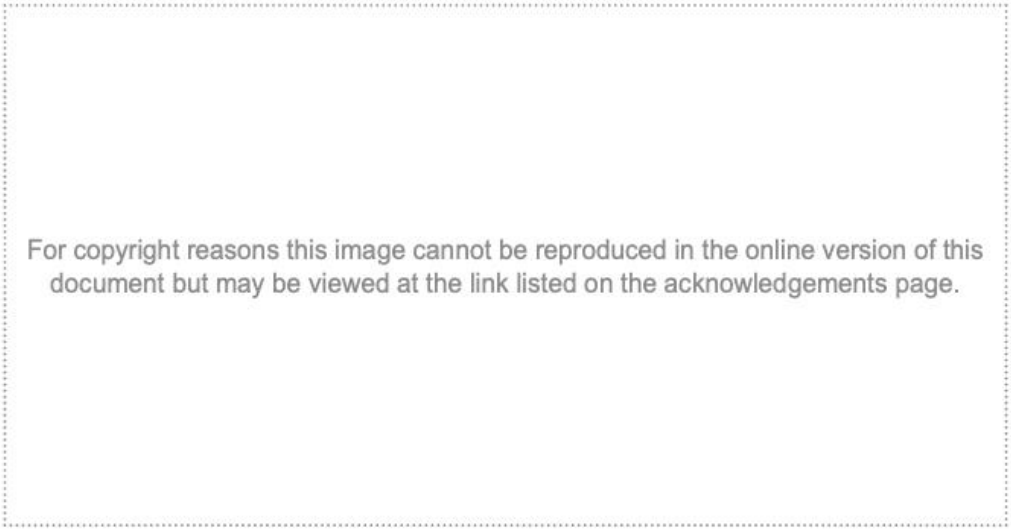
Question 15 **(11 marks)**

A 42.5 kg gymnast performs her dismount from the 1.25 m high beam. She leaves the beam with a velocity of 3.10 m s^{-1} at an angle of 55.0° to the horizontal.



(a) Calculate the vertical and horizontal components of her launch velocity. (2 marks)

Answer v_V _____ m s^{-1} Answer v_H _____ m s^{-1}

(b) Calculate the time it takes for her to reach the ground, assuming she is vertical at impact. (5 marks)

Answer _____ s

(c) Calculate her range R. (2 marks)

Answer _____ m

(d) Calculate the gymnast's kinetic energy at the top of her flight. (2 marks)

Answer _____ J