

1. Write  $\sqrt{48}$  in the form  $k\sqrt{3}$ , where  $k$  is an integer. (2 marks)
2. Write  $\sqrt{50}$  in the form  $k\sqrt{2}$ , where  $k$  is an integer. (2 marks)
3. Write  $5\sqrt{27}$  in the form  $k\sqrt{3}$ , where  $k$  is an integer. (2 marks)
4. Write  $7\sqrt{20}$  in the form  $k\sqrt{5}$ , where  $k$  is an integer. (2 marks)
5. Expand and simplify  $(2 + \sqrt{3})(2 - \sqrt{3})$  (2 marks)
6. Write  $(3 + \sqrt{5})^2$  in the form  $a + b\sqrt{5}$  where  $a$  and  $b$  are integers (2 marks)
7. Expand and simplify  $(2 + \sqrt{5})(1 - \sqrt{5})$  (2 marks)
8. Write  $(3 - \sqrt{2})^2$  in the form  $a + b\sqrt{2}$  where  $a$  and  $b$  are integers (2 marks)
9. Expand and simplify  $(2 + \sqrt{3})^2 - (2 - \sqrt{3})^2$  (2 marks)
10. Rationalise the denominator  $\frac{6}{\sqrt{3}}$  (2 marks)
11. Rationalise the denominator  $\frac{x}{\sqrt{x}}$  (2 marks)

12. Rationalise the denominator  $\frac{1+\sqrt{5}}{\sqrt{2}}$  (2 marks)
13. Simplify  $\frac{3+\sqrt{6}}{3}$  (2 marks)
14. Simplify fully  $\frac{(4+2\sqrt{3})(4-2\sqrt{3})}{\sqrt{11}}$  You must show all your working. (3 marks)
15. Show that  $\frac{5+2\sqrt{3}}{2+\sqrt{3}}$  can be written as  $4 - \sqrt{3}$  (3 marks)
16. Show that  $\frac{3\sqrt{3}+3}{3+\sqrt{3}}$  can be written as  $\sqrt{3}$  (3 marks)
17. Show that  $\frac{1}{\frac{1}{\sqrt{2}}+\sqrt{2}}$  can be written as  $\frac{\sqrt{2}}{3}$  (3 marks)
18. Simplify fully  $(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b})$  (2 marks)
19. Simplify fully  $(2a + \sqrt{b})^2$  (2 marks)