1 Calculate $\sqrt{10}$ as a percentage of $\sqrt{160}$.

.... % **[4]**

2   Solve these simultaneous equations.

$$4x + y = 1$$
$$2x - 3y = 18$$

$x =$ _____

$y =$ _____ **[3]**

3 Write the following in the form $a\sqrt{3}$, where a is an integer.

   (a) $\dfrac{6}{\sqrt{3}}$

      (a) _____ **[2]**

   (b) $\sqrt{24} \times \sqrt{2}$

      (b) _____ **[2]**

4 (a) Simplify.

　　(i) $(\sqrt{5})^4$

　　　　　　　　　　　　　　　　　　　　　　　(a)(i) _____ **[1]**

　　(ii) $\dfrac{\sqrt{45}}{3}$

　　　　　　　　　　　　　　　　　　　　　　　(ii) _____ **[1]**

　　(iii) $\sqrt{5} \times \sqrt{40}$

　　　　　　　　　　　　　　　　　　　　　　　(iii) _____ **[3]**

(b) Work out the value of a in this equation.

$$(6 - \sqrt{a})(6 + \sqrt{a}) = 33$$

　　　　　　　　　　　　　　　　　　　　　　　(b) _____ **[2]**

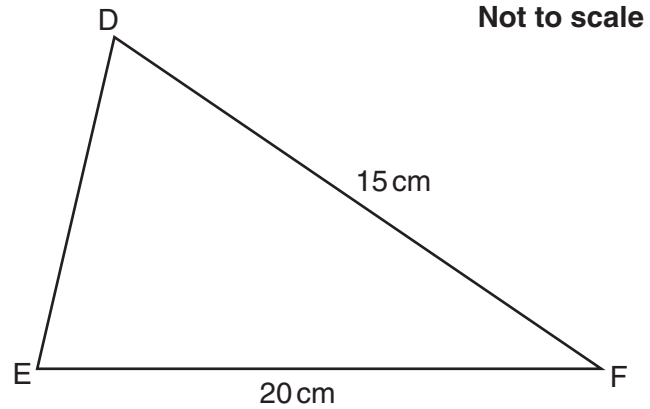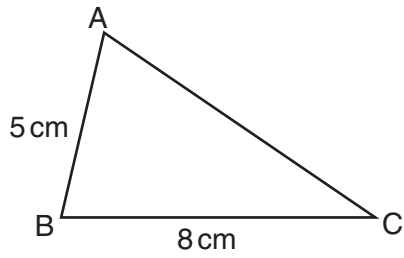**5 (a)** Simplify fully.

$$\sqrt{\sqrt{12} \times \sqrt{3}}$$

(a) _____ **[2]**

(b) Simplify by rationalising the denominator.

$$\frac{2}{\sqrt{5}}$$

(b) _____ **[1]**

6 Triangle ABC is similar to triangle DEF.

Not to scale

(a) Calculate DE.

(a) _____ cm **[3]**

(b) Calculate AC.

(b) _____ cm **[2]**

7 (a) Simplify.

$$(3a^3b^4)^2$$

(a) _____ [3]

(b) Given that f(x) = 3x − 5, evaluate f(3) − f(1).

(b) _____ [3]

(c) Evaluate.

$$125^{-\frac{1}{3}}$$

(c) _____ [2]

(d) Rationalise the denominator and simplify.

$$\frac{24}{\sqrt{6}}$$

(d) _____ [2]

8 Peter is using the quadratic formula to solve an equation of the form

$$ax^2 + bx + c = 0.$$

After substituting values and some calculation he arrives at this stage in his working.

$$x = \frac{-5 \pm \sqrt{73}}{4}$$

Work out possible values for a, b and c.

$a =$ _____

$b =$ _____

$c =$ _____ **[4]**