**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)

AQA GCSE Maths - Surds (H)

## 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)

AQA GCSE Maths - Surds (H)

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)

AQA GCSE Maths - Surds (H)

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

_____

_____

_____

_____

Answer _____

(2)

(Total 3 marks)

Q9.

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

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-----(H)----------------------------------------------------------------------------------------

----------------------------------------------------------------------------------------------

----------------------------------------------------------------------------------------------

        Answer _____

(2)

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

----------------------------------------------------------------------------------------------

----------------------------------------------------------------------------------------------

        Answer _____

(2)

(Total 4 marks)

AQA GCSE Maths - Surds (H)

## Q10.

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

_____

_____

_____

Answer _____

(2)

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

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

_____

_____

_____

_____

_____

_____

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)

AQA GCSE Maths - Surds (H)

## Q12.

Put these in order starting with the smallest.

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

You must show your working.

_____

_____

_____

_____

_____

_____

_____

_____

Smallest _____

_____

Largest _____

(Total 3 marks)

## Q13.

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

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

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

(Total 4 marks)

AQA GCSE Maths - Surds (H)

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)

AQA GCSE Maths - Surds (H)