1. What should be the exponent for the equation to hold?

   *a.* $8^* = 512;$     *b.* $2^* = 64;$       *c.* $3^* = 81;$       *d.* $7^* = 343$

2. Simplify the expressions:

   *a.* $3^2 + 3^2 + 3^2;$         *b.* $3^k + 3^k + 3^k;$         *c.* $3^k \cdot 3^k \cdot 3^k;$

3. Compare:

   a. $9997^{10}$ and $100003^8$       b. $5^{300}$ and $3^{500}$

4. Simplify the following fraction:
$$\frac{(8 \cdot 9)^5 \cdot 7^{10}}{8^2 \cdot 9^3 \cdot 7^7}$$

5. A truck can cover distance between two cities in 10 hours. A fast car, which goes 10 miles per hour faster than the truck, can cover the same distance in 8 hours. What is the distance?

6. It takes two minutes to fry a hamburger on one side. Two hamburgers can be placed in a frying pan. What is the shortest time it takes to fry three hamburgers on both sides?

7. Solve the following riddles (each letter represents a digit):

$$\begin{array}{r} \text{S H E} \\ + \text{H E R E} \\ \hline \text{C O M E S} \end{array}$$