

14. a) i) centre $(7, -5)$ radius = 10

ii) $(-2, 7)$
x y

$$(-2-7)^2 + (7+5)^2$$

$$= -9^2 + 12^2$$

$$= 81 + 144$$

$= 225 > 100$ so P lies outside circle

b) Distance between centres $(7, -5)$ $(-2, 7)$ $\sqrt{9^2 + 12^2} = 15$

$$r_1 + r_2 = 15$$

$$10 + r_2 = 15$$

$$\underline{r = 5}$$

Question			Generic Scheme	Illustrative Scheme	Max Mark
14.	(a)	(i)	•¹ state coordinates of centre •² state radius	•¹ (7, -5) •² 10	2
		(ii)	•³ substitute coordinates of P and evaluate •⁴ communicate result	•³ $(-2-7)^2 + (7+5)^2 = 225$ •⁴ $225 > 100 \therefore P$ lies outside	2
Notes:					
1. Accept $x=7, y=-5$ for • ¹ . 2. Do not accept $g=7, f=-5$ or $7, -5$ for • ¹ .					
Commonly Observed Responses:					
Candidate A			$d=15$ $15 > 10 \therefore P$ lies outside	Candidate B $d = \sqrt{225}$ $\sqrt{225} > 10 \therefore P$ lies outside	•³ ✓ •⁴ ✓ •³ ✓ •⁴ ✓
Candidate C			$d=15$ $r=10$ $d > r \therefore P$ lies outside		•³ ✓ •⁴ ✓
	(b)		•⁵ determine first value of r •⁶ determine second value of r	•⁵ 5 •⁶ 25	2
Notes:					
Commonly Observed Responses:					

[END OF MARKING INSTRUCTIONS]