Combined transformations

6 questions | 13 marks

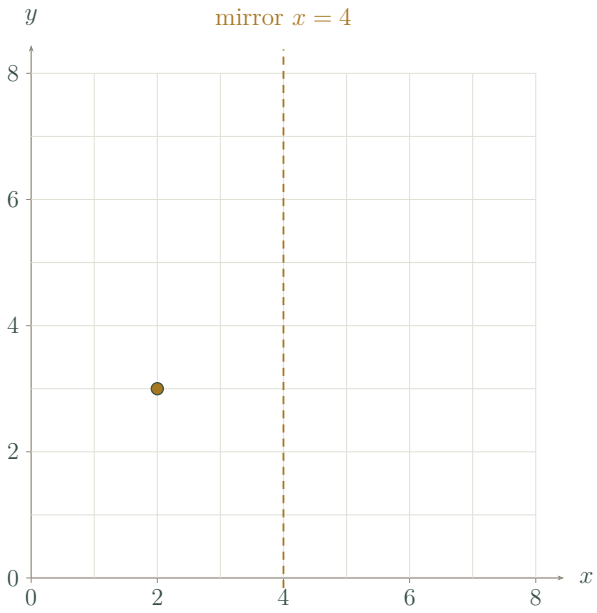
Equivalent correct methods earn the corresponding marks.

1. Move point $(1, 2)$ 3 units right and 2 units up. Give its new coordinates. [1 mark]

$1 + 3 = 4;\ 2 + 2 = 4.$

Answer: $(4, 4)$

2. Reflect point $(2, 3)$ in the vertical line $x = 4$. Give its image. [2 marks]



It is 2 units left of $x = 4$, so the image is 2 units right.

The height stays 3.

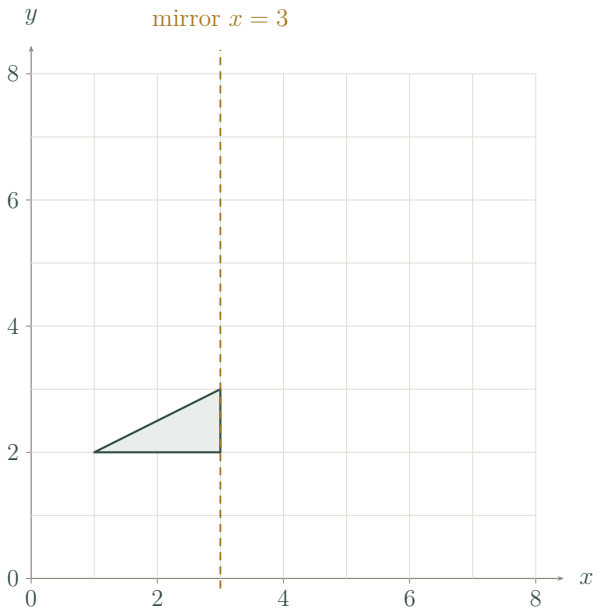
Answer: $(6, 3)$

3. Rotate point $(5, 4)$ 90° anticlockwise about $(4, 4)$. Give the new point. [2 marks]

A point 1 right of the centre moves to 1 above it.

Answer: $(4, 5)$

4. Triangle vertices are $(1, 1)$, $(3, 1)$, $(1, 2)$. Slide 2 right and 1 up, then reflect in $x = 3$. Plot the final triangle. [3 marks]



After sliding: $(3, 2)$, $(5, 2)$, $(3, 3)$.

Reflect across $x = 3$.

Answer: Final vertices: $(3, 2)$, $(1, 2)$, $(3, 3)$.

5. Start at $(1, 1)$. Plan A reflects in $x = 3$ then slides 2 right and 1 up. Plan B slides first, then reflects in $x = 3$. Find both final points. [3 marks]

A: $(1, 1)$ reflects to $(5, 1)$, then moves to $(7, 2)$.

B: $(1, 1)$ moves to $(3, 2)$, which lies on the mirror and stays fixed.

Answer: A: $(7, 2)$; B: $(3, 2)$.

6. A triangle is reflected and then rotated. Name two measurements that remain unchanged. [2 marks]

Both moves preserve size and shape.

Its position or orientation may change.

Answer: Its side lengths and angle sizes.