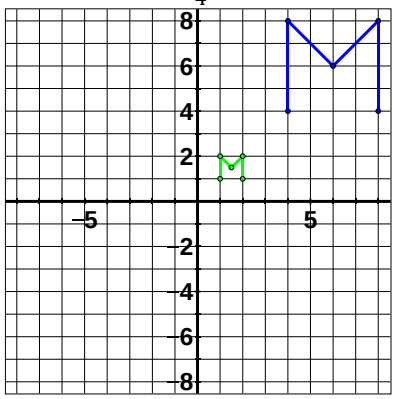
Unit 2 Homework Key

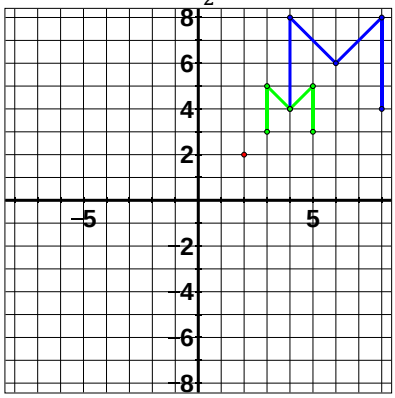
Lesson 2.1

Perform the given dilation on each given pre-image.

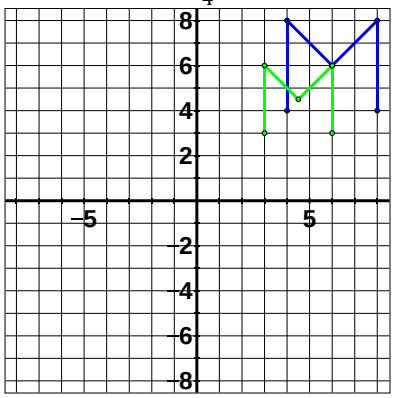
1. Dilate by $c = \frac{1}{4}$, center $(0,0)$



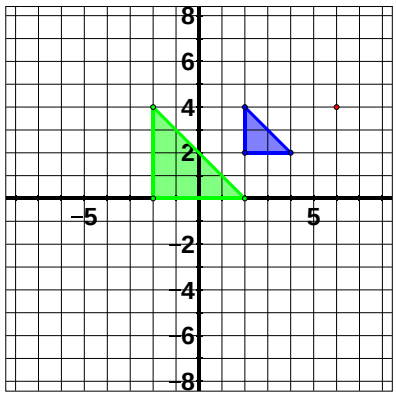
2. Dilate by $c = \frac{1}{2}$, center $(2,2)$



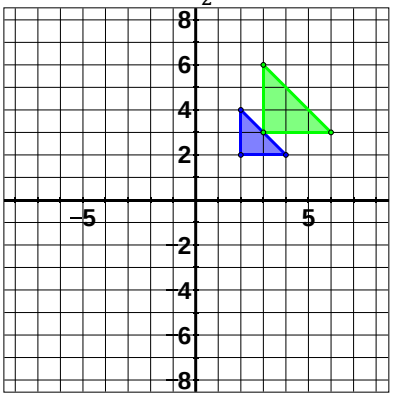
3. Dilate by $c = \frac{3}{4}$, center $(0,0)$



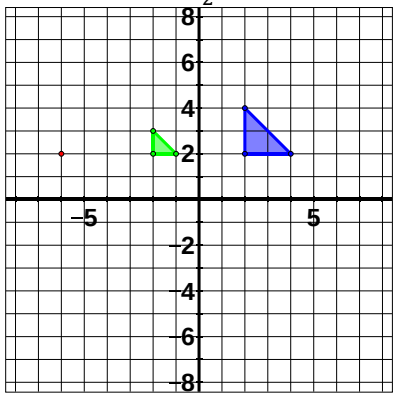
4. Dilate by $c = 2$, center $(6,4)$



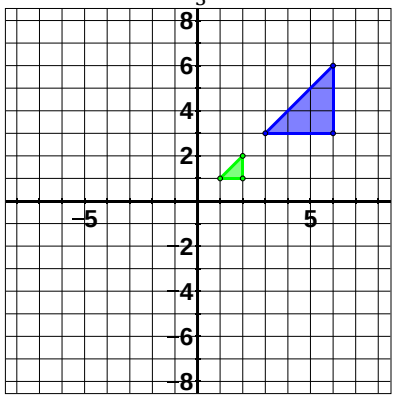
5. Dilate by $c = \frac{3}{2}$, center $(0,0)$



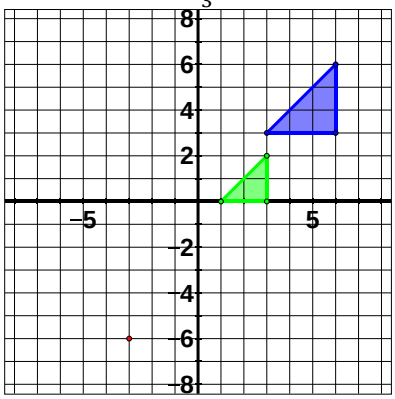
6. Dilate by $c = \frac{1}{2}$, center $(-6,2)$



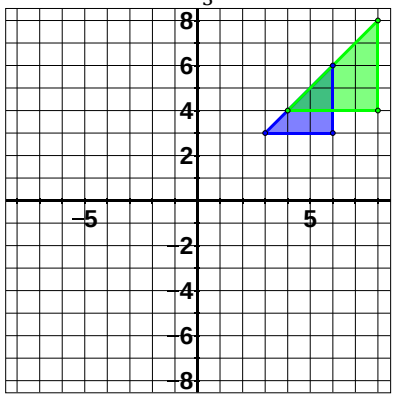
7. Dilate by $c = \frac{1}{3}$, center $(0,0)$



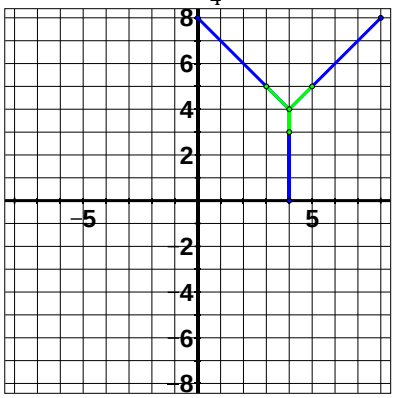
8. Dilate by $c = \frac{2}{3}$, center $(-3,-6)$



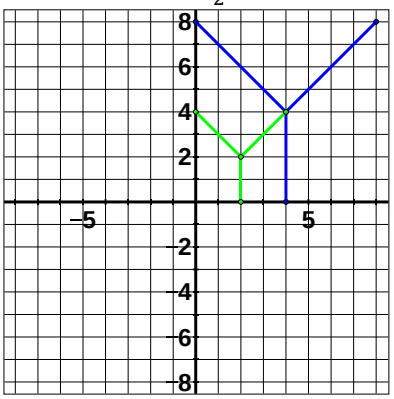
9. Dilate by $c = \frac{4}{3}$, center $(0,0)$



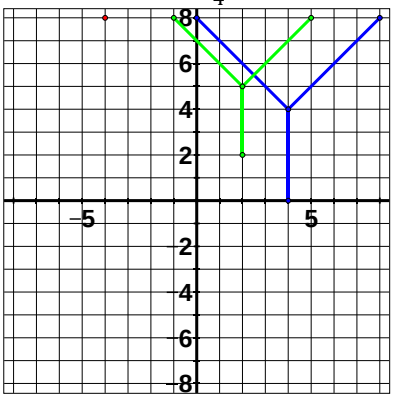
10. Dilate by $c = \frac{1}{4}$, center $(4,4)$



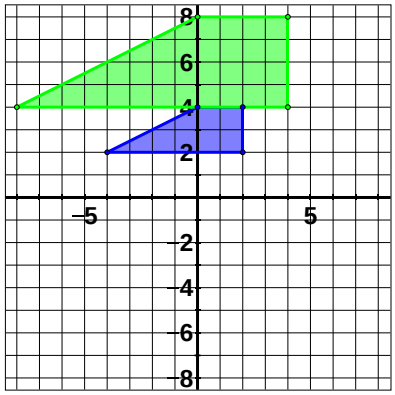
11. Dilate by $c = \frac{1}{2}$, center $(0,0)$



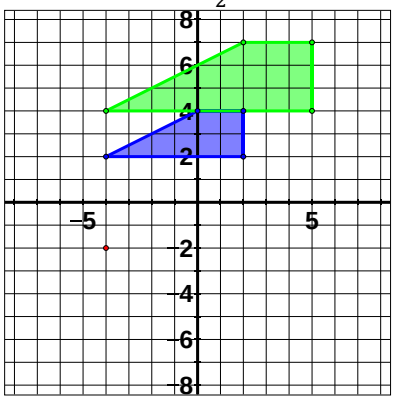
12. Dilate by $c = \frac{3}{4}$, center $(-4,8)$



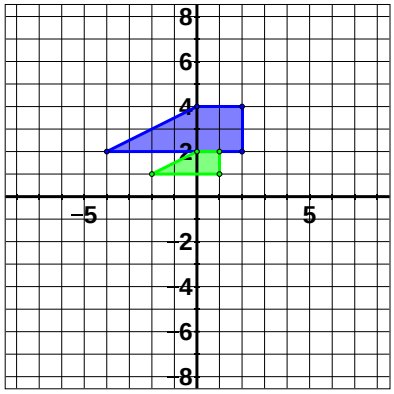
13. Dilate by $c = 2$, center $(0,0)$



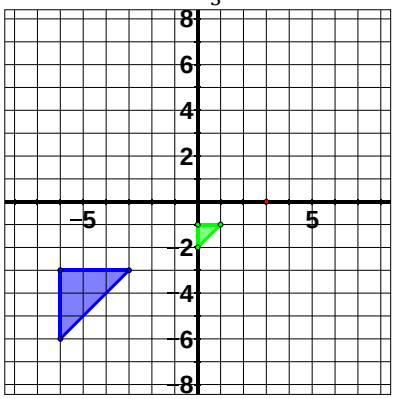
14. Dilate by $c = \frac{3}{2}$, center $(-4,-2)$



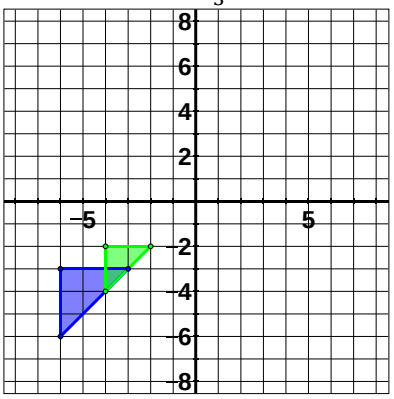
15. Dilate by $c = \frac{1}{2}$, center $(0,0)$



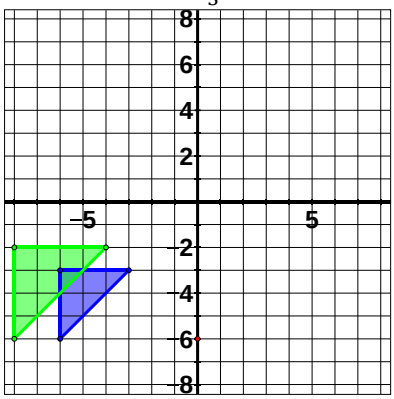
16. Dilate by $c = \frac{1}{3}$, center $(3,0)$



17. Dilate by $c = \frac{2}{3}$, center $(0,0)$



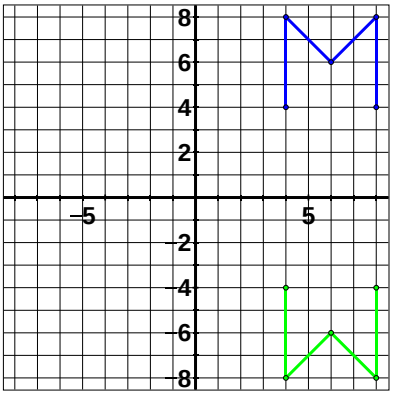
18. Dilate by $c = \frac{4}{3}$, center $(0,-6)$



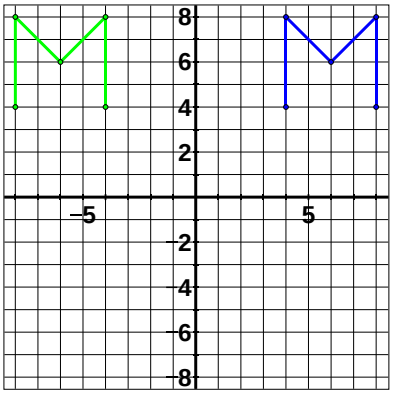
Lesson 2.2

Perform the given reflection or series of transformations on each given pre-image.

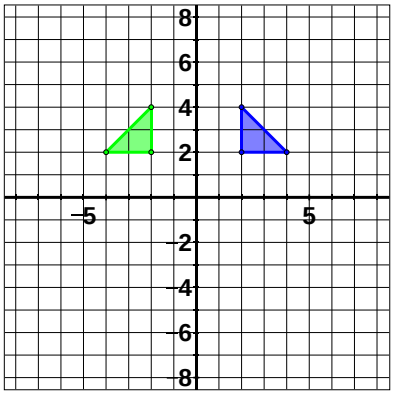
1. Reflect across x-axis



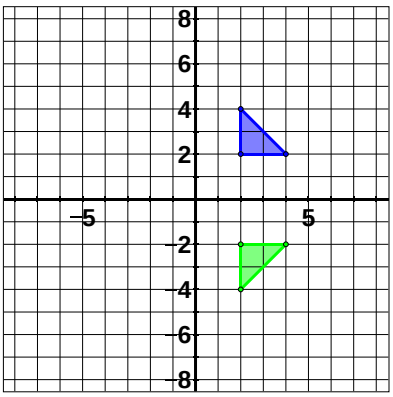
2. Reflect across y-axis



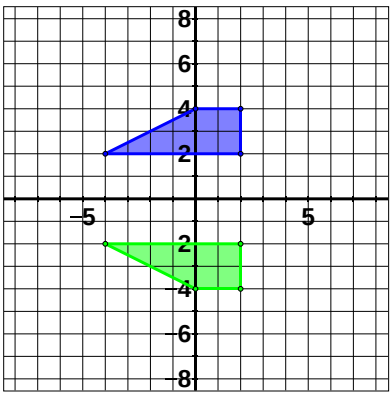
3. Reflect across y-axis



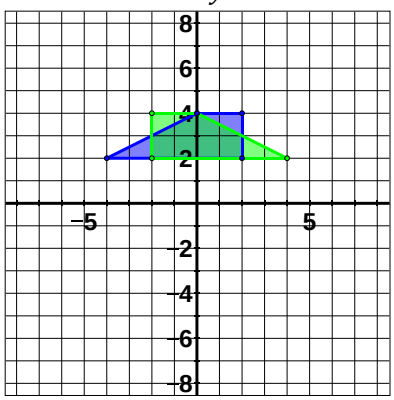
4. Reflect across x-axis



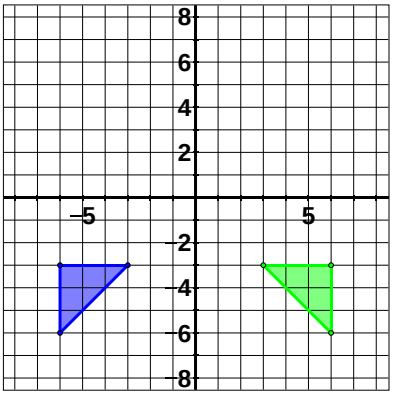
5. Reflect across x-axis



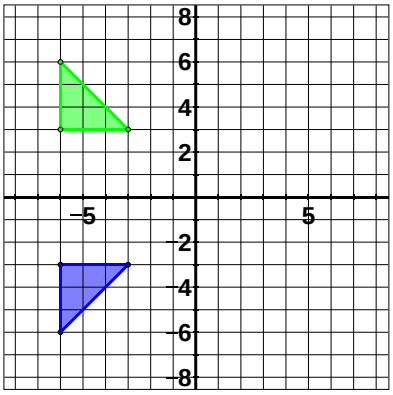
6. Reflect across y-axis



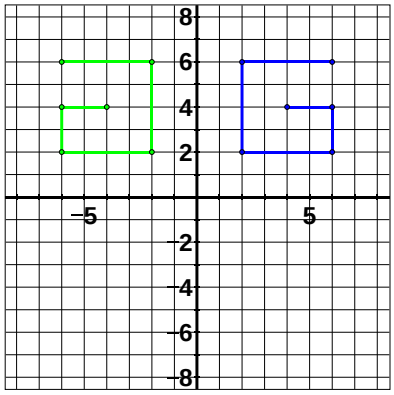
7. Reflect across y-axis



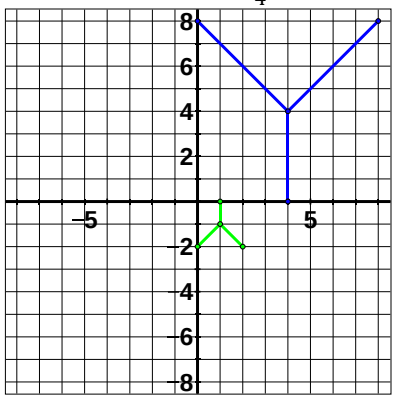
8. Reflect across x-axis



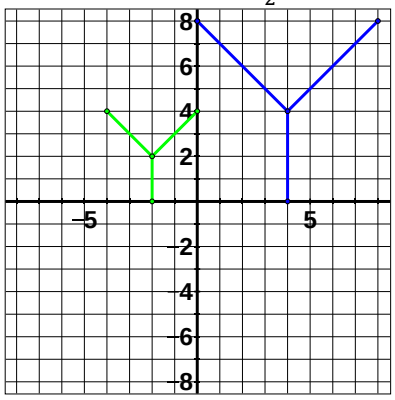
9. Reflect across y-axis



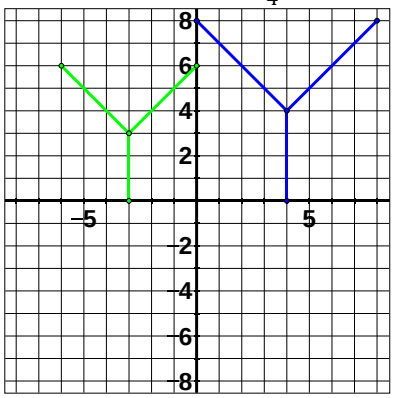
10. Reflect across x-axis
and dilate by $c = \frac{1}{4}$



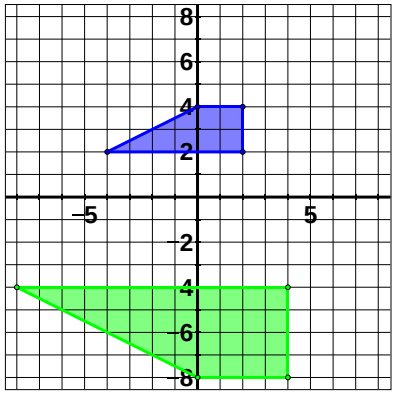
11. Reflect across y-axis
and dilate by $c = \frac{1}{2}$



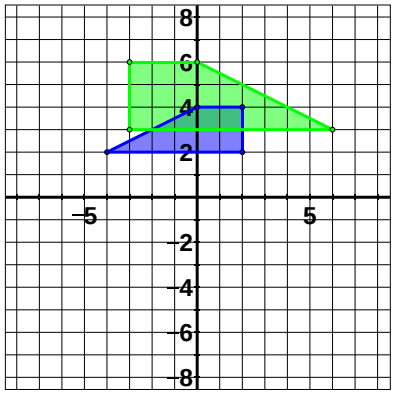
12. Reflect across y-axis
and dilate by $c = \frac{3}{4}$



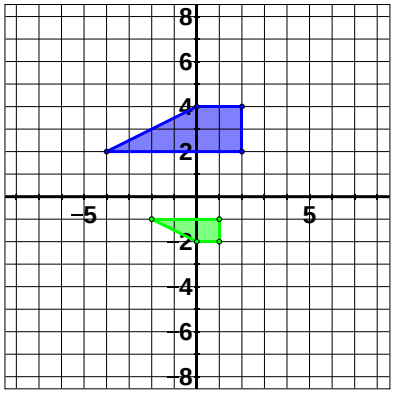
13. Dilate by $c = 2$
and reflect across x-axis



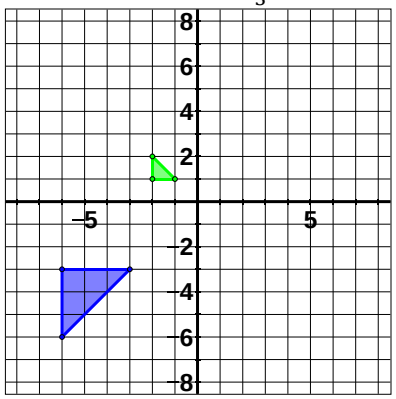
14. Dilate by $c = \frac{3}{2}$
and reflect across y-axis



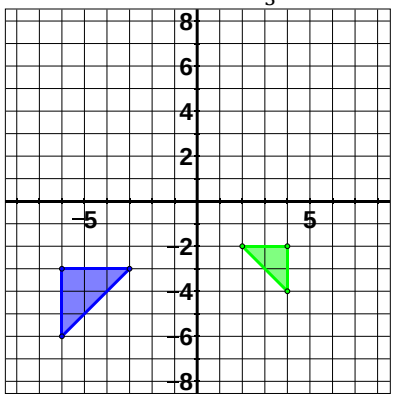
15. Dilate by $c = \frac{1}{2}$
and reflect across x-axis



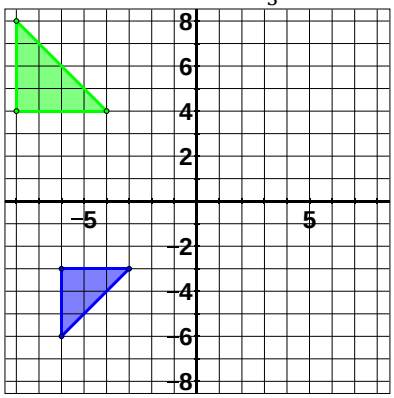
16. Reflect across x-axis
and dilate by $c = \frac{1}{3}$



17. Reflect across y-axis
and dilate by $c = \frac{2}{3}$



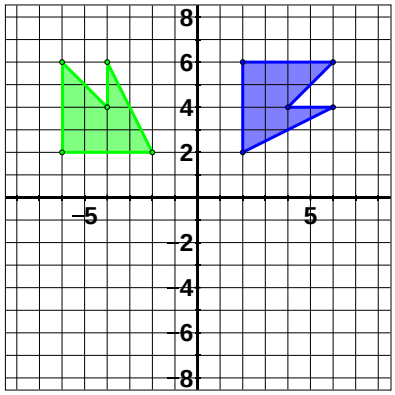
18. Reflect across x-axis
and dilate by $c = \frac{4}{3}$



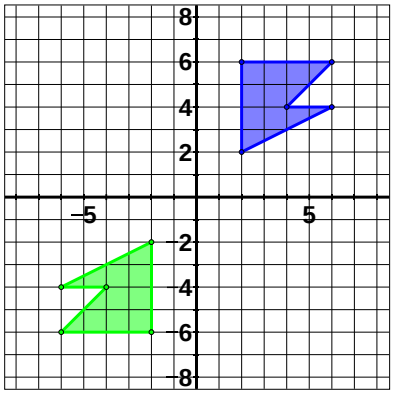
Lesson 2.3

Perform the given rotation or series of transformations on each given pre-image.

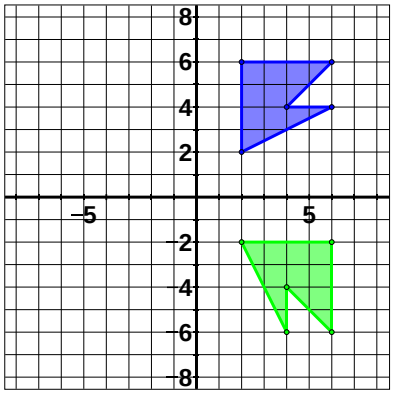
1. Rotate 90°



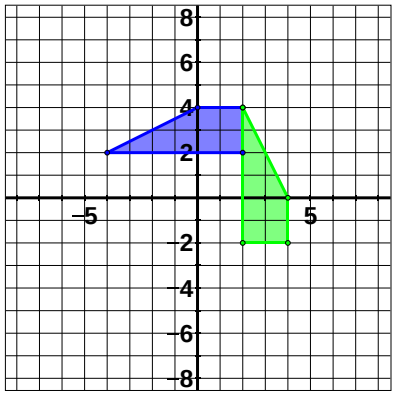
2. Rotate 180°



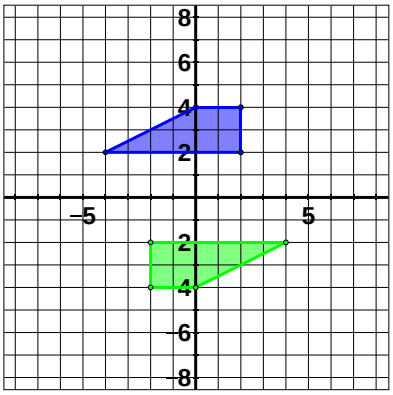
3. Rotate 270°



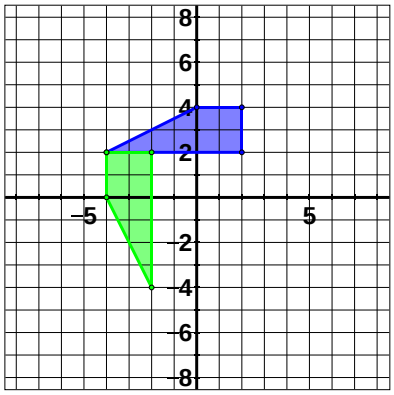
4. Rotate 270°



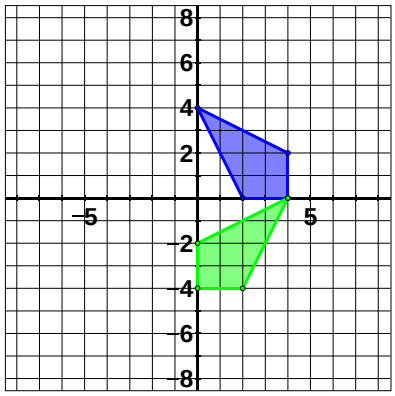
5. Rotate 180°



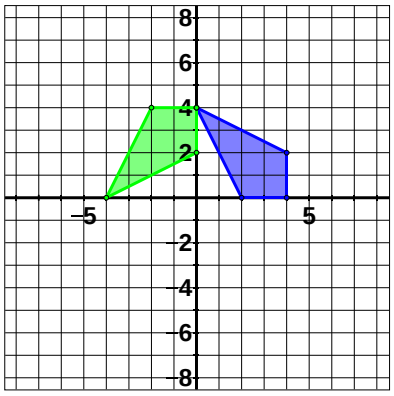
6. Rotate 90°



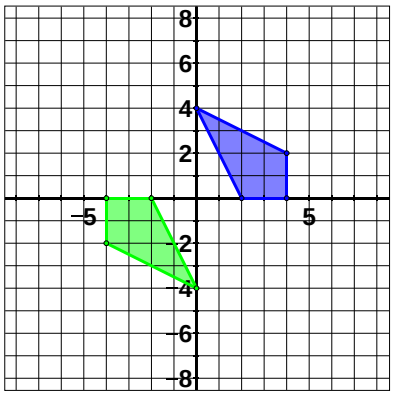
7. Rotate 270°



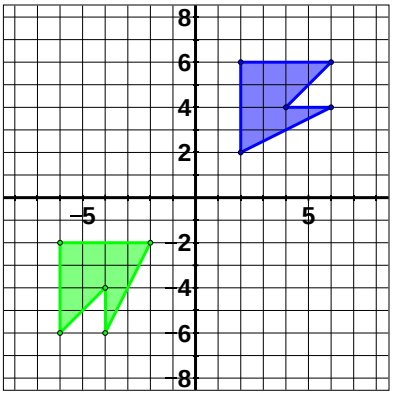
8. Rotate 90°



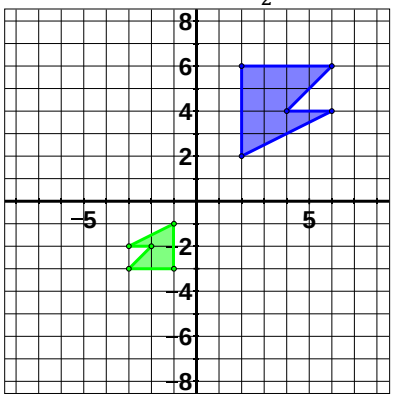
9. Rotate 180°



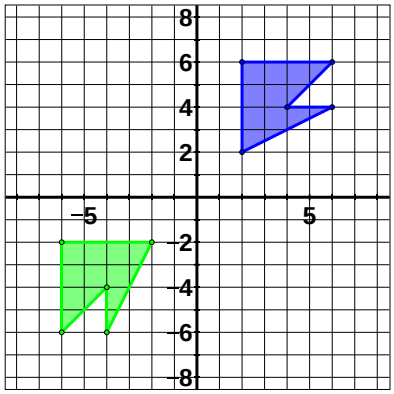
10. Rotate $90°$
and reflect across x-axis



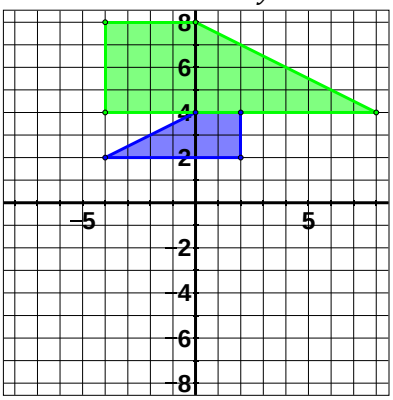
11. Rotate $180°$
and dilate by $c = \frac{1}{2}$



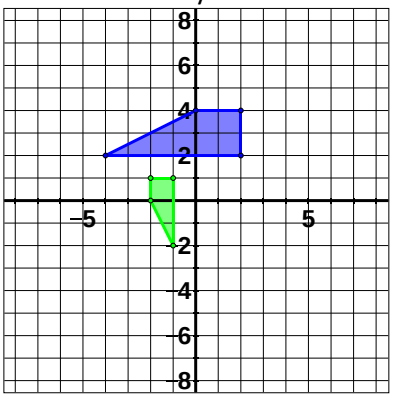
12. Rotate $270°$
and reflect across y-axis



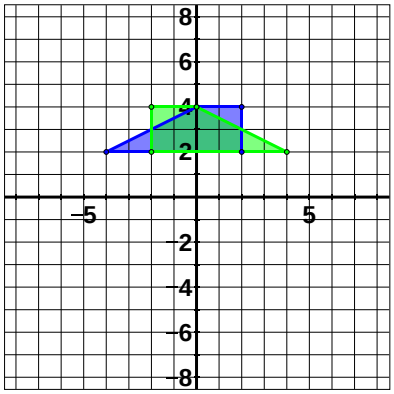
13. Dilate by $c = 2$
and reflect across y-axis



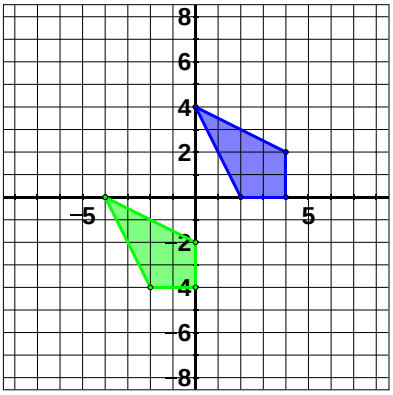
14. Dilate by $c = \frac{1}{2}$
and rotate by $90°$



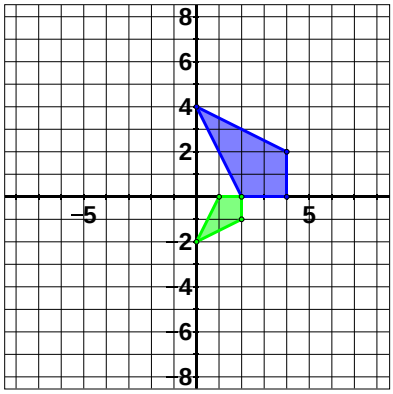
15. Rotate $180°$
and reflect across x-axis



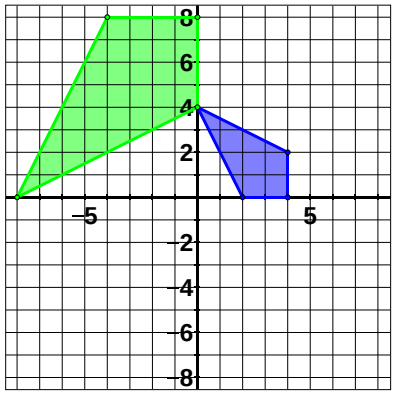
16. Reflect across y-axis
and rotate $90°$



17. Dilate by $c = \frac{1}{2}$
and reflect across x-axis



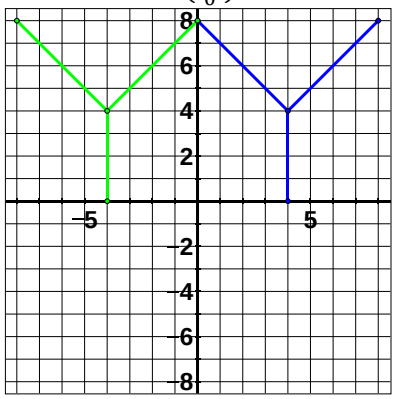
18. Dilate by $c = 2$
and rotate $90°$



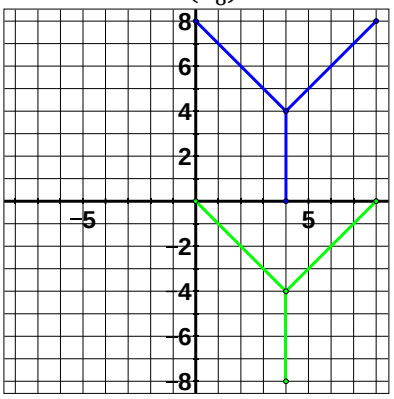
Lesson 2.4

Perform the given translation or series of transformations on each given pre-image.

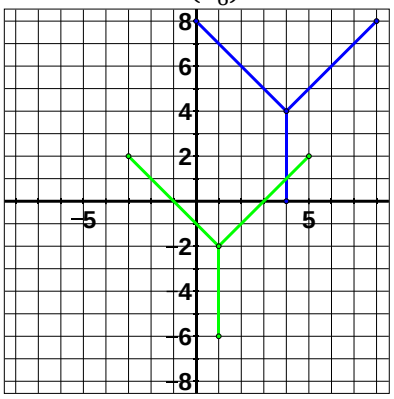
1. Translate by $\binom{-8}{0}$



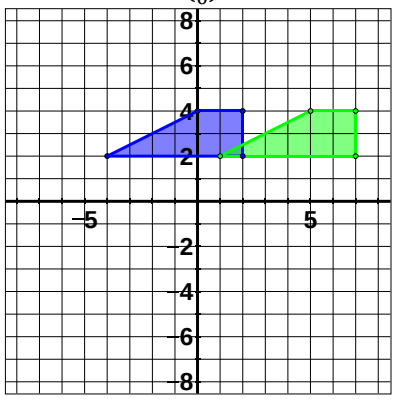
2. Translate by $\binom{0}{-8}$



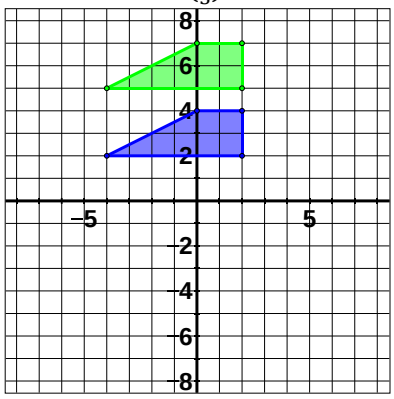
3. Translate by $\binom{-3}{-6}$



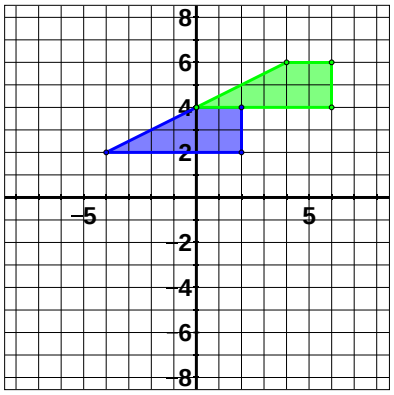
4. Translate by $\binom{5}{0}$



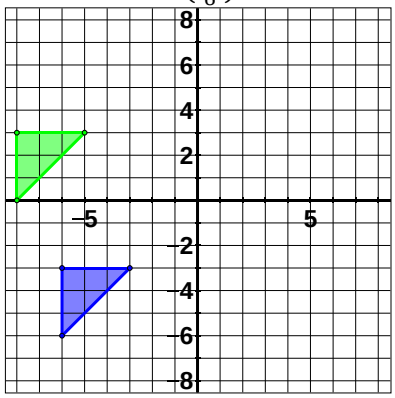
5. Translate by $\binom{0}{3}$



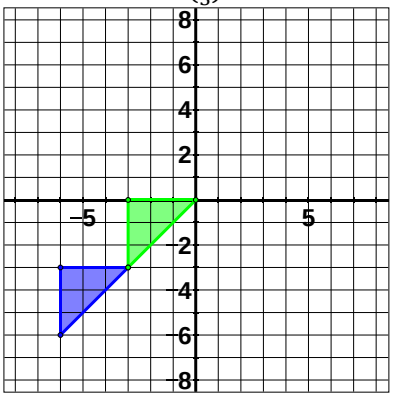
6. Translate by $\binom{4}{2}$



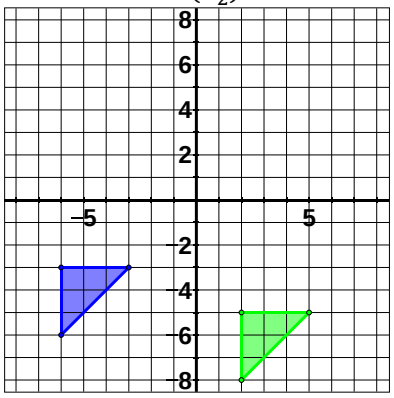
7. Translate by $\binom{-2}{6}$



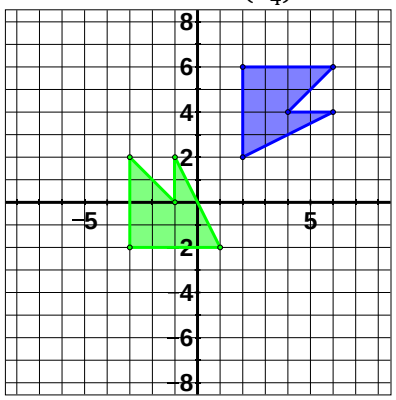
8. Translate by $\binom{3}{3}$



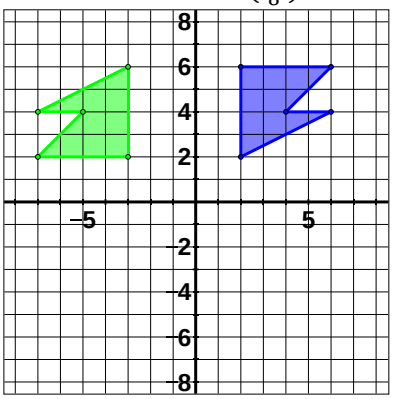
9. Translate by $\binom{8}{-2}$



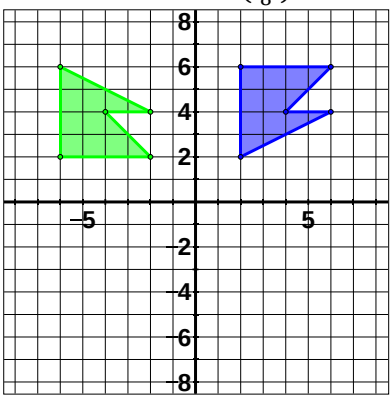
10. Rotate $90°$
and translate by $\binom{3}{-4}$



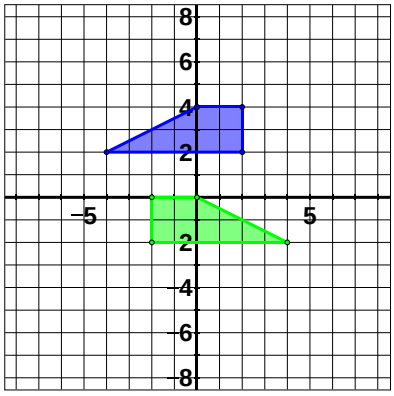
11. Rotate $180°$
and translate by $\binom{-1}{8}$



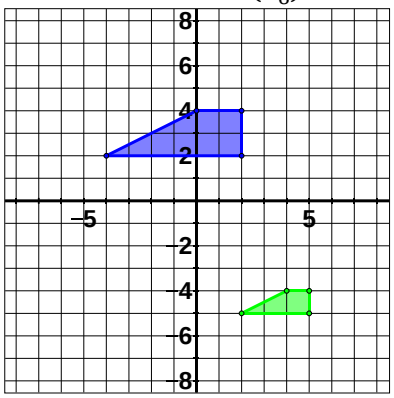
12. Reflect across x-axis
and translate by $\binom{-8}{8}$



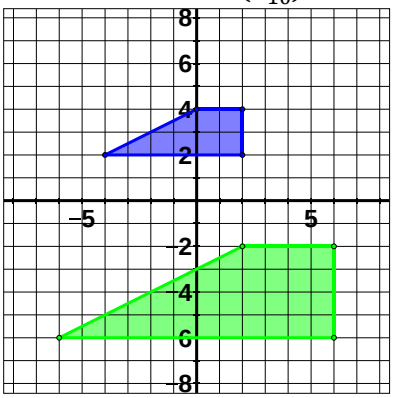
13. Reflect across y-axis
and translate by $\binom{0}{-4}$



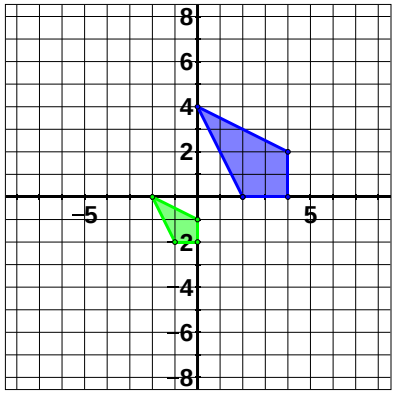
14. Dilate by $c = \frac{1}{2}$
and translate by $\binom{4}{-6}$



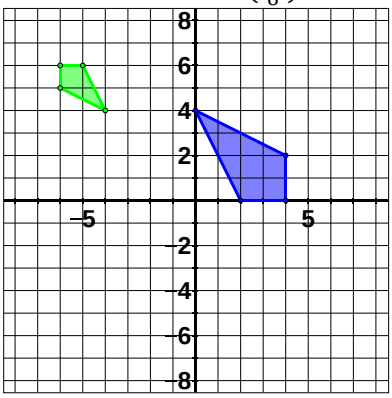
15. Dilate by $c = 2$
and translate by $\binom{2}{-10}$



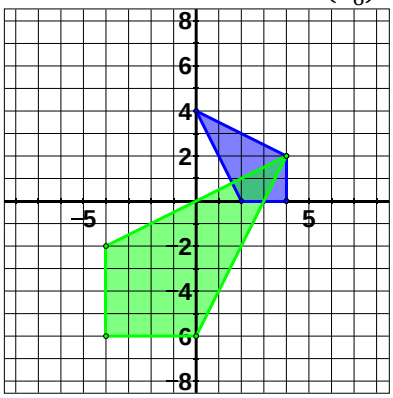
16. Dilate by $c = \frac{1}{2}$, rotate $90°$,
and reflect across x-axis



17. Dilate by $c = \frac{1}{2}$, rotate $180°$,
and translate by $\binom{-4}{6}$



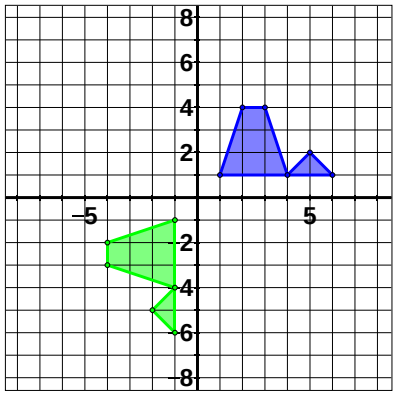
18. Dilate by $c = 2$, reflect across
y-axis, and translate by $\binom{4}{-6}$



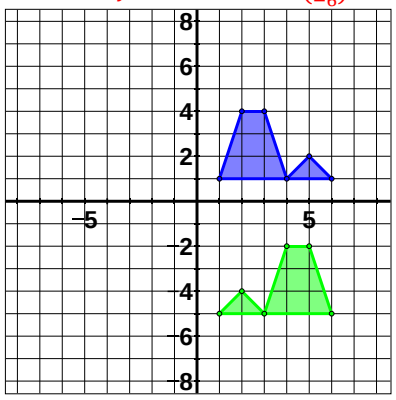
Lesson 2.5

Determine the specific series of transformations that took the pre-image (darker in blue) to the image (lighter in green). Be sure to give the specific vector, rotation angle, line of reflection and/or scale factor. Then determine if the pre-image and image are similar or congruent.

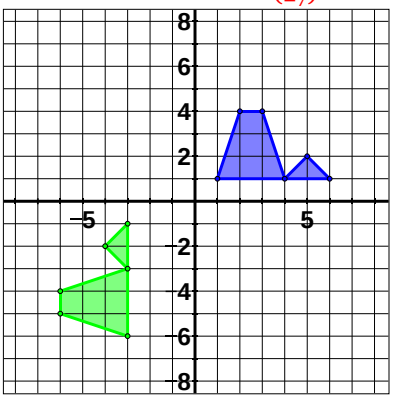
1. Rotate $90°$, Reflect x-axis; Con



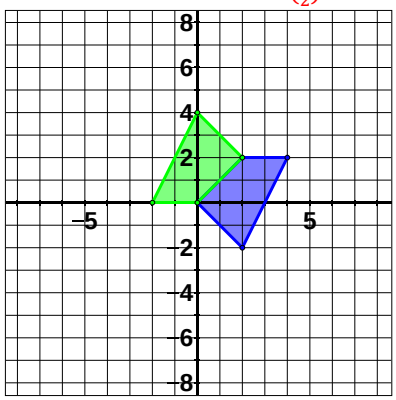
2. Reflect y-axis, Translate $\binom{7}{-6}$; Con



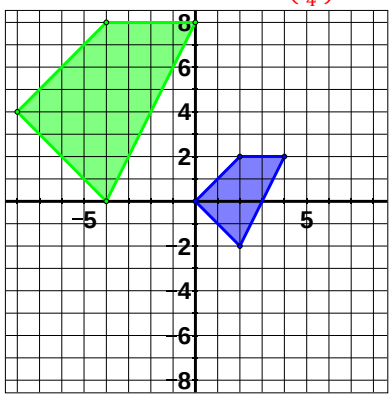
3. Rotate $90°$, Translate $\binom{-2}{-7}$; Con



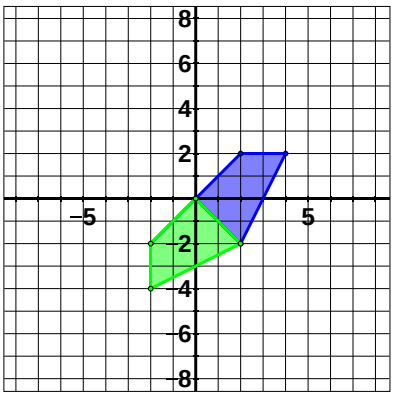
4. Rotate $180°$, Translate $\binom{2}{2}$; Con



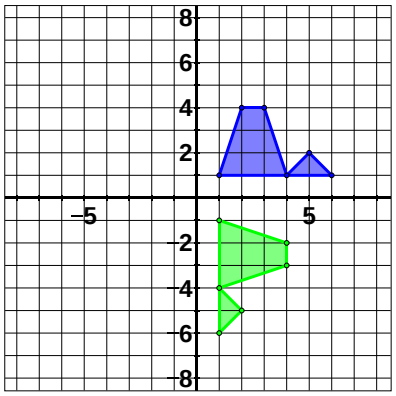
5. Dilate $c = 2$, Translate $\binom{-8}{4}$; Sim



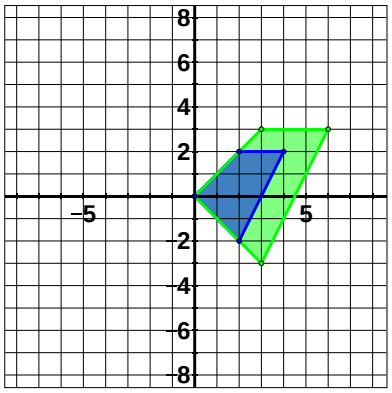
6. Rotate $90°$, Reflect x-axis; Con



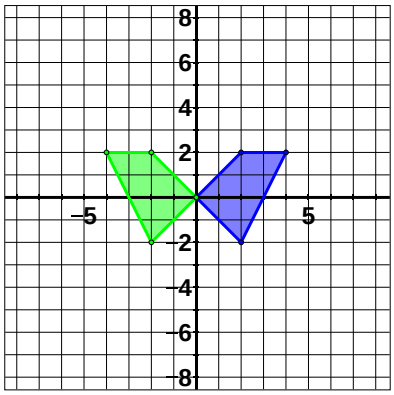
7. Rotate $270°$; Con



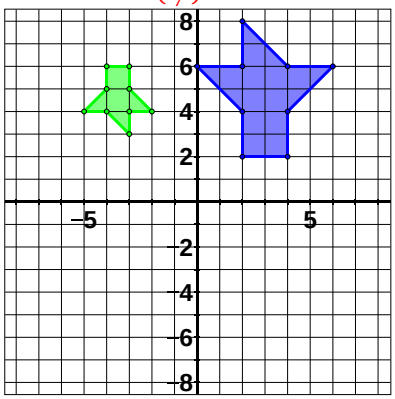
8. Dilate $\frac{3}{2}$; Sim



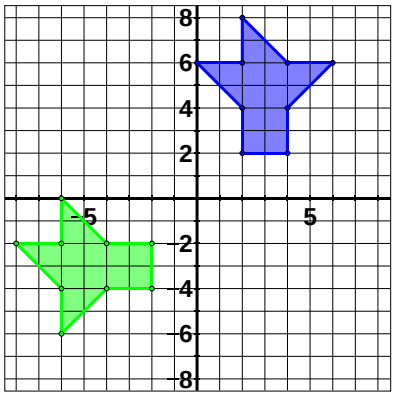
9. Reflect across y-axis; Con



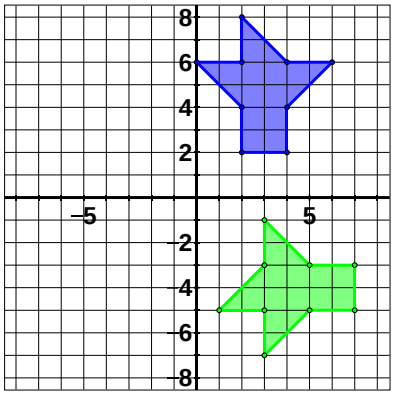
10. Dilate $c = \frac{1}{2}$, Rotate 180°, Translate $\binom{-2}{7}$; Sim



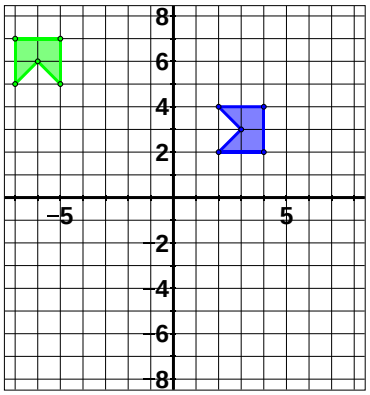
11. Rotate 270°, Reflect y-axis; Con



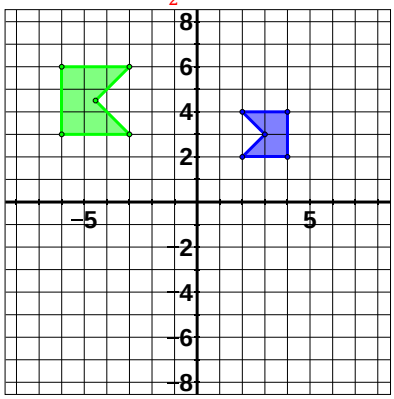
12. Rotate 90°, Translate $\binom{9}{-7}$; Con



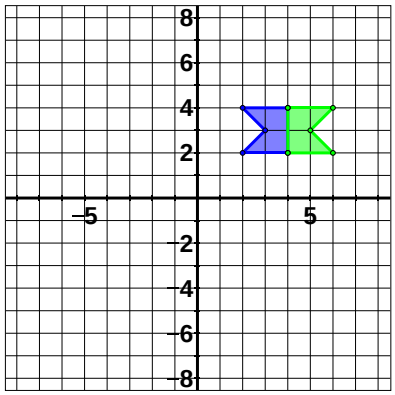
13. Rotate 90°, Translate $\binom{-3}{3}$; Con



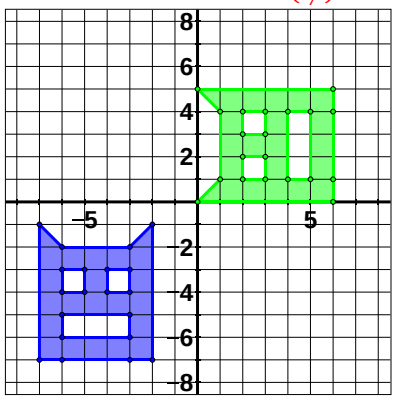
14. Dilate $c = \frac{3}{2}$, Reflect y-axis; Sim



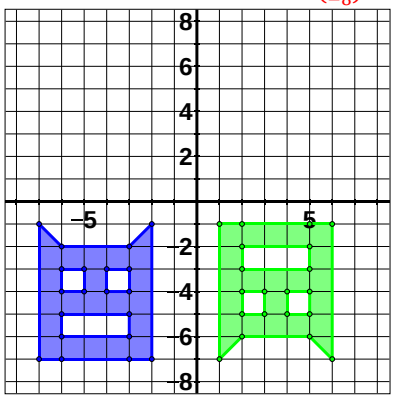
15. Reflect y-axis, Translate $\binom{8}{0}$; Con



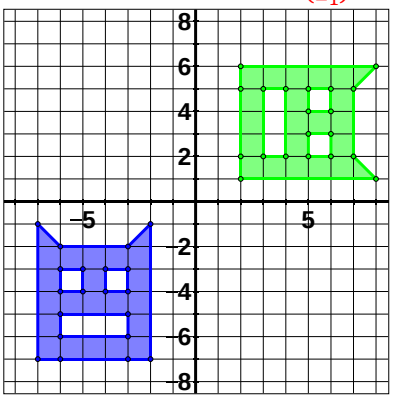
16. Rotate 90°, Translate $\binom{-1}{7}$; Con



17. Reflect x-axis, Translate $\binom{8}{-8}$; Con



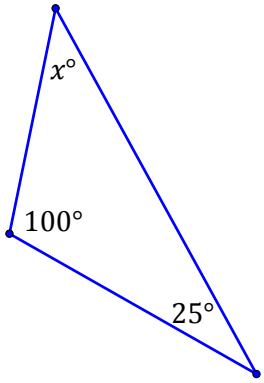
18. Rotate 270°, Translate $\binom{9}{-1}$; Con



Lesson 2.6

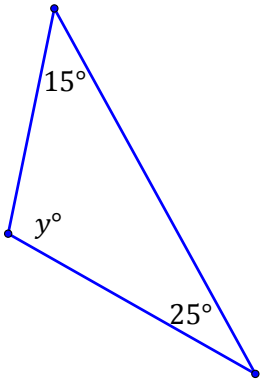
Solve for the variable.

1.



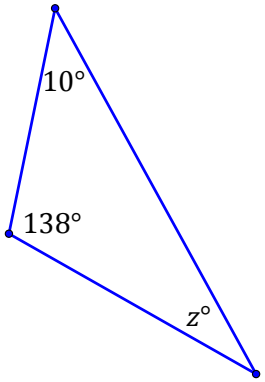
$\boldsymbol{x = 55}$

2.



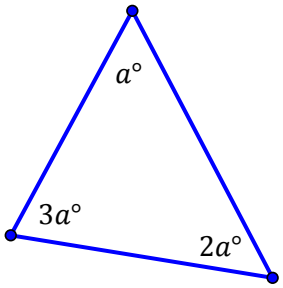
$\boldsymbol{y = 140}$

3.



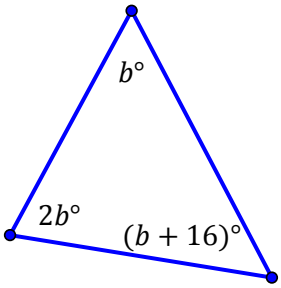
$\boldsymbol{z = 32}$

4.



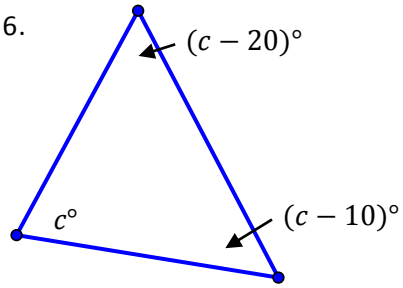
$\boldsymbol{a = 30}$

5.



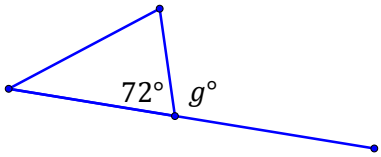
$\boldsymbol{b = 41}$

6.



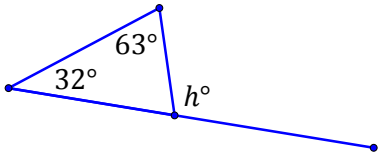
$\boldsymbol{c = 70}$

7.



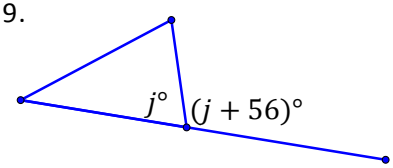
$\boldsymbol{g = 108}$

8.



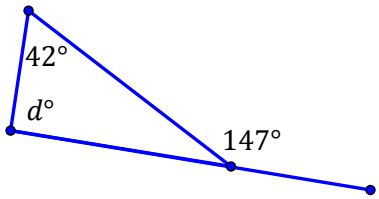
$\boldsymbol{h = 95}$

9.



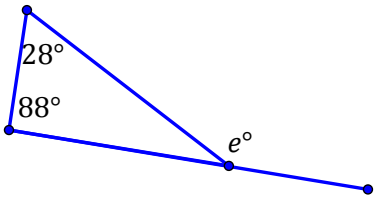
$\boldsymbol{j = 62}$

10.



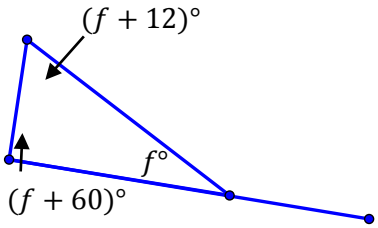
$\boldsymbol{d = 105}$

11.



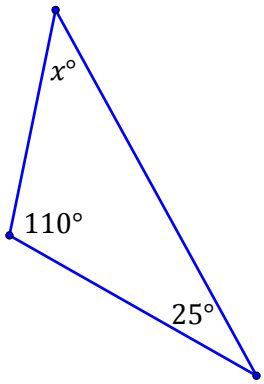
$\boldsymbol{e = 116}$

12.



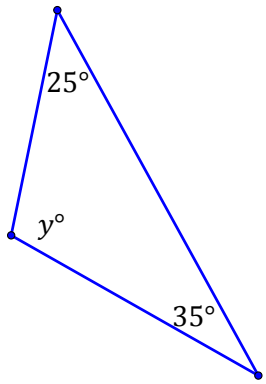
$\boldsymbol{f = 36}$

13.



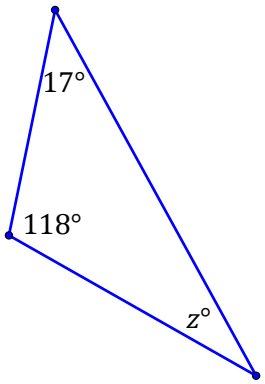
$\boldsymbol{x = 45}$

14.



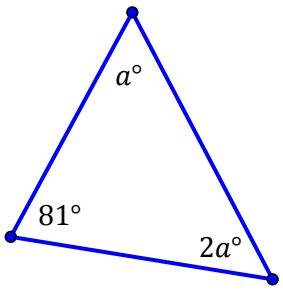
$\boldsymbol{y = 120}$

15.



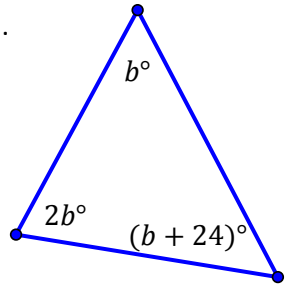
$\boldsymbol{z = 45}$

16.



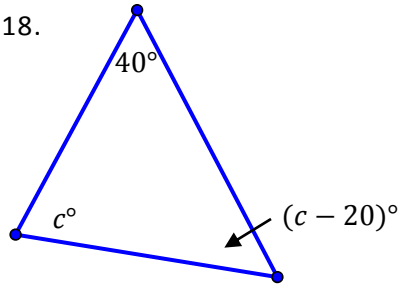
$\boldsymbol{a = 33}$

17.



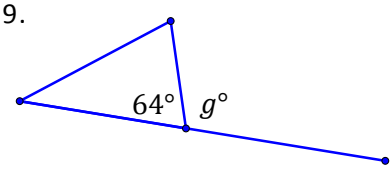
$\boldsymbol{b = 39}$

18.



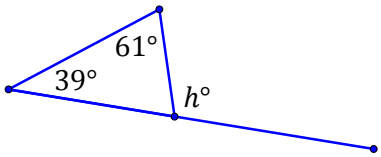
$\boldsymbol{c = 80}$

19.



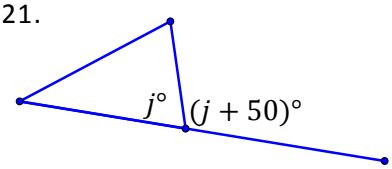
$\boldsymbol{g = 116}$

20.



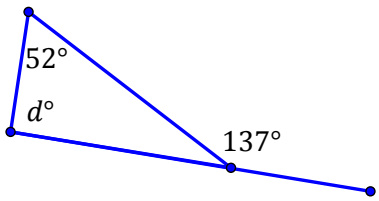
$\boldsymbol{h = 100}$

21.



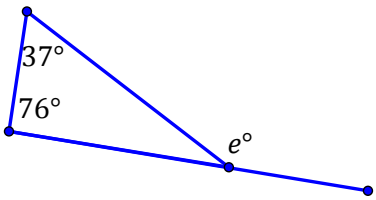
$\boldsymbol{j = 65}$

22.



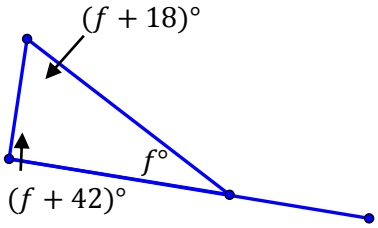
$\boldsymbol{d = 85}$

23.



$\boldsymbol{e = 113}$

24.



$\boldsymbol{f = 40}$

Lesson 2.7

Decide if the following triangles are similar and explain why using the angle-angle criterion.

1. Triangle 1 – $m\angle 1 = 45°, m\angle 2 = 45°$
   Triangle 2 – $m\angle 1 = 45°, m\angle 2 = 90°$
   Similar

2. Triangle 1 – $m\angle 1 = 75°, m\angle 2 = 65°$
   Triangle 2 – $m\angle 1 = 65°, m\angle 2 = 140°$
   Not similar, #2 not even a triangle

3. Triangle 1 – $m\angle 1 = 50°, m\angle 2 = 30°$
   Triangle 2 – $m\angle 1 = 30°, m\angle 2 = 100°$
   Similar

4. Triangle 1 – $m\angle 1 = 80°, m\angle 2 = 20°$
   Triangle 2 – $m\angle 1 = 80°, m\angle 2 = 80°$
   Similar

5. Triangle 1 – $m\angle 1 = 60°, m\angle 2 = 20°$
   Triangle 2 – $m\angle 1 = 40°, m\angle 2 = 100°$
   Not similar

6. Triangle 1 – $m\angle 1 = 45°, m\angle 2 = 30°$
   Triangle 2 – $m\angle 1 = 30°, m\angle 2 = 100°$
   Not similar

7. Triangle 1 – $m\angle 1 = 40°, m\angle 2 = 30°$
   Triangle 2 – $m\angle 1 = 90°, m\angle 2 = 30°$
   Not similar

8. Triangle 1 – $m\angle 1 = 80°, m\angle 2 = 40°$
   Triangle 2 – $m\angle 1 = 40°, m\angle 2 = 60°$
   Similar

9. Triangle 1 – $m\angle 1 = 35°, m\angle 2 = 95°$
   Triangle 2 – $m\angle 1 = 35°, m\angle 2 = 40°$
   Not similar

10. Triangle 1 – $m\angle 1 = 105°, m\angle 2 = 35°$
    Triangle 2 – $m\angle 1 = 40°, m\angle 2 = 105°$
    Similar

11. Triangle 1 – $m\angle 1 = 35°, m\angle 2 = 95°$
    Triangle 2 – $m\angle 1 = 35°, m\angle 2 = 50°$
    Similar

12. Triangle 1 – $m\angle 1 = 50°, m\angle 2 = 50°$
    Triangle 2 – $m\angle 1 = 50°, m\angle 2 = 90°$
    Not similar

13. Triangle 1 – $m\angle 1 = 25°, m\angle 2 = 115°$
    Triangle 2 – $m\angle 1 = 25°, m\angle 2 = 40°$
    Similar

14. Triangle 1 – $m\angle 1 = 70°, m\angle 2 = 45°$
    Triangle 2 – $m\angle 1 = 45°, m\angle 2 = 65°$
    Similar

15. Triangle 1 – $m\angle 1 = 5°, m\angle 2 = 15°$
    Triangle 2 – $m\angle 1 = 120°, m\angle 2 = 15°$
    Not similar

16. Triangle 1 – $m\angle 1 = 90°, m\angle 2 = 20°$
    Triangle 2 – $m\angle 1 = 90°, m\angle 2 = 80°$
    Not similar

17. Triangle 1 – $m\angle 1 = 5°, m\angle 2 = 15°$
    Triangle 2 – $m\angle 1 = 160°, m\angle 2 = 15°$
    Similar

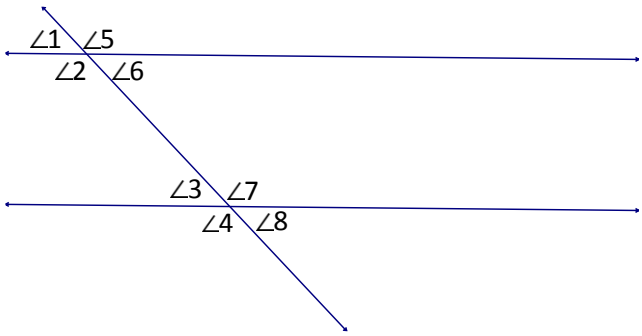
18. Triangle 1 – $m\angle 1 = 80°, m\angle 2 = 30°$
    Triangle 2 – $m\angle 1 = 70°, m\angle 2 = 30°$
    Similar

19. Triangle 1 – $m\angle 1 = 45°, m\angle 2 = 55°$
    Triangle 2 – $m\angle 1 = 55°, m\angle 2 = 90°$
    Not similar

20. Triangle 1 – $m\angle 1 = 72°, m\angle 2 = 23°$
    Triangle 2 – $m\angle 1 = 85°, m\angle 2 = 23°$
    Similar

Lesson 2.8

Use the following picture to answer the questions.



1. Name a pair of vertical angles.
   $\angle 1 \cong \angle 6$ $\angle 2 \cong \angle 5$ $\angle 3 \cong \angle 8$ $\angle 4 \cong \angle 7$

2. Name a pair of corresponding angles.
   $\angle 1 \cong \angle 3$ $\angle 2 \cong \angle 4$ $\angle 5 \cong \angle 7$ $\angle 6 \cong \angle 8$

3. Name a pair of alternate interior angles.
   $\angle 2 \cong \angle 7$ $\angle 6 \cong \angle 3$

4. Name a pair of alternate exterior angles.
   $\angle 1 \cong \angle 8$ $\angle 5 \cong \angle 4$

5. If $m\angle 2 = 110°$, what is $m\angle 5$?
   $m\angle 5 = 110°$

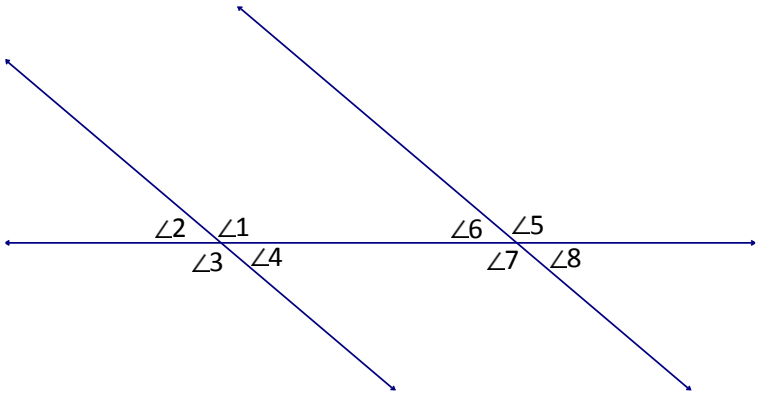
6. If $m\angle 2 = 110°$, what is $m\angle 4$?
   $m\angle 4 = 110°$

7. If $m\angle 2 = 110°$, what is $m\angle 7$?
   $m\angle 7 = 110°$

8. If $m\angle 1 = 70°$, what is $m\angle 8$?
   $m\angle 8 = 70°$

9. If $m\angle 1 = 70°$, what is $m\angle 7$?
   $m\angle 7 = 110°$

10. If $m\angle 2 = 140°$, what are the measures of all the other angles?
    $m\angle 1 = 40°$ $m\angle 3 = 40°$ $m\angle 4 = 140°$ $m\angle 5 = 140°$
    $m\angle 6 = 40°$ $m\angle 7 = 140°$ $m\angle 8 = 40°$



11. Name all the pairs of vertical angles.
    $\angle 1 \cong \angle 3$ $\angle 2 \cong \angle 4$ $\angle 6 \cong \angle 8$ $\angle 5 \cong \angle 7$

12. Name all the pairs of corresponding angles.
    $\angle 1 \cong \angle 5$ $\angle 2 \cong \angle 6$ $\angle 3 \cong \angle 7$ $\angle 4 \cong \angle 8$

13. Name all the pairs of alternate interior angles.
    $\angle 1 \cong \angle 7$ $\angle 4 \cong \angle 6$

14. Name all the pairs of alternate exterior angles.
    $\angle 2 \cong \angle 8$ $\angle 3 \cong \angle 5$

15. If $m\angle 2 = 40°$, what is $m\angle 8$?
    $m\angle 8 = 40°$

16. If $m\angle 2 = 40°$, what is $m\angle 4$?
    $m\angle 4 = 40°$

17. If $m\angle 1 = 140°$, what is $m\angle 7$?
    $m\angle 7 = 140°$

18. If $m\angle 1 = 140°$, what is $m\angle 5$?
    $m\angle 5 = 140°$

19. If $m\angle 1 = 140°$, what is $m\angle 6$?
    $m\angle 6 = 40°$

20. If $m\angle 2 = 35°$, what are the measures of all the other angles?
    $m\angle 1 = 145°$ $m\angle 3 = 145°$ $m\angle 4 = 35°$ $m\angle 5 = 145°$
    $m\angle 6 = 35°$ $m\angle 7 = 145°$ $m\angle 8 = 35°$