

PC 11
Unit 5 Dividing Radicals

Name _____
Block _____

1. Divide. Express answers in simplified radical form.

a) $\frac{\sqrt{6}}{\sqrt{2}}$

b) $\frac{-24\sqrt{14}}{8\sqrt{2}}$

c) $\frac{-90\sqrt{22}}{36\sqrt{2}}$

d) $\frac{28\sqrt{55}}{42\sqrt{11}}$

e) $\frac{10\sqrt[3]{48}}{2\sqrt[3]{3}}$

f) $\frac{\sqrt{6x}}{5\sqrt{2x}}$

g) $\frac{44\sqrt{48x^3}}{\sqrt{6x}}$

h) $\frac{-10\sqrt[3]{80x^7y^2}}{2\sqrt[3]{5x}}$

2. Rationalize the denominator. Assume all variables are positive real numbers.

a) $\frac{2}{\sqrt{5}}$

b) $\frac{-4}{\sqrt{11}}$

c) $\frac{5\sqrt{7}}{\sqrt{2}}$

d) $\frac{6\sqrt{10}}{-\sqrt{3}}$

e) $\frac{18\sqrt{5}}{3\sqrt{2}}$

f) $\frac{-\sqrt{10}}{\sqrt{2x}}$

g) $\frac{15}{\sqrt{x-2}}$

h) $\sqrt{\frac{49}{\pi}}$

i) $\frac{1}{2}\sqrt{\frac{6x}{5}}$

j) $\frac{4-\sqrt{x}}{\sqrt{2}}$

k) $\frac{1}{\sqrt[3]{2}}$

l) $\frac{10}{\sqrt[3]{2x^2}}$

m) $\frac{12}{\sqrt[3]{4}}$

n) $\frac{-40\sqrt[3]{2}}{\sqrt[3]{25}}$

3. Express in simplest form. Assume all variables are positive real numbers.

a) $\frac{3\sqrt{6}}{\sqrt{20}}$

b) $\frac{4\sqrt{5}}{\sqrt{8}}$

c) $\frac{-9\sqrt{12}}{\sqrt{18}}$

d) $\frac{14\sqrt{3}}{2\sqrt{28}}$

e) $\frac{18\sqrt{2x}}{\sqrt{24x}}$

f) $\frac{-\sqrt{28x^5}}{\sqrt{7x^3}}$

g) $\frac{-2}{3} \sqrt{\frac{5}{8x}}$

h) $2\sqrt[3]{\frac{5}{16x}}$

4. The volume of a cone is $V = \frac{1}{3} \pi r^2 h$. If the volume of a cone is $18\pi \text{ cm}^3$ and the height is 9cm, what is the radius?

5. The surface area of a sphere is $S = 4\pi r^2$. If the surface area is 100 mm^2 , what is the radius?

6. The volume of a sphere is $V = \frac{4}{3} \pi r^3$. If the volume of a sphere is 36 cm^3 , what is the radius?

7. A pendulum of length L metres, takes approximately $t = 2\pi \sqrt{\frac{L}{10}}$ seconds to complete a swing cycle.

a) Write an equivalent formula with the denominator rationalized.

b) If the length of the pendulum is 15 m, how long would it take to complete 2 cycles?

Answers:

1. a) $\sqrt{3}$ b) $-3\sqrt{7}$ c) $\frac{-5}{2}\sqrt{11}$ d) $\frac{2}{3}\sqrt{5}$ e) $10\sqrt[3]{2}$ f) $\frac{1}{5}\sqrt{3}$ g) $88x\sqrt{2}$ h) $-10x^2\sqrt[3]{2y^2}$ 2. a) $\frac{2\sqrt{5}}{5}$ b) $\frac{-4\sqrt{11}}{11}$ c) $\frac{5\sqrt{14}}{2}$ d) $-2\sqrt{30}$ e) $3\sqrt{10}$
 f) $\frac{-\sqrt{5x}}{x}$ g) $\frac{15\sqrt{x-2}}{x-2}$ h) $\frac{7\sqrt{\pi}}{\pi}$ i) $\frac{\sqrt{30x}}{10}$ j) $\frac{4\sqrt{2}-\sqrt{2x}}{2}$ k) $\frac{\sqrt[3]{4}}{2}$ l) $\frac{5\sqrt[3]{4x}}{x}$ m) $6\sqrt[3]{2}$ n) $-8\sqrt[3]{10}$ 3. a) $\frac{3\sqrt{30}}{10}$ b) $\sqrt{10}$ c) $-3\sqrt{6}$ d) $\frac{\sqrt{21}}{2}$ e) $3\sqrt{3}$
 f) $-2x$ g) $\frac{-\sqrt{10x}}{6x}$ h) $\frac{\sqrt[3]{20x^2}}{2x}$ 4. $\sqrt{6} \text{ cm}$ 5. $\frac{5\sqrt{\pi}}{\pi}$ 6. $\frac{3\sqrt[3]{\pi^2}}{\pi}$ 7. a) $t = \frac{\pi\sqrt{10L}}{5}$ b) $2\pi\sqrt{6}$ seconds