

New Jersey started running out of license plates and had to switch the way they were assigned:

Old System: 3 letters, 2 numbers, 1 letter New System: 1 letter, 2 numbers, 3 letters

6. How many license plates could New Jersey assign under the OLD system?

$$\frac{26 \cdot 26 \cdot 26}{l \cdot l \cdot l} \cdot \frac{10 \cdot 10}{\# \cdot \#} \cdot \frac{26}{l} = 26^4 \cdot 10^2 = 45,697,600 \text{ license plates}$$

7. How many additional license plate numbers can New Jersey assign under the NEW system? (assume the 1st number can be anything other than zero).

$$\frac{26 \cdot 9 \cdot 10}{l \cdot \# \cdot \#} \cdot \frac{26 \cdot 26 \cdot 26}{l \cdot l \cdot l} = 41,278,400 \text{ license plates}$$

8. Delaware currently uses 6 numbers on their license plates. What is the maximum number of license plates that they can issue?

$$\frac{10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10}{\# \cdot \# \cdot \# \cdot \# \cdot \# \cdot \#} = 10^6 = 1,000,000 \text{ license plates}$$

9. Washington State is running out of numbers to use for license plates. Currently they use 3 numbers followed by 3 letters. How many options does this give?

$$\frac{10 \cdot 10 \cdot 10}{\# \cdot \# \cdot \#} \cdot \frac{26 \cdot 26 \cdot 26}{l \cdot l \cdot l} = 10^3 \times 26^3 = 17,576,000 \text{ license plates}$$

10. REFLECTION: In solving real-world problems such as estimating a crowd size, how many tennis balls fit in the classroom, the number of possible telephone numbers, why is it necessary to first make some reasonable assumptions about the situation?

- so you can make an educated guess $\hat{=}$ use mathematics to help you arrive at a solution.
- possibility vs. actuality