

# RATIONALIZING THE DENOMINATOR WORKSHEETS

Name :

Date :

Directions: Rationalize the denominator

$$1) \frac{5}{\sqrt{2}} =$$

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

$$3) \sqrt{\frac{27}{12}} =$$

$$4) \frac{7\sqrt{10}}{\sqrt{2}} =$$

$$5) \frac{6-\sqrt{5}}{\sqrt{8}} =$$

$$6) \frac{\sqrt{2}+\sqrt{8}}{-\sqrt{2}-\sqrt{8}} =$$

# RATIONALIZING THE DENOMINATOR WORKSHEETS

Directions: Rationalize the denominator

$$1) \frac{5}{\sqrt{2}} = \frac{5}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{5\sqrt{2}}{\sqrt{4}} = \frac{5\sqrt{2}}{2}$$

$$2) \frac{6}{\sqrt{3}} = \frac{6}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{6\sqrt{3}}{\sqrt{9}} = \frac{6\sqrt{3}}{3} = \frac{6\sqrt{3}}{\cancel{3}^1} = 2\sqrt{3}$$

$$3) \sqrt{\frac{27}{12}} = \frac{7\sqrt{10}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{20}}{\sqrt{4}} = \frac{7\sqrt{20}}{2} = \frac{7\sqrt{4 \cdot 5}}{2} = \frac{7\sqrt{4}\sqrt{5}}{2} = \frac{7 \cdot 2\sqrt{5}}{2} = \frac{\cancel{14}\sqrt{5}}{\cancel{2}^1} = 7\sqrt{5}$$

$$4) \frac{7\sqrt{10}}{\sqrt{2}} = \frac{7\sqrt{10}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{20}}{\sqrt{4}} = \frac{7\sqrt{20}}{2} = \frac{7\sqrt{4 \cdot 5}}{2} = \frac{7\sqrt{4}\sqrt{5}}{2} = \frac{7 \cdot 2\sqrt{5}}{2} = \frac{\cancel{14}\sqrt{5}}{\cancel{2}^1} = 7\sqrt{5}$$

$$5) \frac{6-\sqrt{5}}{\sqrt{8}} = \frac{6-\sqrt{5}}{\sqrt{8}} \cdot \frac{\sqrt{8}}{\sqrt{8}} = \frac{\sqrt{8}(6-\sqrt{5})}{\sqrt{64}} = \frac{6\sqrt{8}-\sqrt{40}}{8} = \frac{6\sqrt{4 \cdot 2}-\sqrt{4 \cdot 10}}{8} = \frac{6\sqrt{4}\sqrt{2}-\sqrt{4}\sqrt{10}}{8} = \frac{6(2)\sqrt{2}-2\sqrt{10}}{8} = \frac{12\sqrt{2}-2\sqrt{10}}{8} = \frac{2(6\sqrt{2}-\sqrt{10})}{8} = \frac{\cancel{2}(6\sqrt{2}-\sqrt{10})}{\cancel{8}^4} = \frac{6\sqrt{2}-\sqrt{10}}{4}$$

$$6) \frac{\sqrt{2}+\sqrt{8}}{-\sqrt{2}-\sqrt{8}} = \frac{\sqrt{2}+\sqrt{8}}{-\sqrt{2}-\sqrt{8}} \cdot \frac{-\sqrt{2}+\sqrt{8}}{-\sqrt{2}+\sqrt{8}} = \frac{(\sqrt{2}+\sqrt{8})(-\sqrt{2}+\sqrt{8})}{(-\sqrt{2}-\sqrt{8})(-\sqrt{2}+\sqrt{8})} = \frac{-\sqrt{4}+\sqrt{16}-\sqrt{16}+\sqrt{64}}{\sqrt{4}-\sqrt{16}+\sqrt{16}-\sqrt{64}} = \frac{-\sqrt{4}+\sqrt{64}}{\sqrt{4}-\sqrt{64}} = \frac{-2+8}{2-8} = \frac{6}{-6} = -1$$