

② For equal roots, $b^2 - 4ac = 0$

$$(k-5)^2 - 4 \times 1 \times 1 = 0$$

$$k^2 - 10k + 25 - 4 = 0$$

$$k^2 - 10k + 21 = 0$$

$$(k-7)(k-3) = 0$$

$$k-7=0$$

$$\underline{\underline{k = 7}}$$

$$k-3=0$$

$$\underline{\underline{k = 3}}$$

Question			Generic scheme	Illustrative scheme	Max mark
2.			•¹ use discriminant •² apply condition and simplify •³ determine values of k	•¹ $(k-5)^2 - 4 \times 1 \times 1$ •² $k^2 - 10k + 21 = 0$ or $(k-5)^2 = 4$ •³ 3, 7	3
Notes:					
1. Accept $(k-5)^2 - 4$ for • ¹ . 2. Where candidates state an incorrect condition • ² is not available. • ³ is available for finding the roots of the quadratic. See Candidate B. 3. Where x appears in any expression, no further marks are available.					
Commonly Observed Responses:					
Candidate A For equal roots $b^2 - 4ac = 0$ $(k-5)^2 - 4 \times 1 \times 1$ • ¹ ✓ $k^2 - 10k + 21$ • ² ✓ $k = 3, 7$ • ³ ✓			Candidate B For equal roots $b^2 - 4ac > 0$ • ² ✗ $(k-5)^2 - 4 \times 1 \times 1$ • ¹ ✓ $k^2 - 10k + 21 = 0$ or $(k-5)^2 = 4$ $k = 3, 7$ • ³ ✓ 1		
Candidate C $(k-5)^2 - 4 \times 1 \times 1 = 0$ • ¹ ✓ $k^2 - 10k = -21$ • ² ✓ $k = 3, 7$ • ³ ✓					

No requirement for standard quadratic form