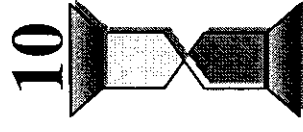
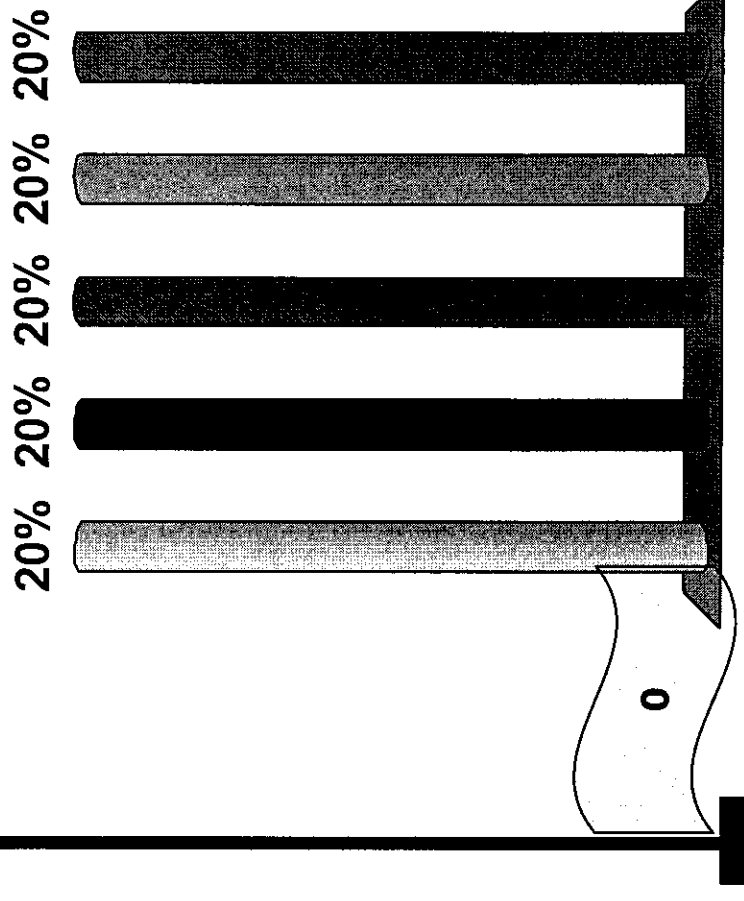


In an air track experiment, two sleds of mass  $M_1$  and  $m_2$  are at rest and tied together by thread, in such a way that the compressed springs between them tend to push them apart. When the thread is burned, the final speeds are in the ratio  $V_1/V_2 =$



- a)  $(m_2/M_1)^{1/2}$
- b)  $(M_1/m_2)^{1/2}$
- c)  $(M_1/m_2)$
- d)  $(m_2/M_1)$
- e) None of the above



**The correct answer is d):**

$$V_1/v_2 = (m_2/M_1)$$

- Because Conservation of momentum guarantees that
- $0 = P_{TOT\ i} = P_{TOT\ f} = M_1V_1 + m_2v_2 = 0$ .
- And  $V_1 = -|v_2|$  (since they move in opposite directions).
- Therefore
- $V_1/v_2 = (m_2/M_1)$