Name: _____ Date: _____

Fresh Math

Sequences of Transformations - Medium

Find the image of the point after the sequence of transformations.

1. Point (-4, -6). Translate 3 units right and 2 units down, then rotate 180° about the origin.
2. Point (-4, -6). Rotate 90° clockwise about the origin, then reflect over the x-axis.
3. Point (4, -1). Translate 6 units right and 4 units up, then rotate 90° clockwise about the origin.
4. Point (3, 4). Reflect over the y-axis, then translate 1 unit left and 3 units up.
5. Point (-7, -1). Rotate 90° clockwise about the origin, then rotate 180° about the origin.
6. Point (4, 5). Rotate 90° clockwise about the origin, then reflect over the x-axis.

Find the vertices of the image of the triangle after the sequence of transformations.

7. Triangle with A(6, 3), B(-1, 6), C(3, 1). Rotate 90° counterclockwise about the origin, then translate 6 units left and 4 units up.
8. Triangle with A(-1, -3), B(5, 4), C(-7, 4). Reflect over the y-axis, then rotate 90° clockwise about the origin.
9. Triangle with A(-5, 2), B(1, 1), C(6, -3). Reflect over the y-axis, then rotate 90° clockwise about the origin.
10. Triangle with A(-3, -2), B(-4, 7), C(-3, -1). Reflect over the y-axis, then rotate 180° about the origin.

Name: _____ Date: _____

Sequences of Transformations - Medium

Find the vertices of the image of the triangle after the sequence of transformations.

11. Triangle with A(-3, 2), B(5, 1), C(7, 4). Reflect over the x-axis, then rotate 90° clockwise about the origin.

12. Triangle with A(-3, 7), B(-7, -2), C(-4, -4). Translate 3 units right and 1 unit down, then rotate 90° counterclockwise about the origin.

Does doing the two transformations in the reverse order give the same image? Find both images.

13. Point (-3, -5). Reflect over the y-axis, then rotate 90° clockwise about the origin.

14. Point (5, 3). Reflect over the y-axis, then reflect over the x-axis.

15. Point (-3, -2). Translate 1 unit left and 3 units down, then reflect over the y-axis.

16. Point (7, 2). Reflect over the x-axis, then translate 5 units down.

17. Point (-1, 1). Translate 1 unit right and 4 units down, then rotate 180° about the origin.

18. Point (-4, -5). Reflect over the x-axis, then rotate 90° counterclockwise about the origin.

19. Point (-6, -2). Translate 6 units left and 1 unit up, then rotate 90° clockwise about the origin.

20. Point (5, -4). Translate 4 units left and 1 unit up, then reflect over the x-axis.

Sequences of Transformations – Medium – Answer Key

1. Point (-4, -6). Translate 3 units right and 2 units down, then rotate 180° about the origin.
   (1, 8)

2. Point (-4, -6). Rotate 90° clockwise about the origin, then reflect over the x-axis.
   (-6, -4)

3. Point (4, -1). Translate 6 units right and 4 units up, then rotate 90° clockwise about the origin.
   (3, -10)

4. Point (3, 4). Reflect over the y-axis, then translate 1 unit left and 3 units up.
   (-4, 7)

5. Point (-7, -1). Rotate 90° clockwise about the origin, then rotate 180° about the origin.
   (1, -7)

6. Point (4, 5). Rotate 90° clockwise about the origin, then reflect over the x-axis.
   (5, 4)

7. Triangle with A(6, 3), B(-1, 6), C(3, 1). Rotate 90° counterclockwise about the origin, then translate 6 units left and 4 units up.
   A′(-9, 10), B′(-12, 3), C′(-7, 7)

8. Triangle with A(-1, -3), B(5, 4), C(-7, 4). Reflect over the y-axis, then rotate 90° clockwise about the origin.
   A′(-3, -1), B′(4, 5), C′(4, -7)

9. Triangle with A(-5, 2), B(1, 1), C(6, -3). Reflect over the y-axis, then rotate 90° clockwise about the origin.
   A′(2, -5), B′(1, 1), C′(-3, 6)

10. Triangle with A(-3, -2), B(-4, 7), C(-3, -1). Reflect over the y-axis, then rotate 180° about the origin.
    A′(-3, 2), B′(-4, -7), C′(-3, 1)

Sequences of Transformations – Medium – Answer Key

11. Triangle with A(-3, 2), B(5, 1), C(7, 4). Reflect over the x-axis, then rotate 90° clockwise about the origin.

    A′(-2, 3), B′(-1, -5), C′(-4, -7)

12. Triangle with A(-3, 7), B(-7, -2), C(-4, -4). Translate 3 units right and 1 unit down, then rotate 90° counterclockwise about the origin.

    A′(-6, 0), B′(3, -4), C′(5, -1)

13. Point (-3, -5). Reflect over the y-axis, then rotate 90° clockwise about the origin.

    No, different images: (-5, -3) in this order, (5, 3) in the reverse order

14. Point (5, 3). Reflect over the y-axis, then reflect over the x-axis.

    Yes, same image: (-5, -3) in this order, (-5, -3) in the reverse order

15. Point (-3, -2). Translate 1 unit left and 3 units down, then reflect over the y-axis.

    No, different images: (4, -5) in this order, (2, -5) in the reverse order

16. Point (7, 2). Reflect over the x-axis, then translate 5 units down.

    No, different images: (7, -7) in this order, (7, 3) in the reverse order

17. Point (-1, 1). Translate 1 unit right and 4 units down, then rotate 180° about the origin.

    No, different images: (0, 3) in this order, (2, -5) in the reverse order

18. Point (-4, -5). Reflect over the x-axis, then rotate 90° counterclockwise about the origin.

    No, different images: (-5, -4) in this order, (5, 4) in the reverse order

19. Point (-6, -2). Translate 6 units left and 1 unit up, then rotate 90° clockwise about the origin.

    No, different images: (-1, 12) in this order, (-8, 7) in the reverse order

20. Point (5, -4). Translate 4 units left and 1 unit up, then reflect over the x-axis.

    No, different images: (1, 3) in this order, (1, 5) in the reverse order