Answer the questions on a separate paper.

Name: _____

1. What are the names of the following elements?
   (a) Na (1)
   (b) Pb (1)
   (c) N (1)
   (d) K (1)

2. Reduce the following fractions:
   (a) $\frac{120}{400}$ (1)
   (b) $\frac{256\pi}{32}$ (1)
   (c) $\frac{x^2-1}{x+1}$ (1)
   (d) $\frac{2x^2+4x+2}{x^2-1}$ (1)

3. Multiply the following fractions:
   (a) $\frac{3\pi}{4} \times \frac{1}{2\pi}$ (1)
   (b) $\frac{256\pi}{32} \times 12$ (1)
   (c) $\frac{x^2-1}{x+1} \times \frac{2}{x-1}$ (1)
   (d) $\frac{2x^2+4x+2}{x^2-1} \times \frac{3x}{6}$ (1)

4. Convert the following measurements:
   (a) how many inches in 3 yards? (1)
   (b) how many tablespoons in one gallon? (1)
   (c) how many pounds in 373 ounces? (1)
   (d) how many kilograms in $1,000,000,000$ grams? (1)
   (e) how many centimeters in 375 meters? (1)

5. It is a truth universally acknowledged, that a single man in possession of a good fortune, must be in want of _____. (1)

6. What is 12.0×3.21? Choose the most correct answer: (2)

   A. 39

   B. 38.5

   C. 38.52

   D. 38.520

   E. 38.5200

7. What is $12.0 + 3.21$? Choose the most correct answer: (2)

   A. 15

   B. 15.2

   C. 15.21

   D. 15.210

   E. 15.2100

8. How much wood would a woodchuck chuck if a woodchuck could chuck wood? (1)

9. The boiling point of water in Seattle is 212°F, the boiling point of water in Moscow is 206°F. Why is it lower in Moscow? (1)

10. Give definitions for the following:

    (a) heat (1)

    (b) electrolyte (1)

    (c) acid (1)

11. Solve the following equations for the named variable:

    (a) $12 = \frac{2}{5}x$ (solve for x) (1)

    (b) $3t - 17 = 22$ (solve for t) (1)

    (c) $\frac{y^2-1}{y+1} = 0$ (solve for y) (1)

    (d) $5\beta + 12 = 2\beta$ (solve for β) (1)

    (e) $\frac{2\theta-1}{2\theta+1} = 3$ (solve for θ) (1)

12. What happens when you leave an ice tray full of water the deep freezer for several days? Choose all the correct answers. (5)

    A. the water gets warmer

    B. the molecules in the water slow down

    C. the water undergoes a physical change from liquid to gas

    D. the water changes phase from liquid to solid

    E. the water undergoes a chemical change from liquid to solid

13. What is the fastest known time for the Kessel Run? (1)

    A. 72 hours

    B. 12 parsecs

    C. 14 petabytes

    D. 3 weeks

    E. 123 kiloseconds

14. Which of the following is an example of a chemical reaction? (5)

    A. a piece of wood burns in a bonfire

    B. a piece of steak is fed into a meat grinder

    C. one gram of table salt is dissolved into a glass of water

    D. a pan of water is brought to a boil, and left boiling until it is dry

    E. vinegar and baking soda are combined in a cup and they produce foam

15. Balance the following chemical equations:

    (a) $NaOH + HCl \longrightarrow H_2O + NaCl$ (1)

    (b) $CH_4\,(g) + O_2\,(g) \longrightarrow CO_2\,(g) + H_2O\,(g)$ (1)

    (c) $LiOH + H_2SO_4 \longrightarrow Li_2SO_4 + H_2O$ (1)

    (d) $C_3H_8\,(g) + O_2\,(g) \longrightarrow CO_2\,(g) + H_2O\,(g)$ (1)

16. What is $2x^2 + 13x + 123$ if $x = 176230$? (1)

    A. a whole lot
    B. a really big number
    C. something really huge
    D. a whole number larger than 176353
    E. all of the above

17. You go to the store and ask for one mole of eggs. How many eggs did you ask for? (1)

18. How many protons are in the nucleus of an Oxygen (O) atom? (1)

This exam has 18 questions for a total of 50 points.