Name: _____ Date: _____ Period: _____

Unit 1 Exam Review

You must be able to perform the following problems without notes and without a calculator. You will be given a multiplication table to use on the exam. There will multiple choice and free response questions on this exam. These problems should be worked out on a separate sheet of paper.

Add, subtract, multiply, divide and reduce fractions.

1. $\dfrac{5}{7} + \dfrac{2}{3}$
2. $\dfrac{12}{5} - \dfrac{2}{9}$
3. $\dfrac{9}{10} \times \dfrac{4}{5}$
4. $\dfrac{1}{7} \div \dfrac{3}{2}$

Solve multi-step equations (including with fractions).

5. $5(x - 3) = 21$

6. $4x - 9 = 10x + 56$

7. $\dfrac{1}{2}x + \dfrac{3}{5} = 10$

8. $7 - 2(4x + 1) = 12$

Simplify exponential expressions using the rules of exponents.
There should be no negative exponents in your final answer.

9. $b^3 \cdot b^{-5}$
10. $(4x^2 y)^2 \cdot 5y$
11. $\left(\dfrac{3x^4}{y}\right)^2$
12. $7x^0 \cdot 3y$

Add/subtract, multiply, divide and simplify radical expressions.

13. $\sqrt{20} - 6\sqrt{5}$
14. $-2\sqrt{6x} \cdot \sqrt{3x}$
15. $\sqrt{25x^3 y}$
16. $\dfrac{\sqrt{12}}{\sqrt{4}}$

Rationalize the denominator of a radical expression.

17. $\frac{5}{\sqrt{6}}$

18. $\frac{\sqrt{19}}{\sqrt{2}}$

Simplify radicals with negative numbers as the radicand.

19. $\sqrt{-4}$

20. $-\sqrt{-20}$

21. $\sqrt{-\frac{2}{5}}$

22. $\sqrt{-\frac{9}{25}}$

Add, subtract, multiply and divide complex numbers.

23. $(13 + 2i) + (-4 - 5i)$

24. $(3 + 2i) - (5 + 4i)$

25. $(1 + 6i)(4 - 3I)$

26. $\frac{7}{6-i}$

Compute any power of i to either i, -1, -i, or 1.

27. $i^{26} =$

28. $i^{315} =$

29. $i^{56} =$

30. $i^{89} =$