Non-Calculator

Q1.

(a)   Work out the value of $\sqrt{8} \times \sqrt{2}$

_____

_____

Answer _____

(2)

(b)   Rationalise the denominator and simplify $\dfrac{12}{\sqrt{3}}$

_____

_____

_____

_____

Answer _____

(2)
(Total 4 marks)

Q2.

(a)   Write $\sqrt{175}$ in the form $a\sqrt{b}$ where a and b are integers greater than 1.

_____

_____

_____

Answer _____

(2)

(b)   Simplify fully $\dfrac{24}{\sqrt{3}}$ by rationalising the denominator.

_____

_____

_____

Answer _____

(2)
(Total 4 marks)

Q3.

Write $\dfrac{26}{\sqrt{2}} - \dfrac{12}{\sqrt{18}} + 2\sqrt{50}$ in the form $a\sqrt{2}$ where a is an integer.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

(Total 4 marks)

Q4.

Write this ratio in its simplest form

$$\sqrt{12} \;:\; \sqrt{48} \;:\; \sqrt{300}$$

_____

_____

_____

_____

Answer_____ : _____ : _____

(Total 3 marks)

Q5.

Here is a formula $r = \sqrt{(w^2 - h^2)}$

Work out the value of *r* when $w = 9\sqrt{2}$ and $h = 5\sqrt{6}$

Give your answer in the form $a\sqrt{b}$ where a and b are integers greater than 1.

Answer _____

(Total 3 marks)

Q6.

Expand and simplify fully $(\sqrt{10} + \sqrt{2})(\sqrt{15} - \sqrt{3})$

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

Answer _____

(Total 4 marks)

Q7.

(a) Simplify fully $\dfrac{\sqrt{8}}{\sqrt{2}}$

_____

_____

_____

Answer _____

(2)

(b) $\sqrt{6} \times \sqrt{5} \times \sqrt{4} \times \sqrt{3} \times \sqrt{2} \times \sqrt{1} = k\sqrt{5}$

Work out the value of *k*.

_____

_____

_____

_____

_____

Answer _____

(3)

(Total 5 marks)

Q8.

(a) Work out the value of $\left(\sqrt{2}\right)^4$

_____

Answer _____

(1)

(b) Expand and simplify $\left(\sqrt{2} + 3\right)^2$

_____

_____

_____

_____

Answer _____

(2)

(Total 3 marks)

Q9.

(a) Work out the value of $\sqrt{2} \times \sqrt{32}$

_____

_____

_____

_____

Answer _____

(2)

(b) Rationalise the denominator and simplify $\dfrac{21}{\sqrt{7}}$

_____

_____

Answer _____

(2)

(Total 4 marks)

Q10.

(a) Rationalise the denominator and simplify $\dfrac{16}{\sqrt{2}}$

Answer _____

(2)

(b) Expand and simplify $(5 - \sqrt{3})^2$

Give your answer in the form $a - b\sqrt{3}$

Answer _____

(2)
(Total 4 marks)

Q11.

Simplify fully $\dfrac{(5 - \sqrt{3})(3 - \sqrt{3})}{2}$

Give your answer in the form $a + b\sqrt{3}$ where a and b are integers.

Answer _____

(Total 3 marks)

Q12.

Put these in order starting with the smallest.

$$2\sqrt{3} \times \sqrt{2} \qquad \sqrt{\dfrac{56}{2}} \qquad \dfrac{10}{\sqrt{5}}$$

You **must** show your working.

_____

_____

_____

_____

_____

_____

_____

_____

Smallest _____

_____

Largest _____

(Total 3 marks)

Q13.

Work out the value of $\quad \dfrac{5}{\sqrt{3}} - \sqrt{6\dfrac{3}{4}}$

Give your answer in the form $\quad k\sqrt{3}$

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

(Total 4 marks)

Q14.

Rationalise the denominator and simplify $\dfrac{10}{3\sqrt{5}}$

Answer _____

(Total 2 marks)

Q15.

Write $\sqrt{12} + \dfrac{15}{\sqrt{3}}$ in the form $a\sqrt{b}$ where a and b are prime numbers.

Answer _____

(Total 3 marks)

Calculator

Q16.

The square of x is 7

Circle the value of x^3

343            $\sqrt[3]{49}$ 117 649 $7\sqrt{7}$

(Total 1 mark)