## Calculating with Surds



## REVISE THIS **TOPIC**

CHECK YOU'R **ANSWERS** 



1	1 Express $\sqrt{12}$ in its simplest form.	
	(Tot	al for Question 1 is 1 mark)
2	2 Express $\sqrt{50}$ in its simplest form.	
	(Tot	al for Question 2 is 1 mark)
3	3 Express $\sqrt{500}$ in its simplest form.	
	(Tot	al for Question 3 is 1 mark)

Express  $\sqrt{27}$  in its simplest form.

(Total for Question 4 is 1 mark)

Express  $\sqrt{98}$  in its simplest form.

(Total for Question 5 is 1 mark)

Express  $\sqrt{48}$  in its simplest form.



(Total for Question 6 is 1 mark)







7 Express $5\sqrt{8}$ in its simplest form.	
	(Total for Question 7 is 1 mark)
8 Express $4\sqrt{18}$ in its simplest form.	
	(Total for Question 8 is 1 mark)
9 Express $2\sqrt{200}$ in its simplest form.	
	(Total for Question 9 is 1 mark)
10 Express $9\sqrt{20}$ in its simplest form.	
	(Total for Question 10 is 1 mark)
11 Express $7\sqrt{640}$ in its simplest form.	
12 Express $5\sqrt{80}$ in its simplest form.	(Total for Question 11 is 1 mark)
13 Express $3\sqrt{72}$ in its simplest form.	(Total for Question 12 is 1 mark)
1st	(Total for Question 13 is 1 mark)

**14** Work out  $\sqrt{6} \times \sqrt{3}$  giving your answer in its simplest form.

(Total for Question 14 is 2 marks)

15 Work out  $\sqrt{10} \times \sqrt{6}$  giving your answer in its simplest form.

(Total for Question 15 is 2 marks)

16 Work out  $2\sqrt{5} \times 5\sqrt{8}$  giving your answer in its simplest form.

(Total for Question 16 is 2 marks)

17 Work out  $4\sqrt{2} \times 2\sqrt{12}$  giving your answer in its simplest form.

(Total for Question 17 is 2 marks)

**18** Work out  $2\sqrt{20} \times 3\sqrt{5}$  giving your answer as an integer.



(Total for Question 18 is 2 marks)

Solutions



19 Work out  $(\sqrt{6})^2$  giving your answer as an integer.

(Total for Question 19 is 2 marks)

**20** Work out  $(\sqrt{5})^4$  giving your answer as an integer.

(Total for Question 20 is 2 marks)

**21** Work out  $(2\sqrt{3})^3$  giving your answer in its simplest form.

(Total for Question 21 is 2 marks)

22 Work out  $(\sqrt{2} \times \sqrt{3} \times \sqrt{5})^2$  giving your answer as an integer.

(Total for Question 22 is 2 marks)

23 Express  $(\sqrt{3})^7$  in the form  $a\sqrt{3}$ , where a is an integer.



(Total for Question 23 is 2 marks)

**24** Work out  $\sqrt{60} \div \sqrt{3}$  giving your answer in its simplest form.

(Total for Question 24 is 2 marks)

25 Work out  $8\sqrt{30} \div 4\sqrt{6}$  giving your answer in its simplest form.

(Total for Question 25 is 1 mark)

26 Simplify fully  $\frac{18\sqrt{150}}{9\sqrt{3}}$ 

(Total for Question 26 is 2 marks)

27 Simplify fully  $\frac{40\sqrt{40}}{5\sqrt{10}}$ 

(Total for Question 27 is 2 marks)

**28** Simplify fully  $\left(\frac{\sqrt{2}}{\sqrt{5}}\right)^2$ 



(Total for Question 28 is 2 marks)

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**29** Simplify 
$$\sqrt{11} + \sqrt{11} + \sqrt{11}$$

(Total for Question 29 is 1 mark)

**30** Simplify 
$$3\sqrt{5} + 6\sqrt{5}$$

(Total for Question 30 is 1 mark)

**31** Simplify 
$$9\sqrt{7} + 3\sqrt{7} - \sqrt{7}$$

(Total for Question 31 is 1 mark)

32 Work out  $(\sqrt{2} + 6\sqrt{2} - 2\sqrt{2})^2$  giving your answer as an integer.

(Total for Question 32 is 2 marks)

**33** Simplify 
$$4\sqrt{3} + 6\sqrt{2} - \sqrt{3} + 8\sqrt{2}$$



(Total for Question 33 is 2 marks)

**34** Express  $\sqrt{18} + \sqrt{2}$  in the form  $a\sqrt{2}$ , where a is an integer.

(Total for Question 34 is 2 marks)

**35** Express  $2\sqrt{3} + \sqrt{75}$  in the form  $a\sqrt{3}$ , where a is an integer.

(Total for Question 35 is 2 marks)

**36** Express  $\sqrt{32} + \sqrt{8}$  in the form  $a\sqrt{2}$ , where a is an integer.

(Total for Question 36 is 3 marks)

37 Express  $3\sqrt{500} - \sqrt{20}$  in the form  $a\sqrt{5}$ , where a is an integer.

(Total for Question 37 is 3 marks)

**38** Express  $\sqrt{28} + \sqrt{175} - 3\sqrt{7}$  in the form  $a\sqrt{7}$ , where a is an integer.



(Total for Question 38 is 3 marks)







**39** Ross is doing a surds question.

Ross writes:

$$\sqrt{300} + \sqrt{12} = \sqrt{312}$$

$$= \sqrt{4} \times \sqrt{78}$$

$$= 2 \times \sqrt{78}$$

$$= 2\sqrt{78}$$

Explain the mistake that Ross has made

(Total for Question 39 is 1 mark)

**40** Work out  $\frac{\sqrt{30} \times 5\sqrt{6}}{\sqrt{125} - \sqrt{20}}$  giving your answer as an integer.



(Total for Question 40 is 4 marks)