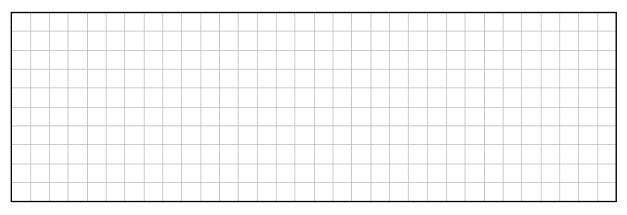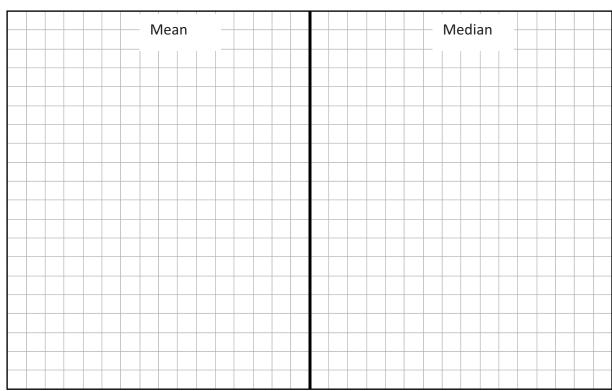**Question 6** **(25 marks)**

(a) **(i)** Given that $x - \sqrt{32} = \sqrt{128} - 5x$, find the value of x, where $x \in \mathbb{R}$.
Give your answer in the form $a\sqrt{2}$, where $a \in \mathbb{N}$.

(ii) $A = \left\{ \sqrt{32k^2}, \sqrt{50k^2}, \sqrt{128k^2}, \sqrt{98k^2} \right\}$, where $k \in \mathbb{N}$.

Show that the **mean** of set A is equal to the **median** of set A.

Mean	Median

(b) Prove, using contradiction, that $\sqrt{2}$ is **not** a rational number.