

SURDS

Simplifying surds

$$\sqrt{20} = \sqrt{4} \sqrt{5} = 2\sqrt{5}$$

Identify factors, one must be a square number, then simplify

Express each of the following in its simplest form:

$$\sqrt{8} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{50} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{12} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{20} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{63} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{28} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{90} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{48} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{300} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{45} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{96} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{60} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{108} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{150} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{28} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{32} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{72} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{24} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{98} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

$$\sqrt{27} = \sqrt{\quad} \sqrt{\quad} = \sqrt{\quad}$$

1 4 9 16 25 36 49 64 81 100

Simplifying surds

$$3\sqrt{32} = \sqrt{16} \sqrt{2} = 3 \times 4\sqrt{2} = 12\sqrt{2}$$

Simplify as before, then multiply by 3.... The number in the square root does not change

Express each of the following in its simplest form:

$$5\sqrt{8} = 5 \times \sqrt{4} \sqrt{2} = 5 \times 2\sqrt{2} = 10\sqrt{2}$$

$$3\sqrt{32} = 3 \times \sqrt{16} \sqrt{2} = 3 \times 4\sqrt{2} = 12\sqrt{2}$$

$$5\sqrt{40} = 5 \times \sqrt{4} \sqrt{10} = 5 \times 2\sqrt{10} = 10\sqrt{10}$$

$$2\sqrt{12} = 2 \times \sqrt{4} \sqrt{3} = 2 \times 2\sqrt{3} = 4\sqrt{3}$$

$$4\sqrt{18} = 4 \times \sqrt{9} \sqrt{2} = 4 \times 3\sqrt{2} = 12\sqrt{2}$$

$$3\sqrt{24} = 3 \times \sqrt{4} \sqrt{6} = 3 \times 2\sqrt{6} = 6\sqrt{6}$$

$$3\sqrt{27} = 3 \times \sqrt{9} \sqrt{3} = 3 \times 3\sqrt{3} = 9\sqrt{3}$$

$$10\sqrt{48} = 10 \times \sqrt{16} \sqrt{3} = 10 \times 4\sqrt{3} = 40\sqrt{3}$$

$$2\sqrt{108} = 2 \times \sqrt{36} \sqrt{3} = 2 \times 6\sqrt{3} = 12\sqrt{3}$$

$$3\sqrt{45} = 3 \times \sqrt{9} \sqrt{5} = 3 \times 3\sqrt{5} = 9\sqrt{5}$$

Simplifying surds

$$3\sqrt{2} + 5\sqrt{2} = 8\sqrt{2}$$

We can only group together if the surd is the same

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

Cannot be simplified

Express each of the following in its simplest form:

$$5\sqrt{2} + 3\sqrt{2} = \sqrt{\quad}$$

$$3\sqrt{7} - \sqrt{7} = \sqrt{\quad}$$

$$4\sqrt{3} + 2\sqrt{3} - 3\sqrt{3} = \sqrt{\quad}$$

$$4\sqrt{3} + 3\sqrt{3} = \sqrt{\quad}$$

$$8\sqrt{6} - 2\sqrt{6} = \sqrt{\quad}$$

$$5\sqrt{6} + 2\sqrt{6} - \sqrt{6} = \sqrt{\quad}$$

$$\sqrt{2} + 2\sqrt{2} = \sqrt{\quad}$$

$$3\sqrt{7} - 9\sqrt{7} = \sqrt{\quad}$$

$$\sqrt{5} + 5\sqrt{5} - 3\sqrt{5} = \sqrt{\quad}$$

$$2\sqrt{3} + \sqrt{3} - 5\sqrt{3} = \sqrt{\quad}$$