Surds

GCSE Mathematics • **Higher Tier** • Grades 8–9 • Non-calculator

Name: _____ Class: _____ Total: _____ / 55

Show all your working. Marks are given for correct method as well as the final answer.

1. Simplify $\sqrt{50}$. **[2 marks]**

Answer: _____

2. Simplify $\sqrt{72}$. **[2 marks]**

Answer: _____

3. Simplify $\sqrt{200}$. **[2 marks]**

Answer: _____

4. Simplify $\sqrt{3} \times \sqrt{12}$. **[2 marks]**

Answer: _____

5. Simplify $\sqrt{8} \times \sqrt{2}$. **[2 marks]**

Answer: _____

6. Simplify $\dfrac{\sqrt{48}}{\sqrt{3}}$. **[2 marks]**

Answer: _____

7. Simplify $3\sqrt{5} \times 2\sqrt{5}$. **[3 marks]**

Answer: _____

8. Simplify $5\sqrt{7} + 2\sqrt{7}$. **[1 mark]**

Answer: _____

9. Simplify $\sqrt{18} + \sqrt{8}$. **[3 marks]**

Answer: _____

10. Simplify $\sqrt{75} - \sqrt{27}$. **[3 marks]**

Answer: _____

11. Explain why $\sqrt{2} + \sqrt{3}$ cannot be simplified. **[2 marks]**

Answer: _____

12. Expand $\sqrt{2}(3 + \sqrt{2})$. **[3 marks]**

Answer: _____

13. Expand and simplify $(1+\sqrt{3})(2+\sqrt{3})$. **[4 marks]**

Answer: _____

14. Expand and simplify $(2+\sqrt{5})(2-\sqrt{5})$. **[3 marks]**

Answer: _____

15. Expand and simplify $(\sqrt{7}+1)^2$. **[4 marks]**

Answer: _____

16. Rationalise the denominator of $\frac{1}{\sqrt{3}}$. **[2 marks]**

Answer: _____

17. Rationalise the denominator of $\frac{6}{\sqrt{2}}$. **[3 marks]**

Answer: _____

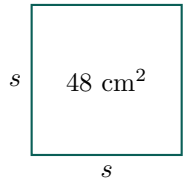
18. Rationalise the denominator of $\frac{10}{\sqrt{5}}$. **[3 marks]**

Answer: _____

19. Rationalise the denominator of $\frac{1}{3+\sqrt{2}}$. **[4 marks]**

Answer: _____

20. A square has area 48 cm^2.



(a) Work out its side length in simplified surd form. **[3 marks]**

(b) Work out its perimeter in simplified surd form. **[2 marks]**

Answer: _____

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