Aaron's Designs

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

T1
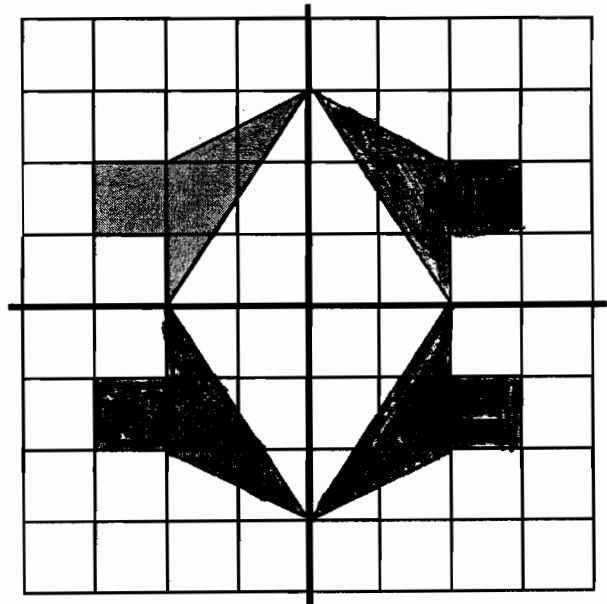
Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the
    gray shape over the vertical line.

    Then reflect both of the shapes over the
    horizontal line.

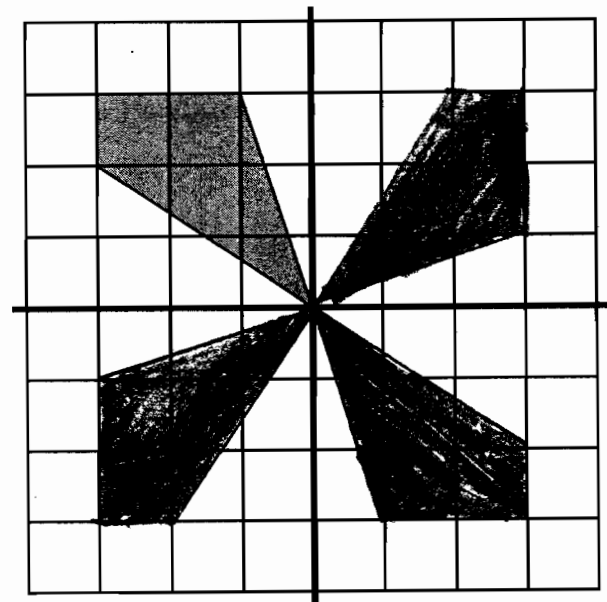   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design,
    rotate the gray shape 1/4 of a turn in a
    clockwise direction about the origin.
    Then draw the second shape.

    Rotate the second shape 1/4 of a turn in a
    clockwise direction about the origin.
    Then draw the third shape.

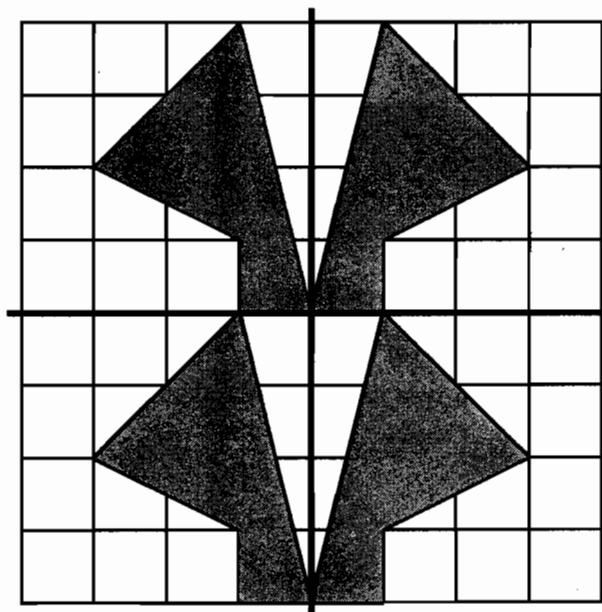   Rotate the third shape 1/4 of a turn in a
    clockwise direction about the origin.
    Then draw the fourth shape.

    This will make a design in all four quadrants.

Aaron's Designs   Test 8

3. This is Aaron's third design.

He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

He translated the first shape 4 units
downward, and then reflected both
shapes across the bold vertical line.

Aaron's Designs   Test 8

8

Aaron's Designs

T2

This problem gives you the chance to:
• draw reflections and rotations of a given figure on a grid
• describe transformations needed to make a given pattern

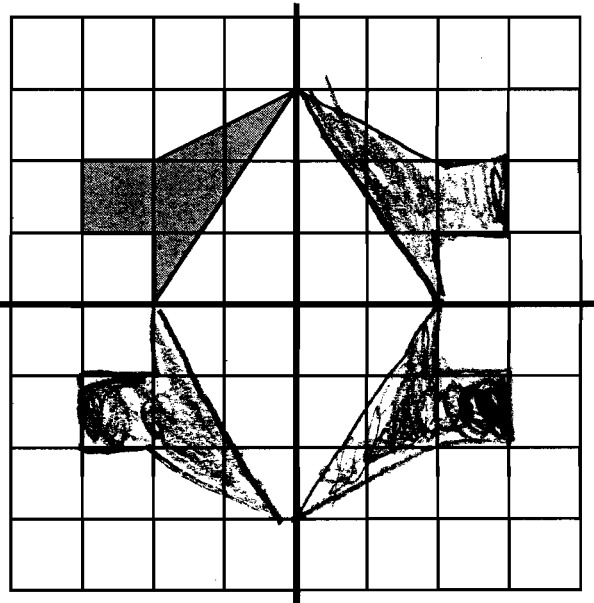Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the
   gray shape over the vertical line.

   Then reflect both of the shapes over the
   horizontal line.

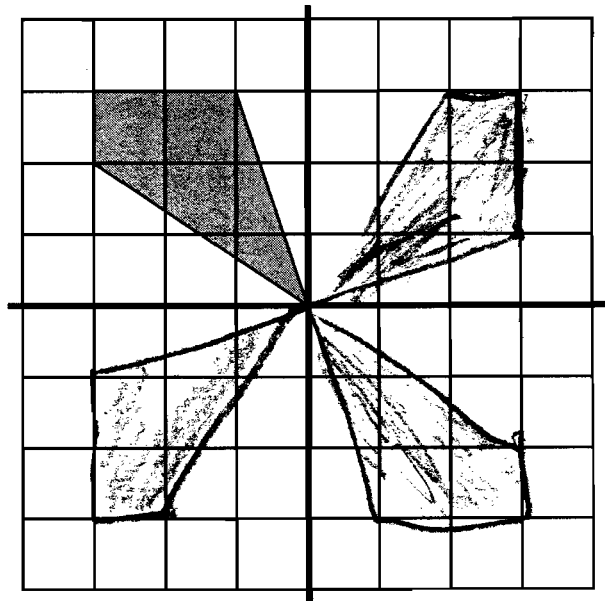   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design,
   rotate the gray shape 1/4 of a turn in a
   clockwise direction about the origin.
   Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a
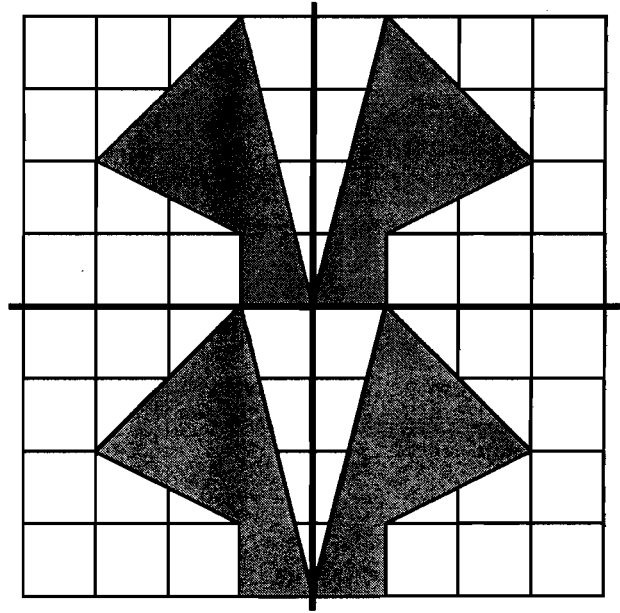   clockwise direction about the origin.
   Then draw the third shape.

   Rotate the third shape 1/4 of a turn in a
   clockwise direction about the origin.
   Then draw the fourth shape.

   This will make a design in all four quadrants.

Aaron's Designs   Test 8

3. This is Aaron's third design.

He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

_____

_____

_____

_____

_____

8

Aaron's Designs

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

T3

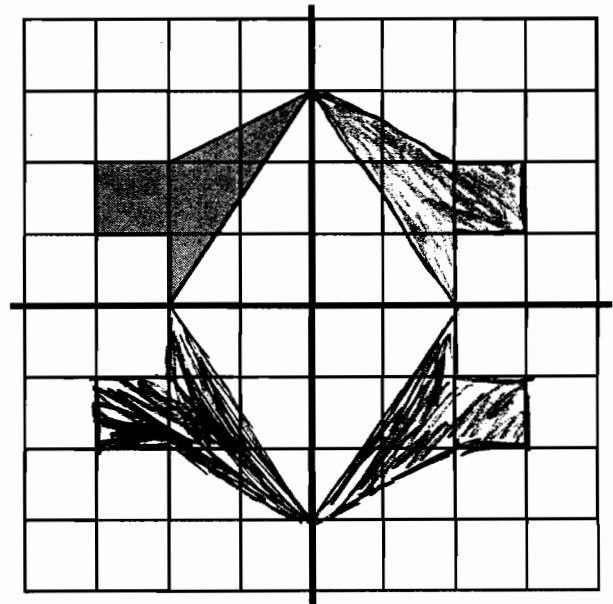Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

    Then reflect both of the shapes over the horizontal line.

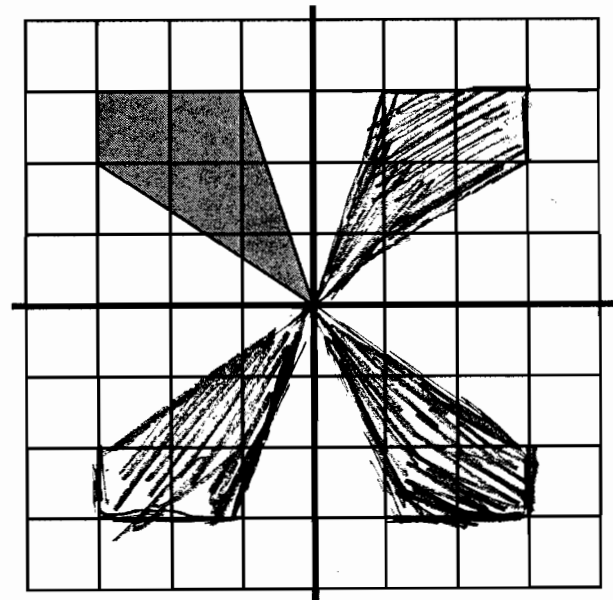   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin.
   Then draw the second shape.

    Rotate the second shape 1/4 of a turn in a clockwise direction about the origin.
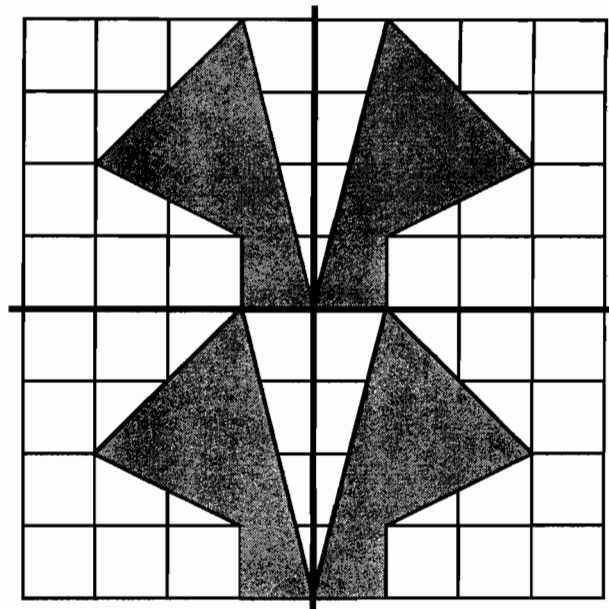   Then draw the third shape.

    Rotate the third shape 1/4 of a turn in a clockwise direction about the origin.
    Then draw the fourth shape.

    This will make a design in all four quadrants.

Aaron's Designs   Test 8

3. This is Aaron's third design.

He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

Aaron tilted his page 1/4 to the left to get his 3rd shape and 1/4 to the right to get his 2nd and 4th.

8

Aaron's Designs

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

T4

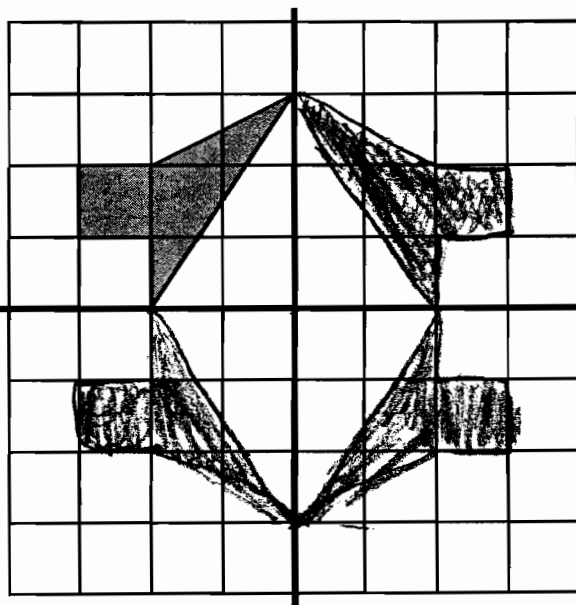Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

   Then reflect both of the shapes over the horizontal line.

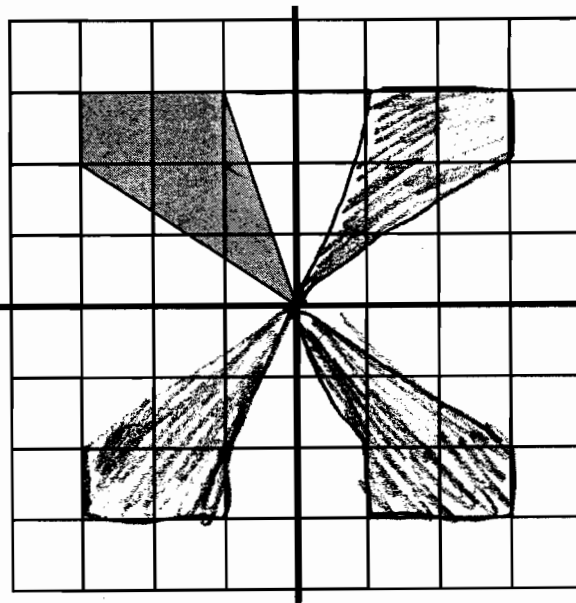   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin.
   Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a clockwise direction about the origin.
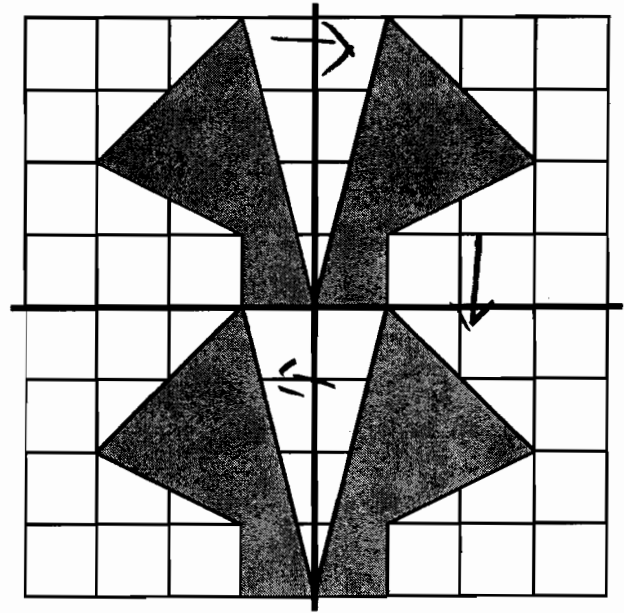   Then draw the third shape.

   Rotate the third shape 1/4 of a turn in a clockwise direction about the origin.
   Then draw the fourth shape.

   This will make a design in all four quadrants.

Aaron's Designs   Test 8

3. This is Aaron's third design.

   He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

Reflected it across the verticle axis, then slid it across the horizontal, the reflected back to the other side

Aaron's Designs   Test 8

8

Aaron's Designs

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern
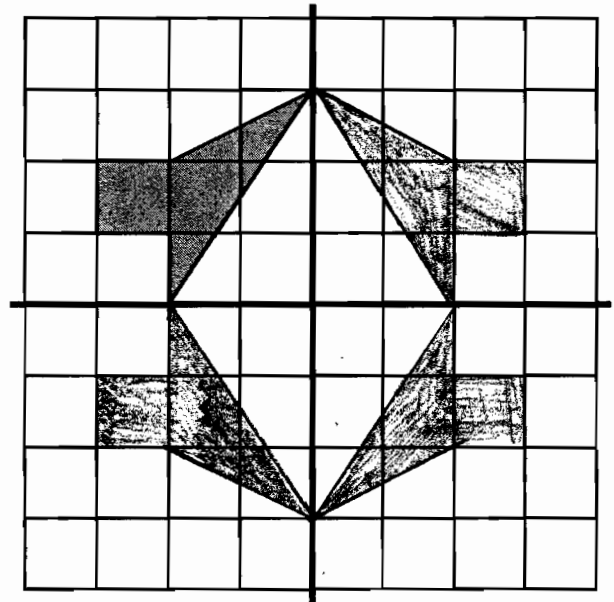
Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

    Then reflect both of the shapes over the horizontal line.

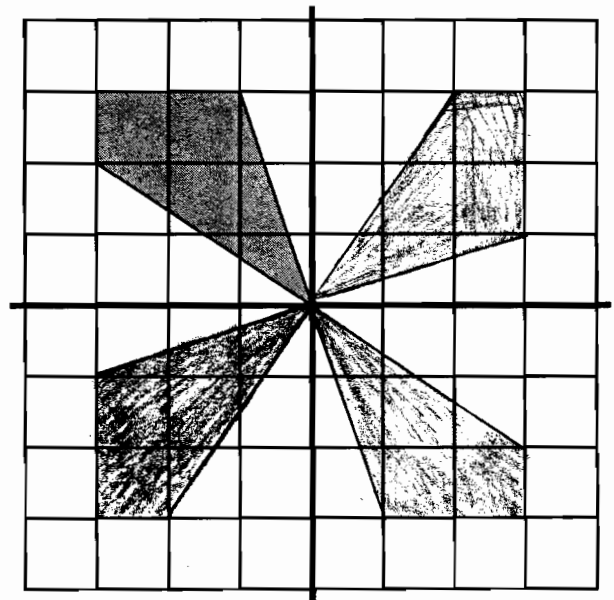   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin.
    Then draw the second shape.

    Rotate the second shape 1/4 of a turn in a clockwise direction about the origin.
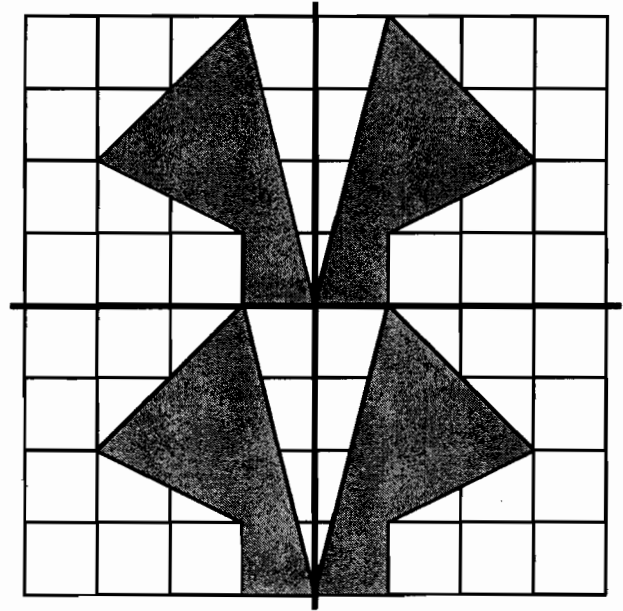   Then draw the third shape.

    Rotate the third shape 1/4 of a turn in a clockwise direction about the origin.
    Then draw the fourth shape.

    This will make a design in all four quadrants.

3. This is Aaron's third design.

   He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

He took the top left corner and fliped it to top right then he slid the top left & right down to boddem left & right

8

Aaron's Designs

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

S1

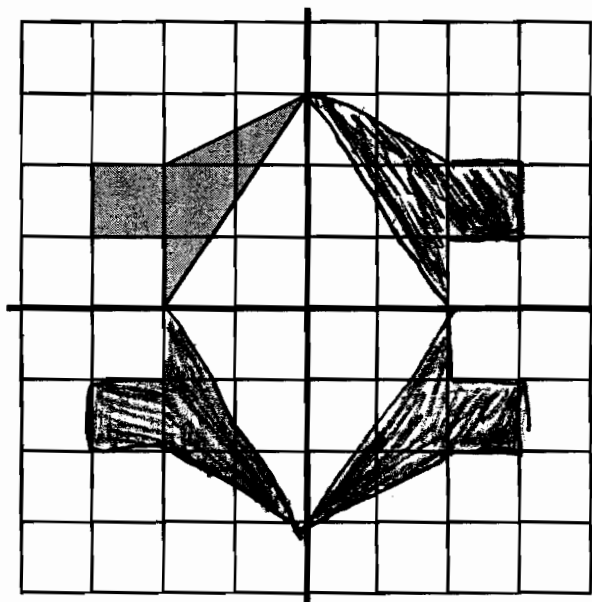Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

   Then reflect both of the shapes over the horizontal line.

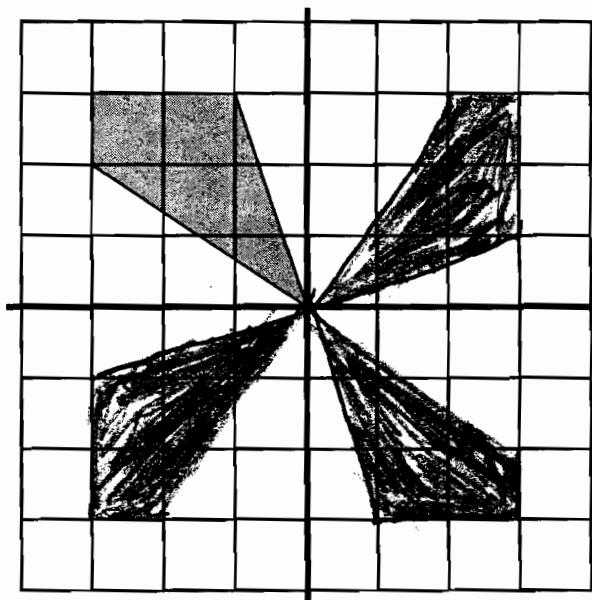   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin. Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a clockwise direction about the origin. Then draw the third shape.
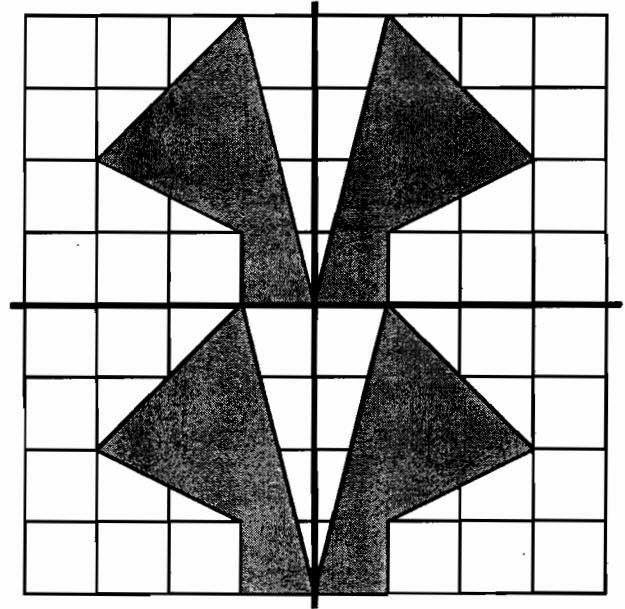
   Rotate the third shape 1/4 of a turn in a clockwise direction about the origin. Then draw the fourth shape.

   This will make a design in all four quadrants.

3. This is Aaron's third design.

   He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

He reflected the shape over the vertical line, translated the shape down 4 units and again, reflected it over the vertical line.

8

Aaron's Designs

S2

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

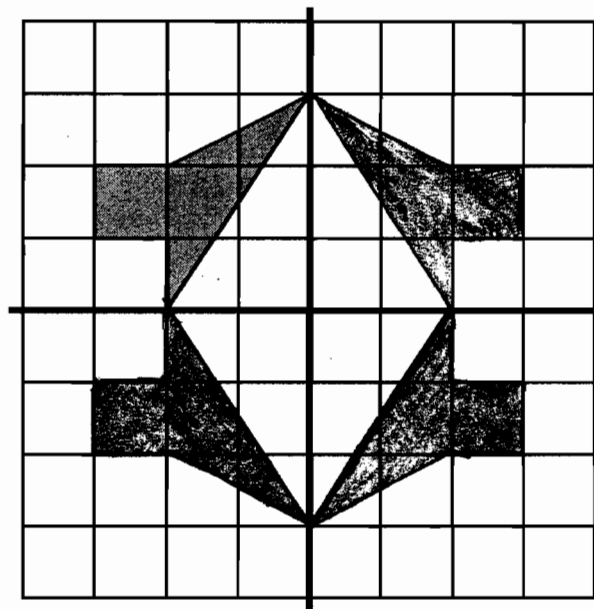Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

   Then reflect both of the shapes over the horizontal line.

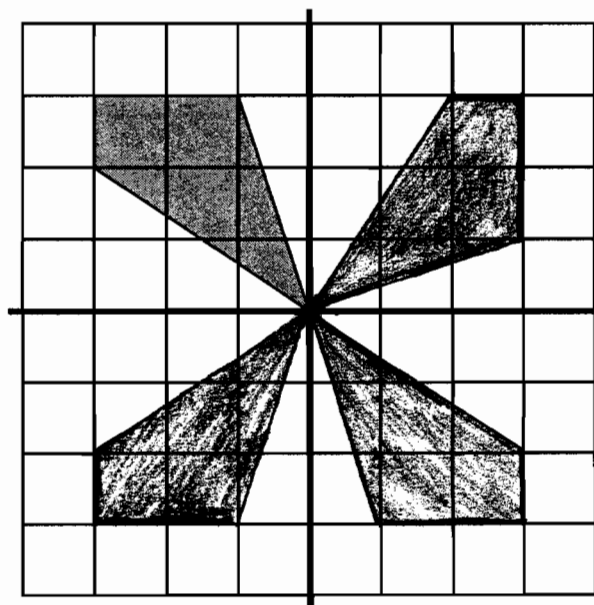   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin. Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a clockwise direction about the origin. Then draw the third shape.
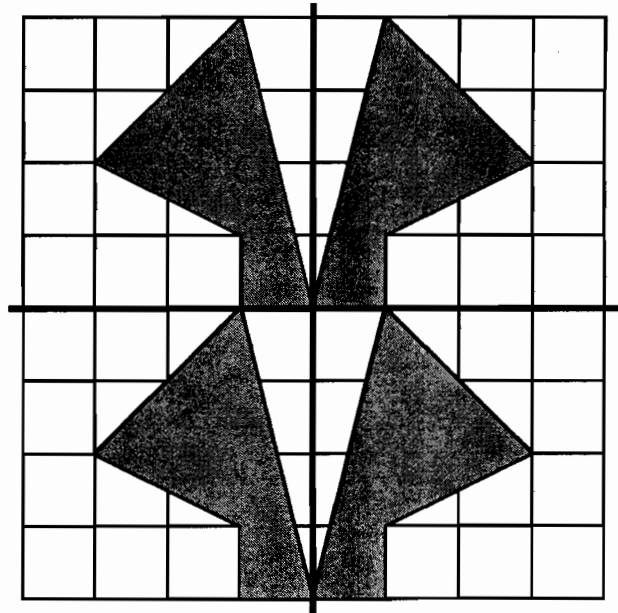
   Rotate the third shape 1/4 of a turn in a clockwise direction about the origin. Then draw the fourth shape.

   This will make a design in all four quadrants.

Aaron's Designs   Test 8

3. This is Aaron's third design.

   He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

Aaron flipped the shape horizontally from the left-right quadrants, and copied the figure exactly as it is for the up-down quadrants.

8

Page 2   Aaron's Designs   Test 8

Aaron's Designs

This problem gives you the chance to:
• draw reflections and rotations of a given figure on a grid
• describe transformations needed to make a given pattern

S3

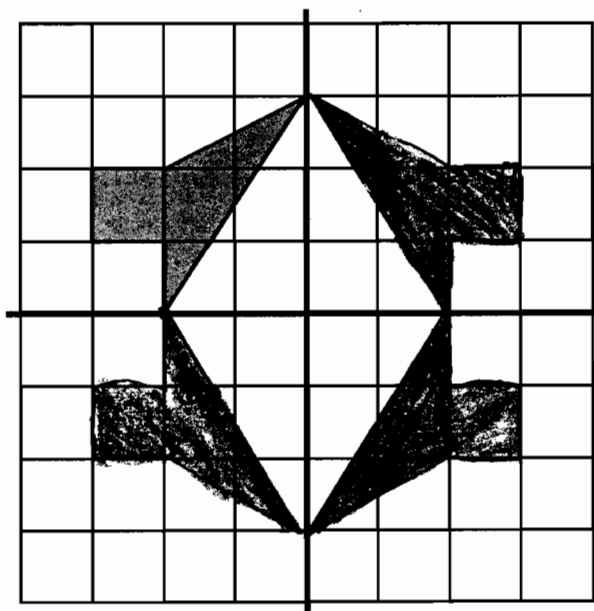Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

   Then reflect both of the shapes over the horizontal line.

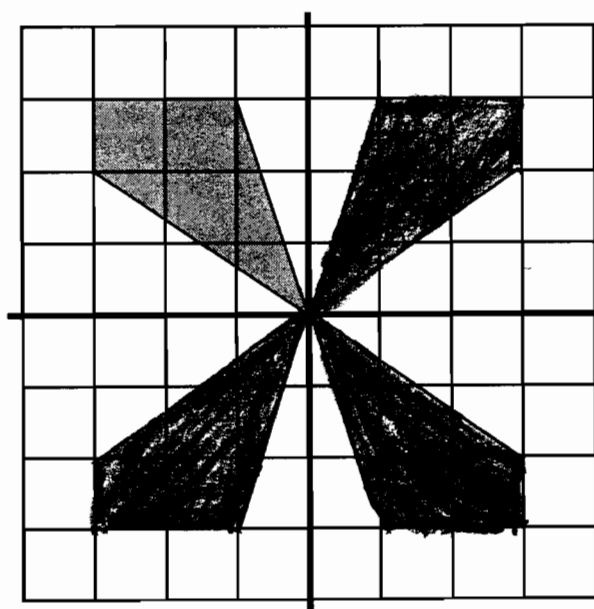   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin. Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a clockwise direction about the origin. Then draw the third shape.

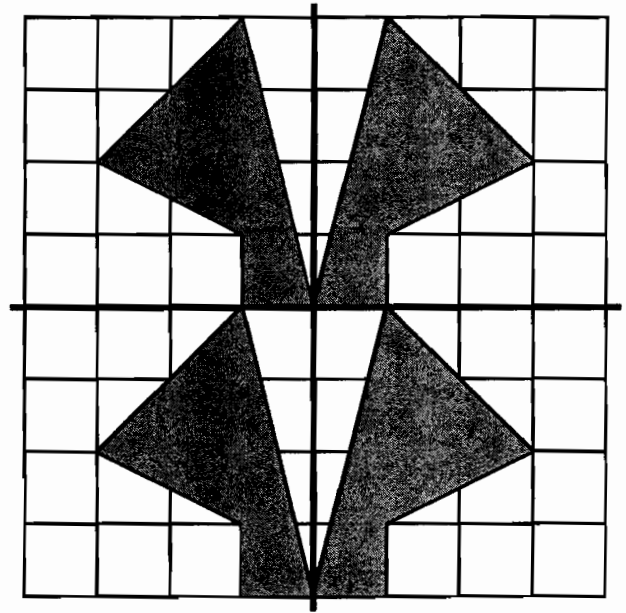   Rotate the third shape 1/4 of a turn in a clockwise direction about the origin. Then draw the fourth shape.

   This will make a design in all four quadrants.

Aaron's Designs   Test 8

3. This is Aaron's third design.

   He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

He Just used the Same design both Times

Aaron's Designs   Test 8

Aaron's Designs

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

S4

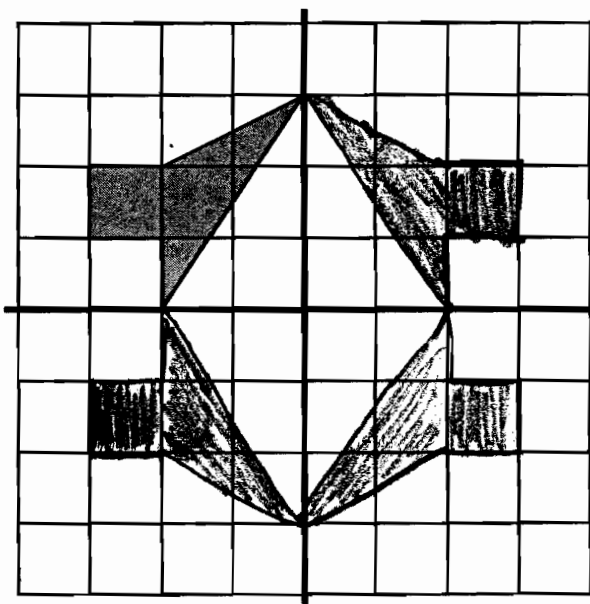Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

   Then reflect both of the shapes over the horizontal line.

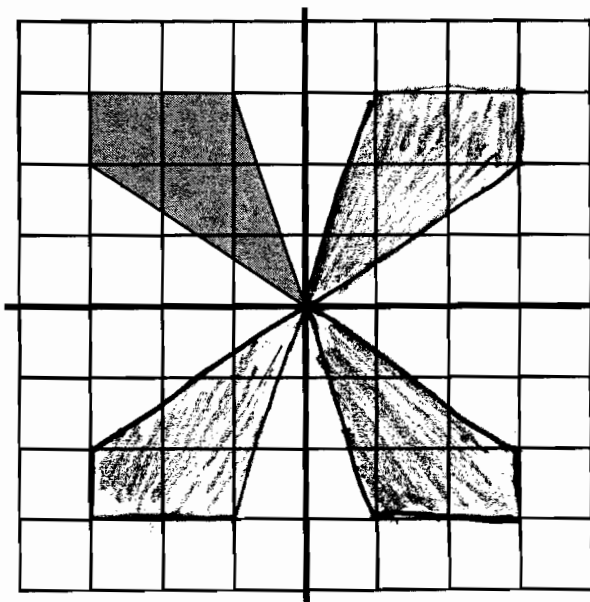   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin.
   Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a clockwise direction about the origin.
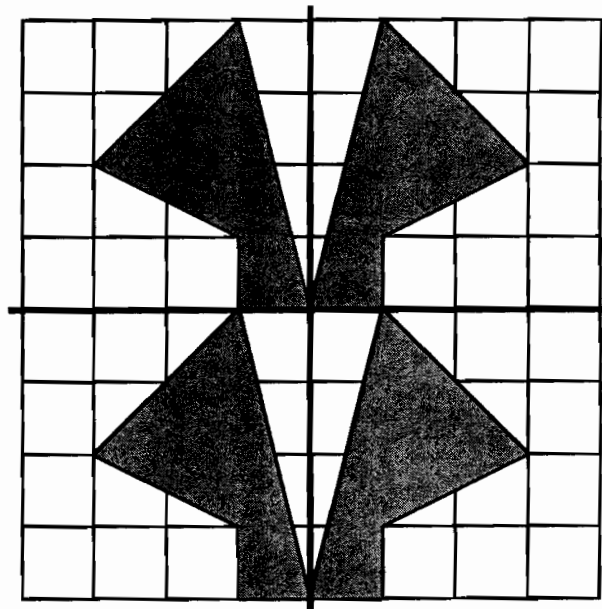   Then draw the third shape.

   Rotate the third shape 1/4 of a turn in a clockwise direction about the origin.
   Then draw the fourth shape.

   This will make a design in all four quadrants.

Aaron's Designs   Test 8

3. This is Aaron's third design.

   He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

He reflected the first design about the vertical line the he transformed that one over the horizontal line and reflected that one over the vertical line

Aaron's Designs   Test 8

8

Aaron's Designs

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

S5

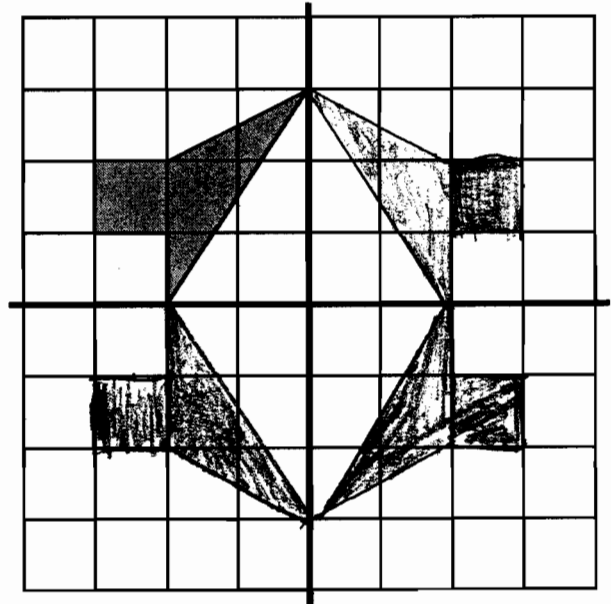Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

   Then reflect both of the shapes over the horizontal line.

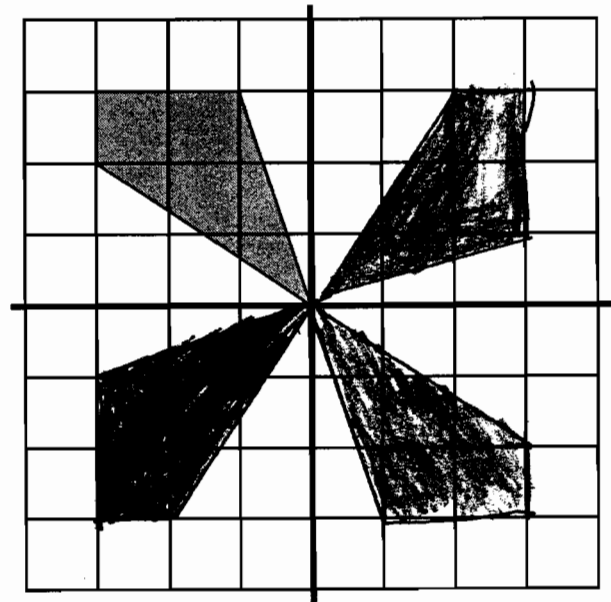   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin. Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a clockwise direction about the origin. Then draw the third shape.
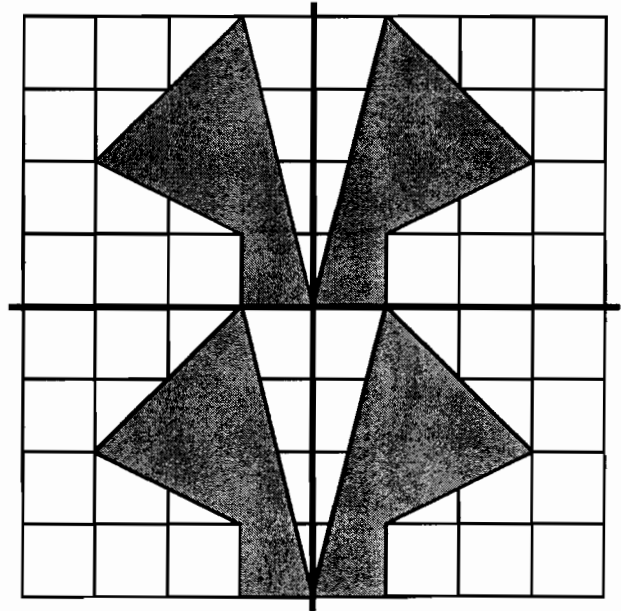
   Rotate the third shape 1/4 of a turn in a clockwise direction about the origin. Then draw the fourth shape.

   This will make a design in all four quadrants.

Aaron's Designs   Test 8

3. This is Aaron's third design.

He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

1. Mirrord oriyinol shape

2. ~~Mirrod~~ reflected imnige on bottom half

Aaron's Designs

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

S6

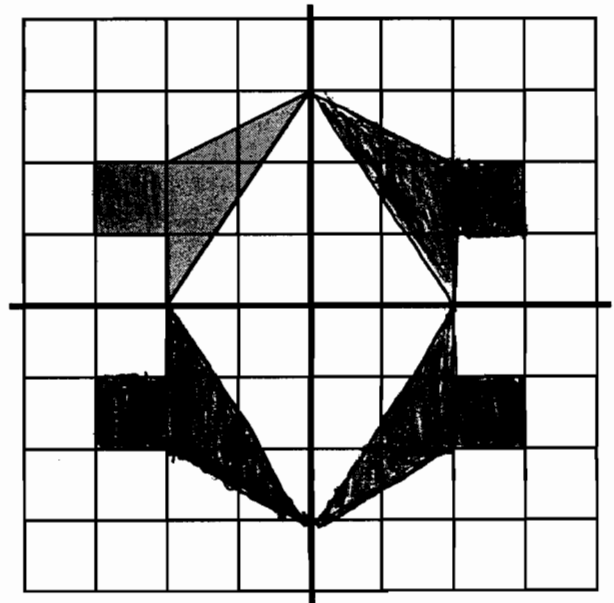Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the
    gray shape over the vertical line.

    Then reflect both of the shapes over the
    horizontal line.

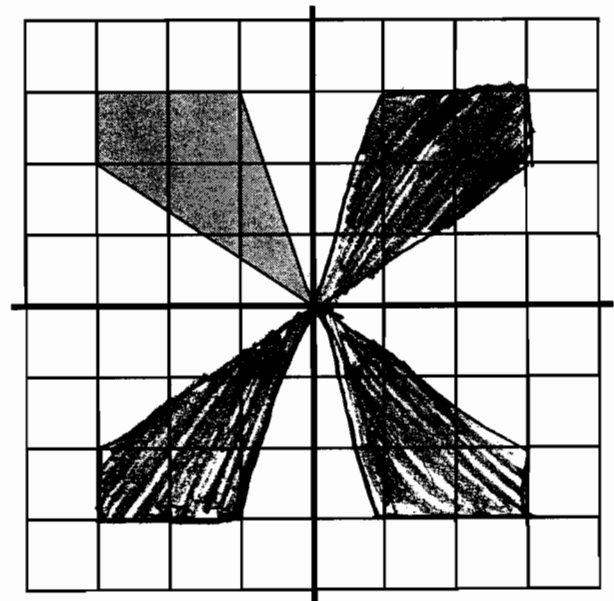   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design,
    rotate the gray shape 1/4 of a turn in a
    clockwise direction about the origin.
    Then draw the second shape.

    Rotate the second shape 1/4 of a turn in a
    clockwise direction about the origin.
    Then draw the third shape.
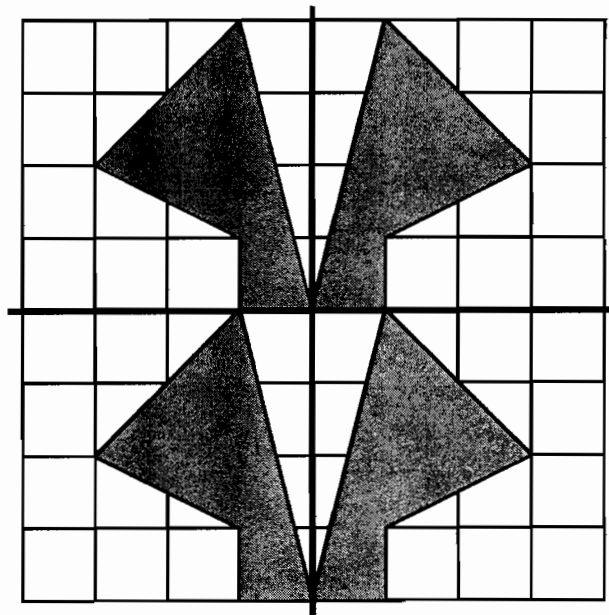
    Rotate the third shape 1/4 of a turn in a
    clockwise direction about the origin.
    Then draw the fourth shape.

    This will make a design in all four quadrants.

3. This is Aaron's third design.

He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

Aarons first design, all of the shapes are facing inward. In his second design, the shapes are facing outward. His third design, the shapes are facing out but the top one is facing up and not down.

8

Aaron's Designs Test 8

Aaron's Designs

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

S7

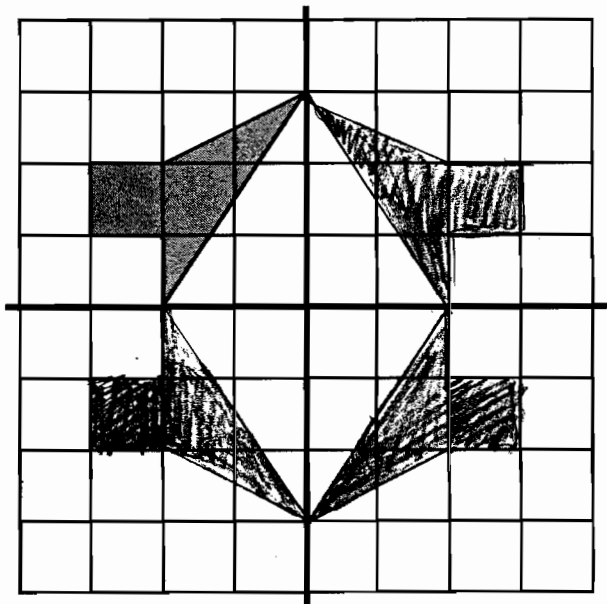Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the
   gray shape over the vertical line.

   Then reflect both of the shapes over the
   horizontal line.

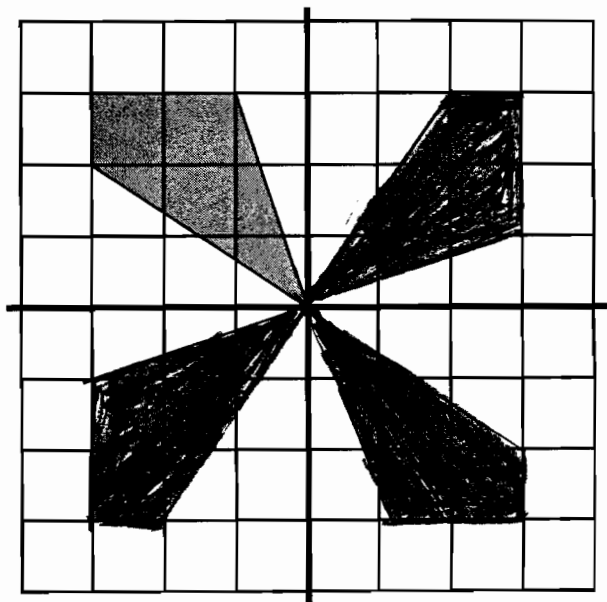   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design,
   rotate the gray shape 1/4 of a turn in a
   clockwise direction about the origin.
   Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a
   clockwise direction about the origin.
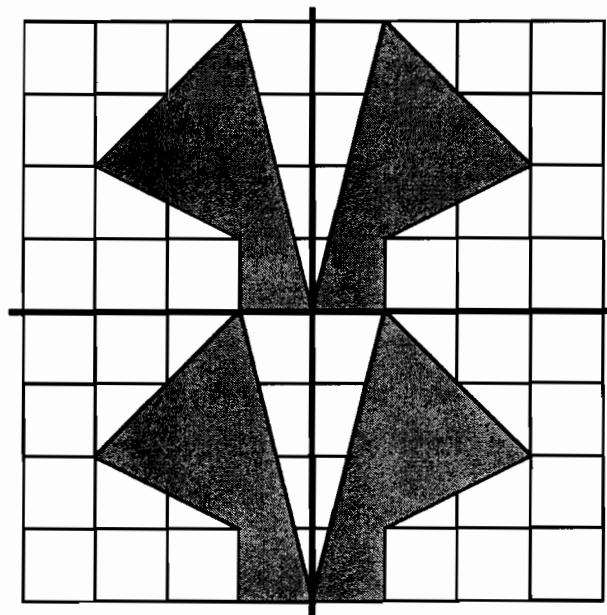   Then draw the third shape.

   Rotate the third shape 1/4 of a turn in a
   clockwise direction about the origin.
   Then draw the fourth shape.

   This will make a design in all four quadrants.

3. This is Aaron's third design.

He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

At first he reflected the design over the vertical line. Then he transferred this new design 4 measures down.

8

Aaron's Designs

S8

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

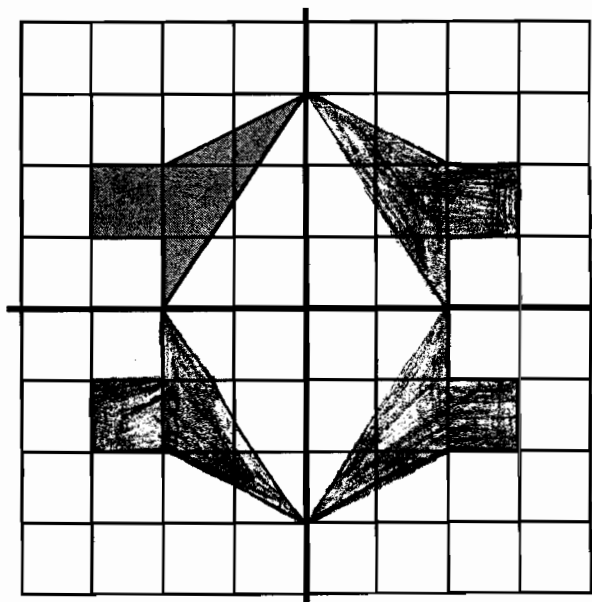Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

   Then reflect both of the shapes over the horizontal line.

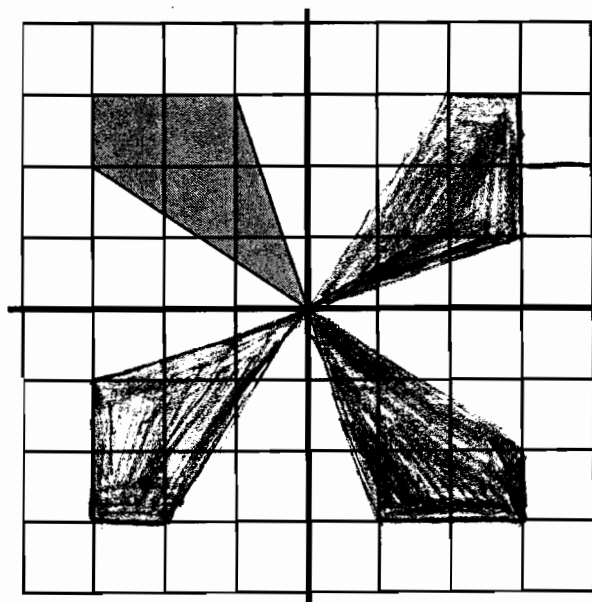   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin. Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a clockwise direction about the origin. Then draw the third shape.
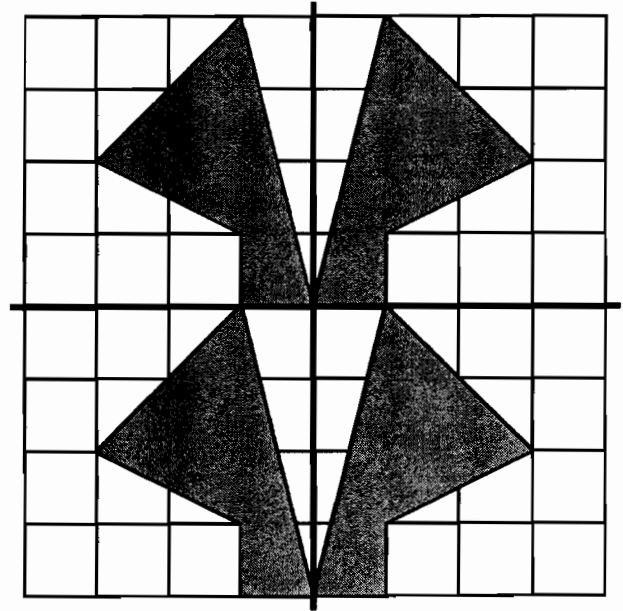
   Rotate the third shape 1/4 of a turn in a clockwise direction about the origin. Then draw the fourth shape.

   This will make a design in all four quadrants.

Aaron's Designs   Test 8

3. This is Aaron's third design.

   He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

Aaron copied the design down and reflected it across

Aaron's Designs   Test 8

8

Aaron's Designs

This problem gives you the chance to:
- draw reflections and rotations of a given figure on a grid
- describe transformations needed to make a given pattern

S9

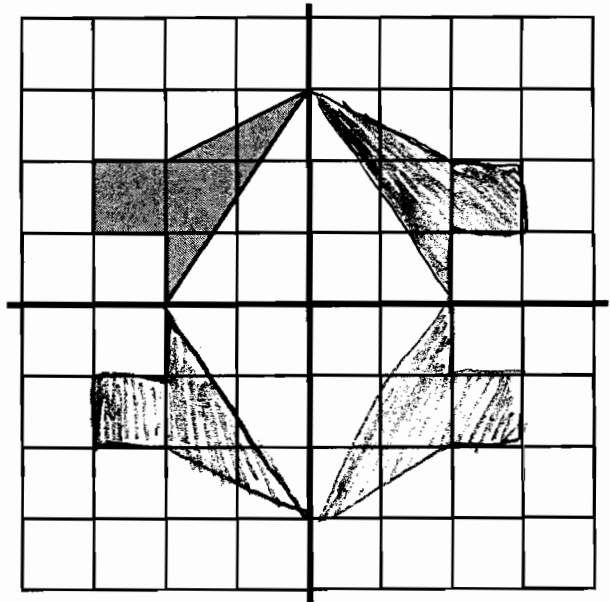Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the
   gray shape over the vertical line.

   Then reflect both of the shapes over the
   horizontal line.

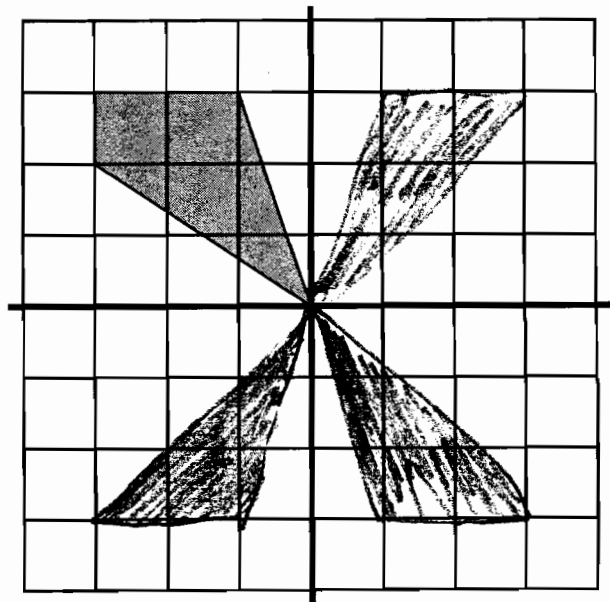   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design,
   rotate the gray shape 1/4 of a turn in a
   clockwise direction about the origin.
   Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a
   clockwise direction about the origin.
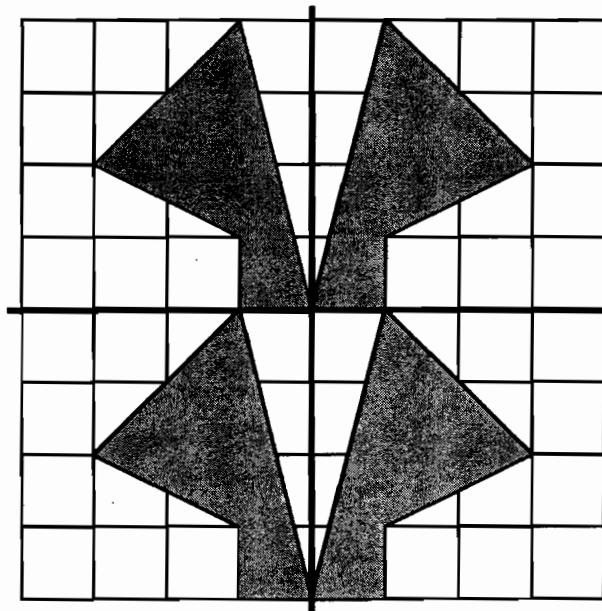   Then draw the third shape.

   Rotate the third shape 1/4 of a turn in a
   clockwise direction about the origin.
   Then draw the fourth shape.

   This will make a design in all four quadrants.

3. This is Aaron's third design.

   He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

He reflected the shape in quadrant 2 over the verticle line. Then he slid the shape down to quadrant 4 + reflected the shape about the verticle line.

Aaron's Designs   Test 8

8

Aaron's Designs

S10

This problem gives you the chance to:
• draw reflections and rotations of a given figure on a grid
• describe transformations needed to make a given pattern

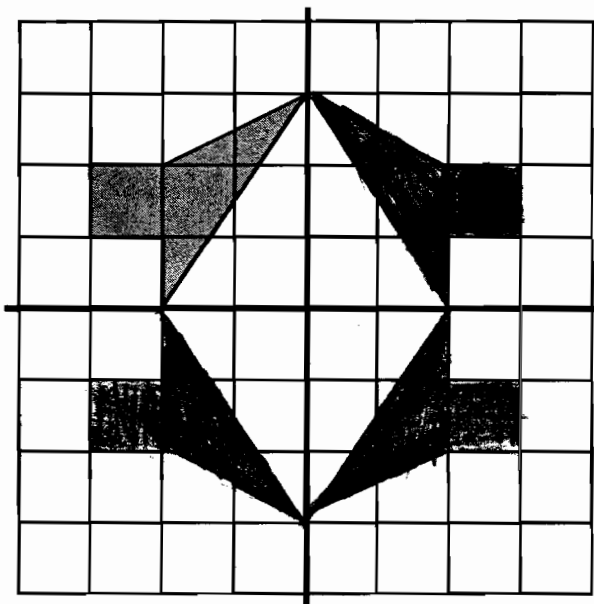Aaron is drawing some designs for greetings cards.
He divides a grid into 4 quadrants and starts by drawing a shape in one quadrant.
He then reflects, rotates or translates the shape into the other three quadrants.

1. Finish Aaron's first design by reflecting the gray shape over the vertical line.

   Then reflect both of the shapes over the horizontal line.

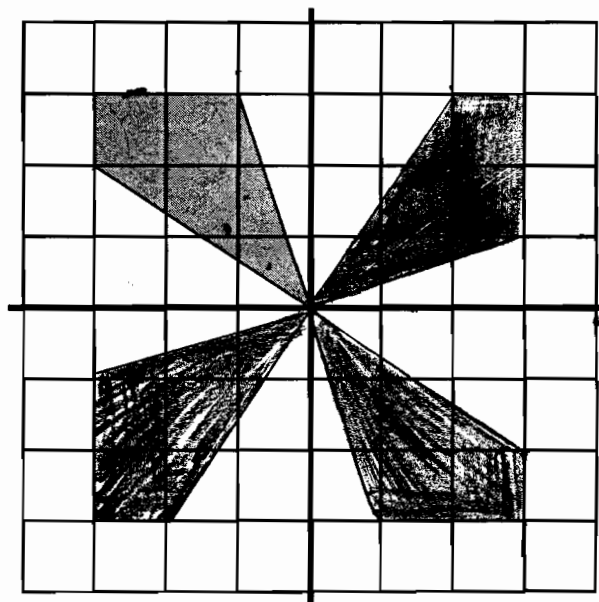   This will make a design in all four quadrants.

2. To finish drawing Aaron's second design, rotate the gray shape 1/4 of a turn in a clockwise direction about the origin.
   Then draw the second shape.

   Rotate the second shape 1/4 of a turn in a clockwise direction about the origin.
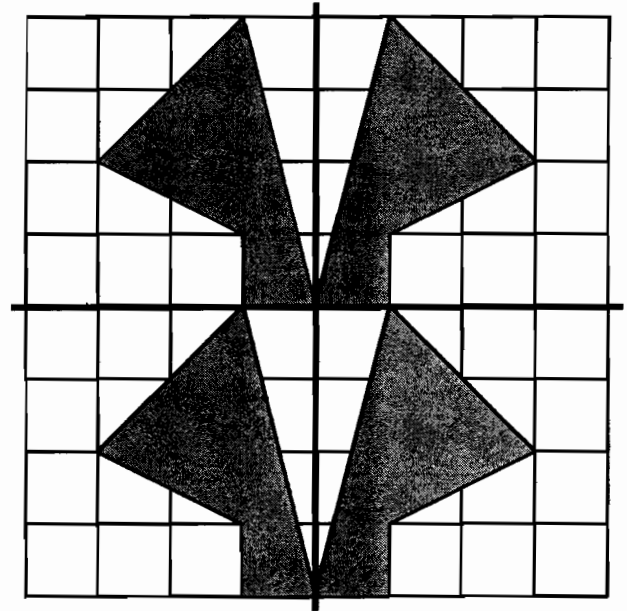   Then draw the third shape.

   Rotate the third shape 1/4 of a turn in a clockwise direction about the origin.
   Then draw the fourth shape.

   This will make a design in all four quadrants.

3. This is Aaron's third design.

    He started with one gray shape in the top left hand quadrant of the grid and transformed it to make the design.

Describe the transformations that Aaron may have used to draw this design.

He slid the shape down then fliped. + Iuen
he slid it up

8

Aaron's Designs   Test 8