N.RN.B.3: Operations with Radicals 4

1 The expression $\sqrt{90} \cdot \sqrt{40} - \sqrt{8} \cdot \sqrt{18}$ simplifies
   to
   1) 22.9
   2) 48
   3) 864
   4) 3,456

2 Express the product of $3\sqrt{20}(2\sqrt{5} - 7)$ in simplest
   radical form.

3 Perform the indicated operations and express the
   answer in simplest radical form.
   $$3\sqrt{7}\left(\sqrt{14} + 4\sqrt{56} \right)$$

4 If $(\sqrt{128} - \sqrt{72})$ is divided by $\sqrt{8}$, the result is
   1) 1
   2) $8\sqrt{2} - 3$
   3) $\sqrt{7}$
   4) $4 - 6\sqrt{2}$

5 Simplify: $\dfrac{\sqrt{27} + \sqrt{75}}{\sqrt{12}}$

6 Simplify: $\dfrac{\sqrt{75} + \sqrt{48}}{\sqrt{27}}$

7 Express $\dfrac{16\sqrt{21}}{2\sqrt{7}} - 5\sqrt{12}$ in simplest radical form.

8 The length of a rectangle is $(3\sqrt{8} + 2)$ and the
   width is $(2\sqrt{2} + 1)$. Express the perimeter of the
   rectangle in simplest radical form. Express the area
   of the rectangle in simplest radical form.

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Answer Section

1. ANS: 2

$$\sqrt{90} \cdot \sqrt{40} - \sqrt{8} \cdot \sqrt{18} = \sqrt{3600} - \sqrt{144} = 60 - 12 = 48$$

REF: 060218a

2. ANS:

$$60 - 42\sqrt{5}. \quad 3\sqrt{20}(2\sqrt{5} - 7) = 6\sqrt{100} - 21\sqrt{20} = 60 - 21\sqrt{4}\sqrt{5} = 60 - 42\sqrt{5}$$

REF: 080834ia

3. ANS:

$$3\sqrt{7}\left(\sqrt{7}\sqrt{2} + 4\sqrt{7}\sqrt{4}\sqrt{2}\right) = 21\sqrt{2} + 168\sqrt{2} = 189\sqrt{2}$$

REF: 061436ia

4. ANS: 1   REF: 068922siii

5. ANS:
4

REF: 089603al

6. ANS:
3

REF: 089710al

7. ANS:

$$-2\sqrt{3} \quad \frac{16\sqrt{21}}{2\sqrt{7}} - 5\sqrt{12} = 8\sqrt{3} - 5\sqrt{4}\sqrt{3} = 8\sqrt{3} - 10\sqrt{3} = -2\sqrt{3}$$

REF: 081136ia

8. ANS:

$$3\sqrt{8} + 2 = 3\sqrt{4}\sqrt{2} + 2 = 6\sqrt{2} + 2$$

$$P = 6\sqrt{2} + 2 + 6\sqrt{2} + 2 + 2\sqrt{2} + 1 + 2\sqrt{2} + 1 = 16\sqrt{2} + 6$$

$$A = (6\sqrt{2} + 2)(2\sqrt{2} + 1) = 12(2) + 6\sqrt{2} + 4\sqrt{2} + 2 = 10\sqrt{2} + 26$$

REF: 061639ia