TAKE 10 ... SIMPLIFICATION OF SURDS

Q1. Write $\sqrt{75}$ in the form $k\sqrt{3}$, where k is an integer.

(2)

Q2. (a) Express $5\sqrt{27}$ in the form $n\sqrt{3}$, where n is a positive integer.

(2)

(b) Rationalise the denominator of $\frac{21}{\sqrt{3}}$

(2)

Q3. Expand $(1+\sqrt{2})(3-\sqrt{2})$

Give your answer in the form $a+b\sqrt{2}$ where a and b are integers.

(2)

Q4. (b)   Expand and simplify $(2\sqrt{5}+1)(3\sqrt{5}-1)$

(2)

(c)   Write $\frac{6}{\sqrt{12}}$ in the form $\sqrt{n}$, where n is an integer.

(2)

Q5. $\frac{\sqrt{3}}{5}+\frac{2}{\sqrt{3}}=a\sqrt{3}$,where a is a fraction. Find the value of a.
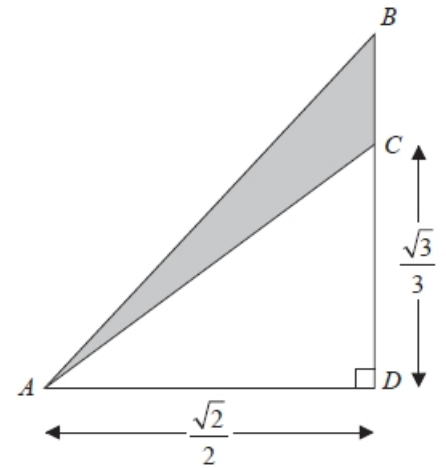
(3)

Q6. *ABD* is a right angled triangle. All measurements are given in centimetres.

C is the point on *BD* such that $CD = \frac{\sqrt{3}}{3}$

$AD = BD = \frac{\sqrt{2}}{2}$

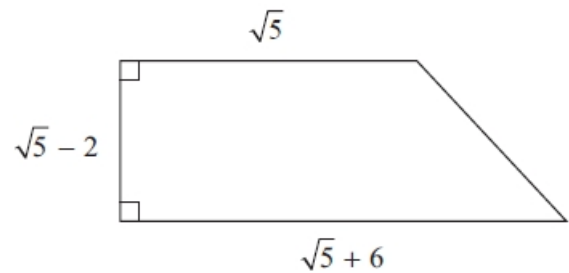Work out the exact area, in cm^2, of the shaded region.

(3)

Q7. Here is a trapezium.

All measurements shown are in centimetres.

Work out the area of the trapezium.
Give your answer in cm^2 in the form $a\sqrt{5} + b$
where *a* and *b* are integers.

(3)

Q8. The perimeter of a square is $\sqrt{120}$ cm.

Work out the area of the square. Give your answer in its simplest form.

(3)

Q9. $a = \sqrt{8} + 2$ $\qquad b = \sqrt{8} - 2$ $\quad T = a^2 - b^2$

Work out the value of T.

Give your answer in the form $c\sqrt{2}$ where c is an integer.

(4)

Q10. Show that $\dfrac{3+\sqrt{2}}{5+\sqrt{8}}$ can be written as $\dfrac{11-\sqrt{2}}{17}$

(3)