Algebra 2 - Unit 4 Name KEY

FOIL and Division with Radicals - PRACTICE

Date_____ Period____

Simplify.

1) $(5\sqrt{2}-3)(-3\sqrt{2}-2)$

$= -15\sqrt{4} - 10\sqrt{2} + 9\sqrt{2} + 6$

$= -15 \cdot 2 - 1\sqrt{2} + 6$

$= -30 - \sqrt{2} + 6$

$= \boxed{-24 - \sqrt{2}}$

2) $(-3+4\sqrt{5})(1-4\sqrt{5})$

$= -3 + 12\sqrt{5} + 4\sqrt{5} - 16\sqrt{25}$

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

$= -3 + 16\sqrt{5} - 80$

$= \boxed{-83 + 16\sqrt{5}}$

3) $(-4\sqrt{3}-4)(-4\sqrt{3}+1)$

$= 16\sqrt{9} - 4\sqrt{3} + 4\sqrt{3} - 4$

$= 16 \cdot 3 - 4$

$= 48 - 4$

$= \boxed{44}$

4) $(5+3\sqrt{2})(-3+5\sqrt{2})$

$= -15 + 25\sqrt{2} - 9\sqrt{2} + 15\sqrt{4}$

$= -15 + 16\sqrt{2} + 15 \cdot 2$

$= -15 + 16\sqrt{2} + 30$

$= \boxed{15 + 16\sqrt{2}}$

5) $\frac{\sqrt{12}}{\sqrt{15}} \cdot \frac{\sqrt{15}}{\sqrt{15}} = \frac{\sqrt{180}}{\sqrt{225}} = \frac{\sqrt{36 \cdot 5}}{15}$

$= \boxed{\frac{6\sqrt{5}}{15}} = \boxed{\frac{2\sqrt{5}}{5}}$ ☺

6) $\frac{4}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{4\sqrt{3}}{\sqrt{9}} = \boxed{\frac{4\sqrt{3}}{3}}$

7) $\frac{\sqrt{4}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{20}}{\sqrt{25}} = \frac{\sqrt{4 \cdot 5}}{5} = \boxed{\frac{2\sqrt{5}}{5}}$

8) $\frac{4\sqrt{5}}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{10}}{2\sqrt{4}} = \frac{4\sqrt{10}}{2 \cdot 2}$

$= \boxed{\frac{4\sqrt{10}}{4}} = \boxed{\sqrt{10}}$

9) $\frac{3\sqrt{6}}{2\sqrt{15}} \cdot \frac{\sqrt{15}}{\sqrt{15}} = \frac{3\sqrt{90}}{2\sqrt{225}} = \frac{3\sqrt{9 \cdot 10}}{2 \cdot 15}$

$= \frac{3 \cdot 3\sqrt{10}}{30} = \boxed{\frac{9\sqrt{10}}{30}} = \boxed{\frac{3\sqrt{10}}{10}}$ ☺

10) $-\frac{4}{2\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = -\frac{4\sqrt{3}}{2\sqrt{9}}$

$= -\frac{4\sqrt{3}}{2 \cdot 3} = \boxed{-\frac{4\sqrt{3}}{6}} = \boxed{-\frac{2\sqrt{3}}{3}}$ ✓

11) $-\frac{3}{2+\sqrt{3}} \cdot \frac{2-\sqrt{3}}{2-\sqrt{3}} = -\frac{6-3\sqrt{3}}{4-2\sqrt{3}+2\sqrt{3}-\sqrt{9}}$

$= \frac{6-3\sqrt{3}}{4-\sqrt{9}} = \frac{6-3\sqrt{3}}{4-3} = \frac{6-3\sqrt{3}}{1}$

$= \boxed{6-3\sqrt{3}}$

12) $\frac{3}{3+\sqrt{2}} \cdot \frac{3-\sqrt{2}}{3-\sqrt{2}} = \frac{9-3\sqrt{2}}{9-3\sqrt{2}+3\sqrt{2}-\sqrt{4}}$

$= \frac{9-3\sqrt{2}}{9-\sqrt{4}} = \frac{9-3\sqrt{2}}{9-2} = \boxed{\frac{9-3\sqrt{2}}{7}}$

13) $\frac{3}{4+\sqrt{2}} \cdot \frac{4-\sqrt{2}}{4-\sqrt{2}} = \frac{12-3\sqrt{2}}{16-4\sqrt{2}+4\sqrt{2}-\sqrt{4}}$

$= \frac{12-3\sqrt{2}}{16-\sqrt{4}} = \frac{12-3\sqrt{2}}{16-2} = \boxed{\frac{12-3\sqrt{2}}{14}}$

14) $\frac{4}{2-3\sqrt{2}} \cdot \frac{2+3\sqrt{2}}{2+3\sqrt{2}} = \frac{8+12\sqrt{2}}{4+6\sqrt{2}-6\sqrt{2}-9\sqrt{4}} = \frac{8+12\sqrt{2}}{4-9\sqrt{4}} = \frac{8+12\sqrt{2}}{4-9 \cdot 2}$

$= \frac{8+12\sqrt{2}}{4-18} = \boxed{\frac{8+12\sqrt{2}}{-14}} = \boxed{\frac{4+6\sqrt{2}}{-7}}$ ✓ ☺