Name:

Level 2 Further Maths

Surds

Corbettmaths

Ensure you have: Pencil or pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/

1. Simplify $\sqrt{300} - 2\sqrt{27}$

$\sqrt{100} \times \sqrt{3} - 2 \times \sqrt{9} \times \sqrt{3}$

$10\sqrt{3} - 6\sqrt{3}$

$4\sqrt{3}$

(2)

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2. Expand and simplify fully $(3 + 4\sqrt{3})(5 - \sqrt{3})$

$15 - 3\sqrt{3} + 20\sqrt{3} - 12$

$3 + 17\sqrt{3}$

$3 + 17\sqrt{3}$

(2)

$3\sqrt{2} \times 3\sqrt{2}$
$= 9 \times \sqrt{4}$
$= 18$

3. Expand and simplify $(3\sqrt{2} - 1)^3$

$(3\sqrt{2} - 1)(3\sqrt{2} - 1)(3\sqrt{2} - 1)$

$(18 - 6\sqrt{2} + 1)(3\sqrt{2} - 1)$

$(19 - 6\sqrt{2})(3\sqrt{2} - 1)$

$57\sqrt{2} - 19 - 36 + 6\sqrt{2}$

$63\sqrt{2} - 55$

.....

(4)

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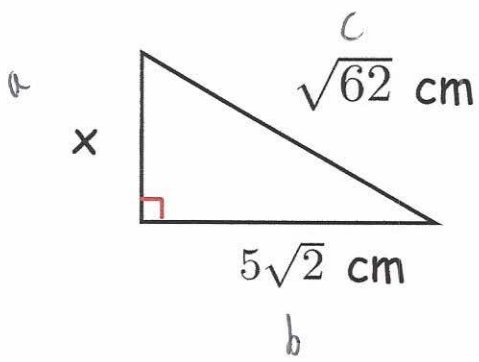
4. Shown below is a right angled triangle.



Find the length of the side labelled x.

Give your answer in the form $a\sqrt{b}$

$x^2 + (5\sqrt{2})^2 = (\sqrt{62})^2$

$x^2 + 50 = 62$

$x^2 = 12$

$x = \sqrt{12}$

$= 2\sqrt{3}$

$2\sqrt{3}$ .....cm

(4)

5. Solve $\sqrt{200}+\sqrt{18}=\sqrt{y}+\sqrt{98}$

$10\sqrt{2}+3\sqrt{2}=\sqrt{y}+7\sqrt{2}$

$\sqrt{y}=6\sqrt{2}$

$\sqrt{y}=\sqrt{72}$

y = 72

(3)

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6. Work out the value of y such that $\dfrac{\sqrt{15}\times\sqrt{y}}{\sqrt{5}}=3\sqrt{11}$

$\dfrac{\sqrt{15}\times\sqrt{y}}{\sqrt{5}}=\sqrt{99}$

$\sqrt{15}\times\sqrt{y}=\sqrt{495}$

$\sqrt{y}=\dfrac{\sqrt{495}}{\sqrt{15}}$

$\sqrt{y}=\sqrt{33}$

y = 33

(4)

7. Solve $\sqrt{112} + y\sqrt{28} = 5\sqrt{7}$

$4\sqrt{7} + 2y\sqrt{7} = 5\sqrt{7}$

$2y\sqrt{7} = \sqrt{7}$

$2y = 1$

$y = \frac{1}{2}$

y = $\frac{1}{2}$

(4)

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8. Simplify this ratio fully

$\sqrt{20} : \sqrt{45} : \sqrt{180}$

$\sqrt{4} \times \sqrt{5} : \sqrt{9} \times \sqrt{5} : \sqrt{36} \times \sqrt{5}$

$2\sqrt{5} : 3\sqrt{5} : 6\sqrt{5}$

$2 : 3 : 6$

2 : 3 : 6

(3)