

23

A student conducts an investigation to determine a ball's mass, displacement, velocity, and kinetic energy.

a. Identify **each** of the following as either a vector quantity or a scalar quantity:

- mass
- displacement
- velocity
- kinetic energy

b. Describe how vector quantities are different from scalar quantities.

The student measures the mass of the ball to be 0.25 kg. The ball is set in motion, and the student determines the magnitude of the ball's maximum velocity to be 11 m/s.

c. Calculate the maximum kinetic energy of the ball. Show your calculations and include units in your answer.