

Surds

25 marks

1. Work out

$$\frac{(3 - \sqrt{2})(2 + 3\sqrt{2})}{\sqrt{8}}$$

Give your answer in its simplest form.

.....
(Total 3 marks)

2. Work out

$$\frac{(5 + \sqrt{3})(5 - \sqrt{3})}{\sqrt{22}}$$

Give your answer in its simplest form.

.....
(Total 3 marks)

3. (a) Express $\frac{6}{\sqrt{2}}$ in the form $a\sqrt{b}$, where a and b are positive integers.

.....

(2)

The diagram shows a right-angled isosceles triangle.

The length of each of its equal sides is $\frac{6}{\sqrt{2}}$ cm.

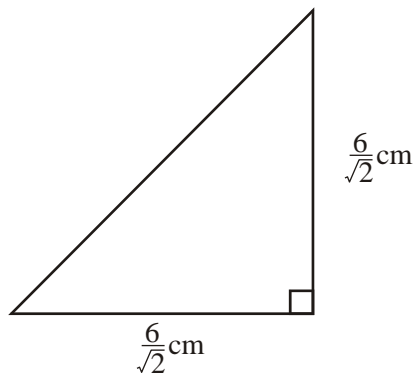


Diagram **NOT** accurately drawn

- (b) Find the area of the triangle.
Give your answer as an integer.

..... cm²

(2)

(Total 4 marks)

4. (a) Write down the value of $8^{\frac{1}{3}}$

.....

(1)

$8\sqrt{8}$ be written in the form 8^k

- (b) Find the value of k .

$k =$

(1)

$8\sqrt{8}$ can also be expressed in the form $m\sqrt{2}$ where m is a positive integer.

(c) Express $8\sqrt{8}$ in the form $m\sqrt{2}$

.....

(2)

(d) Rationalise the denominator of $\frac{1}{8\sqrt{8}}$

Give your answer in the form $\frac{\sqrt{2}}{p}$ where p is a positive integer.

.....

(2)

(Total 6 marks)

5. (a) Rationalise

$$\frac{1}{\sqrt{7}}$$

.....

(2)

(b) (i) Expand and simplify

$$(\sqrt{3} + \sqrt{15})^2$$

Give your answer in the form $n + m\sqrt{5}$, where n and m are integers.

.....

(ii)

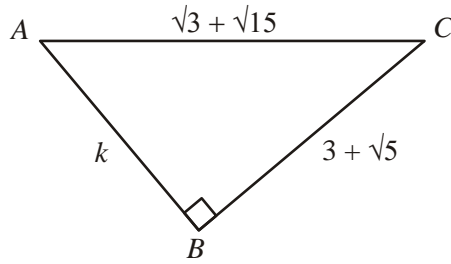


Diagram **NOT** accurately drawn

All measurements on the triangle are in centimetres.

ABC is a right-angled triangle.
 k is a positive integer.

Find the value of k .

$k = \dots\dots\dots$

(5)

(Total 7 marks)

6. Write $\frac{\sqrt{18} + 10}{\sqrt{2}}$ in the form $p + q\sqrt{2}$, where p and q are integers.

$p = \dots\dots\dots$

$q = \dots\dots\dots$

(Total 2 marks)