

## Surds Overview

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(1) Simplify:

$$\sqrt{100000} \times \sqrt{100000}$$

(2) Expand and simplify:

$$\sqrt{2}(\sqrt{2} + \sqrt{8})$$

(3) Expand and simplify:

$$(3 + \sqrt{5})^2$$

(4)  $3\sqrt{7} + 4\sqrt{7}$

(5)  $2\sqrt{3} \times 3\sqrt{6}$

(6) Find the value of  $k$  in

$$4\sqrt{2} \equiv \sqrt{k}$$

(7) Simplify:  $3 \times 4\sqrt{3}$

(8) Rationalise the

denominator:  $\frac{3}{\sqrt{3}}$

(9) The perimeter of a rectangle is  $12 + 6\sqrt{3}$ . One side length is  $2 + \sqrt{3}$ . What are the other side lengths?

(10) Show that

$(\sqrt{5} + 2)(\sqrt{5} - 2)$  is an integer.

(11) Simplify  $\sqrt{200}$

(12) Expand and simplify

$$(2 + \sqrt{3})(3 - \sqrt{6})$$

(13) Write  $2\sqrt{7} \times \sqrt{3}$  in the form  $\sqrt{k}$

(14) Show that  $\frac{\sqrt{20}}{\sqrt{5}}$  is an integer.

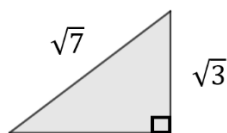
(15) Expand and simplify  $\sqrt{a}(\sqrt{a} + \sqrt{b})$

(16) Simplify  $\sqrt{18} - \sqrt{8}$

(17) Rationalise and fully simplify  $\frac{\sqrt{2+4}}{\sqrt{2}}$

(18) Simplify  $\sqrt{300}$

(19) Show that the missing side length in the triangle below is an integer



(20) Expand and simplify  $2\sqrt{7}(\sqrt{5} - \sqrt{7})$

(21) Simplify  $\frac{1}{\sqrt{3}} + \sqrt{27}$

(22) Show that  $(\sqrt{12} - \sqrt{3})^4$  is an integer.

(23) Write  $a\sqrt{a}$  in the form  $\sqrt{k}$

(24) Simplify  $(\sqrt{5})^6$

(25)  $A = 8 + \sqrt{12}$  and  $B$  is half of  $A$ . Find  $B$  in its simplest form.

(26) Rationalise  $\frac{5}{3\sqrt{5}}$

(27) Simplify  $5^{\frac{1}{2}} + \sqrt{125}$

(28) A linear (arithmetic) sequence has first 2 terms:

$1 + \sqrt{3}$ ,  $3 + \sqrt{12}$   
Find the 3<sup>rd</sup> term in its simplest form.

(29) A geometric sequence has first term  $2\sqrt{3}$  and second term 6. What is the 3<sup>rd</sup> term?

(30) Write  $2\sqrt{5} + \sqrt{5}$  in the form  $\sqrt{k}$