

- 1 Recall the equation for the kinetic energy
- 2 What does ' $E_k$ ' represent?
- 3 What does ' $m$ ' represent?
- 4 What does ' $v$ ' represent?
- 5 What are the units for: **a)  $E_k$    b)  $m$    c)  $v$**
- 6 Calculate the **kinetic energy ( $E_k$ )** store of a:
  - a) vehicle of mass 500 kg moving at a speed of 20 m/s
  - b) vehicle of mass 1000 kg moving at a speed of 20 m/s
  - c) vehicle of mass 1000 kg moving at a speed of 10 m/s
  - d) ball of mass 0.6 kg moving at a speed of 15 m/s
- 7 Rearrange the equation for **mass**
- 8 Calculate the **mass** of the following objects with a:
  - a) Object with a  **$E_k$  of 6,000 J** travelling at **20 m/s**
  - b) Object with a  **$E_k$  of 6,000 J** travelling at **40 m/s**
  - c) Object with a  **$E_k$  of 3,000 J** travelling at **40 m/s**
  - d) Object with a  **$E_k$  of 20 kJ** travelling at **10 m/s**
  - e) Object with a  **$E_k$  of 40 kJ** travelling at **30 m/s**
  - f) Object with a  **$E_k$  of 120,000 kJ** travelling at **2,000 m/s**
- 9 Rearrange the equation for **speed ( $v$ , not  $v^2$ )**
- 10 Calculate the **speed** of the following objects
  - a) A **6 kg** object with a  **$E_k$  of 6,000 J**
  - b) A **12 kg** object with a  **$E_k$  of 12,000 J**
  - c) A **1,000 g** object with a  **$E_k$  of 300 J**
  - d) A **20 g** object with a  **$E_k$  of 150,000 J**
  - e) A **2,500,000 g** object with a  **$E_k$  of 70 kJ**
  - f) A **2,500,000 kg** object with a  **$E_k$  of 800 kJ**
  - g) A **0.5 g** object with a  **$E_k$  of 2 J**

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- 6 Rearrange the equation for **mass**
- 7 Rearrange the equation for **speed ( $v$ , not  $v^2$ )**
- 8
  - i) Identify the subject you need to work out
  - ii) select the correct equation
  - iii) work out for the subject you selected.
  - a) Object with a  **$E_k$  of 6,000 J** travelling at **20 m/s**
  - b) A **6 kg** object with a  **$E_k$  of 6,000 J**
  - c) Object with a  **$E_k$  of 6,000 J** travelling at **40 m/s**
  - d) A **12 kg** object with a  **$E_k$  of 12,000 J**
  - e) vehicle of mass 1000 kg moving at a speed of 20 m/s
  - f) Object with a  **$E_k$  of 3,000 J** travelling at **40 m/s**
  - g) A **1,000 g** object with a  **$E_k$  of 300 J**
  - h) Object with a  **$E_k$  of 20 kJ** travelling at **10 m/s**
  - i) A **20 g** object with a  **$E_k$  of 150,000 J**
  - j) vehicle of mass 1000 kg moving at a speed of 10 m/s
  - k) Object with a  **$E_k$  of 40 kJ** travelling at **30 m/s**
  - l) A **2,500,000 g** object with an  **$E_k$  of 70 kJ**
  - m) ball of mass 0.6 kg moving at a speed of 15 m/s
  - n) Object with a  **$E_k$  of 120,000 kJ** travelling at **2,000 m/s**
  - o) A **2,500,000 kg** object with a  **$E_k$  of 800 kJ**
  - p) ball of mass 0.3 kg moving at a speed of 30 m/s
  - q) Object with a  **$E_k$  of 5,000 J** travelling at **1,000 m/s**
  - r) A **0.5 g** object with a  **$E_k$  of 2 J**