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Name: Key Date: _____

Square Roots and Irrational Numbers
Algebra 1 Homework

Skills

1. Express each of the following irrational numbers in simplest radical form.

(a) $\sqrt{50}$

$\sqrt{25}\cdot\sqrt{2}$

$5\sqrt{2}$

(b) $\sqrt{72}$

$\sqrt{36}\cdot\sqrt{2}$

$6\sqrt{2}$

(c) $\sqrt{54}$

$\sqrt{9}\cdot\sqrt{6}$

$3\sqrt{6}$

(d) $5\sqrt{8}$

$5\cdot\sqrt{4}\cdot\sqrt{2}$

$5\cdot 2\cdot\sqrt{2}$

$10\sqrt{2}$

(e) $7\sqrt{45}$

$7\cdot\sqrt{9}\cdot\sqrt{5}$

$7\cdot 3\cdot\sqrt{5}$

$21\sqrt{5}$

(f) $-3\sqrt{80}$

$-3\cdot\sqrt{16}\cdot\sqrt{5}$

$-3\cdot 4\cdot\sqrt{5}$

$-12\sqrt{5}$

(g) $\frac{1}{2}\sqrt{32}$

$\frac{1}{2}\cdot\sqrt{16}\cdot\sqrt{2}$

$\frac{1}{2}\cdot 4\sqrt{2}$

$2\sqrt{2}$

(h) $-\frac{2}{3}\sqrt{27}$

$-\frac{2}{3}\cdot\sqrt{9}\cdot\sqrt{3}$

$-\frac{2}{3}\cdot 3\sqrt{3}$

$-2\sqrt{3}$

(i) $\frac{5}{2}\sqrt{200}$

$\frac{5}{2}\cdot\sqrt{100}\cdot\sqrt{2}$

$\frac{5}{2}\cdot 10\sqrt{2}$

$25\sqrt{2}$

(j) $-5\sqrt{40}$

$-5\cdot\sqrt{4}\cdot\sqrt{10}$

$-5\cdot 2\cdot\sqrt{10}$

$-10\sqrt{10}$

(k) $\frac{4}{3}\sqrt{162}$

$\frac{4}{3}\cdot\sqrt{81}\cdot\sqrt{2}$

$\frac{4}{3}\cdot 9\cdot\sqrt{2}$

$12\sqrt{2}$

(l) $-3\sqrt{98}$

$-3\cdot\sqrt{49}\cdot\sqrt{2}$

$-3\cdot 7\cdot\sqrt{2}$

$-21\sqrt{2}$

2. Evaluate each of the following products. Place each answer in simplest radical form. The first is done as an example for you to follow.

(a) $\sqrt{2}\cdot\sqrt{6}$

$\sqrt{2}\cdot\sqrt{6}=\sqrt{12}$

$=\sqrt{4}\cdot\sqrt{3}$

$=2\sqrt{3}$

(b) $\sqrt{5}\cdot\sqrt{10}$

$\sqrt{50}$

$\sqrt{25}\cdot\sqrt{2}$

$5\sqrt{2}$

(c) $\sqrt{6}\cdot\sqrt{8}$

$\sqrt{48}$

$\sqrt{16}\cdot\sqrt{3}$

$4\sqrt{3}$

(d) $\sqrt{15}\cdot\sqrt{3}$

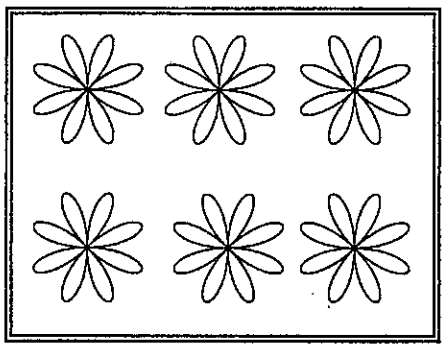
$\sqrt{45}$

$\sqrt{9}\cdot\sqrt{5}$

$3\sqrt{5}$

Applications

3. A rectangular flower garden is shown at the right. It has a length given by $\sqrt{15}$ yards and a width given by $\sqrt{10}$ yards. Answer the following questions based on this information.



(a) Find the area of the garden in simplest radical form.

$A = L \cdot W \quad \sqrt{15} \cdot \sqrt{10}$

$\sqrt{150}$

$\sqrt{25} \cdot \sqrt{6}$

$5\sqrt{6}\ yd^2$

(b) Find the area of the garden to the nearest *tenth* of a square yard.

$12.2\ yd^2$

(c) If it costs \$2.50 per square yard to cover the garden with fertilizer, then how much does it cost to apply fertilizer to the entire area that you found in part (b)?

2.50×12.2

\$30.50