1) Fill in the blanks in this statement: $-\dfrac{15}{1}$ is an element in the

set of _____ , but it is **not** in the set of _____ .

A. integers; real numbers

B. natural numbers; integers

C. integers; rational numbers

D. natural numbers; whole numbers

E. rational numbers; whole numbers

2) Simplify. Do not leave negative exponents in your answer.

$$\left(\dfrac{2a^2b^{-2}}{5a^{-3}b^0}\right)^{-3}$$

A. $-\dfrac{6b^6}{15a^{15}}$

B. $-\dfrac{6}{5ab^2}$

C. $\dfrac{8a^3}{125b^5}$

D. $\dfrac{125b^6}{8a^{15}}$

E. $\dfrac{15b^6}{6a^{15}}$

3) Perform the necessary operations. Express your answer in scientific notation.

$$\dfrac{(3,800,000,000)(0.00006)}{0.00000019}$$

A. 1.2×10^{12}

B. 12×10^{8}

C. 1.2×10^{-2}

D. 12×10^{-3}

E. 1.2×10^{11}

4) Simplify. $\sqrt[3]{\dfrac{-27\,a^3}{b^9 c^6}}$

A. $-\dfrac{9a}{b^6 c^3}$

B. $\dfrac{3a}{b^3 c}$

C. $-\dfrac{3a}{b^3 c^2}$

D. $\dfrac{9a}{b^3 c^2}$

E. $\dfrac{3a}{b^6 c^3}$

5) Perform the indicated operations and simplify.
$$4\left(y^2 - 2y\right) - \frac{1}{3}y(6y - 9)$$

A. $2y^2 - 5y$

B. $4y^2 - 10y + 3$

C. $2y^2 - 11y$

D. $y^2 - 11y$

E. $2y^2 - 2y - 9$

6) Perform the indicated operation and simplify.
$$\left(3w + 2z\right)^2$$

A. $9w^2 + 4z^2$

B. $6w^2 + 4z^2$

C. $9w^2 + 6wz + 4z^2$

D. $9w^2 + 12wz + 4z^2$

E. None of these.

7) Factor completely.
   $4m^2 - 100$

   A. $4(m+10)(m-10)$

   B. $4m(m+5)(m-5)$

   C. $(2m-10)(2m-10)$

   D. $2(m+5)(m-5)$

   E. $4(m+5)(m-5)$

8) One factor of $6x^3 + 23x^2y + 15xy^2$ is:

   A. $3x+5y$

   B. $6x+5y$

   C. $x^2 + 3xy$

   D. $x+5y$

   E. $6x+3y$

9) Perform the indicated operations and simplify.
   Assume that all denominators are nonzero.
   $$\frac{2x}{x^2-16} + \frac{5}{x+4}$$

   A. $\dfrac{2x+5}{x^2-16}$

   B. $\dfrac{3x-4}{x^2-16}$

   C. $\dfrac{7x-20}{x^2-16}$

   D. $\dfrac{7x-4}{x^2-16}$

   E. $\dfrac{7x+20}{x^2-16}$

10) Simplify. Assume that all denominators are nonzero.

$$\frac{\dfrac{1}{a}+\dfrac{1}{b}}{\dfrac{b}{a}-\dfrac{a}{b}}$$

A. $\dfrac{a+b}{b^2-a}$

B. $\dfrac{2}{b-a}$

C. $\dfrac{1}{b-a}$

D. $\dfrac{b+a}{b^2+a^2}$

E.   None of these.

11) Solve.

$$6x-\frac{2}{3}(2x+5)=-1$$

A. $x=\dfrac{1}{2}$

B. $x=\dfrac{13}{14}$

C. $x=-\dfrac{13}{14}$

D. $x=-\dfrac{1}{2}$

E. $x=2$

12) Solve.

$$\frac{3}{x-2} + \frac{1}{x} = \frac{3}{x-2}$$

A. $x = -2$

B. $x = \frac{1}{4}$

C. $x = \frac{5}{4}$

D. $x = 0$

E. No solution.

13) A telemarketer earns \$58/day plus \$14.50 for each insurance policy sold. If he earned \$145 for one day of work, how many policies did he sell? Set up the equation necessary to solve this problem. Do NOT solve. Assume that x represents the number of policies sold.

A. $58x + 14.50 = 145$

B. $14.50 x = 87$

C. $14.50x - 58 = 145$

D. $58 = 14.50x$

E. $58x = 130.50$

14) Omega Sports Center charges \$12 for a one-day pass for the climbing wall or \$5 for a quick-climb pass. If 42 people came to the wall on Saturday and the revenue was \$301, how many people bought a quick-climb pass?

A. 13

B. 18

C. 37

D. 21

E. None of these.