SIMPLIFYING SURDS

Answer all of these questions. Remember to show your working out in all questions.

MAIN QUESTIONS

1.

$\sqrt{12}$

> $2\sqrt{3}$

2.

$\sqrt{18}$

> $3\sqrt{2}$

3.

$\sqrt{50}$

> $5\sqrt{2}$

4.

$\sqrt{72}$

> $6\sqrt{2}$

5.

$\sqrt{98}$

> $7\sqrt{2}$

6.

$\sqrt{200}$

> $10\sqrt{2}$

7.

$\sqrt{27}$

> $3\sqrt{3}$

8.

$\sqrt{75}$

> $5\sqrt{3}$

9.

$\sqrt{128}$

> $8\sqrt{2}$

10.

$\sqrt{242}$

> $11\sqrt{2}$

11.

$\sqrt{45} + \sqrt{20}$

> $5\sqrt{5}$

12.

$\sqrt{63} - \sqrt{28}$

> $\sqrt{7}$

13.

$2\sqrt{12} + 3\sqrt{27}$

> $13\sqrt{3}$

14.

$5\sqrt{8} - 2\sqrt{18}$

> $4\sqrt{2}$

15.

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

> 6

16.

$\sqrt{8} \times \sqrt{18}$

> 12

17.

$\sqrt{20} \times \sqrt{45}$

> 30

18.

$\sqrt{50} \div \sqrt{2}$

> 5

19.

$\sqrt{72} \div \sqrt{8}$

> 3

20.

$\sqrt{75} \div \sqrt{3}$

> 5

21.

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

> 12

22.

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

> 18

23.

$(4\sqrt{5})^2$

> 80

24.

$1/\sqrt{2}$

> $\sqrt{2}/2$

25.

$2/\sqrt{3}$

> $2\sqrt{3}/3$

26.

$5/\sqrt{5}$

> $\sqrt{5}$

27.

$3/(2\sqrt{2})$

> $3\sqrt{2}/4$

28.

$\sqrt{12} + \sqrt{27} - \sqrt{75}$

> 0

29.

$\sqrt{8} + \sqrt{18} + \sqrt{32}$

> $9\sqrt{2}$

30.

$\sqrt{50} - \sqrt{18} + \sqrt{8}$

> $4\sqrt{2}$

MASTER QUESTIONS

M1.

A square has an area of 72cm^2. Find the exact length of one side.

> $6\sqrt{2}$ cm

M2.

A right-angled triangle has legs of length $\sqrt{12}$ cm and $\sqrt{27}$ cm. Find the exact length of the hypotenuse.

> $\sqrt{39}$ cm

M3.

A rectangle has length $\sqrt{50}$ cm and width $\sqrt{18}$ cm. Find its exact area.

> $30\ \text{cm}^2$

M4.

Simplify the expression for the perimeter of an equilateral triangle with side length $\sqrt{48}$ cm.

> $12\sqrt{3}$ cm

M5.

A circle has area $32\pi\ \text{cm}^2$. Find the exact radius.

> $4\sqrt{2}$ cm

M6.

Find the exact distance between points $(0,0)$ and $(\sqrt{12},\sqrt{27})$.

> $\sqrt{39}$ units

M7.

A cube has volume $64\sqrt{2}\ \text{cm}^3$. Find the exact length of one edge.

> $2\sqrt[3]{4\sqrt{2}}$ cm

M8.

Simplify the expression for the diagonal of a square with area $98\ \text{cm}^2$.

> 14 cm

M9.

A ladder $\sqrt{75}$ m long leans against a wall. The base is $\sqrt{12}$ m from the wall. Find the exact height reached.

> $\sqrt{63}$ m

M10.

Find the exact value of $(\sqrt{8} + \sqrt{2})^2$.

> 18