Master Maths 10   Worksheet 11
Surds

11

Name: _____

1. Circle the irrational numbers in the list below.

$$0.\dot{7} \quad \sqrt{16} \quad \sqrt{15} \quad 0.3\overline{57} \quad \pi \quad \frac{6}{7}$$

2. Simplify the following surds.

(a) $\sqrt{25}$ (b) $\sqrt{49}$ (c) $\sqrt{121}$ (d) $\sqrt{81}$

3. Simplify the following surds.

(a) $\sqrt{28}$ (b) $\sqrt{99}$ (c) $3\sqrt{32}$ (d) $5\sqrt{162}$

4. Write the following as entire surds.

(a) $8\sqrt{2}$ (b) $5\sqrt{9}$ (c) $6\sqrt{5}$ (d) $3\sqrt{13}$

5. Simplify the following expressions.

(a) $8\sqrt{2} + 5\sqrt{2}$ (b) $5\sqrt{7} + 6\sqrt{3} - 3\sqrt{7} + 5\sqrt{3}$

(c) $5\sqrt{48} - 8\sqrt{12}$ (d) $\sqrt{20} - 2\sqrt{45} + 3\sqrt{500}$

(e) $2\sqrt{6} \times 3\sqrt{10}$ (f) $\dfrac{5\sqrt{24}}{2\sqrt{75}}$

6. Expand and simplify.

(a) $\sqrt{5}(\sqrt{2} + \sqrt{10})$ (b) $3\sqrt{2}(6\sqrt{6} + 2\sqrt{8})$

7. Expand and simplify.

$$(5\sqrt{3} + 2\sqrt{7})(3\sqrt{7} + 2\sqrt{3})$$

8. Write the following fractions with rational denominators and simplify where possible.

(a) $\dfrac{3}{\sqrt{5}}$ (b) $\dfrac{2\sqrt{7}}{3\sqrt{5}}$ (c) $\dfrac{3 + 4\sqrt{11}}{2\sqrt{5}}$

(d) $\dfrac{2\sqrt{5} - 3\sqrt{3}}{4\sqrt{5} + 2\sqrt{3}}$