Is it possible to tell if two triangles (T₁ and T₂), as described below, are congruent? Explain why they are congruent, not congruent or why it is impossible to tell.

1. Both triangles have a 30° angle, 2 cm side and 3 cm side.
2. Both triangles have three 60° angles.
3. Both triangles have a 3 cm side, 30° angle and 60° angle.
4. Both triangles have a 3 cm side, 4 cm side and 5 cm side.
5. Both triangles have a 30° angle, 50° angle and 3 cm side that is adjacent to the 30° angle but not included between the two angles.
6. Both triangles have a 30° angle, 50° angle and 3 cm side that is adjacent to the 30° angle.
7. Both triangles have two 45° angles and the side adjacent to both angles is 6 cm long.
8. Both triangles have two 7 cm sides and an angle adjacent to both sides is 70°.
9. Both triangles have a 2 cm side, 3 cm side and the angle opposite to the 3 cm side is 30°.
10. Both triangles have a 2 cm side, 3 cm side and the angle opposite to the 2 cm side is 30°.

If you arrived at a conclusion that two triangle must be congruent, either explain it by reference to triangle congruence theorems we had or formulate a new tentative theorem that would capture your observation.

If you are using Geogebra exploration applets, here’s a hint on how to manipulate the objects: