# Lesson 11-1: Simplifying Radicals

## Part 1: Simplifying Radical Expressions Involving Products

1. 089902a, P.I. A.N.2
The expression $\sqrt{50}$ can be simplified to
[A] $5\sqrt{10}$ [B] $2\sqrt{25}$
[C] $5\sqrt{2}$ [D] $25\sqrt{2}$

2. 010530a, P.I. A.N.2
When $\sqrt{72}$ is expressed in simplest $a\sqrt{b}$ form, what is the value of $a$?
[A] 3 [B] 6 [C] 2 [D] 8

3. fall0731ia, P.I. A.N.2
Express $5\sqrt{72}$ in simplest radical form.

4. 080125a, P.I. A2.A.13
Simplify: $\sqrt{50r^2s^4}$

5. 010422a, P.I. A2.A.13
If a > 0, then $\sqrt{9a^2+16a^2}$ equals
[A] $5\sqrt{a}$ [B] $7a$ [C] $5a$ [D] $\sqrt{7a}$

6. 060627a, P.I. A.N.3
Expressed in simplest radical form, the product of $\sqrt{6}\cdot\sqrt{15}$ is
[A] $3\sqrt{10}$ [B] $3\sqrt{15}$
[C] $\sqrt{90}$ [D] $9\sqrt{10}$

7. 010103a, P.I. A2.A.13
If $x > 0$, the expression $(\sqrt{x})(\sqrt{2x})$ is equivalent to
[A] $x^2\sqrt{2}$ [B] $x\sqrt{2}$
[C] $\sqrt{2x}$ [D] $2x$

8. 080724b, P.I. A.N.3
Classical mathematics uses the term "Golden Ratio" for the ratio $(1+\sqrt{5}):2$. The Golden Ratio was used by many famous artists to determine the dimensions of their paintings. If the ratio of the length to the width of a painting is $(1+\sqrt{5}):2$, find the length, in feet, of a painting that has a width of 14 feet. Express your answer in simplest radical form.

## Part 2: Simplifying Radical Expressions Involving Quotients

9. 010622a, P.I. A.N.3
The expression $\frac{6\sqrt{20}}{3\sqrt{5}}$ is equivalent to
[A] $3\sqrt{15}$ [B] $2\sqrt{15}$ [C] 4 [D] 8

[1] C

[2] B

[3]
[2] $30\sqrt{2}$, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] Appropriate work is shown, but the answer is not in simplest radical form.
or [1] $30\sqrt{2}$, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[4]
[2] $5rs^2\sqrt{2}$, and appropriate work is shown.
[1] A partially correct answer is found, such as $5r\sqrt{2s^4}$ or $5s^2\sqrt{2r^2}$, and appropriate work is shown.
or [1] $7.07rs^2$, but appropriate work is shown.
or [1] $5rs^2\sqrt{2}$, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[5] C

[6] A

[7] B

[8]
[2] $7+7\sqrt{5}$ and $7(1+\sqrt{5})$, appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made, or the answer is not expressed in simplest radical form.
or [1] Appropriate work is. shown, but one conceptual error is made.
or [1] $7+7\sqrt{5}$ or $7(1+\sqrt{5})$, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[9] C