GCSE HIGHER · REVISION MAT 1

Surds and exact calculations

1 Work out as a single fraction

$$\frac{2}{3} + \frac{3}{4}$$

2 Simplify

$$\sqrt{48}$$

3 Show that

$$\sqrt{12} \times \sqrt{3} = 6$$

4 Find the exact perimeter of a semicircle of radius 4 cm.

5 Show that

$$(3 + \sqrt{2})(3 - \sqrt{2}) = 7$$

6 A rectangle measures

$(2 + \sqrt{3})$ cm by $(2 - \sqrt{3})$ cm

Find its exact area and diagonal.

7 Show that

$$\frac{6}{\sqrt{3}} = 2\sqrt{3}$$

8 Rationalise the denominator and simplify

$$\frac{4}{3 - \sqrt{5}}$$

Mr&Mrs MATHS

ANSWERS · REVISION MAT 1

Surds and exact calculations

1 $\frac{8}{12} + \frac{9}{12}$

$\frac{17}{12}$ or $1\frac{5}{12}$

2 $\sqrt{16 \times 3}$

$4\sqrt{3}$

3 $\sqrt{36}$

$= 6$

4 Arc $= \frac{1}{2} \times 2\pi \times 4 = 4\pi$

Diameter $= 8$

$(4\pi + 8)$ cm

5 $9 - 3\sqrt{2} + 3\sqrt{2} - 2$

$= 7$

6 Area $= 4 - 3 = 1$ cm^2

$d^2 = (7 + 4\sqrt{3}) + (7 - 4\sqrt{3}) = 14$

Area 1 cm^2, diagonal $\sqrt{14}$ cm

7 $\frac{6}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{6\sqrt{3}}{3}$

$= 2\sqrt{3}$

8 $\frac{4(3 + \sqrt{5})}{(3 - \sqrt{5})(3 + \sqrt{5})}$

$= \frac{4(3 + \sqrt{5})}{4}$

$= 3 + \sqrt{5}$

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