Lesson 6-5: Understand Congruent Figures

1. Sample answer: A sequence of translations, reflections, and rotations maps one figure onto another without changing its shape or size.

2. No; Sample answer: The sequence of transformations just needs to include one or more of these transformations.

3. Yes; Sample answer: If you use only rotations and translations, the orientation will be maintained. Only a reflection would change the orientation.

4. 25 cm^2; Sample answer: The resulting image will have the same area because rotations and reflections do not change the size or shape of a figure.

5. Yes; Sample answer: You can map △ABC only △DEF by reflecting △ABC across the line x = 5 and then translating 5 units up.

6. No; Sample answer: You cannot map △ABC onto △GHI by a sequence of translations, reflections, and rotations.

7. are

8. Yes; Sample answer: A 180° rotation about point F followed by a translation 4 units down and 1 unit left maps △DEF onto △D’E’F’. So the triangles are congruent.

9. Sample answer: Reflecting quadrilateral ABCD across the y-axis and then translating it 5 units down will show that the quadrilaterals are the same size and shape, so therefore congruent.

10. Yes; Sample answer: A reflection across the y-axis followed by a translation 6 units down and 3 units right shows that the triangles have the same size and shape.

11. △QRS and △DFE; Reflect △DFE across the x-axis. Rotate it 90° counterclockwise around point E. Translate it 5 units down.

12. No; Sample answer: There is no sequence of transformations that maps △LMN directly onto △XYZ.

13. Sample answer: She found a sequence of transformations that maps △D’E’F’ onto △DEF, not △DEF onto △D’E’F’. The translation should have been 6 units left.

14. a. B
    b. Yes; Sample answer: A rotation of 180° about the origin followed by a translation 3 units right and 4 units up maps △DEF onto △D’E’F’.