Panel 1 (top left)

Find the exact value of each missing side.

1. $x = 7\sqrt{3}$, $y = 7$, $30°$, $60°$, 14

2. $30°$, x , 11 , y , $\dfrac{22\sqrt{3}}{3}$

$\dfrac{11}{\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3}} = \dfrac{11\sqrt{3}}{3}$

3. x , $45°$, y , $45°$, 14 , $7\sqrt{2}$

$\dfrac{14}{\sqrt{2}} \cdot \dfrac{\sqrt{2}}{\sqrt{2}} = \dfrac{14\sqrt{2}}{2}$

Panel 2 (top right)

Which of these are rational numbers?

#'s that can be written as a ratio

Terminating or Repeating decimals

1. 12.8 Rational

2. $\sqrt{25}$ Rational

3. $\sqrt{3}$ ↑ Irrational

4. $\dfrac{19}{7}$ Rational

Panel 3 (bottom left)

To rationalize a denomintor means to remove any irrational number from the denominator.
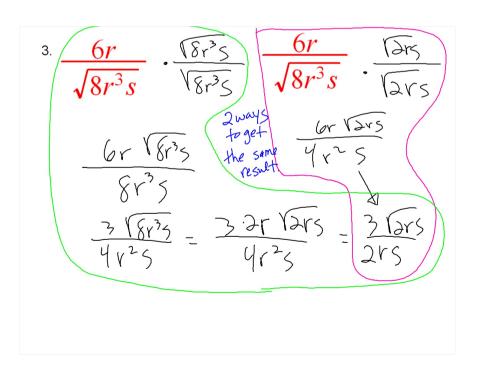
Rationalize each denominator

1. $\dfrac{2}{\sqrt{11}} \cdot \dfrac{\sqrt{11}}{\sqrt{11}}$ $\sqrt{11}^2$

$\dfrac{2\sqrt{11}}{11}$

2. $\dfrac{10}{\sqrt{12w}} \cdot \dfrac{\sqrt{3w}}{\sqrt{3w}}$

$= \dfrac{10\sqrt{3w}}{\sqrt{36w^2}} = \dfrac{10\sqrt{3w}}{6w} = \dfrac{5\sqrt{3w}}{3w}$

Panel 4 (bottom right)

3. $\dfrac{6r}{\sqrt{8r^3 s}} \cdot \dfrac{\sqrt{8r^3 s}}{\sqrt{8r^3 s}}$ $\dfrac{6r}{\sqrt{8r^3 s}} \cdot \dfrac{\sqrt{2rs}}{\sqrt{2rs}}$

2 ways to get the same result

$\dfrac{6r\sqrt{8r^3 s}}{8r^3 s}$ $\dfrac{6r\sqrt{2rs}}{4r^2 s}$

$\dfrac{3\sqrt{8r^3 s}}{4r^2 s} = \dfrac{3 \cdot 2r\sqrt{2rs}}{4r^2 s} = \dfrac{3\sqrt{2rs}}{2rs}$

$$\frac{\sqrt{13c^2d^3}}{\sqrt{2c^5d}} \cdot \frac{\sqrt{2cd}}{\sqrt{2cd}} = \frac{\sqrt{26c^3d^4}}{2c^3d}$$

$$= \frac{cd^2\sqrt{26c}}{2c^3d}$$

$$= \boxed{\frac{d\sqrt{26c}}{2c^2}}$$

5. $\sqrt[3]{\dfrac{7}{3a^2}} \cdot \dfrac{\sqrt[3]{9a}}{\sqrt[3]{9a}} = \dfrac{\sqrt[3]{63a}}{\sqrt[3]{27a^3}}$

$$= \boxed{\frac{\sqrt[3]{63a}}{3a}}$$

$$\frac{2}{\sqrt[3]{5^1w^4z^{13}}} \cdot \frac{\sqrt[3]{5^2w^2z^2}}{\sqrt[3]{5^2w^2z^2}} =$$

$$= \frac{2\sqrt[3]{5^2w^2z^2}}{\sqrt{5^3w^6z^{15}}} = \boxed{\frac{2\sqrt[3]{25w^2z^2}}{5w^2z^5}}$$