Core 1 Basic Algebra Questions – Mainly Surds

1 (a) Simplify $(\sqrt{5}+2)(\sqrt{5}-2)$. *(2 marks)*

(b) Express $\sqrt{8}+\sqrt{18}$ in the form $n\sqrt{2}$, where n is an integer. *(2 marks)*

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4 (a) Express $(4\sqrt{5}-1)(\sqrt{5}+3)$ in the form $p+q\sqrt{5}$, where p and q are integers. *(3 marks)*

(b) Show that $\dfrac{\sqrt{75}-\sqrt{27}}{\sqrt{3}}$ is an integer and find its value. *(3 marks)*

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3 (a) Express $\dfrac{\sqrt{5}+3}{\sqrt{5}-2}$ in the form $p\sqrt{5}+q$, where p and q are integers. *(4 marks)*

(b) (i) Express $\sqrt{45}$ in the form $n\sqrt{5}$, where n is an integer. *(1 mark)*

(ii) Solve the equation

$$x\sqrt{20}=7\sqrt{5}-\sqrt{45}$$

giving your answer in its simplest form. *(3 marks)*

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2 (a) Express $\dfrac{\sqrt{63}}{3}+\dfrac{14}{\sqrt{7}}$ in the form $n\sqrt{7}$, where n is an integer. *(3 marks)*

(b) Express $\dfrac{\sqrt{7}+1}{\sqrt{7}-2}$ in the form $p\sqrt{7}+q$, where p and q are integers. *(4 marks)*
