Math 20-2   Name_____

Radical Skills   Date_____

Express as mixed radicals in simplest form.

1) $\sqrt{294}$

$= \sqrt{49 \times 6}$

$= 7\sqrt{6}$

2) $\sqrt{320} = \sqrt{64 \times 5}$

$= 8\sqrt{5}$

3) $\sqrt{50} = \sqrt{25 \times 2}$

$= 5\sqrt{2}$

4) $\sqrt{20} = \sqrt{4 \times 5}$

$= 2\sqrt{5}$

5) $\sqrt{512} = \sqrt{64 \times 8}$

$= 8\sqrt{8}$

$= 8\sqrt{4 \times 2}$

$= 8(2)\sqrt{2}$

$= 16\sqrt{2}$

6) $\sqrt{64} = 8$

Add and Subtract Radicals: express answers as mixed radicals in simplest form.

7) $3\sqrt{2} + 3\sqrt{2}$ "same size"

$= 6\sqrt{2}$

8) $3\sqrt{6} - 2\sqrt{6} + 3\sqrt{3}$

$= \sqrt{6} + 3\sqrt{3}$

9) $3\sqrt{3} + 2\sqrt{2} + 2\sqrt{27} - \sqrt{6}$

$= 3\sqrt{3} + 2\sqrt{2} + 2\sqrt{9 \times 3} - \sqrt{6}$

$= 3\sqrt{3} + 2\sqrt{2} + 2(3)\sqrt{3} - \sqrt{6}$

$= 3\sqrt{3} + 2\sqrt{2} + 6\sqrt{3} - \sqrt{6}$

$= 9\sqrt{3} + 2\sqrt{2} - \sqrt{6}$

10) $3\sqrt{2} - 3\sqrt{18} + 3\sqrt{54} - 2\sqrt{2}$

$= 3\sqrt{2} - 3\sqrt{9 \times 2} + 3\sqrt{9 \times 6} - 2\sqrt{2}$

$= 3\sqrt{2} - 3(3)\sqrt{2} + 3(3)\sqrt{6} - 2\sqrt{2}$

$= 3\sqrt{2} - 9\sqrt{2} + 9\sqrt{6} - 2\sqrt{2}$

$= -8\sqrt{2} + 9\sqrt{6}$

11) $3\sqrt{27} + 2\sqrt{45} + 3\sqrt{12} - \sqrt{3}$

$= 3\sqrt{9 \times 3} + 2\sqrt{9 \times 5} + 3\sqrt{4 \times 3} - \sqrt{3}$

$= 3(3)\sqrt{3} + 2(3)\sqrt{5} + 3(2)\sqrt{3} - \sqrt{3}$

$= 9\sqrt{3} + 6\sqrt{5} + 6\sqrt{3} - \sqrt{3}$

$= 14\sqrt{3} + 6\sqrt{5}$

12) $-\sqrt{45} + 3\sqrt{8} + 3\sqrt{6} + 3\sqrt{8}$

$= -\sqrt{9 \times 5} + 3\sqrt{4 \times 2} + 3\sqrt{6} + 3\sqrt{4 \times 2}$

$= -(3)\sqrt{5} + 3(2)\sqrt{2} + 3\sqrt{6} + 3(2)\sqrt{2}$

$= -3\sqrt{5} + 6\sqrt{2} + 3\sqrt{6} + 6\sqrt{2}$

$= -3\sqrt{5} + 12\sqrt{2} + 3\sqrt{6}$

What is the best answer?

13) $2\sqrt{18} + 3\sqrt{2}$

   A) $12\sqrt{2}$ B) $9\sqrt{2}$

   C) $18\sqrt{2}$ D) $24\sqrt{2}$

14) $-2\sqrt{12} + 2\sqrt{45} + 2\sqrt{27} - 2\sqrt{20}$

   A) $2\sqrt{3} + 2\sqrt{5}$

   B) $2\sqrt{3} + 8\sqrt{5}$

   C) $-2\sqrt{3} + 14\sqrt{5}$

   D) $-2\sqrt{3} + 8\sqrt{5}$

Answers to Radical Skills

1) $7\sqrt{6}$ 2) $8\sqrt{5}$ 3) $5\sqrt{2}$ 4) $2\sqrt{5}$

5) $16\sqrt{2}$ 6) 8 7) $6\sqrt{2}$ 8) $\sqrt{6} + 3\sqrt{3}$

9) $9\sqrt{3} + 2\sqrt{2} - \sqrt{6}$ 10) $-8\sqrt{2} + 9\sqrt{6}$ 11) $14\sqrt{3} + 6\sqrt{5}$

12) $-3\sqrt{5} + 12\sqrt{2} + 3\sqrt{6}$ 13) B   14) A

P 188: 1, 2, 5, 6, 9, 12, 14-16, 18, 19