PROBLEM SOLVING

USING THE STRATEGIES

1. **Calendar** If there are exactly four Mondays in January, on what days of the week can January 31 not fall?

2. **Marching band** A large marching band was performing on a football field. First, the band formed a square. Then, the band formed a rectangle, so that the number of rows increased by 5. How many were in the band?

3. **Sequence** Each term in the following sequence is determined from the previous term only.
   
   15, 26, 38, 67, 55, ...
   
   Extend the sequence until you find the numbers that repeat. Which numbers repeat?

4. **Measurement** The trapezoid has 3 equal sides. The length of the base is 2 cm less than the sum of the lengths of the three equal sides. The distance between the parallel sides is 8 cm. Find the area of the trapezoid.

5. **Standard form** What is the ones digit when $6317^{458}$ is written in standard form?

6. **Toothpicks** The 12 toothpicks have been arranged to make three identical squares.

   How could you arrange the toothpicks to make six identical squares?

7. **Marking points** Mark six points on a piece of paper, so that each point is 1 unit from exactly three other points.

8. **Letter puzzle** In this addition, \[ \begin{array}{c} D \\ + F \end{array} \]
   the letters D, E, and F represent different digits. What are the values of D and F?

9. **Moving counters** There are four red counters and four blue counters in a row.

   You are allowed to move two adjacent counters at a time, without rotating them. In four moves, arrange the counters so that the colours alternate.

10. **Driving** About how many litres of gasoline are used by all the cars in Ontario in a week?

11. **System of equations** In the system of equations, find the values of F and E.

   \[
   \begin{align*}
   A + B &= C \\
   C + D &= E \\
   A + E &= F \\
   B + D + F &= 20 \\
   A &= 4 
   \end{align*}
   \]

12. **Bicycle race** Suzanne, Beth, and Janel entered a 36-km bicycle race. Each of them kept a constant speed throughout the race. When Suzanne finished, Beth was 12 km from the finish line, and Janel was 18 km from the finish line. When Beth finished the race, how far from the finish line was Janel?