

Mark schemes

Q1.

- (a) kinetic energy depends on both mass and velocity
allow $E_k = \frac{1}{2} mv^2$ 1

as mass increases so does terminal / maximum velocity
a statement is required 1

kinetic energy $\propto m$ and kinetic energy $\propto v^2$ so as mass doubles kinetic energy more than doubles
this mark can be scored by relevant calculations 1

- (b) 1 N m 1

- (c) mass = 0.0185 (kg)
allow 0.018 to 0.019 inclusive 1

$$F = \frac{0.0185 \times 25}{0.060}$$

allow a correct substitution using an incorrectly / not converted value of m 1

$F = 7.708$ (N)
allow 7.7 (N)
allow correct calculation using an incorrectly / not converted value of m 1

if no other marks are awarded
a misreading of the scale giving a value between 15.6 and 15.7 inclusive that is then correctly converted giving an answer between 6.50 and 6.54 scores 2 marks
a misreading of the scale giving a value between 15.6 and 15.7 inclusive that is then not converted giving an answer between 6500 and 6542 scores 1 mark

[7]