Secondary Math 3   Name_____

6.4 Binomial Radical Expressions
Date_____ Period_____

1) A scientist found that x grams of Metal A is copmletely oxidized in $2x\sqrt{3}$ seconds while Metal B is completely oxidized in $6x\sqrt{3}$ seconds. How much faster is Metal A oxidized than Metal B?

2) Describe the possible values of a such that $\sqrt{72} + \sqrt{a}$ simplifies to a single term.

Simplify as much as possible.

3) $2\sqrt{6} + 2\sqrt{24} - 3\sqrt{24}$

4) $2\sqrt{2} + 2\sqrt{2} + 3\sqrt{8}$

5) $-2\sqrt{8} - \sqrt{3} - 3\sqrt{12}$

6) $-2\sqrt{18} - 2\sqrt{27} - 2\sqrt{3}$

7) $2\sqrt{27} + 3\sqrt{27} - 3\sqrt{24}$

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

9) $-3\sqrt{20} + 2\sqrt{2} - 2\sqrt{8}$

10) $-3\sqrt[3]{81} + 3\sqrt[3]{54} + 3\sqrt[3]{3}$

11) $\left(-3\sqrt{2} + \sqrt{3}\right)\left(\sqrt{5} - 2\sqrt{3}\right)$

12) $\left(-3\sqrt{2} + 5\right)\left(-5\sqrt{2} + 3\right)$

13) $\left(\sqrt{2} + 4\right)\left(2\sqrt{2} + 5\right)$

14) $\left(1 + \sqrt{2}\right)\left(5 + \sqrt{2}\right)$

15) $\left(5 + \sqrt{3}\right)\left(3 - \sqrt{3}\right)$

16) $\left(-2\sqrt{3} + \sqrt{2}\right)\left(\sqrt{3} - \sqrt{2}\right)$

Simplify.

17) $\dfrac{\sqrt{5}}{\sqrt{2} + 4\sqrt{3}}$

18) $\dfrac{2}{4 + \sqrt{3}}$

19) $\dfrac{\sqrt{5}}{-5 + \sqrt{2}}$

20) $-\dfrac{4\sqrt{3}}{4 + \sqrt{2}}$

21) $\dfrac{5}{-4 - \sqrt{2}}$

22) $\dfrac{3}{5\sqrt{2} + \sqrt{5}}$