

Two lines exist on a coordinate plane : $l : y = x - 4$ and line m contains points $A(6, 0)$ and $B(0, 3)$. l 's intersection with the x-axis, y-axis, and m is marked as C , D , and E , respectively. Point P lies on l and its x-coordinate is always greater than the x-coordinate of E . Given this information, answer the questions below.

- (1): Find the equation of m .
- (2): Find the coordinates of E .
- (3): Find the coordinates of P such that the area of BDE and AEP are equal.
- (4): Find the coordinates of P such that ADP is an isosceles triangle with $AD = AP$.

