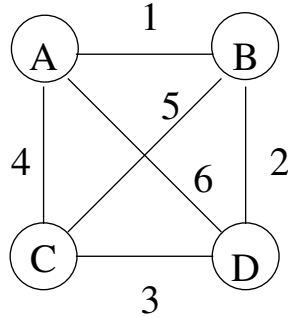Ally Smith

TSP Worksheet

1. Show all possible TSP tours in the graph and compute their cost; for example, one TSP tour is $A - B - C - D - A$ and its cost is $1 + 5 + 3 + 6 = 15$.

   $A - B - C - D - A$, $1 + 5 + 3 + 6 = 15$

   $A - B - D - C - A$, $1 + 2 + 3 + 4 = 10$

   $A - C - B - D - A$, $4 + 5 + 2 + 6 = 17$

   $A - C - D - B - A$, $4 + 3 + 2 + 1 = 10$

   $A - D - B - C - A$, $6 + 2 + 5 + 4 = 17$

   $A - D - C - B - A$, $6 + 3 + 5 + 1 = 15$

   $B - A - C - D - B$, $1 + 4 + 3 + 2 = 10$

   $B - A - D - C - B$, $1 + 6 + 3 + 5 = 15$

   $B - C - A - D - B$, $5 + 4 + 6 + 2 = 17$

   $B - C - D - A - B$, $5 + 3 + 6 + 1 = 15$

   $B - D - A - C - B$, $2 + 6 + 4 + 5 = 17$

   $B - D - C - A - B$, $2 + 3 + 4 + 1 = 10$

   $C - A - B - D - C$, $4 + 1 + 2 + 3 = 10$

   $C - A - D - B - C$, $4 + 6 + 2 + 5 = 17$

   $C - B - A - D - C$, $5 + 1 + 6 + 3 = 15$

   $C - B - D - A - C$, $5 + 2 + 6 + 4 = 17$

   $C - D - A - B - C$, $3 + 6 + 1 + 5 = 15$

   $C - D - B - A - C$, $3 + 2 + 1 + 4 = 10$

   $D - A - B - C - D$, $6 + 1 + 5 + 3 = 15$

   $D - A - C - B - D$, $6 + 4 + 5 + 2 = 17$

   $D - B - A - C - D$, $2 + 1 + 4 + 3 = 10$

   $D - B - C - A - D$, $2 + 5 + 4 + 6 = 17$

   $D - C - A - B - D$, $3 + 4 + 1 + 2 = 10$

$D - C - B - A - D,\ 3 + 5 + 1 + 6 = 15$

2. How many distinct tours are there when you account for the same tour being counted multiple times?

   3 distinct tours