

## حل أوراق عمل درس Transformations and Similarity منهج ريفيل



### تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ← المناهج الإماراتية ← الصف الثامن ← رياضيات ← الفصل الثالث ← ملفات متنوعة ← الملف

تاريخ إضافة الملف على موقع المناهج: 09:03:12 2025-05-07

ملفات اكتب للمعلم اكتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل  
منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس

المزيد من مادة  
رياضيات:

### التواصل الاجتماعي بحسب الصف الثامن



صفحة المناهج  
الإماراتية على  
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

### المزيد من الملفات بحسب الصف الثامن والمادة رياضيات في الفصل الثالث

مراجعة الاختبار المركزي الأول متبوعة بالإجابات

1

أسئلة الامتحان النهائي القسم الالكتروني منهج بريدج مع الحلول

2

مقرر الدروس المطلوبة الفصل الثالث منهج بريدج

3

حل أوراق عمل الوحدة العاشرة أدوات الهندسة

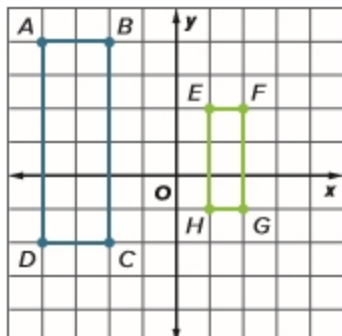
4

حل أوراق عمل الوحدة التاسعة مخططات الانتشار وتحليل البيانات

5

## 9-3 Similarity and Transformations

1. Determine if the pair of figures is similar. If so, describe a sequence of transformations that maps one figure onto the other figure. If not, explain why they are not similar.



**SOLUTION:**

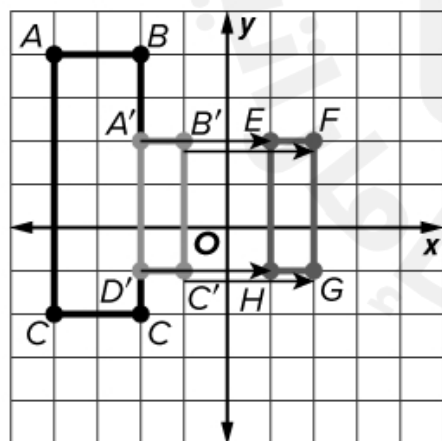
Determine if the two figures are similar. Determine if a dilation occurred by examining the ratios of the side lengths.

$$\frac{EF}{AB} = \frac{1}{2} \quad \frac{EH}{AD} = \frac{3}{6} \text{ or } \frac{1}{2}$$

$$\frac{GH}{CD} = \frac{1}{2} \quad \frac{FG}{BC} = \frac{3}{6} \text{ or } \frac{1}{2}$$

Because the ratios are equal, a dilation, with a scale factor of  $\frac{1}{2}$ , is one of the transformations.

Graph the dilation of  $ABCD$  with a center of dilation at the origin and a scale factor of  $\frac{1}{2}$ .

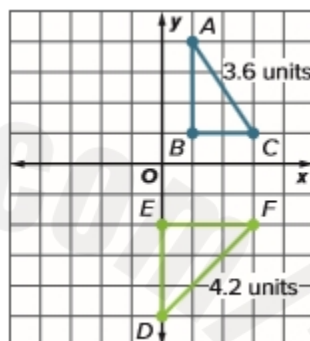


Then translate it 3 units to the right. This maps rectangle  $ABCD$  onto rectangle  $EFGH$ .

**ANSWER:**

similar; Sample answer: Dilating rectangle  $ABCD$  using a scale factor of 0.5 and center of dilation at the origin, and then translating it 3 units to the right maps rectangle  $ABCD$  onto rectangle  $EFGH$ .

2. Determine if the pair of figures is similar. If so, describe a sequence of transformations that maps one figure onto the other figure. If not, explain why they are not similar.



**SOLUTION:**

Determine if the two figures are similar. Determine if a dilation occurred by examining the ratios of the side lengths.

$$\frac{AC}{DF} = \frac{3.6}{4.2} \quad \frac{AB}{EF} = \frac{3}{3} \text{ or } 1$$

$$\frac{BC}{ED} = \frac{2}{3}$$

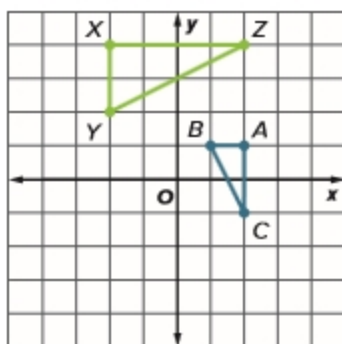
The ratios of the side lengths are not equal for all of the sides. They are not similar.

**ANSWER:**

not similar; Sample answer: The ratios of the side lengths are not equal for all of the sides, so a dilation did not occur.

### 9-3 Similarity and Transformations

3. Triangle  $ABC$  is similar to  $\triangle XYZ$ . Determine which sequence of transformations maps  $\triangle ABC$  onto  $\triangle XYZ$ .



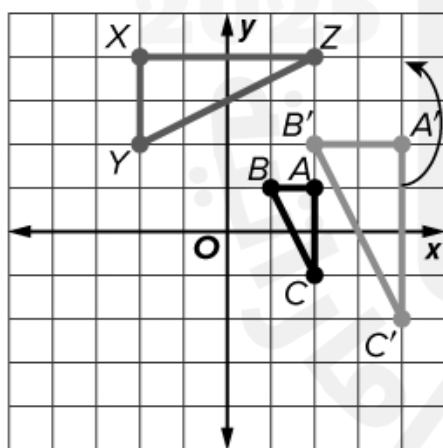
**SOLUTION:**

Because the two figures are similar determine the dilation by examining the ratios of the side lengths.

$$\frac{XY}{AB} = \frac{2}{1} \text{ or } 2 \qquad \frac{XZ}{AC} = \frac{4}{2} \text{ or } 2$$

$$\frac{ZY}{BC} \approx \frac{4.4}{2.2} \text{ or } 2$$

A scale factor of 2 was used. Dilate triangle  $ABC$  using a scale factor of 2 and center of dilation at the origin.



Then rotate it  $90^\circ$  counterclockwise about the origin.

**ANSWER:**

Sample answer: Dilate triangle  $ABC$  using a scale factor of 2 and center of dilation at the origin, and then rotate it  $90^\circ$  counterclockwise about the origin.

4. Jenna is creating a mural for her bedroom wall. She would like to copy a picture that is 2 inches by 2.5 inches. She uses a copy machine to enlarge it by a scale factor of 4. Then she projects it on her wall by a scale factor of 12. What are the dimensions of the mural? Are the enlarged pictures similar to the original?

**SOLUTION:**

Find the first set of dimensions by multiplying by 4.

$$2 \text{ in.} \times 4 = 8 \text{ in.}$$

$$2.5 \text{ in.} \times 4 = 10 \text{ in.}$$

Find the second set of dimensions by multiplying by 12.

$$8 \text{ in.} \times 12 = 96 \text{ in.}$$

$$10 \text{ in.} \times 12 = 120 \text{ in.}$$

The dimensions are 96 in. by 120 in.

Each enlargement was the result of a dilation. If the three pictures were placed next to one another, then a dilation followed by a translation maps the pictures onto each other. So, they are similar.

**ANSWER:**

96 in. by 120 in.; yes

### 9-3 Similarity and Transformations

5. **Multiple Choice** Which sequence of transformations can be used to show that two figures are similar but not necessarily congruent?

A dilation and rotation  
B translation and reflection  
C reflection and rotation  
D rotation and translation

*SOLUTION:*

You can show two figures are similar if the second can be obtained from the first by a sequence of dilations and congruence transformations (translations, reflections, rotations).

*ANSWER:*

The correct choice is A.

6. A graphic designer enlarges a rectangular image with a length of 3 inches and width of 5 inches by a scale factor of 2. Then he decides that the enlarged image is too large and reduces it by a scale factor of 0.25. Will the final image fit into a rectangular space that has an area of 3.5 square inches? Justify your response.

*SOLUTION:*

Find the first set of dimensions by multiplying by 2.

$$3 \text{ in.} \times 2 = 6 \text{ in.}$$

$$5 \text{ in.} \times 2 = 10 \text{ in.}$$

Find the second set of dimensions by multiplying by 0.25.

$$6 \text{ in.} \times 0.25 = 1.5 \text{ in.}$$

$$10 \text{ in.} \times 0.25 = 2.5 \text{ in.}$$

Find the area.

$$\text{Area} = \text{length} \times \text{width}$$

$$= 1.5 \times 2.5$$

$$= 3.75 \text{ in}^2$$

The area of the final image is 3.75 square inches which is greater than 3.5 square inches. So, it will not fit.

*ANSWER:*

no; Sample answer: The area of the final image is 3.75 square inches.

### 9-3 Similarity and Transformations

7. An artist needs to reduce the size of a painting. The original dimensions of the painting are 12 inches by 20 inches. She reduces the painting by a scale factor of  $\frac{1}{4}$ . She then decides that the reduced image is too small and enlarges it by a scale factor of 2. Will the final image fit in a rectangular space that has an area of 55 square inches? Justify your response.

**SOLUTION:**

Find the first set of dimensions by multiplying by  $\frac{1}{4}$

$$12 \text{ in.} \times \frac{1}{4} = 3 \text{ in.}$$

$$20 \text{ in.} \times \frac{1}{4} = 5 \text{ in.}$$

Find the second set of dimensions by multiplying by 2.

$$3 \text{ in.} \times 2 = 6 \text{ in.}$$

$$5 \text{ in.} \times 2 = 10 \text{ in.}$$

Find the area.

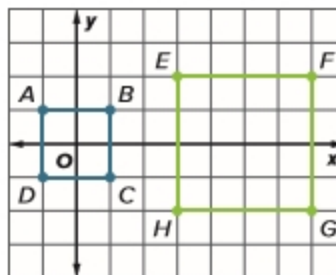
$$\begin{aligned} \text{Area} &= \text{length} \times \text{width} \\ &= 6 \times 10 \\ &= 60 \text{ in}^2 \end{aligned}$$

The area of the final image is 60 square inches which is greater than 55 square inches. So, it will not fit.

**ANSWER:**

no; Sample answer: The area of the final image is 60 square inches.

8. Square  $ABCD$  is similar to square  $EFGH$  because a dilation with a scale factor of 2 with the center of dilation at the origin, followed by a translation 5 units to the right maps square  $ABCD$  onto square  $EFGH$ .



- a. If you perform the translation first and then the dilation, will the squares still map onto one another? Explain.

- b. Describe a sequence of transformations that maps square  $ABCD$  onto square  $EFGH$ , in which the first transformation is a translation.

**SOLUTION:**

- a. no; Sample answer: The coordinates of square  $EFGH$  are  $E(3, 2)$ ,  $F(7, 2)$ ,  $G(7, -2)$ , and  $H(3, -2)$ . If you translate square  $ABCD$  5 units to the right and then dilate it with a scale factor of 2 with center at the origin, the coordinates of the image would be  $A''(8, 2)$ ,  $B''(12, 2)$ ,  $C''(12, -2)$ , and  $D''(8, -2)$ .

- b. Sample answer: Translate square  $ABCD$  4 units to the right and 1 unit up so that vertex  $A$  maps onto vertex  $E$ , and then dilate it using a scale factor of 2, with the center of dilation at vertex  $E$ .

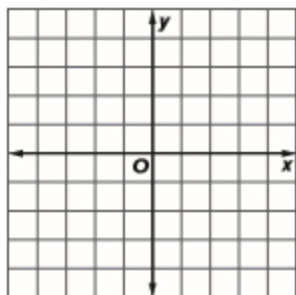
**ANSWER:**

- a. no; Sample answer: The coordinates of square  $EFGH$  are  $E(3, 2)$ ,  $F(7, 2)$ ,  $G(7, -2)$ , and  $H(3, -2)$ . If you translate square  $ABCD$  5 units to the right and then dilate it with a scale factor of 2 with center at the origin, the coordinates of the image would be  $A''(8, 2)$ ,  $B''(12, 2)$ ,  $C''(12, -2)$ , and  $D''(8, -2)$ .

- b. Sample answer: Translate square  $ABCD$  4 units to the right and 1 unit up so that vertex  $A$  maps onto vertex  $E$ , and then dilate it using a scale factor of 2, with the center of dilation at vertex  $E$ .

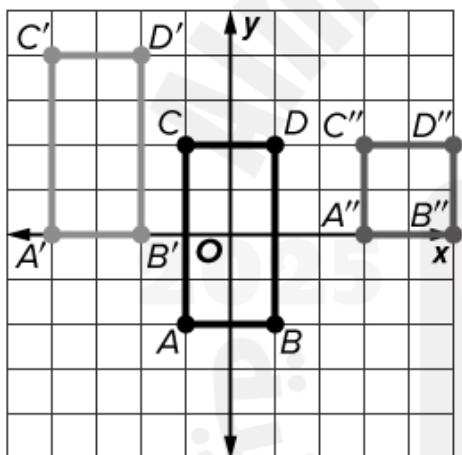
## 9-3 Similarity and Transformations

9. Draw a two-dimensional figure on the coordinate plane. Then perform a series of transformations on the figure. Which figures are congruent? Which figures are similar?



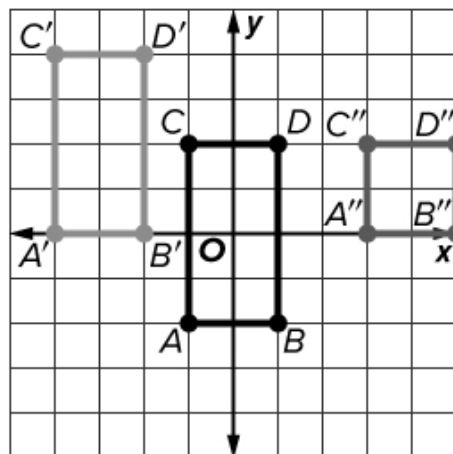
**SOLUTION:**

Sample answer: Figures  $ABCD$  and  $A'B'C'D'$  are congruent. Figures  $ABCD$  and  $A''B''C''D''$  are similar.

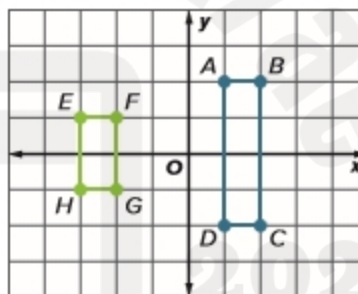


**ANSWER:**

Sample answer: Figures  $ABCD$  and  $A'B'C'D'$  are congruent. Figures  $ABCD$  and  $A''B''C''D''$  are similar.



10. **Find the Error** A student concluded that rectangle  $ABCD$  is similar to rectangle  $EFGH$  because a dilation with a scale factor of 0.5 and a translation maps rectangle  $ABCD$  onto rectangle  $EFGH$ . Find the student's mistake and correct it.



**SOLUTION:**

Sample answer: The two rectangles are not similar because the ratio of the side lengths are not equal for all of the sides, so a dilation did not occur.

**ANSWER:**

Sample answer: The two rectangles are not similar because the ratio of the side lengths are not equal for all of the sides, so a dilation did not occur.