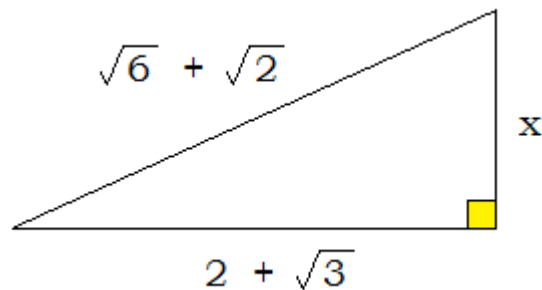


# Princess Vulnavia presents ... Cloud 9; Revision Raindrops

## Surd Form: Application to Trigonometry

### Raindrop 4d

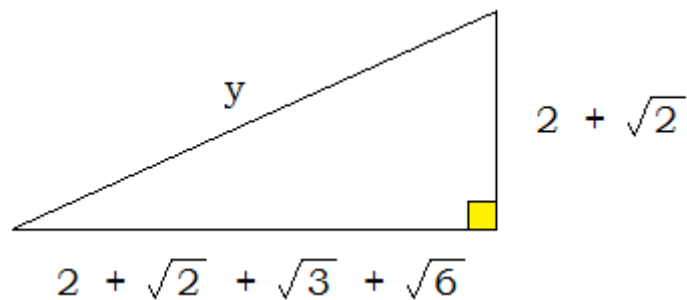
Exercise 1: Without using a calculator and showing all necessary working, calculate  $x$ .



Exercise 2: (i) Factorise  $2 + \sqrt{2} + \sqrt{3} + \sqrt{6}$

(ii) Find  $\sqrt{7 + 2\sqrt{6}}$  in the form  $p + \sqrt{q}$

(iii)



Without using a calculator and showing all necessary working, prove that:

$$y = (1 + \sqrt{a})(1 + \sqrt{b})$$

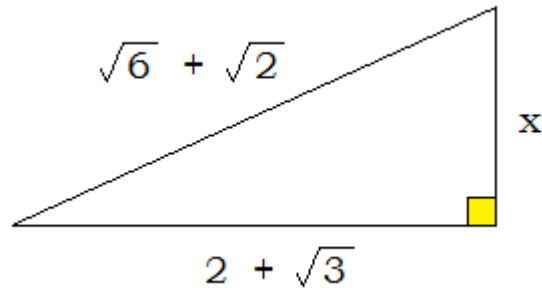
(where  $a$  and  $b$  are rational numbers to be determined)

The answers follow on the next page ...

# Princess Vulnavia presents ... Cloud 9; Revision Raindrops

## Raindrop 4d

Exercise 1: Without using a calculator and showing all necessary working, calculate  $x$ .



Answer:  $x = 1$

Exercise 2: (i) Factorise  $2 + \sqrt{2} + \sqrt{3} + \sqrt{6}$

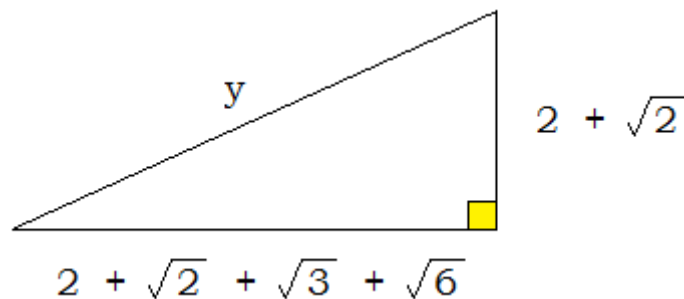
Answer:  $2 + \sqrt{2} + \sqrt{3} + \sqrt{6} \equiv (\sqrt{2} + \sqrt{3})(\sqrt{2} + 1)$

Exercise 2: (ii) Find  $\sqrt{7 + 2\sqrt{6}}$  in the form  $p + \sqrt{q}$

Answer:  $\sqrt{7 + 2\sqrt{6}} = 1 + \sqrt{6}$

## Exercise 2

(iii)



Without using a calculator and showing all necessary working, prove that:

$$y = (1 + \sqrt{a})(1 + \sqrt{b})$$

(where  $a$  and  $b$  are rational numbers to be determined)

Answer:  $y = (1 + \sqrt{2})(1 + \sqrt{6})$

Comparison with the form:

$$y = (1 + \sqrt{a})(1 + \sqrt{b})$$

gives:  $a = 2$  and  $b = 6$

(or vice versa)