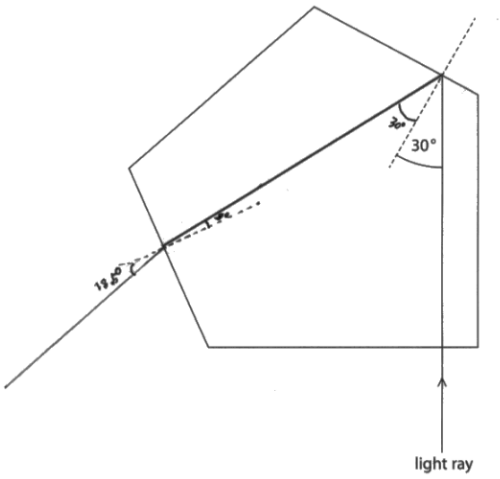
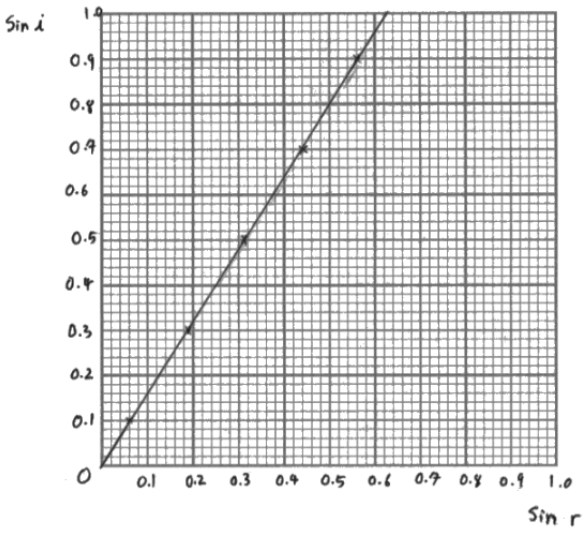
Question number	Answer	Notes	Marks
10 (a) (i)	n =1/sin(c);	accept any rearrangement or word equation	1
(ii)	substitution; evaluation; e.g. n = 1/sin(26) n = 2.3	 allow 2.28…	2
(iii)	correct TIR at first boundary; refraction at boundary at 7 o'clock; refraction away from the normal at exit point;  	 allow ECF for incorrect TIR and correct subsequent boundaries.	3

(b)	(i)	any FOUR from: MP1 any method of recording an incident ray; MP2 any method of recording a refracted ray; MP3 range of angle of incidences; MP4 normal lines drawn; MP5 angles measured using a protractor;	accept marks on a clear, labelled diagram	4
	(ii)	axes labelled; appropriate scale with data enclosed by 3 x 3 grid or larger; points plotted correctly within ½ a square;		3
	(iii)	best fit straight line drawn with ruler;	judge by eye	1
	(iv)	evidence of gradient triangle used; evaluation of 1.6;  	accept markings on graph or evidence of a gradient calculation. accept answer in range 1.55 – 1.65 consistent with candidate's LoBF allow ecf from candidate's LoBF	2

Total for Question 10 = 16 marks