Summer Assignment

For problems 1 - 3, simplify.

1. $\left(\frac{64}{x^8}\right)^{\frac{1}{4}}$

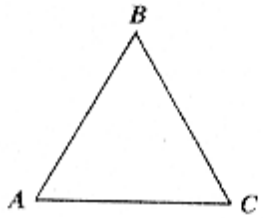
2. $\left(\frac{16}{25}\right)^{\frac{-3}{2}}$

3. $(3a^2b^3)(4a^2b^5)^2$

4. **Expand:** a. $(3x+8)^2$ b. $(2x-5)^2$ c. $(x+6)^2$

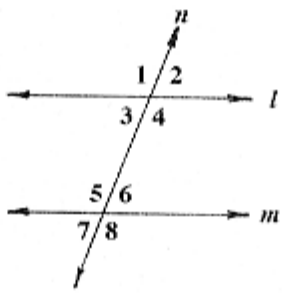
5. **It's your turn in a game using two dice of different colors. How many ways can you throw a sum of eight to win the game?**

6. ΔABC **is equilateral.**
   a. **If the** $m\angle A = 2x-50$, **solve for** x.
   b. **If** $BC = 2x-3$ **and the perimeter of** $\Delta ABC = 4x+39$, **find** AB.



7. **What is the least amount of fencing needed to surround a rectangular dog pen with an area of 196 square feet?**

8. $l \| m$ **and intersected by transversal** n. **If** $m\angle 3 = 4x-3$ **and** $m\angle 6 = 2x+23$, **find the measure of each angle in the figure.**



9. **(-3,8) and (3,y) lie on the same line. If the slope is** $\frac{2}{3}$, **find** y.

10. a. **If your school ID consists of a letter followed by three digits, how many possible combinations are there?**
    b. **Suppose the first letter cannot be O and the first digit cannot be 0, how many possible combinations are there?**

11. **If** $A(r) = \pi r^2$, **find** $A(5)$.

12. **The average of a set of five integers is 16. When a sixth number is added to the set, the average of the set increases to 18. Find the sixth number.**

For problems 1 - 3, solve for x.

1. $16^x = 2^3$ 2. $x^{\frac{2}{3}} = 25$ 3. $27^x = 3$

4. Use the quadratic formula $\left(x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\right)$ to solve for x in the quadratic: $x^2 + 3x - 28 = 0$.

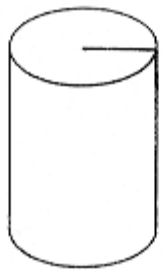
5. Solve and graph:

   a. $|x-3| = 9$

   b. $|x-3| \geq 9$

   c. $|x-3| \leq 9$

6. Find the volume of a right cylinder with base radius, $r = 6$ and height, $h = 15$.



7. If y varies inversely as the cube of x, and $y = 6$ when $x = -2$, find y when $x = 6$.

8. From a point on the ground the angle of elevation to the top of a building is 45° and the distance to the base of the building is 40 meters. How tall is the building?

9. The prom committee decided to purchase beach towels as party favors. At *Design Techniques* the price is $5 per towel plus a $150 setup fee. At *American Printing* the cost is $8 per towel with no setup fee.

   a. Write the expressions that describe the costs for both companies.

   b. How many people need to attend the prom for it to be less expensive to purchase the towels from *American Printing*?

10. Find a number between $\frac{9}{13}$ and $\frac{19}{26}$.

