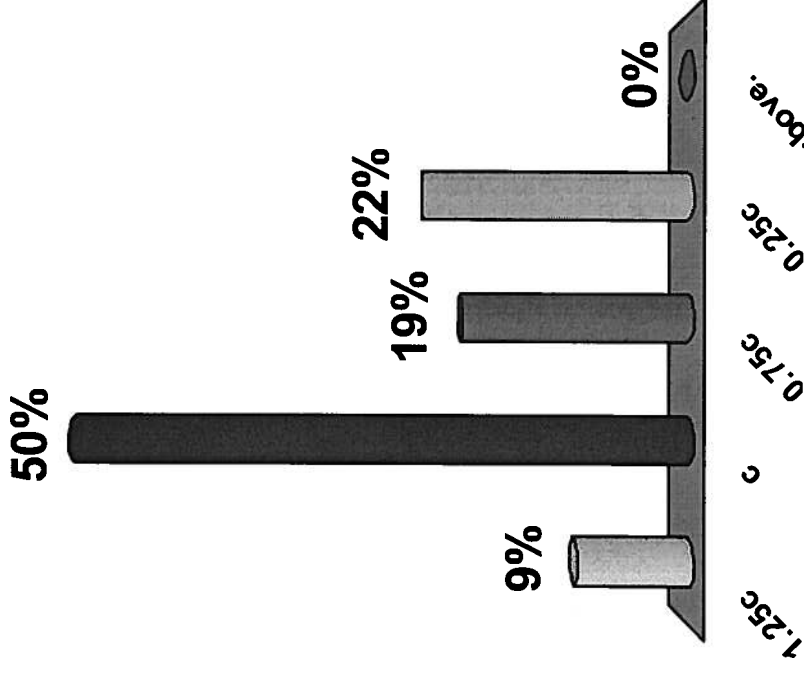


A space ship is traveling at a constant velocity, $|V| = 0.25c$ (where $c = \text{speed of light in rest frame of star}$), towards a distant star, at rest in its own inertial frame. In the ship's lab, the velocity of light coming from the star is measured to be

- a) $1.25c$
- b) c
- c) $0.75c$
- d) $0.25c$
- e) None of the above.



The correct answer is b):

The speed of light is equal to c .

- By the second postulate, the speed of light
- in vacuum is equal to c in **every** inertial
- frame.
- Since the star is rest in its own inertial frame
- and the space ship is traveling with **constant velocity** towards the star, the space ship is
- also at rest in its own inertial frame.

Therefore the speed of light in the space ship is equal to c , by the 2nd postulate of relativity.