QT Surds

1. Write the following surds in the form $a\sqrt{b}$, where a and b are integers.

(a) $\sqrt{12}$

(b) $\sqrt{48}$

(c) $2\sqrt{50}$

(d) $7\sqrt{20}$

2. Simplify the following surds in the form ab, where a and b are integers.

(a) $\sqrt{8} + \sqrt{72}$

(b) $\sqrt{1000} - \sqrt{90}$

(c) $\sqrt{125} - \sqrt{500}$

(d) $2\sqrt{125} + \sqrt{80}$

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

4. Expand and simplify $(2 + \sqrt{2})(1 - \sqrt{2})$

5. Show that $\left(4 + \sqrt{5}\right)^2 = 21 + 8\sqrt{5}$

Show each stage of your working

6. a and b are positive integers such that $\left(2 - \sqrt{a}\right)^2 = b - 4\sqrt{3}$

Find the value of a and the value of b.

7. Show that $\dfrac{4\sqrt{5}+5}{5+ \sqrt{5}}$ can be written as $\dfrac{1+3\sqrt{5}}{4}$