## **Fundamental Counting Principle and Permutations Practice**

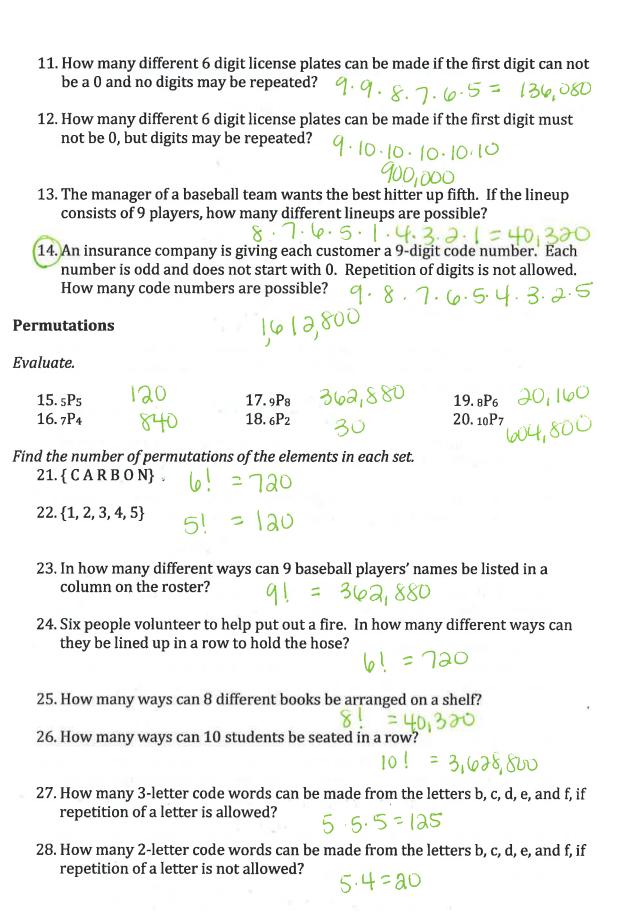
Use fundamental counting principle to solve each problem.

- 1. A company manufactures sneakers in 3 colors, 2 styles, and 8 sizes. How many different sneakers are made?
- 2. A quiz consists of 10 true/false questions. If a student guesses all of the answers, in how many different ways can she complete the quiz?

- 3. Harry is selecting new uniforms for his team. Pants come in 3 styles, shirts in 2 styles, and hats in 4 styles. In how many different ways can a 3-piece uniform be selected?  $3 \cdot 3 \cdot 4 = 34$
- 4. A store makes custom paints using a base, a texture, and a pigment. If the store has 3 different bases, 2 textures, and 50 pigments, how many different custom paints can be mixed?

- 5. There are 12 questions on a true/false test. If all questions are answered, in how many different ways can the test be completed?
- 6. Each of the 8 questions on a multiple choice test has 3 possible answers. If all questions are answered, in how many ways can the test be completed?

- 7. A company is setting up phone numbers for a new town. Each number must have 7 digits and cannot start with 0. How many different numbers are possible? (Repetition is allowed.)  $0.10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 = 0.000$
- 8. A 7-digit phone number is to be chosen so that the first and last digits are not 0 and the last digit is even. How many different numbers can be chosen? (Repetition of a digit is allowed.)
- 9. On a 15 item test, the first five items have 4 choices each, the next five have 3 choices each, and the last five are true or false. If Joe answers items 2, 7, and 10 correctly and guesses all the others, how many different ways can he complete the test?
- 10. A code is constructed so that each word has exactly 5 letters. A word cannot start with a vowel or end with a consonant. If the letters q, x, and z are excluded, how many different code words can be formed?



- 29. How many 4-digit permutations of the 10 digits are there, if no digit may be repeated? |0| 4 |0| 8. |7| = 5040
- 30. How many 3-digit permutations of the 10 digits are there if any digit may be repeated?  $10 \cdot 10 \cdot 10 = 1000$
- 31. How many permutations of the letters of the word BABBLING are there?
- 32. How many permutations of the letters of the word CARICATURE are there?
- 33. How many permutations of the letters in the word DAZZLED are there?