1. How many common tangent lines can be drawn to the circles shown below?

   \[ \begin{array}{c}
   \text{1) 1} \\
   \text{2) 2} \\
   \text{3) 3} \\
   \text{4) 4}
   \end{array} \]

2. In the diagram below, circles \( A \) and \( B \) are tangent at point \( C \) and \( AB \) is drawn. Sketch all common tangent lines.

3. Lines \( AE \) and \( BD \) are tangent to circles \( O \) and \( P \) at \( A, E, B, \) and \( D \), as shown in the diagram below. If \( AC:CE = 5:3 \), and \( BD = 56 \), determine and state the length of \( CD \).

4. In the diagram below, circles \( X \) and \( Y \) have two tangents drawn to them from external point \( T \). The points of tangency are \( C, A, S, \) and \( E \). The ratio of \( TA \) to \( AC \) is 1:3. If \( TS = 24 \), find the length of \( SE \).

5. In the diagram shown below, \( AC \) is tangent to circle \( O \) at \( A \) and to circle \( P \) at \( C \), \( OP \) intersects \( AC \) at \( B \), \( OA = 4 \), \( AB = 5 \), and \( PC = 10 \).

   What is the length of \( BC \)?
   \[ \begin{array}{c}
   \text{1) 6.4} \\
   \text{2) 8} \\
   \text{3) 12.5} \\
   \text{4) 16}
   \end{array} \]
G.C.A.2: Chords, Secants and Tangents 6
Answer Section

1. ANS: 4
   REF: 011428ge

2. ANS:

   REF: 011330ge

3. ANS:
   \[ \frac{3}{8} \cdot 56 = 21 \]
   REF: 081625geo

4. ANS:
   18. If the ratio of TA to AC is 1:3, the ratio of TE to ES is also 1:3. \( x + 3x = 24 \). \( 3(6) = 18 \).
   \[ x = 6 \]
   REF: 060935ge

5. ANS: 3
   \[ 5 \cdot \frac{10}{4} = \frac{50}{4} = 12.5 \]
   REF: 081512geo