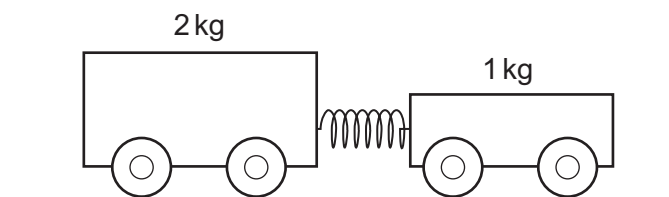


- 10 Two trolleys are held together on a horizontal surface with a compressed spring between them.

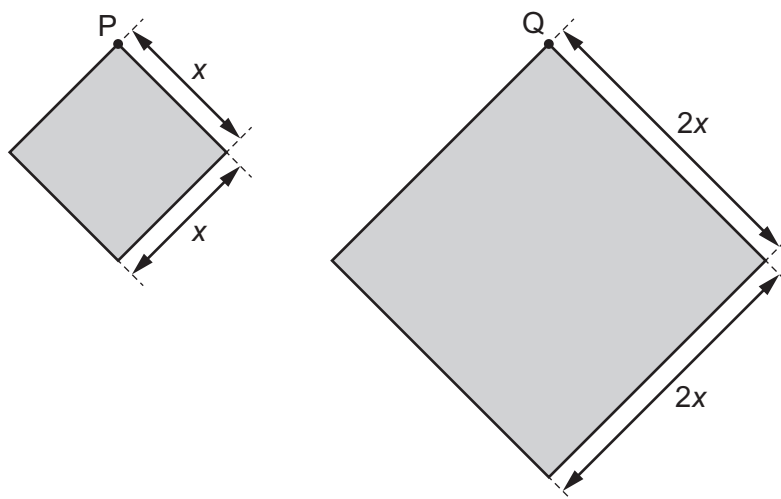


When they are released, the trolleys lose contact with the spring. The trolley of mass 2 kg moves to the left at a final speed of  $2 \text{ m s}^{-1}$ .

How much elastic potential energy was stored in the spring?

- A** 4 J                      **B** 6 J                      **C** 8 J                      **D** 12 J
- 11 A square board, of side length  $x$ , hangs freely from a nail P, as shown.

The board has uniform thickness and is made from material of uniform density.



A second square board, of side length  $2x$ , is made of the same material and has the same thickness as the original board. This second board is then hung from a nail Q. Nails P and Q are at the same height.

What is the vertical distance between the positions of the centres of gravity of the two boards?

- A** 0                      **B**  $\frac{x}{\sqrt{2}}$                       **C**  $x$                       **D**  $x\sqrt{2}$