

Mr. Tu's Excellent Examples

Module 5 Stained Glass Artist



Applying Lesson 5.1

1. An artist is using a grid to sketch a design. The artist wants to make a symmetrical design, so he has drawn a horizontal and vertical axis on the grid. The artist begins the design with a triangle. He takes a cardboard triangle and places it on the grid. He moves the triangle up and down and side to side to determine where he wants to place it. By doing this, what basic rigid motion is he practicing?

The artist is using a translation or a slide.

2. In order to make his design symmetrical, the artist wants the left side of the design to be a mirror image of the right side. What basic rigid motion will he need to apply to do this?

The artist will need to use a reflection or a flip.

Applying Lesson 5.2

1. An artist is designing a stain glass window using a coordinate plane. He places a triangle on the plane with the three vertices located at (1, 4), (3, 2), and (4, 5). To make the design symmetrical both horizontally and vertically he chooses to place three additional triangles using a rotation of 90° , 180° , and 270° . What will be the coordinate points of the three rotated triangles?

90° : (-4,1), (-2,3), (-5,4)

180° : (-1,-4), (-3,-2), (-4,-5)

270° : (4,-1), (2,-3), (5,-4)

Applying Lesson 5.3

1. A stained glass design begins with a 2 in. x 2 in. square. If the artist wants to create three more squares with a scale factor of 2, 3, and 4 respectively, what would be the dimensions of these three squares?

Scale factor 2: 4 in. x 4 in.

Scale factor 3: 6 in. x 6 in.

Scale factor 4: 8 in. x 8 in.

2. The artist draws the 2 in. x 2 in. square on one-half inch scale graph grid. The square is centered on the origin with the vertices located at the coordinates (4, 4), (-4, 4), (-4, -4) and (4, -4). He wants to give the appearance of four squares lying on top of each other. He wants the other squares to have a scale factor of 2, 3, and 4 times the original square. What would be the coordinate points of the three squares?

Scale factor 2: (8, 8), (-8, 8), (-8,-8), (8,-8)

Scale factor 3: (12, 12), (-12, 12), (-12,-12), (12,-12)

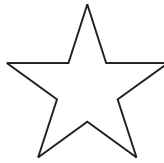
Scale factor 4: (16, 16), (-16, 16), (-16,-16), (16,-16)

Applying Lesson 5.4

1. When an artist creates a stain glass piece that has two halves that are mirror images of each other, what type of symmetry is being utilized?

Line Symmetry

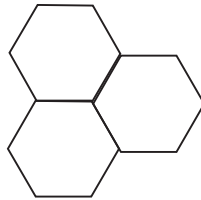
2. The artist has cut a five point star as pictured below. Does this figure have point symmetry? Explain why or why not.



The figure does not have point symmetry because 180° is not one of the angles of rotation.

Applying Lesson 5.5

1. A craftsman is laying a tile floor with hexagonal tiles. A segment of the floor is shown below. What type of tessellation is this?



The floor is a regular tessellation.

2. An interior designer wants to use square and triangular tiles to create a tile floor. The side length for each side of every tile is one inch. Create a semi-regular tile design for the floor using these tiles. If the floor is rectangular, will the designer have spaces on the edges that will need to be filled in apart from the semi-regular tessellation you created?

Answers may vary.

