Follow all directions. This assignment is to be completed in pencil and with all work shown in the space provided. Unless otherwise specified, give exact answers. Box your final answer. Work that is unreadable will be counted as incorrect.

1. **Pediatric Dosage and Clark's Rule:** $D_C = \frac{D_A \cdot W}{150}$

   The amount of medication prescribed for young children depends on their weight, height, age, body surface area and other factors. **Clark's Rule** is a formula that helps estimate the correct child's dose D_C based on the adult dose D_A and the weight W of the child (an average adult weight of 150 lb is assumed). Compute a child's dose if the adult dose is 50 mg and the child weighs 30 lb.

$$
\begin{aligned}
D_C &= \frac{D_A \cdot W}{150} \\
&= \frac{50 \cdot 30}{150} \\
&= \frac{1500}{150} \\
&= 10 \text{mg}
\end{aligned}
$$

2. **Volume and Pressure:** $P = \frac{k}{V}$

   If temperature remains constant, the pressure of a gas held in a closed container is related to the volume of gas by the formula shown, where P is the pressure in pounds per square inch, V is the volume of gas in cubic inches, and k is a constant that depends on given conditions. Find the pressure exerted by the gas if $k = 440,310$ and $V = 22,580 in^3$.

$$
\begin{aligned}
P &= \frac{k}{V} \\
&= \frac{440,310}{22,580} \\
&= 19.5 \text{ pounds per square inch}
\end{aligned}
$$

3. Evaluate/Simplify each expression.
   (a) $|-2.75| = 2.75$

   (b) $-|-6| = -6$

   (c) $\left|\frac{2}{5}\right| = \frac{2}{5}$

4. Evaluate the algebraic expression $2x - 3y^2$ given $x = \frac{-1}{2}$ and $y = -2$.

$$2x - 3y^2 = 2(\frac{-1}{2}) - 3(-2)^2$$
$$= 2(\frac{-1}{2}) - 3(4)$$
$$= -1 - 12$$
$$= -13$$

5. Simplify by removing all grouping symbols(as needed) and combining like terms.
   (a) $-5(x - 2.6)$

$$-5(x - 2.6) = -5(x) + -5(-2.6)$$
$$= -5x + 13$$

   (b) $n^2 - (5n - 4n^2)$

$$n^2 - (5n - 4n^2) = n^2 - 5n + 4n^2$$
$$= 5n^2 - 5n$$

   (c) $2(3m^2 + 2m - 7) - (m^2 - 5m + 4)$

$$2(3m^2 + 2m - 7) - (m^2 - 5m + 4) = 6m^2 + 4m - 14 - m^2 + 5m - 4$$
$$= 5m^2 + 9m - 18$$

   (d) $\frac{2}{3}(2x - 9) + \frac{3}{4}(x + 12)$

$$\frac{2}{3}(2x - 9) + \frac{3}{4}(x + 12) = \frac{4}{3}x - 6 + \frac{3}{4}x + 9$$
$$= (\frac{4}{3}x + \frac{3}{4}x) - 6 + 9$$
$$= (\frac{16}{12}x + \frac{9}{12}x) - 6 + 9$$
$$= \frac{25}{12}x + 3$$