A.N.3: Perform the four arithmetic operations using like and unlike radical terms and express the result in simplest form.

1. 060316a, P.I. A.N.3
The sum of $\sqrt{18}$ and $\sqrt{72}$ is
[A] $9\sqrt{2}$ [B] $\sqrt{90}$
[C] $6\sqrt{3}$ [D] $3\sqrt{10}$

2. 010311a, P.I. A.N.3
The sum of $\sqrt{75}$ and $\sqrt{3}$ is
[A] 18 [B] 15 [C] $6\sqrt{3}$ [D] $\sqrt{78}$

3. 069920a, P.I. A.N.3
The expression $\sqrt{27}+\sqrt{12}$ is equivalent to
[A] $5\sqrt{3}$ [B] $\sqrt{39}$
[C] $5\sqrt{6}$ [D] $13\sqrt{3}$

4. 060512a, P.I. A.N.3
The expression $\sqrt{50}+\sqrt{32}$ is equivalent to
[A] $\sqrt{82}$ [B] $9\sqrt{2}$ [C] 6 [D] 18

5. 060724a, P.I. A.N.3
The expression $\sqrt{28}+\sqrt{63}$ is equivalent to
[A] $13\sqrt{7}$ [B] $5\sqrt{7}$
[C] $\sqrt{91}$ [D] $6\sqrt{7}$

6. 080614a, P.I. A.N.3
What is the sum of $\sqrt{50}$ and $\sqrt{32}$?
[A] $20\sqrt{20}$ [B] $9\sqrt{2}$
[C] $\sqrt{2}$ [D] $\sqrt{82}$

7. 080712a, P.I. A.N.3
What is the sum of $\sqrt{50}$ and $\sqrt{8}$?
[A] $9\sqrt{2}$ [B] $7\sqrt{2}$
[C] $29\sqrt{2}$ [D] $\sqrt{58}$

8. 010912a, P.I. A.N.3
The sum of $\sqrt{27}$ and $\sqrt{108}$ is
[A] $4\sqrt{27}$ [B] $9\sqrt{3}$
[C] $3\sqrt{3}$ [D] $\sqrt{135}$

9. 080524a, P.I. A.N.3
What is the sum of $5\sqrt{7}$ and $3\sqrt{28}$?

[A] $8\sqrt{35}$ [B] $9\sqrt{7}$

[C] $60\sqrt{7}$ [D] $11\sqrt{7}$

10. 010826a, P.I. A.N.3
The expression $\sqrt{28}-\sqrt{7}$ is equivalent to

[A] $\sqrt{7}$ [B] 2 [C] 4 [D] $3\sqrt{7}$

11. 080016a, P.I. A.N.3
The expression $2\sqrt{50}-\sqrt{2}$ is equivalent to

[A] $49\sqrt{2}$ [B] $9\sqrt{2}$

[C] 10 [D] $2\sqrt{48}$

12. 060627a, P.I. A.N.3
Expressed in simplest radical form, the product of $\sqrt{6}\cdot\sqrt{15}$ is

[A] $3\sqrt{15}$ [B] $\sqrt{90}$

[C] $3\sqrt{10}$ [D] $9\sqrt{10}$

13. 080834ia, P.I. A.N.3
Express the product of $3\sqrt{20}(2\sqrt{5}-7)$ in simplest radical form.

14. 060218a, P.I. A.N.3
The expression $\sqrt{90}\cdot\sqrt{40}-\sqrt{8}\cdot\sqrt{18}$ simplifies to

[A] 864 [B] 22.9 [C] 48 [D] 3,456

15. 010622a, P.I. A.N.3
The expression $\frac{6\sqrt{20}}{3\sqrt{5}}$ is equivalent to

[A] $3\sqrt{15}$ [B] 8 [C] 4 [D] $2\sqrt{15}$

16. 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.

A.N.3: Perform the four arithmetic operations using like and unlike radical terms and express the result in simplest form.

[1] A

[2] C

[3] A

[4] B

[5] B

[6] B

[7] B

[8] B

[9] D

[10] A

[11] B

[12] C

[3] $60-42\sqrt{5}$, and appropriate work is shown.
[2] Appropriate work is shown, but one computational error is made.
or [2] Appropriate work is shown, but only one term is expressed in simplest radical form.
[1] Appropriate work is shown, but two or more computational errors are made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] Appropriate work is shown, but the answer is expressed as a decimal.
or [1] The distributive property is correctly applied, yielding $6\sqrt{100}-21\sqrt{20}$, but no further correct work is shown.
or [1] $60-42\sqrt{5}$, 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
[13] incorrect procedure.

[14] C

[15] C

[2] $7+7\sqrt{5}$ or $7(1+\sqrt{5})$, 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
[16] incorrect procedure.