

Q	Marking Instructions	AO	Marks	Typical Solution
6(a)	Selects a method leading to any calculation pertaining to one of the following methods seen (not necessarily correct); gradients of sides, lengths of sides or intersection or lengths of diagonals	AO3.1a	M1	Grad BC = $-5/2$ = Grad DA  Grad AB = $2/5$ = Grad DC  Both pairs of opposite sides have equal gradient so parallel, so ABCD is a parallelogram
	Finds gradients of all 4 sides or lengths of all 4 sides or midpoints of both diagonals correctly	AO1.1b	A1	Grad BC $\times$ grad AB = $-1$ ABC = $90^\circ$ therefore all angles in ABCD are $90^\circ$ so ABCD is a rectangle
	Proves one angle is $90^\circ$ by using gradients or Pythagoras	AO1.1a	M1	
	Completes proof that ABCD is a rectangle. There must be a clear statement that there are 2 pairs of parallel sides and all angles are $90^\circ$	AO2.1	R1	
<p>Note, there are various ways of proving that ABCD is a rectangle (1 – 5 below score M1 A1 M1 before final required statement for relevant R1 stating how their method used proves a rectangle)</p> <ol style="list-style-type: none"> <li>As in the typical solution shown: show that both pairs of opposite sides are parallel, show that one angle is <math>90^\circ</math>.</li> <li>Show that each pair of opposite sides is equal in length, show that one angle is <math>90^\circ</math>.</li> <li>Show that one pair of opposite sides is parallel and equal in length, show that one angle is <math>90^\circ</math>.</li> <li>Show that the diagonals bisect (the midpoint of one is also the midpoint of the other) and are equal in length.</li> <li>Show that each pair of opposite sides are parallel and length of the two diagonals are the same</li> </ol> <p>NB May be expressed using vectors NB Diagonals AC and BD = <math>\sqrt{377}</math></p>				
(b)	Finds correct lengths of two adjacent sides (accept to at least 1dp accuracy)	AO1.1a	M1	AB (= DC) = $\sqrt{261} = 3\sqrt{29}$ BC (= DA) = $\sqrt{116} = 2\sqrt{29}$
	Obtains correct area (AWRT)	AO1.1b	A1	Area = 174
<b>Total</b>			<b>6</b>	