

Question	Working	Answer	Mark	Notes
22	$x + 7x = 180 \Rightarrow x = 22.5$			M1 Correct method to find the value of x or $7x$ Allow if 22.5 or 157.5 seen
	[Sum of angles of $BCDEFGP =$ $180(7 - 2) [= 900]$			M1 Calculating the sum of interior angles of a relevant polygon eg For $GFEDCBA$ $180(6 - 2) [= 720]$ For $GFEDCBAH$ $180(8 - 2) [= 1080]$
	Internal angle eg BCD $180 + "22.5" [= 202.5]$ oe			M1 Correct method to calculate a second relevant angle (sum of angles) eg $360 - "157.5" [= 202.5]$ or for $GFEDCBA$ $720 - 4 \times "157.5" [= 90]$ or for $GFEDCBAH$ $1080 - 6 \times "157.5" [= 135]$
	$[\angle GPB =] "900" - 2 \times "22.5" - 4 \times "202.5"$			M1 Dep on all 3 previous method marks being awarded. Complete correct method to find $\angle BPG$ eg for PGB $180 - 90 - 22.5 \times 2$ or for PAH $180 - 135$
		45	5	A1 Previous method mark must be awarded
				Total 5 marks
Alternative – using kite $BPGO$ or $OAPH$ (where O is the centre of the n -sided polygon)				
	$x + 7x = 180 \Rightarrow x = 22.5$			M1 Correct method to find the value of x or $7x$ Allow if 22.5 or 157.5 seen
	$[n =] \frac{360}{"22.5"} [= 16]$			M1 finding the number of sides of the n -sided polygon
	$OGP = 4.5x$ and $OBP = 4.5x$ $BOG = 5x$ or $OHP = 3.5x$ and $OAP = 3.5x$ $AOH = 7x$			M1 Correct method to find the 3 angles of a kite
	$360 - 14 \times "22.5"$			M1 dep on all 3 previous method marks being awarded. Complete correct method to find $\angle BPG$
		45		A1