

## Solutions to Past Paper Questions – Surds

14) (a)  $\sqrt{5} \times \sqrt{20} = \sqrt{100} = 10$

(b)  $\sqrt{20} = \sqrt{4 \times 5} = 2\sqrt{5}$

So  $\sqrt{5} + \sqrt{20} = \sqrt{5} + 2\sqrt{5} = 3\sqrt{5}$

So  $k = 3$

(c)  $\frac{\sqrt{5} + \sqrt{45}}{\sqrt{20}} = \frac{\sqrt{5} + \sqrt{9 \times 5}}{2\sqrt{5}} = \frac{\sqrt{5} + 3\sqrt{5}}{2\sqrt{5}} = \frac{4\sqrt{5}}{2\sqrt{5}} = 2$

18) (c)  $(2\sqrt{3})^4 = 2^4 \times (3^{\frac{1}{2}})^4 = 2^4 \times 3^2 = 16 \times 9 = 144$

(b) (i)  $\frac{21}{\sqrt{7}} = \frac{21 \times \sqrt{7}}{\sqrt{7} \times \sqrt{7}} = \frac{21\sqrt{7}}{7} = 3\sqrt{7}$

$(\sqrt{5} + 2\sqrt{3})(\sqrt{5} - 2\sqrt{3}) = \sqrt{5}\sqrt{5} + 2\sqrt{3}\sqrt{5} - 2\sqrt{3}\sqrt{5} - \sqrt{3}\sqrt{3}$

(ii)  $= \sqrt{25} - \sqrt{9}$   
 $= 5 - 3 = 2$

17)  $\frac{6 + 9\sqrt{2} - 2\sqrt{2} - 3 \times 2}{2\sqrt{2}}$   
 $= \frac{7\sqrt{2}}{2\sqrt{2}}$   
 $= 3.5$