Surds lesson 4

Tuesday, December 31, 2013
10:06 AM

$5x + 6x = 11x$

$5x \times 6x = 30x^2$

$5x + 6y = 5x + 6y$

$5x \times 6y = 30xy$

$5\sqrt{2} + 6\sqrt{2} = 11\sqrt{2}$

$\sqrt{2} \times \sqrt{2} = 2$

$5\sqrt{2} \times 6\sqrt{2} = 30 \times 2 = 60$

$5\sqrt{2} + 6\sqrt{3} = 5\sqrt{2} + 6\sqrt{3}$

$5\sqrt{2} \times 6\sqrt{3} = 30 \times \sqrt{2} \times \sqrt{3}$

$= 30\sqrt{6}$

General formula: $a\sqrt{x} \times b\sqrt{y} = ab\sqrt{xy}$

Simplify $6\sqrt{3} \times 7\sqrt{5}$

$= 42\sqrt{15}$

Simplify $6\sqrt{5} \times 2\sqrt{10} = 12\sqrt{50}$

$= 12 \times \sqrt{25} \times \sqrt{2}$

$\sqrt{25} = +5$ or -5

$= \pm 5$

$= 12 \times \pm 5 \times \sqrt{2}$

$= \pm 60\sqrt{2}$

Simplify $\sqrt{10x^2y} \times \sqrt{12xy^3}$

$= \sqrt{10} \times \sqrt{x^2} \times \sqrt{y} \times \sqrt{12} \times \sqrt{x} \times \sqrt{y^3}$

$= 2 \times \sqrt{3}$

$= 2x\sqrt{10 \times y \times 3 \times x \times y^3}$

$= 2x\sqrt{30y^4x}$

$= 2x \times \sqrt{30x} \times \sqrt{y^4}$

$= 2xy^2\sqrt{30x}$

$(y^4)^{\frac{1}{2}} = y^2$

Find the area of a triangle if the base has a length of $3\sqrt{x^3}$ and the height has a length of $\sqrt{75y^2}$

Area of a triangle $= b \times h \times \frac{1}{2}$

$= 3\sqrt{x^3} \times \sqrt{75y^2} \times \frac{1}{2}$

$= 3 \times \frac{1}{2} \times \sqrt{75x^3y^2}$

$= \frac{3}{2}\sqrt{25 \times 3 \times x^2 \times x \times y^2}$

$= \frac{3}{2} \times 5 \times x \times y \times \sqrt{3x}$

$= \pm \frac{15xy}{2}\sqrt{3x}$