by an observer on the Earth. (4 marks)

\_\_\_\_\_  $c$

- (c) Calculate the velocity of the missile as measured by Adhita. (4 marks)