- 1) Each vertex has degree 3, so no two of these edges can be incident to the same vertex.

- 2) If every vertex is joined to the opposite vertex, we would have a 4-cycle (such as 1-6 7-2 3).

- 3) If a vertex is not joined to the opposite vertex, it must be joined to a vertex 4 places away since a 3-cycle or 4-cycle would be created if it were joined to a vertex 2 places or 3 places away.

- 4) If 1 is joined to 5, then 10 cannot be joined to 2 or 3 or 4 or 6, since this would create a 3-cycle or 4-cycle, and it also cannot be joined to 4 or 6 since this would create a 4-cycle.

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**Pink**

- 1) 5 4 5 4 5

- 2) 6 1 6 1 4 1

- 3) 5 5 8 2 8

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4) 633526 147352 633526

- 5) 5143282 6514378 5143282

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3) **Kruskal's Algorithm** (possible answer)


8) **Prim's Algorithm** - starting at J (possible answer)