

These are some alternative methods that can be used for Question 7b and 7c

Qu	Working	Answer	Mark	Notes
ALT 1 Ratio				
(b)	$\left[ \frac{AE}{AC} = \frac{3}{5} \right]$ $\frac{6-x}{15} = \frac{3}{5} \quad \text{or} \quad \frac{4-y}{5} = \frac{3}{5}$	$\begin{matrix} [3:5] & [3:5] \\ [-x+6:15] & [4-y:5] \end{matrix}$ $-x+6=9 \quad \text{or} \quad 4-y=3$		M1 for writing an equation in terms of $x$ or $y$
	$x = -3 \quad \text{or} \quad y = 1$	$x = -3 \quad \text{or} \quad y = 1$		M1dep for solving either equation to find either the $x$ coordinate or the $y$ coordinate
		$(-3, 1)$		A1 cao
ALT 1 Eqn of line and distance				
(c)	Distance $DE$ $(x-6)^2 + (y-4)^2 = 2.5$ oe Distance $AD$ $(x+3)^2 + (y-1)^2 = 92.5$ oe	Line $ED$ $y = -3x + 22$		M1 for equation of line $ED$ or distance of $AD$ or $DE$
	$\text{eg } (x-6)^2 + (-3x+22-4)^2 = 2.5$ $(x+3)^2 + (-3x+22-1)^2 = 92.5$			M1dep for a correct equation for the $x$ or $y$ coordinate of $D$
		$(6.5, 2.5)$		A1 cao
ALT 2 Pythagoras and Trig				
(c)	$\tan^{-1} BAG = \frac{4.5}{8.5} [\Rightarrow BAG = 27.8(9...)]$			M1 for angle $BAG$ (where $AGB$ is a right angle)
	$[AB =] \sqrt{8.5^2 + 4.5^2} \left[ = \frac{\sqrt{370}}{2} \right] \text{ and }$ $\tan^{-1} \left( \frac{4.5}{8.5} \right) - 2 \times \left( \tan^{-1} \left( \frac{4.5}{8.5} \right) - \tan^{-1} \left( \frac{3}{9} \right) \right) [\Rightarrow DAH = 8.97(2...)]$			M1dep for distance $AB$ <b>and</b> for angle $DAH$ (where angle $AHD$ is a right angle)
		$(6.5, 2.5)$		A1 cao