

Coordinating Change

- I. Plot the following points and draw the polygon, ABCD.
A(0,0), B(0,5), C(5,5), D(5,0)
What is the shape of ABCD? _____
What is the perimeter of ABCD? _____
What is the area of ABCD? _____
- II. On a new grid, draw a new shape. Use the same coordinates as ABCD, but change each x -value to 3 times the original value. Keep the y -values the same.
A'(,), B'(,), C'(,), D'(,)
How does the shape of A'B'C'D' compare to the shape of ABCD?
What is the new perimeter? _____
What is the new area? _____
- III. On a new grid, draw a new shape. Use the same coordinates as ABCD, but change each y -value to 2 times the original value. Keep the x -values the same.
A''(,), B''(,), C''(,), D''(,)
How does the shape of A''B''C''D'' compare to the shape of ABCD?
What is the new perimeter? _____
What is the new area? _____
- IV. On a new grid, draw a new shape. Use the same coordinates as ABCD, but change each x -value AND each y -value to 2 times the original value.
A'''(,), B'''(,), C'''(,), D'''(,)
How does the shape of A'''B'''C'''D''' compare to the shape of ABCD?
What is the new perimeter? _____
What is the new area? _____

Coordinating Change (cont.)

V. Plot the following points and draw the polygon, ABCDEFGH.

A(0,0), B(6,0), C(6,8), D(4,8), E(4,4), F(2,4), G(2,8), H(0,8)

What is the shape of ABCDEFGH? _____

What is the perimeter of the polygon? _____

What is the area of the polygon? _____

VI. On a new grid, draw a new shape. Use the same coordinates as ABCDEFGH, but change each x -value to 3 times the original value. Keep the y -values the same.

A'(,), B'(,), C'(,), D'(,), E'(,), F'(,), G'(,),
H'(,)

How does the shape of the new polygon compare with the original?

What is the new perimeter? _____

What is the new area? _____

VII. On a new grid, draw a new shape. Use the same coordinates as ABCDEFGH, but change each y -value to 3 times the original value. Keep the x -values the same.

A''(,), B''(,), C''(,), D''(,), E''(,), F''(,), G''(,),
H''(,)

How does the shape of the new polygon compare with the original?

What is the new perimeter? _____

What is the new area? _____

VIII. On a new grid, draw a new shape. Use the same coordinates as ABCDEFGH, but change each x -value AND each y -value to 2 times the original value.

A'''(,), B'''(,), C'''(,), D'''(,), E'''(,), F'''(,),
G'''(,), H'''(,)

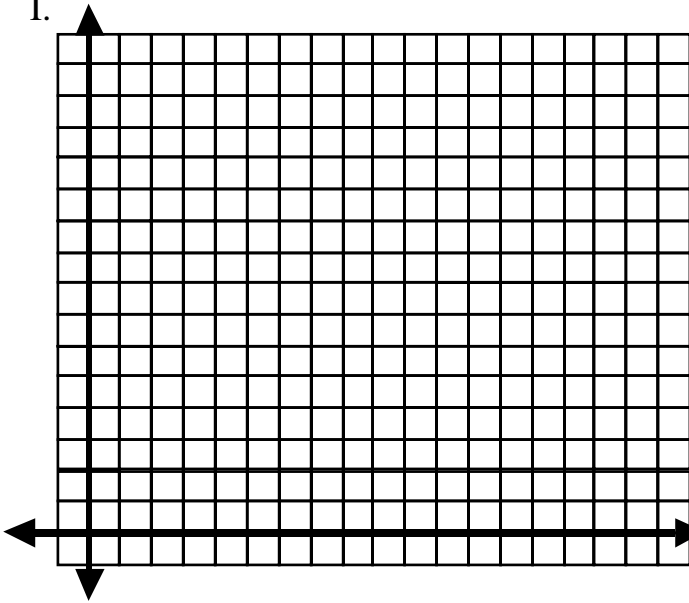
How does the shape of the new polygon compare with the original?

What is the new perimeter? _____

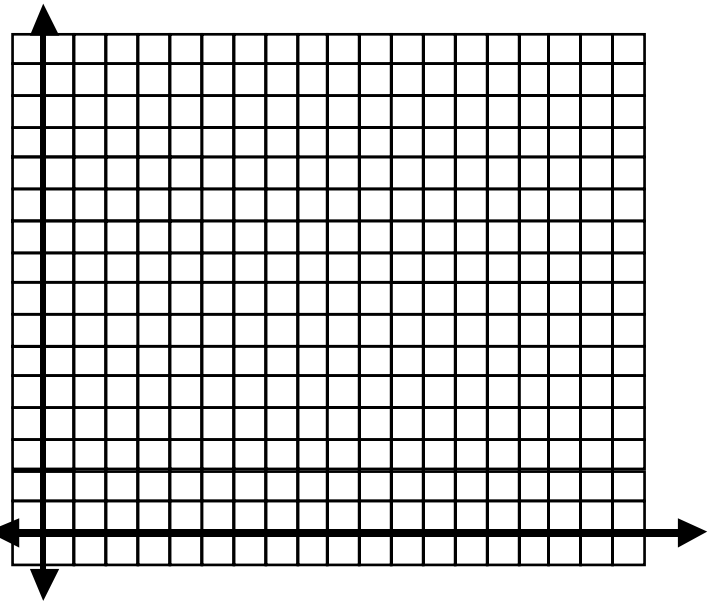
What is the new area? _____

Coordinating Change – Grid Sheet

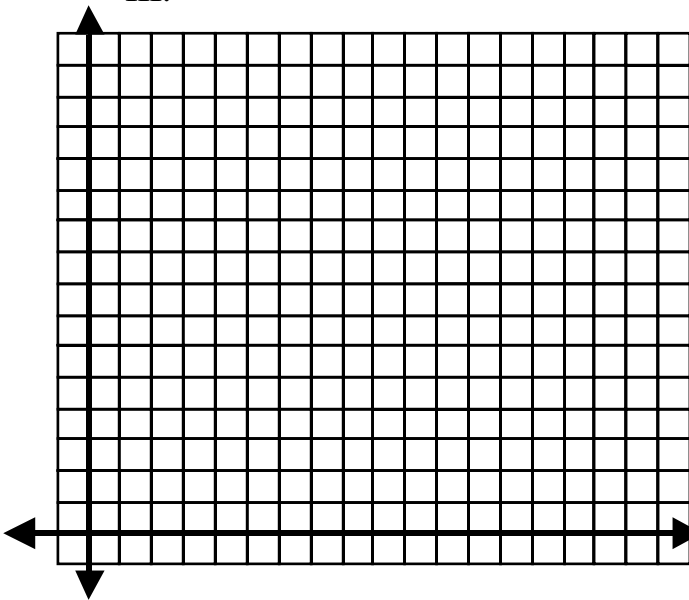
I.



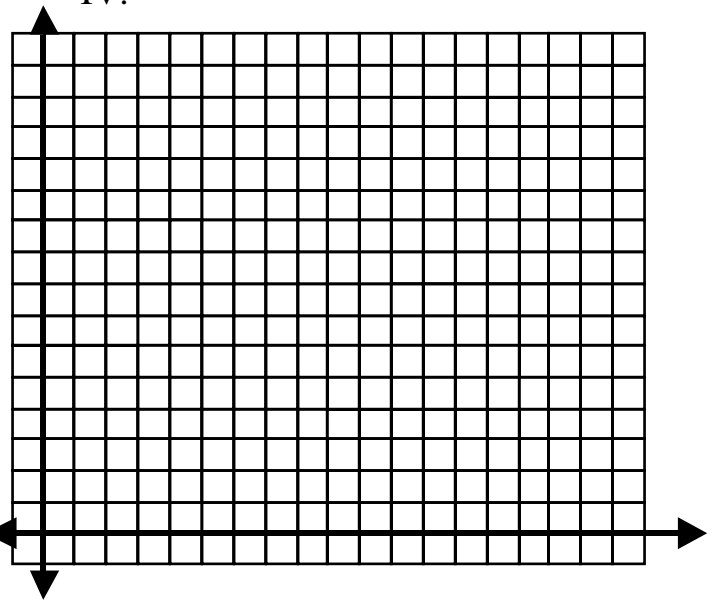
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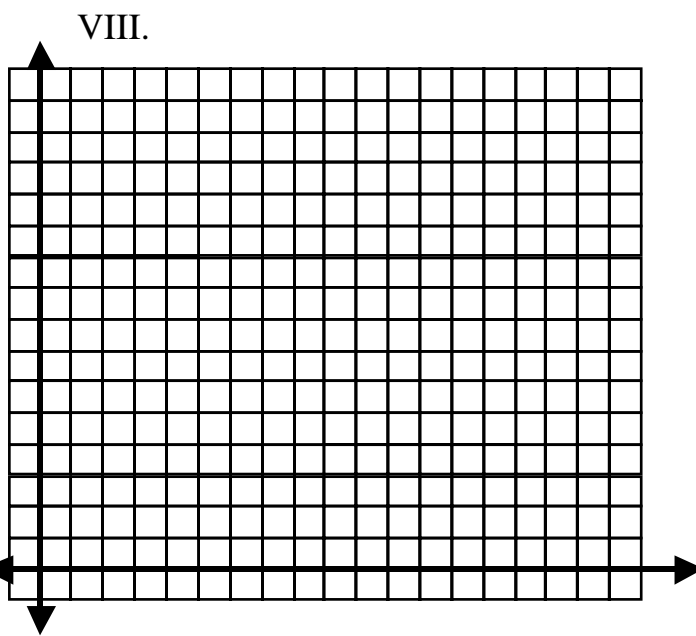
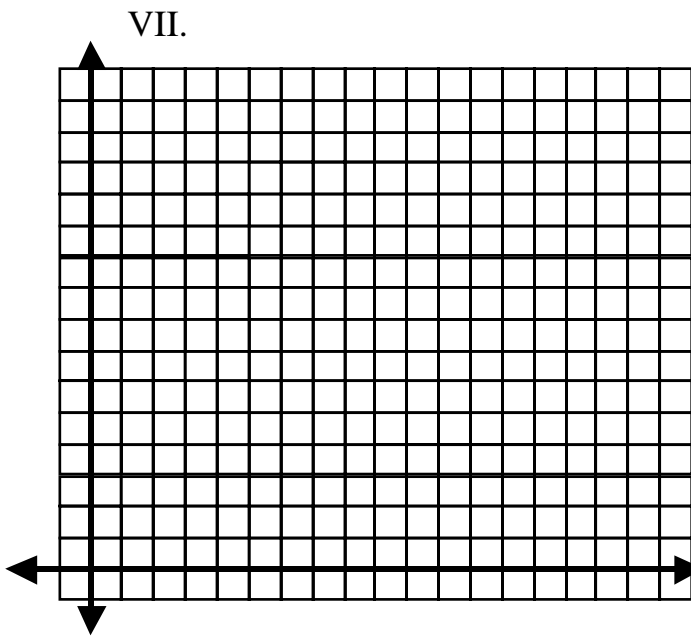
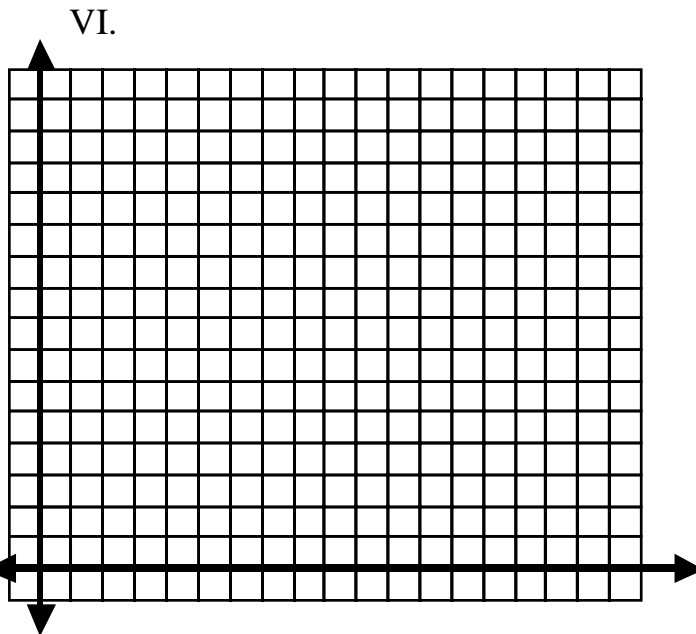
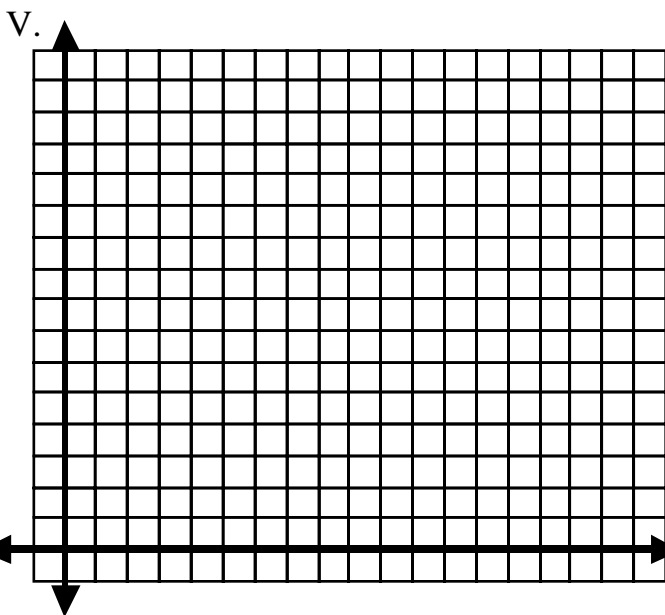
III.



IV.



Coordinating Change – Grid Sheet



IX. Suppose a regular pentagon is drawn so that the area is 20 square inches. An enlargement is made with each side of the new figure being twice the length of each side of the original. Predict the area of the enlarged pentagon.

Going Up Cooperative Task Cards-1

<p>Going Up #1</p> <p>There are nine blocks in all.</p> <p>There are three colors used.</p>	<p>Going Up #1</p> <p>No two blocks of the same color touch.</p>
<p>Going Up #1</p> <p>The ends of the building are identical towers.</p> <p>Top blocks of both towers are red.</p>	<p>Going Up #1</p> <p>There are two red blocks on the bottom level.</p>
<p>Going Up #1</p> <p>All blue blocks are on the bottom level.</p>	<p>Going Up #1</p> <p>There are 2 yellow blocks.</p>

Going Up Cooperative Task Cards-2

<p>Going Up #2</p> <p>There are seven blocks in all.</p> <p>Two of the blocks are red.</p>	<p>Going Up #2</p> <p>No two blocks of the same color share a face.</p>
<p>Going Up #2</p> <p>The only block on the third level is green.</p>	<p>Going Up #2</p> <p>The blue blocks share an edge.</p> <p>The red blocks share an edge.</p>
<p>Going Up #2</p> <p>Three different colored blocks form the bottom level.</p>	<p>Going Up #2</p> <p>There are more green blocks than any other color.</p>

BUILD A MODEL

Figure A top

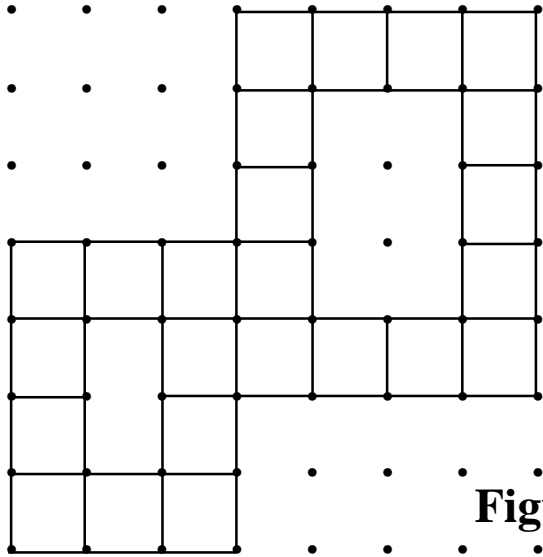


Figure A side

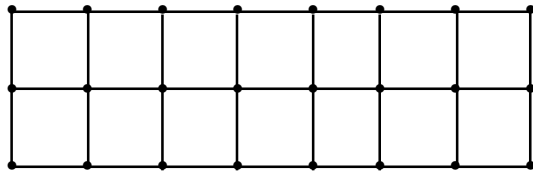


Figure A front

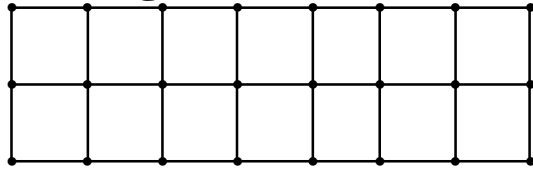


Figure B front



Figure B top

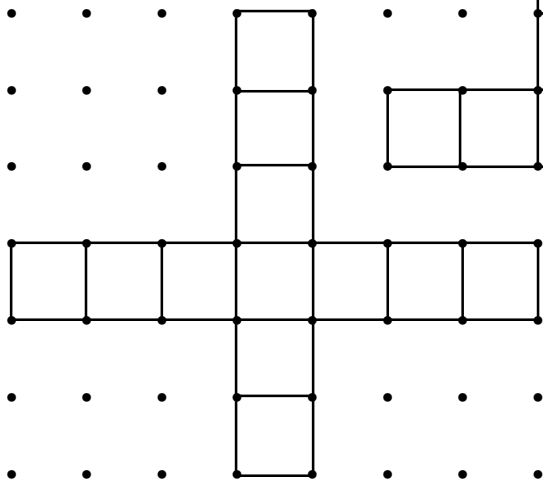
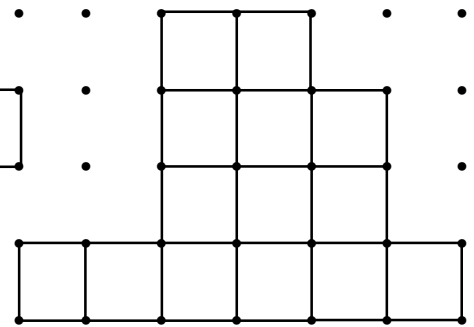


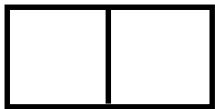
Figure B side



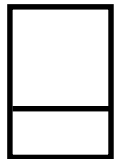
Building with GeoBlocks

Using the given orthographic drawings, build the 3-dimensional figure.

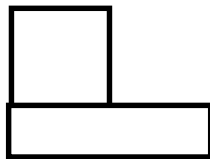
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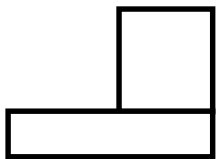
Top



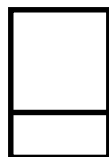
Front



Left Side



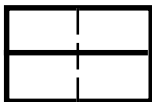
Right Side



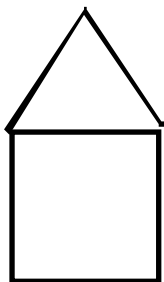
Back

2 Blocks

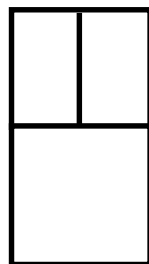
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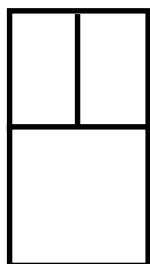
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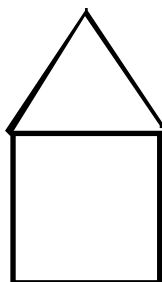
Front



Left Side



Right Side



Back

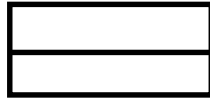
3 Blocks

Building with GeoBlocks continued

3.



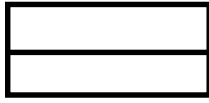
Top



Front



Left Side



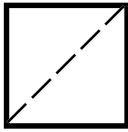
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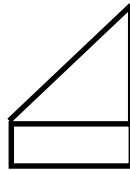
Right Side

2 Blocks

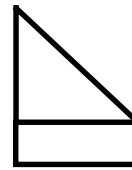
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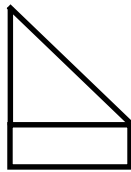
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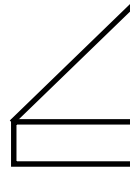
Front



Right Side



Back



Left Side

2 Blocks

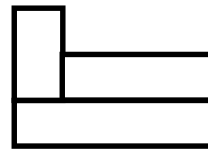
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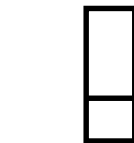
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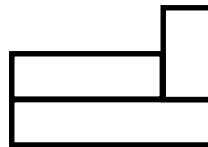
Front



Left Side



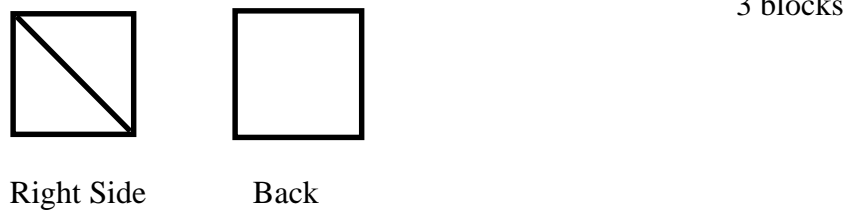
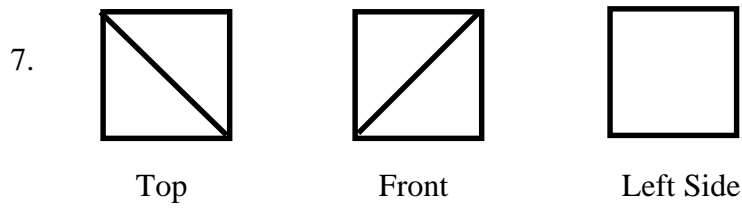
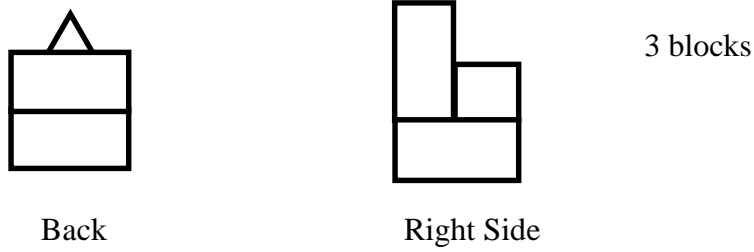
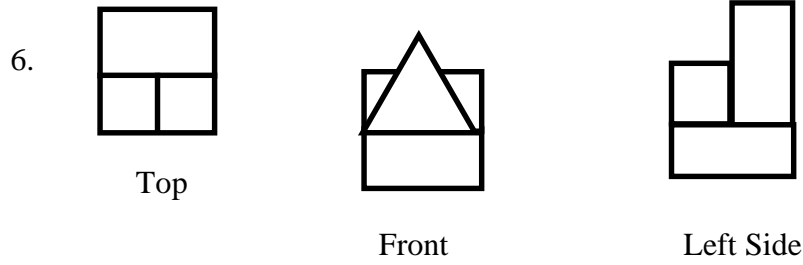
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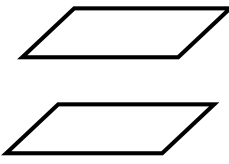
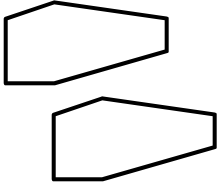
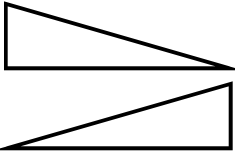
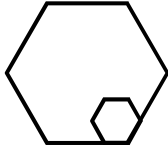
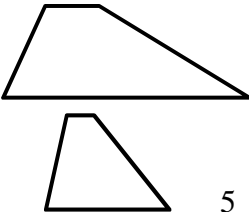
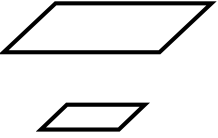
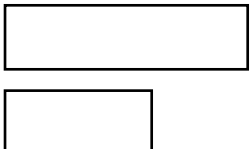
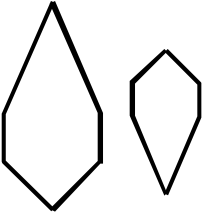
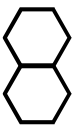
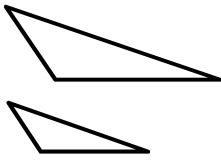
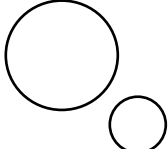
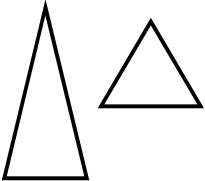
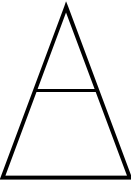
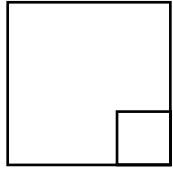
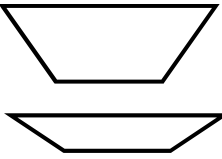
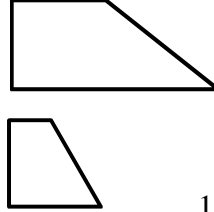
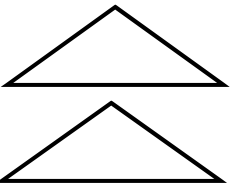
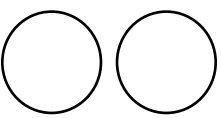

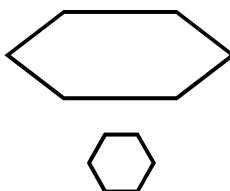
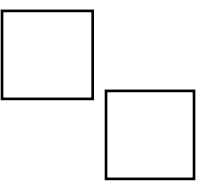
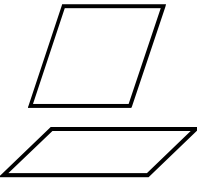
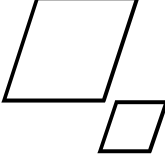
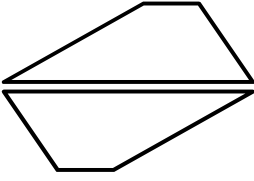
Right Side

3 Blocks

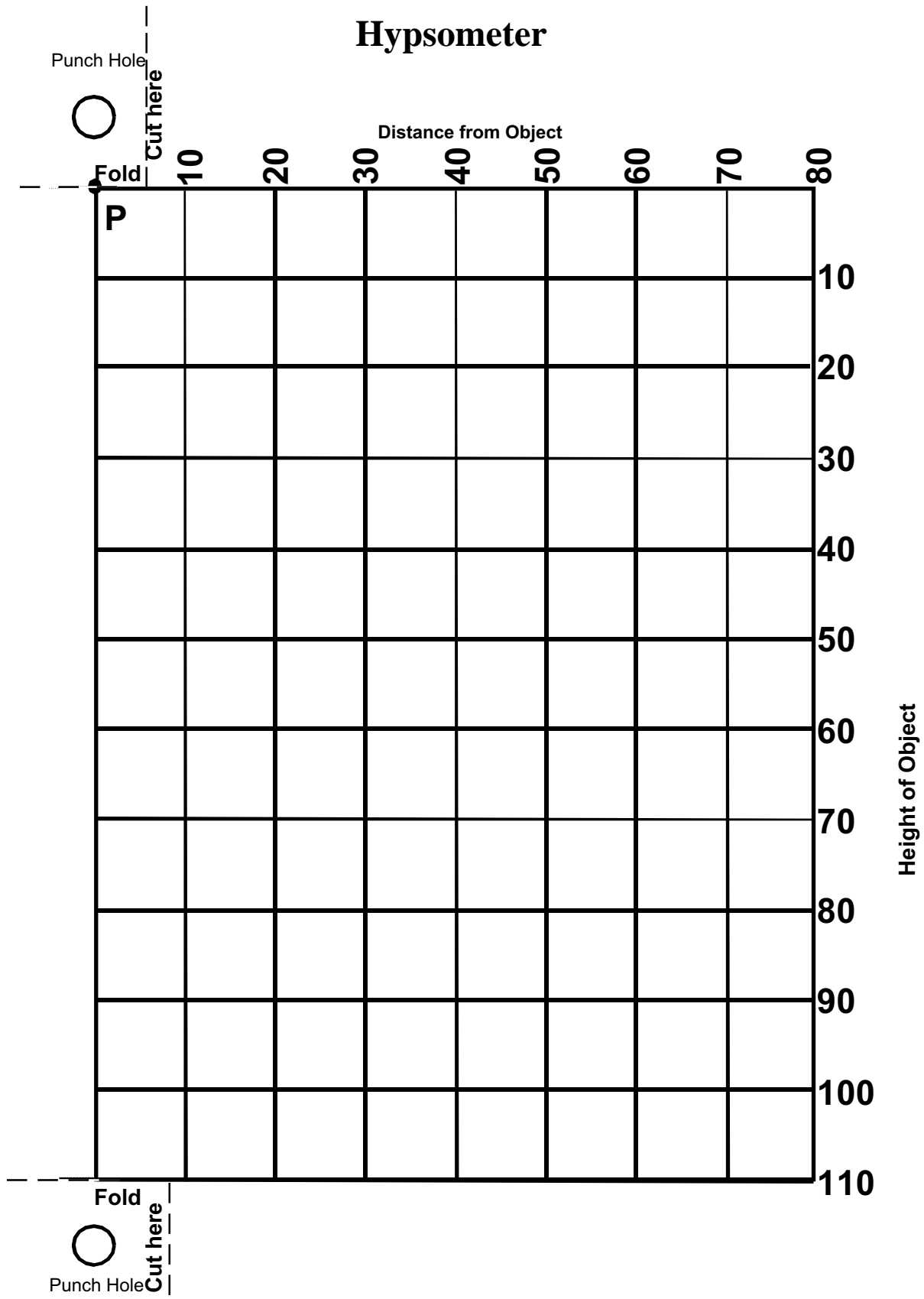
more Building with GeoBlocks



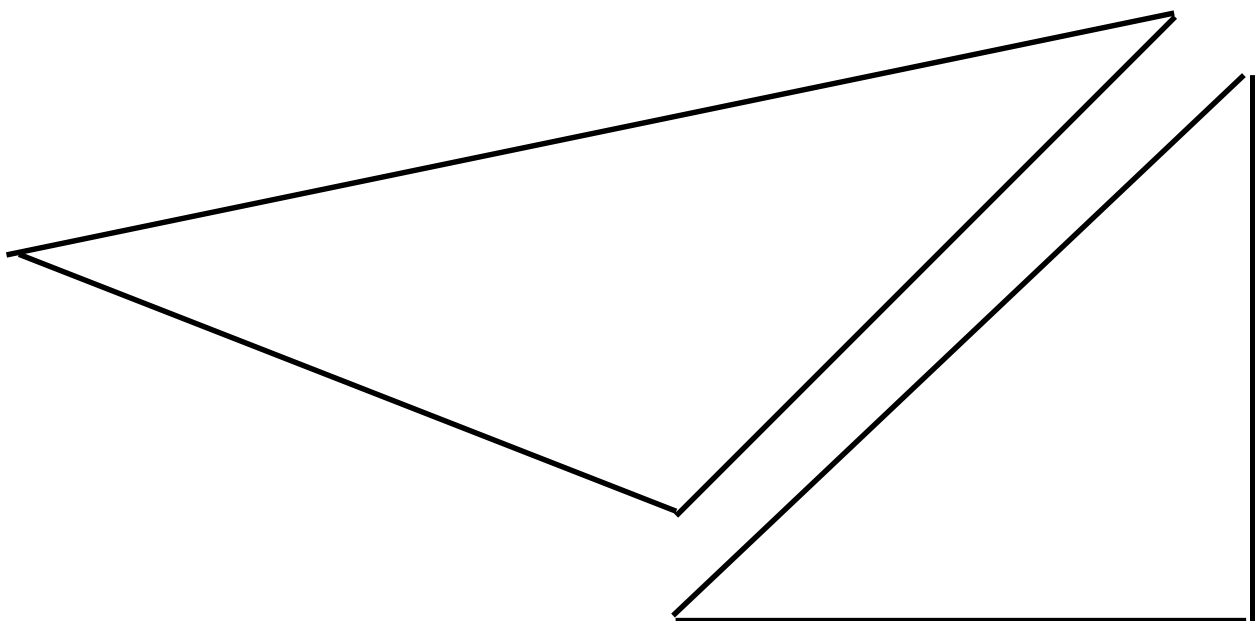
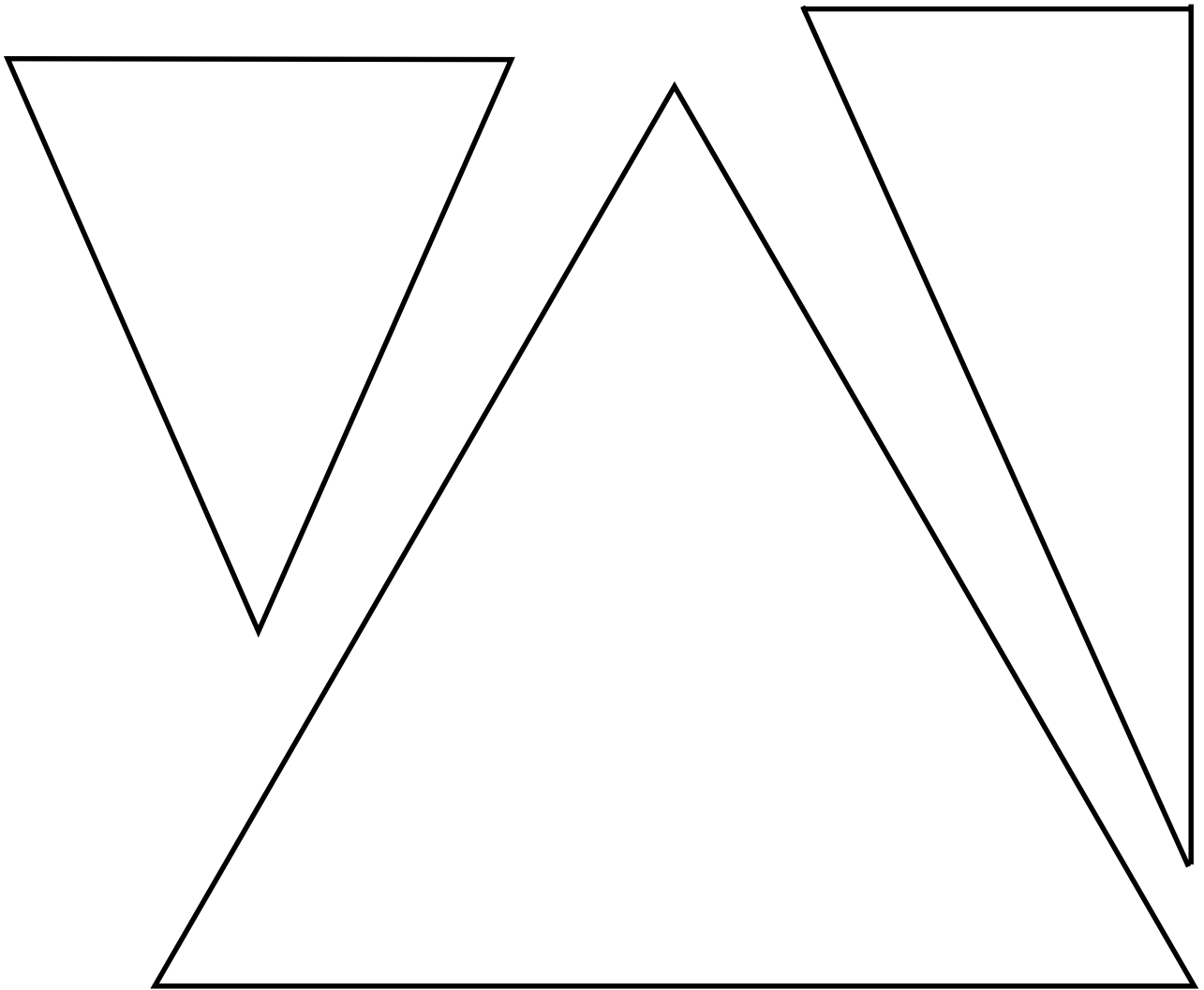
Sorting Activity

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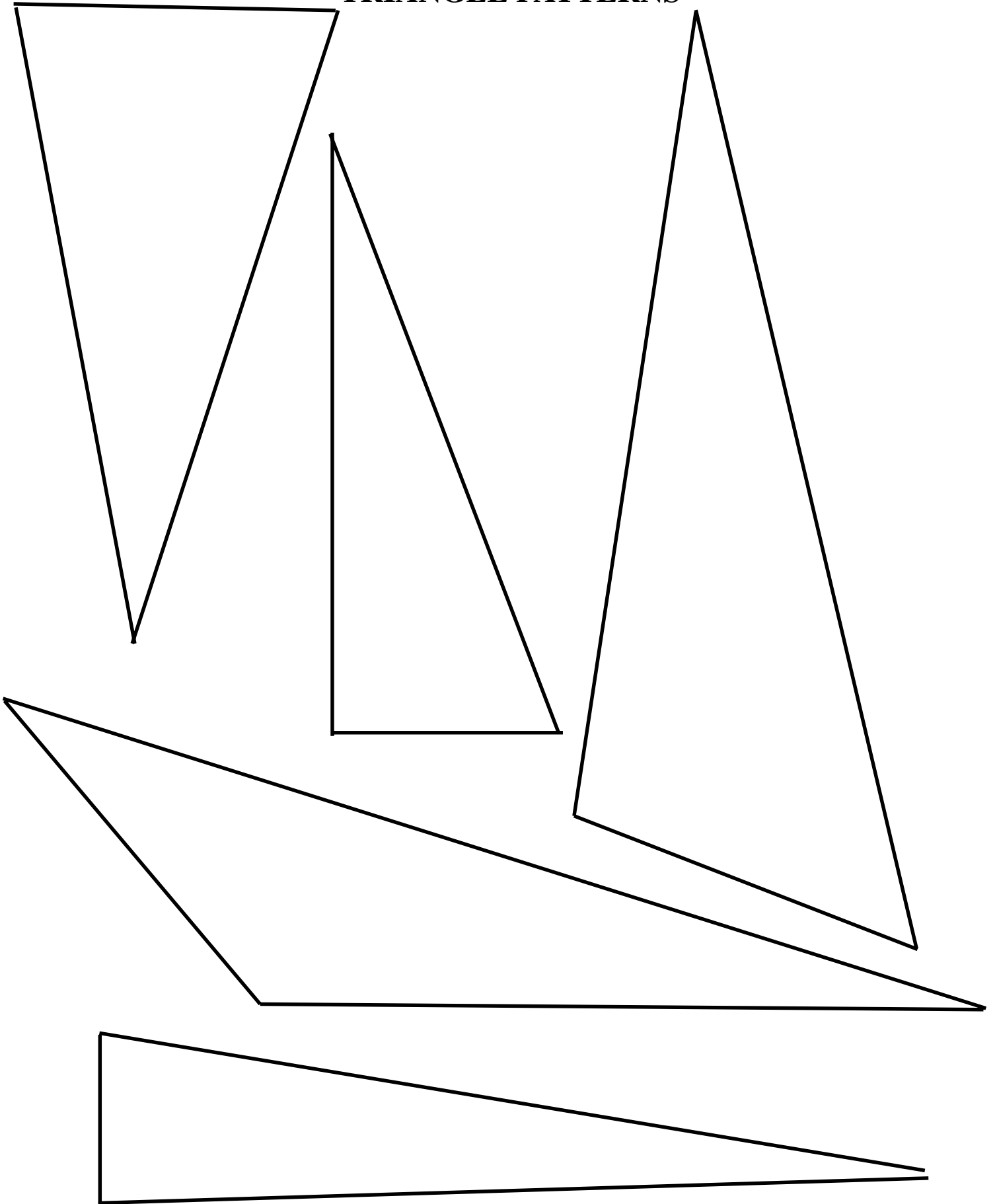
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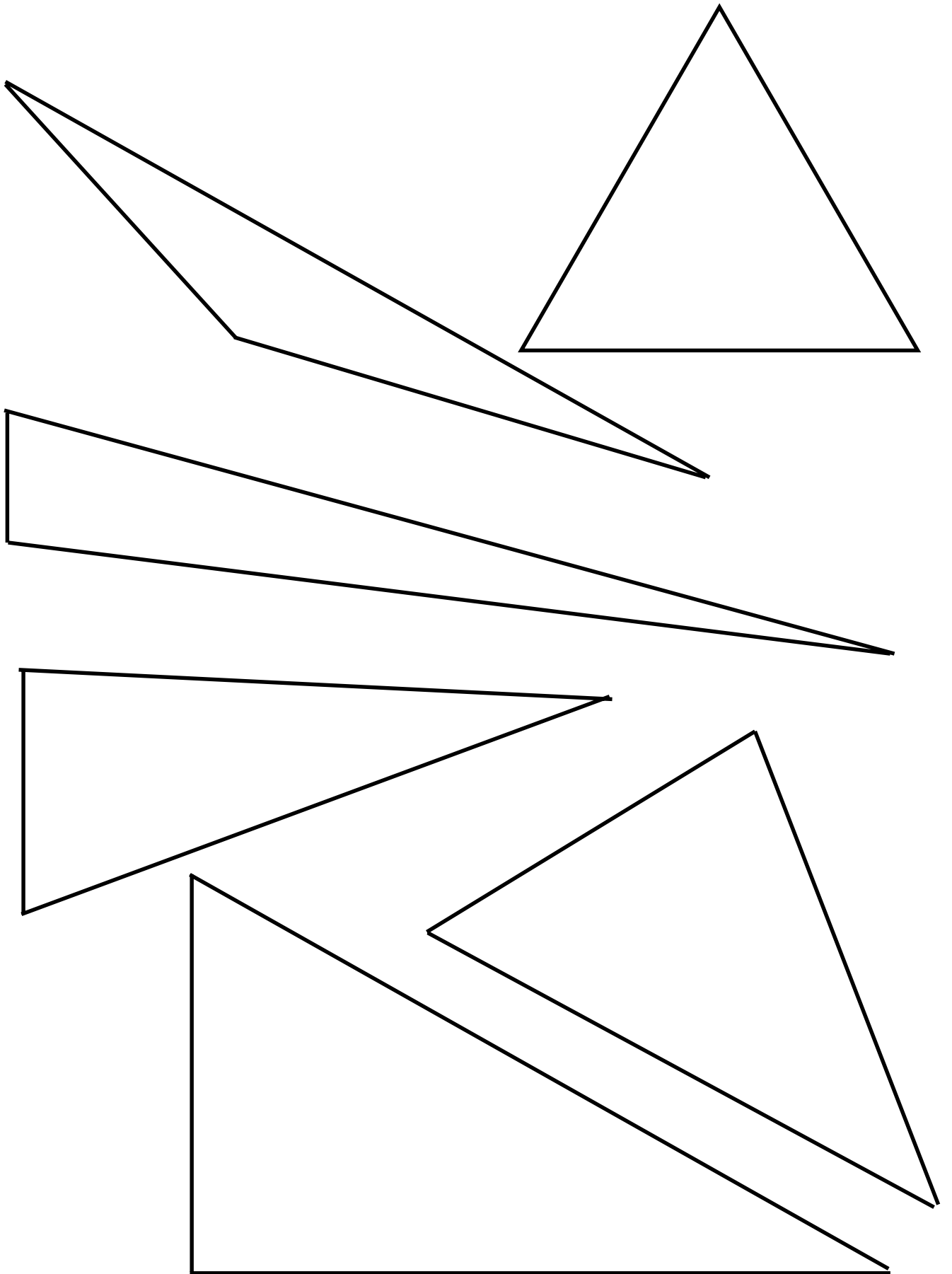
TRIANGLE PATTERNS



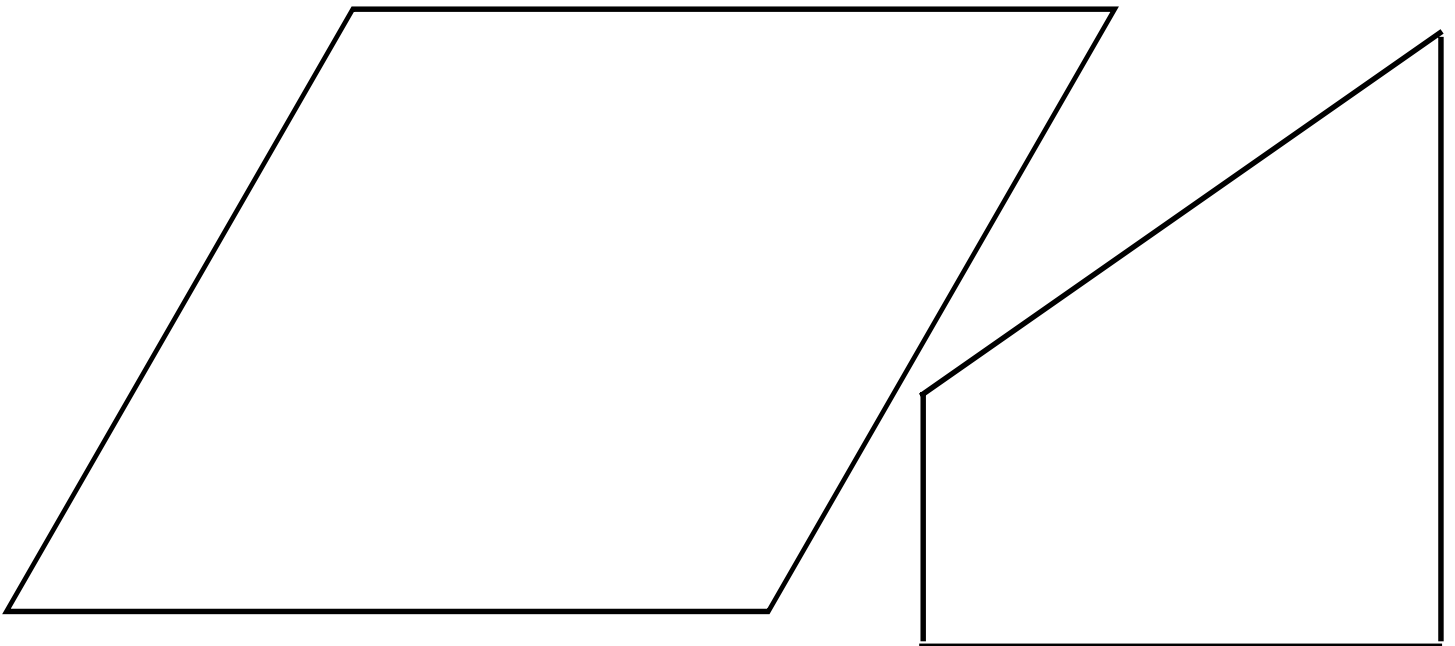
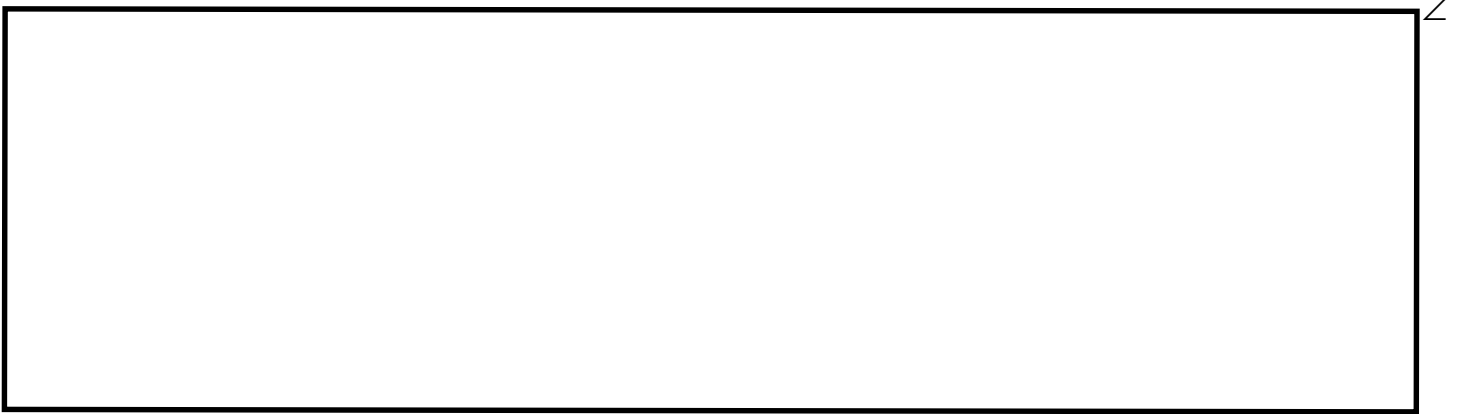
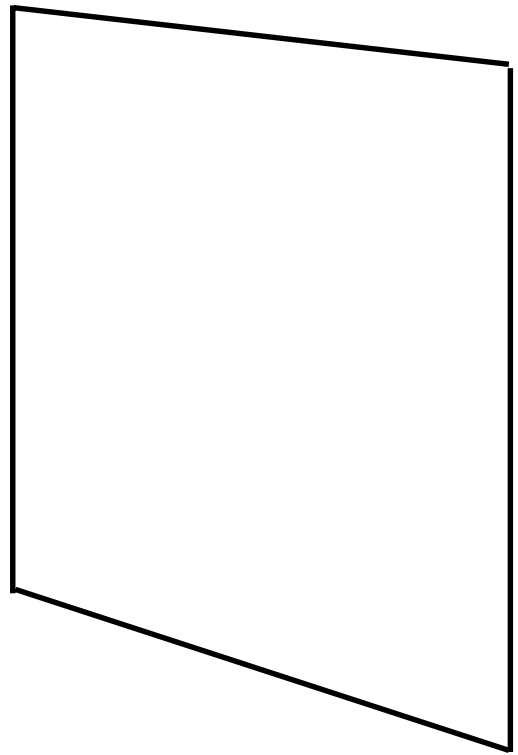
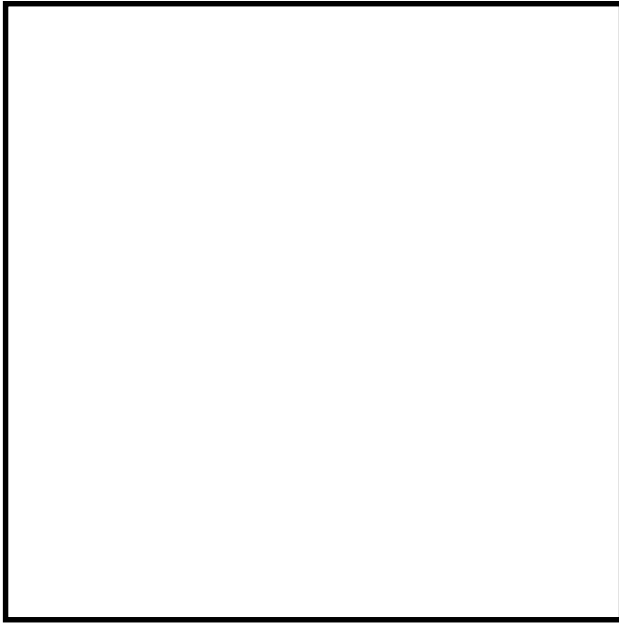
TRIANGLE PATTERNS



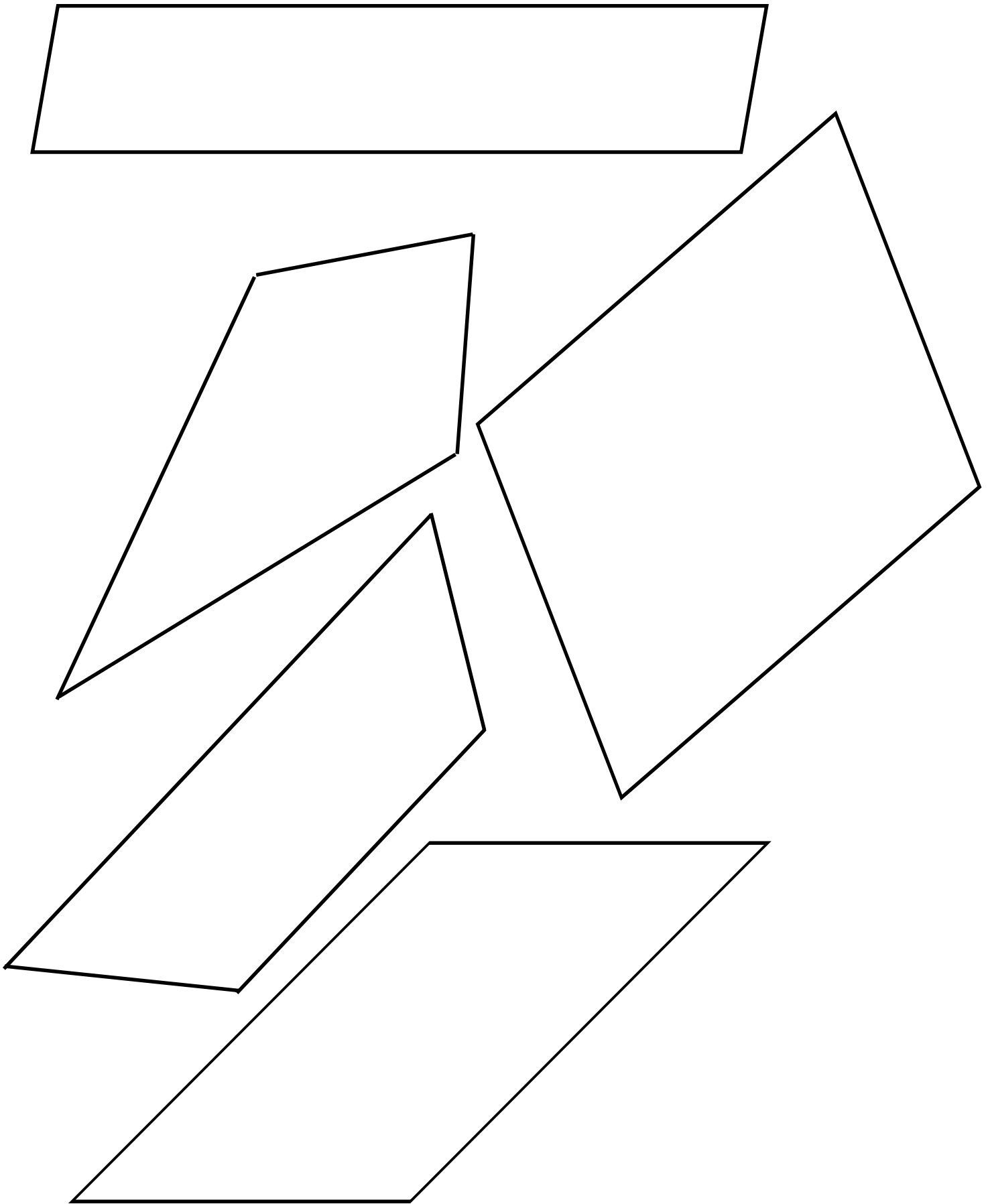
TRIANGLE PATTERNS



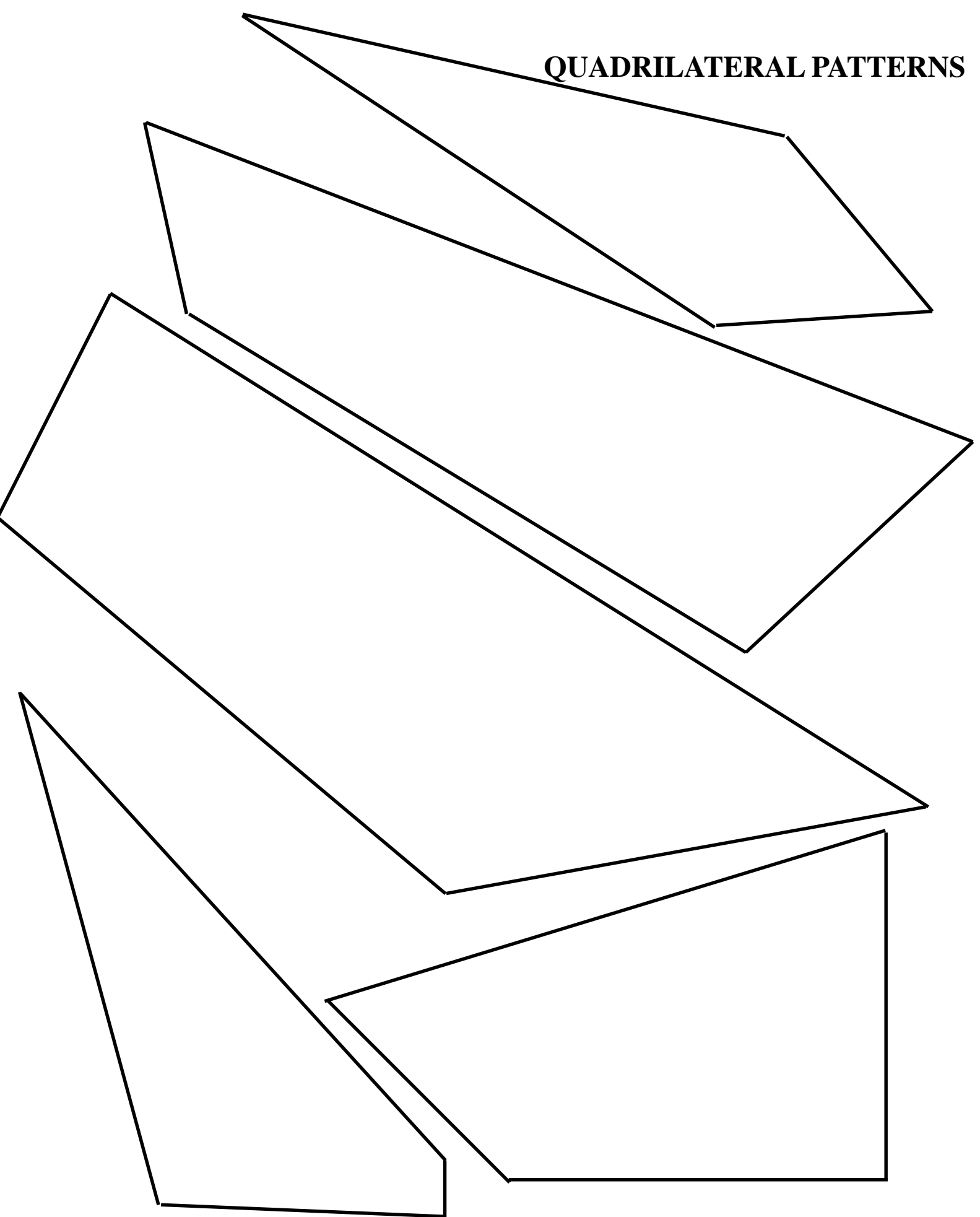
QUADRILATERAL PATTERNS



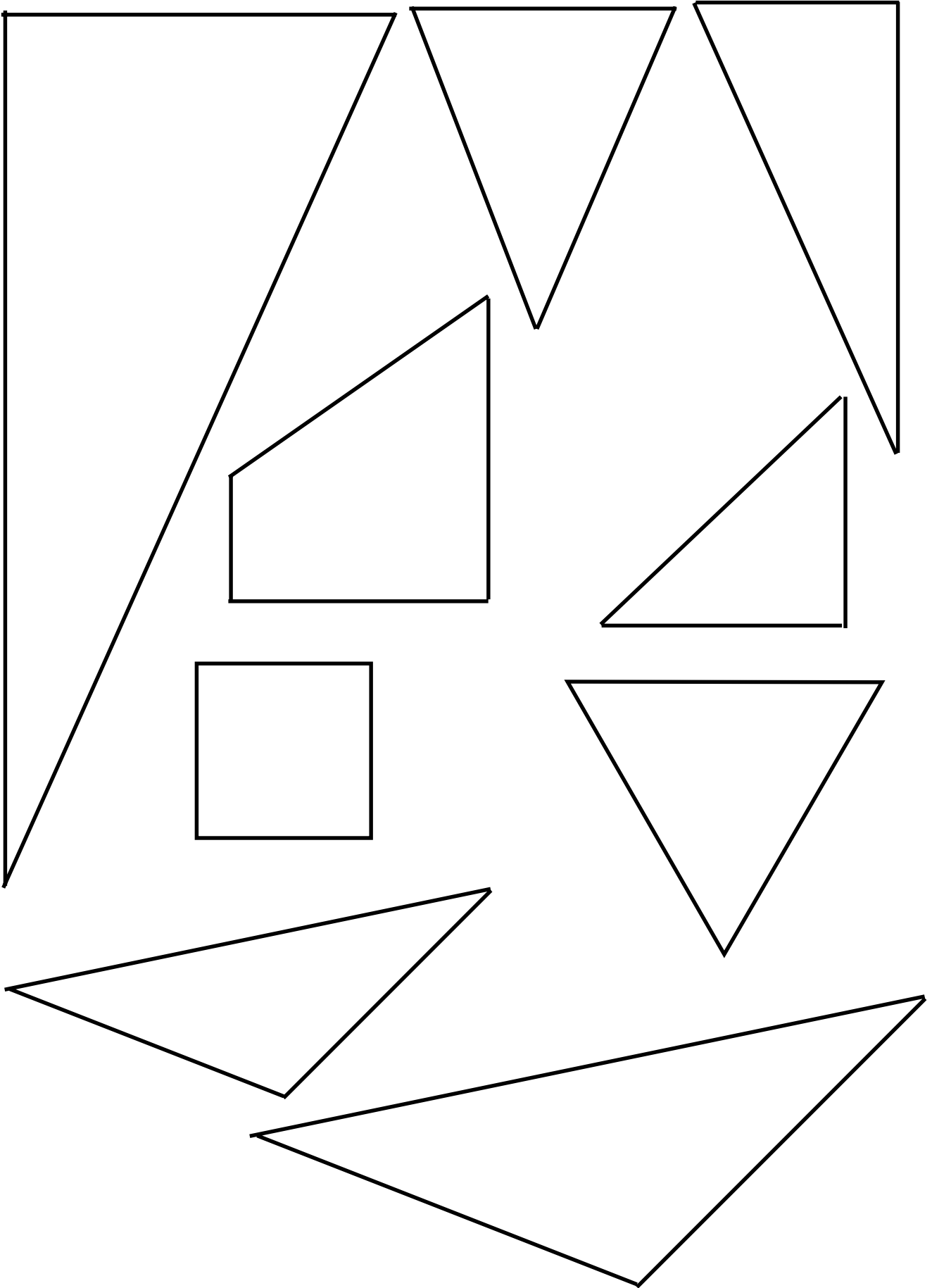
QUADRILATERAL PATTERNS



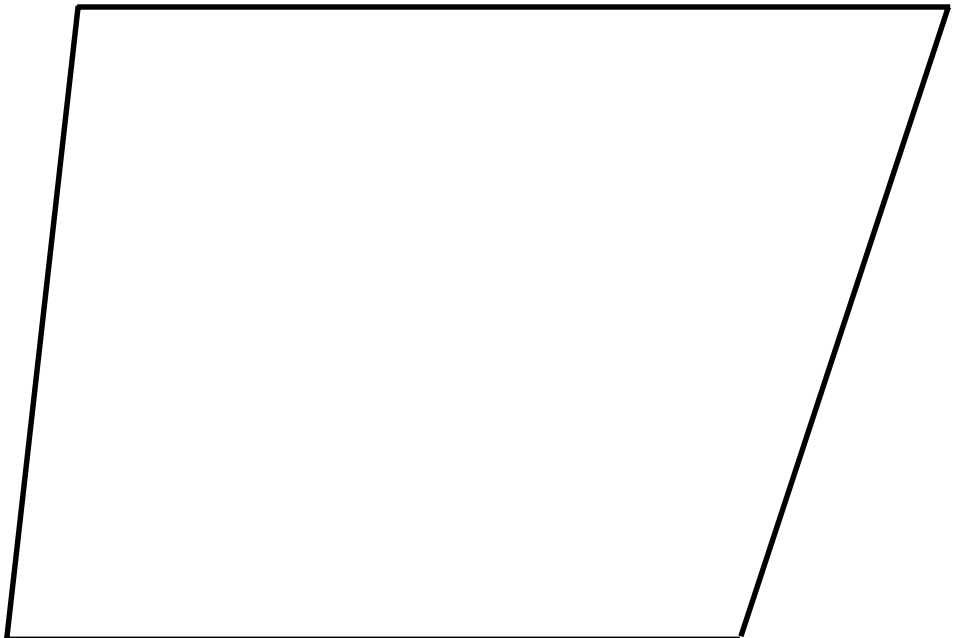
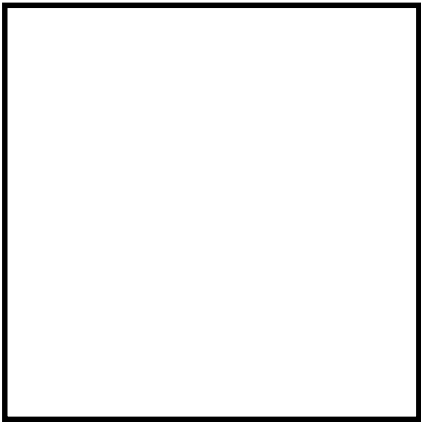
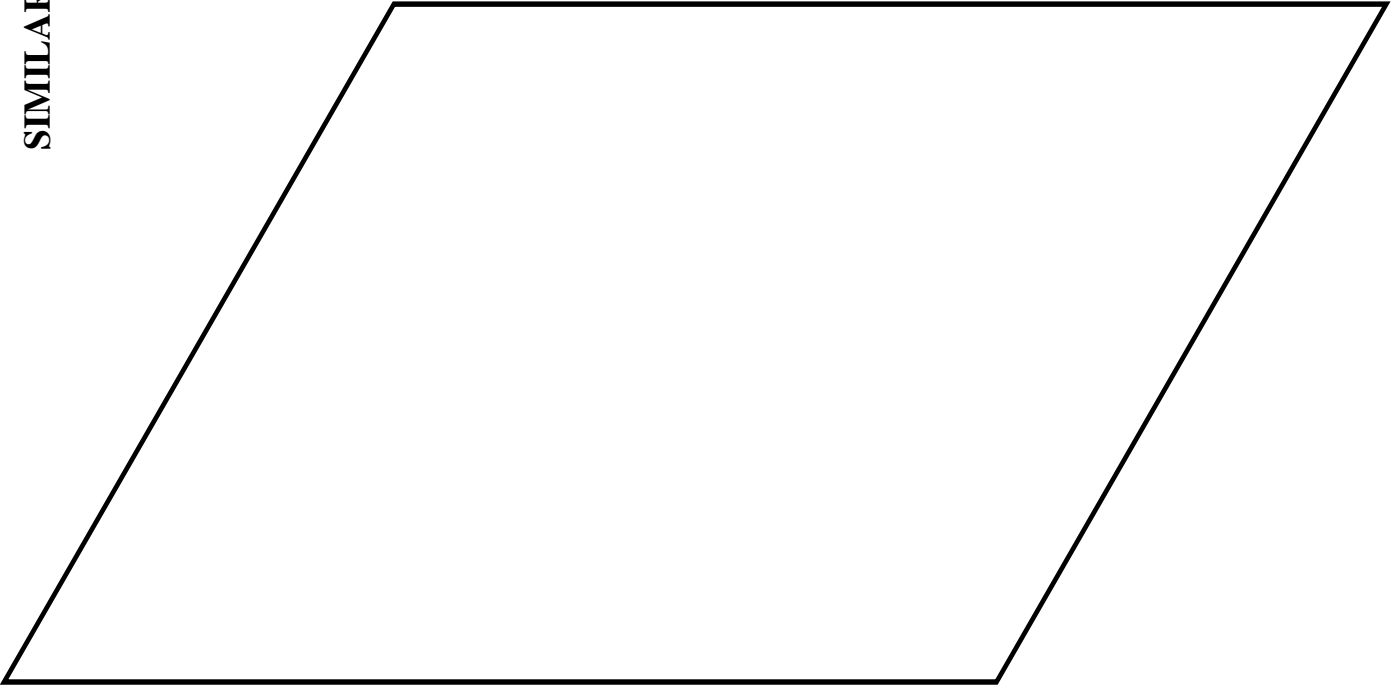
QUADRILATERAL PATTERNS



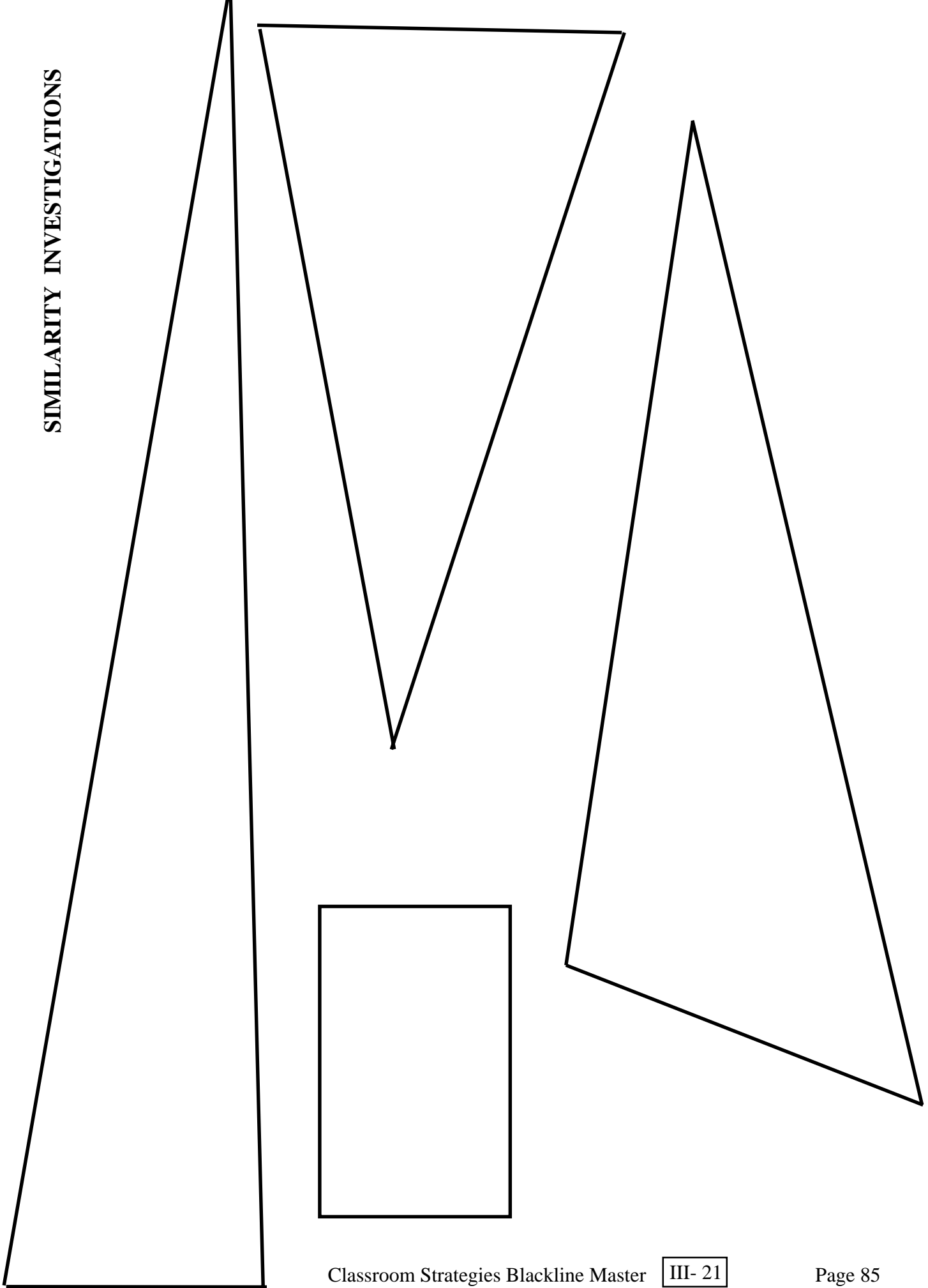
SIMILARITY INVESTIGATIONS



SIMILARITY INVESTIGATIONS



SIMILARITY INVESTIGATIONS



Mirror, Mirror on the Floor

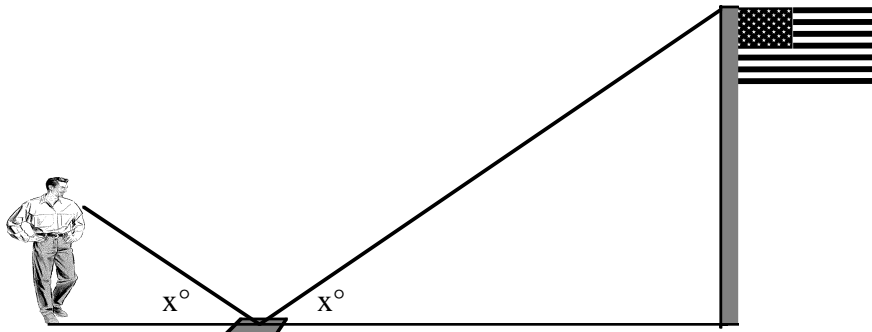
In this project you will find the height of a flagpole, or other designated object by using two similar triangles. You will need:

- a mirror, with its center marked some way
- a long measuring tape (50-100 feet)
- pencil and calculator

Instructions

You and your partner are going to do the experiment twice. When you are done, you can compare answers and discuss the differences, if any. Partner #1 will do steps 1 through 3; Partner #2 repeats steps 1 through 3.

1. Place the mirror on the ground a distance from the flagpole. Make sure you can see to the top of the flagpole in the mirror!
2. Now position yourself with the mirror between you and the flagpole so when you look at the mirror you see the top of the pole on the point marked on the mirror.
3. Have your partner make the following three measurements. Make the measurements to the nearest $\frac{1}{4}$ inch. Write them down in decimal form.



Measurement	Partner #1	Partner #2
Height of observer:	_____	_____
Distance from mirror center to observer:	_____	_____
Distance from mirror center to base of pole:	_____	_____

Mirror, Mirror, on the Floor continued

Now you can compute the height of the flagpole by using a proportion for two similar triangles. Remember that triangles are similar when and all corresponding angles have the same measure and all corresponding sides have the same ratio. Since the flagpole and person are perpendicular to the ground, what kind of angle is formed by each? _____

What is its measure? _____ What type of triangle is formed on each side of the mirror? _____

There is an important property in physics that says when light is reflected by an object, like a mirror, the angle of incidence is equal to the angle of reflection. Or, in other words, the light hits the mirror at the same angle as that formed when the light is reflected away from it. In geometry we say that the two triangles are similar because they have two pairs of corresponding angles congruent.

Since corresponding sides of similar triangles are proportional, we can write the following:

$$\frac{\text{Person's height}}{\text{Person's distance}} = \frac{\text{Flagpole height}}{\text{Flagpole distance}}$$

Now rewrite the proportion, but substitute your measurements, and use a calculator to compute the height of the flagpole for both partners.

Flagpole height by Partner #1: _____

Flagpole height by Partner #2: _____

Do your answers agree within a few inches? _____

If not, why do you think they differ?

Carolina Capers

Materials:

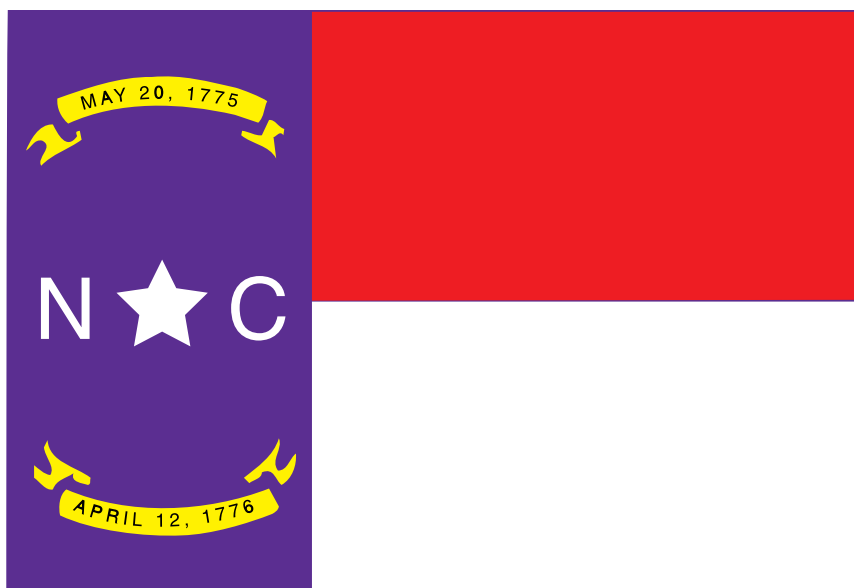
Worksheet of N.C. flag

Rulers

Calculators

Problems:

Robert is going to make a larger scale of the North Carolina flag for his social studies project. He knows the total width of the flag will be 36 inches. Find the width of the solid white section for Robert. Find the measures of other rectangles in the flag, the size of the letters, star, etc. Compute the area and perimeter of both the original and the larger flag.



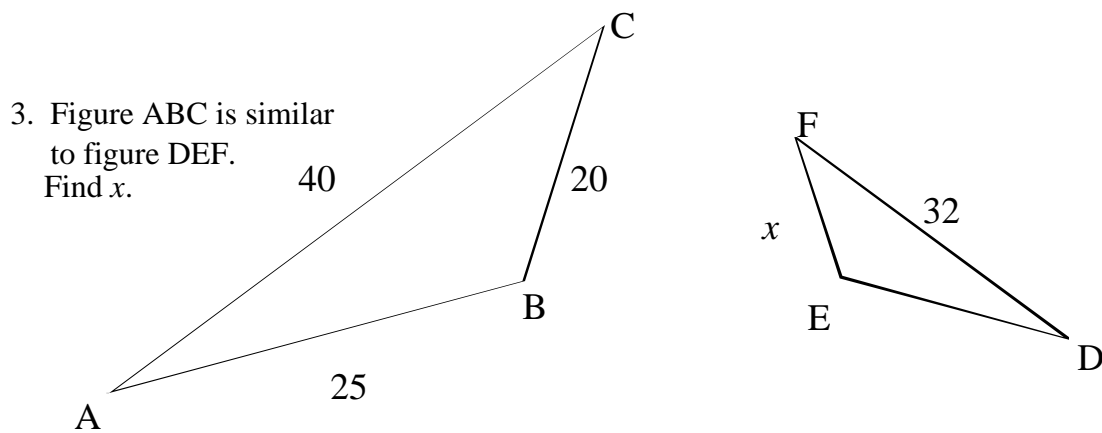
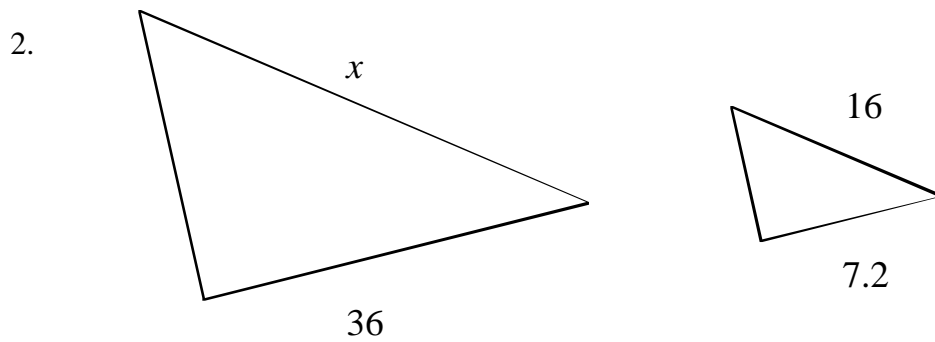
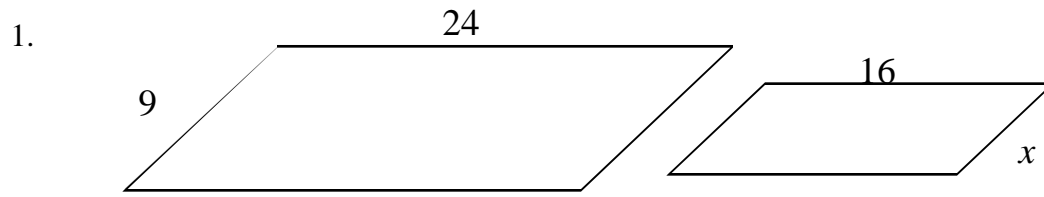
Attack of the 50 Foot Woman

In an old Hollywood movie, a woman suddenly grows to a height of 50 feet. Imagine a world where the women are normally 50 feet tall. Assuming everything else in their world is to the same scale as in ours, calculate the measurements of commonly found items in that world. Use 65 inches as the height of an average Earth woman.

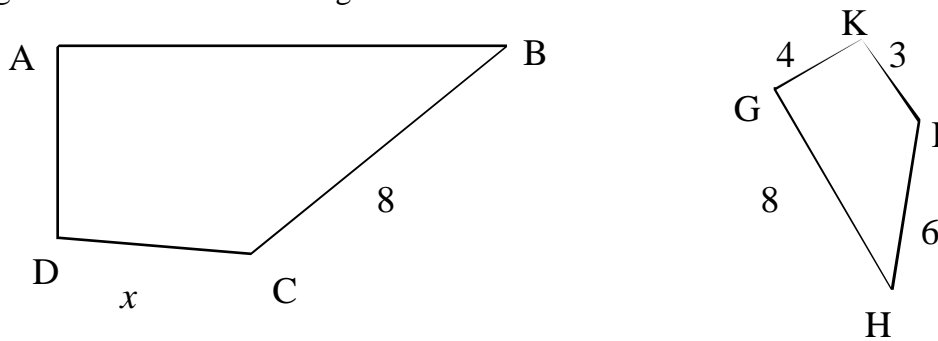
Item	Measurement Earth	Measurement Giant Planet	Can you find something on Earth about this size?
Dinner plate (diameter)	_____	_____	_____
Water glass (height)	_____	_____	_____
Sports car (length)	_____	_____	_____
Shoe (length)	_____	_____	_____
Ring (diameter)	_____	_____	_____
Banana (length)	_____	_____	_____
Watermelon (length)	_____	_____	_____
Pet cat (length)	_____	_____	_____



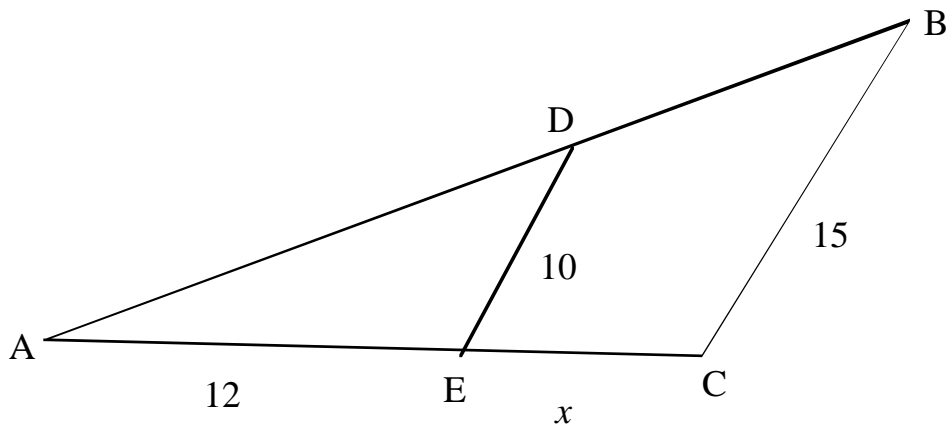
The shapes below are similar. Find x .



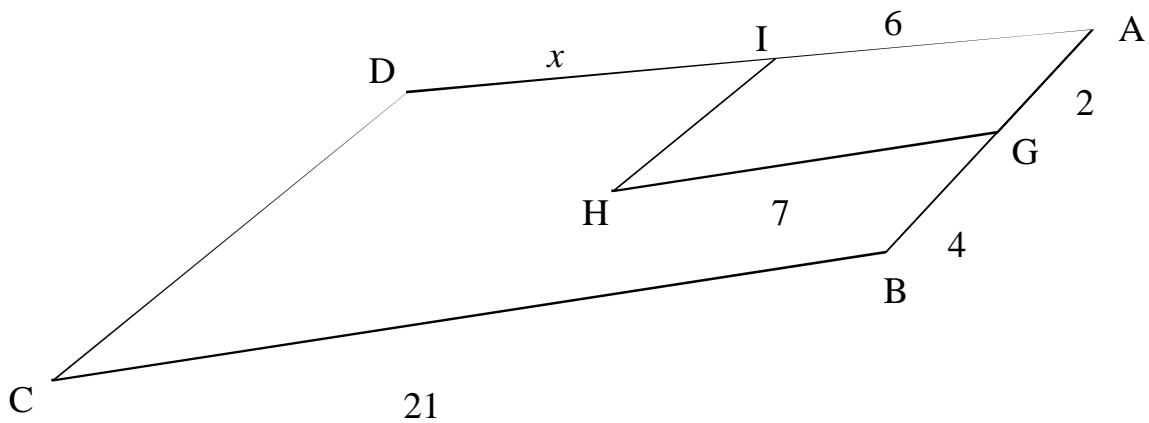
4. Figure ABCD is similar to figure GHIK. Find x .



5. Figure ABC is similar to figure ADE. Find x .

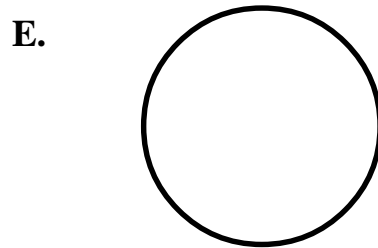
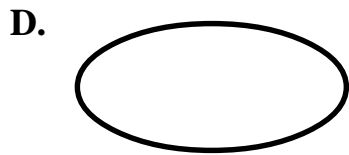
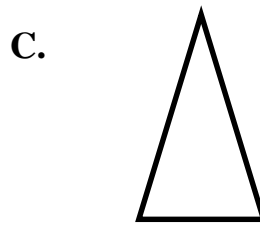
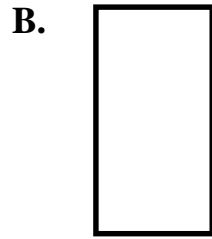
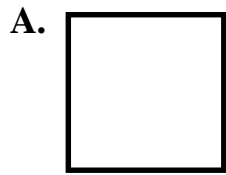


6. Figure ABCD is similar to figure AGHI. Find x .

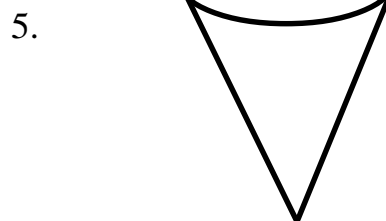
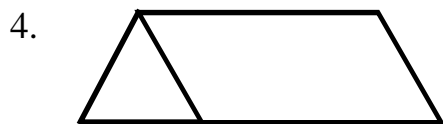
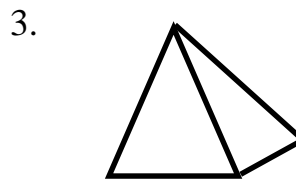
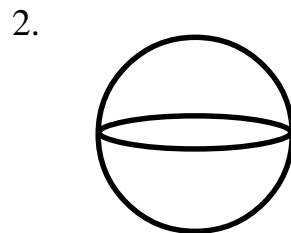
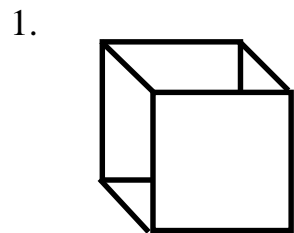


Matching A Cross-Sectional View to A Three-Dimensional Figure

Cross-Sectional Views



Write the letter of each cross sectional view above that could be formed by cutting the shapes below. There may be multiple cross-sectional views to each three-dimensional figure.



Are there any other cross-sectional views that could be formed by any of these objects?

Name _____ Date _____

Plotting the Fan Club

Use Ann's points and the rule for each of the other members of the fan club to get their coordinates.

Graph each member on graph paper. Connect the points as you go.

	Ann	Dan	Stan	Lan	Ran
Rule	(x,y)	(2x,2y)	(3x,y)	(3x,3y)	(2x,3y)
Point	SET 1	SET 1	SET 1	SET 1	SET 1

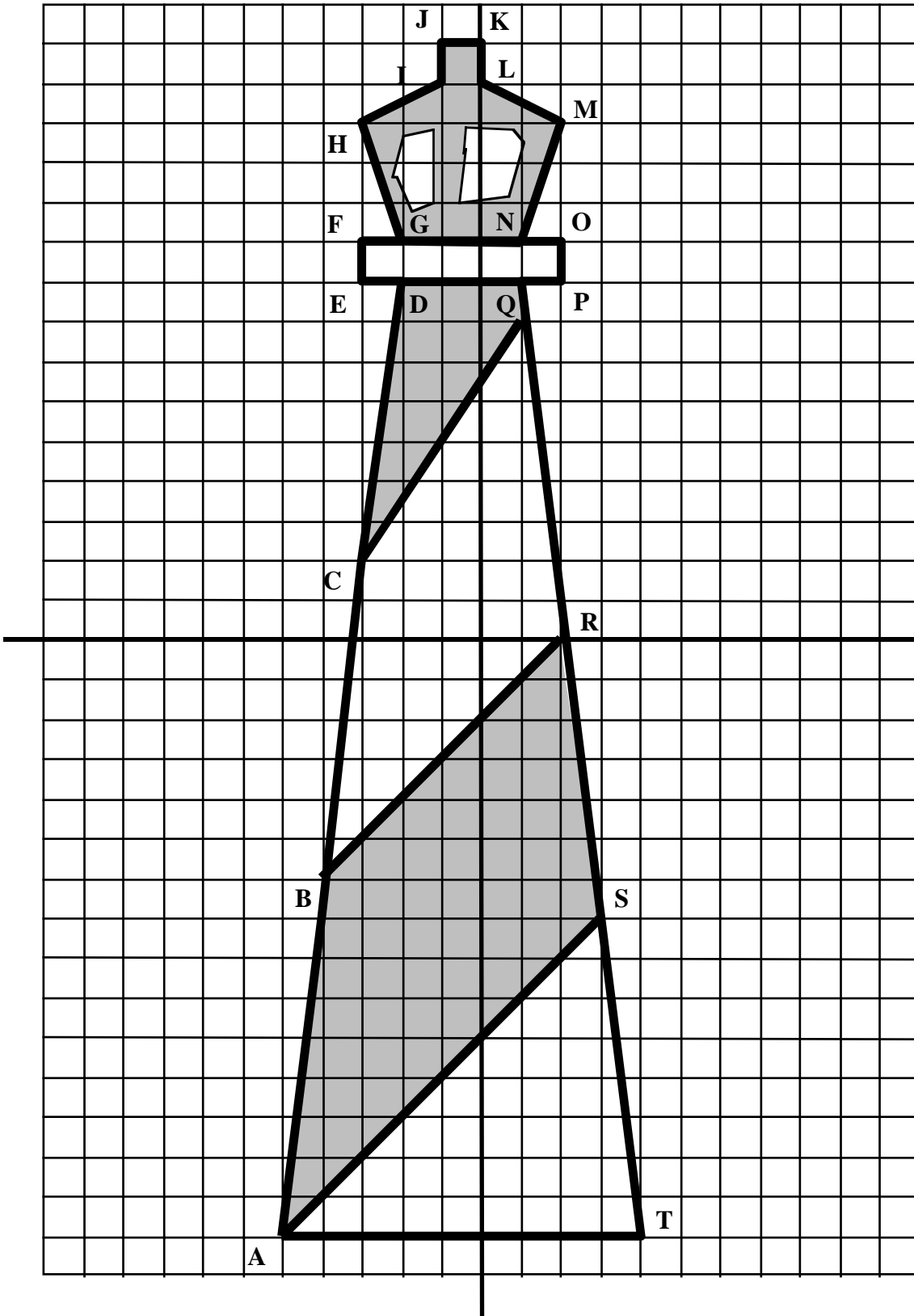
A	(2,0)				
B	(2,4)				
C	(0,4)				
D	(0,5)				
E	(2,5)				
F	(0,8)				
G	(0,12)				
H	(1,15)				
I	(2,12)				
J	(5,12)				
K	(6,15)				
L	(7,12)				
M	(7,8)				
N	(5,5)				
O	(7,5)				
P	(7,4)				
Q	(5,4)				
R	(5,0)				
S	(4,0)				
T	(4,3)				
U	(3,3)				
V	(3,0)				
connect V to A		connect V to A	connect V to A	connect V to A	connect V to A

	Ann	Dan	Stan	Lan	Ran
Rule	(x,y)	(2x,2y)	(3x,y)	(3x,3y)	(2x,3y)
Point	SET 2 (start over)	SET 2 (start over)	SET 2 (start over)	SET 2 (start over)	SET 2 (start over)
W	(1,8)				
X	(2,7)				
Y	(5,7)				
Z	(6,8)				

	SET 3 (start over)	SET 3 (start over)	SET 3 (start over)	SET 3 (start over)	SET 3 (start over)
AA	(3,8)				
BB	(4,8)				
CC	(4,10)				
DD	(3,10)				
connect DD to AA connect DD to AA connect DD to AA connect DD to AA connect DD to AA					

	SET 4 (start over)	SET 4 (start over)	SET 4 (start over)	SET 4 (start over)	SET 4 (start over)
EE	(2,11) DOT				
FF	(5,11) DOT				

Let Your Little Light Shine



Drawing 3-D Views

Build the following 3-d figures. Then draw the front, top, left and right views.

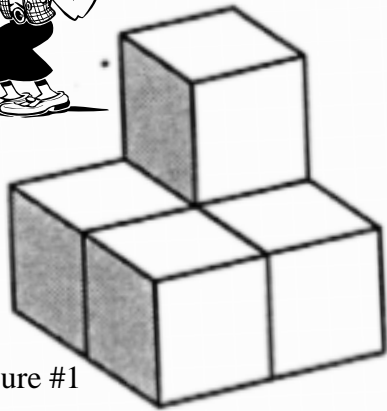
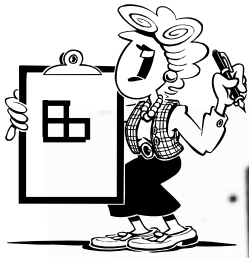


Figure #1

Front

Top

Left

Right

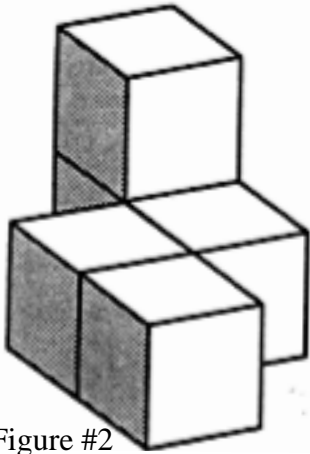


Figure #2

Front

Top

Left

Right

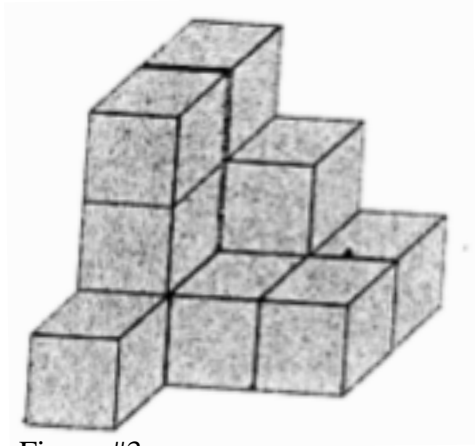


Figure #3

Front

Top

Left

Right

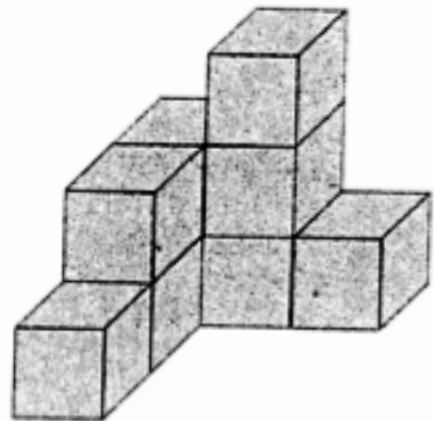


Figure #4

Front

Top

Left

Right

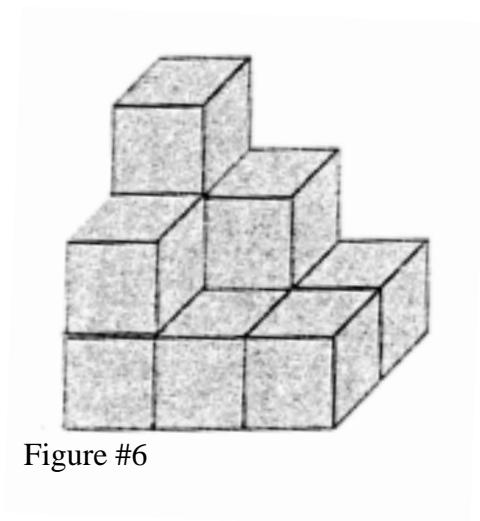


Front

Top

Left

Right



Front

Top

Left

Right

Building 3-D Figures Given the front, top, left and right views, construct the 3-d figure.

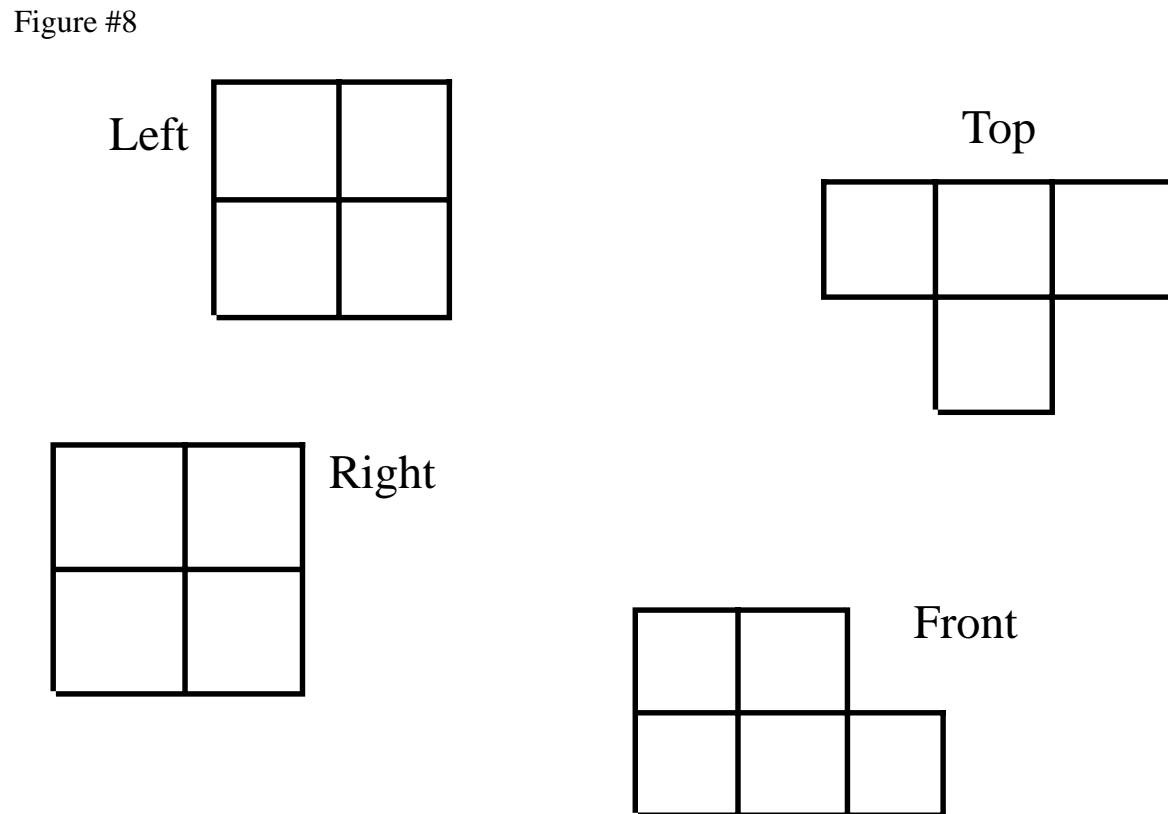
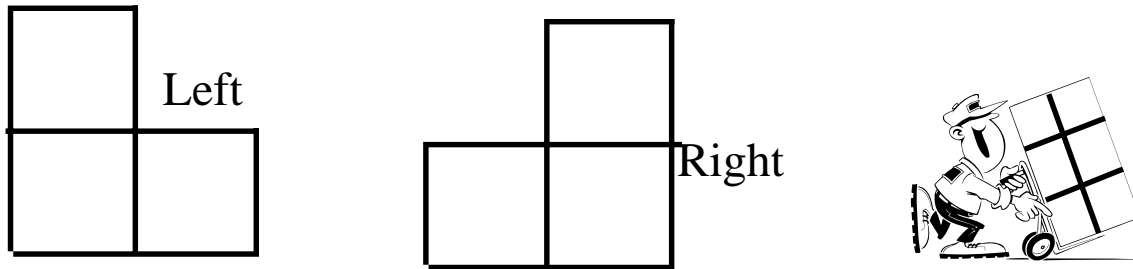
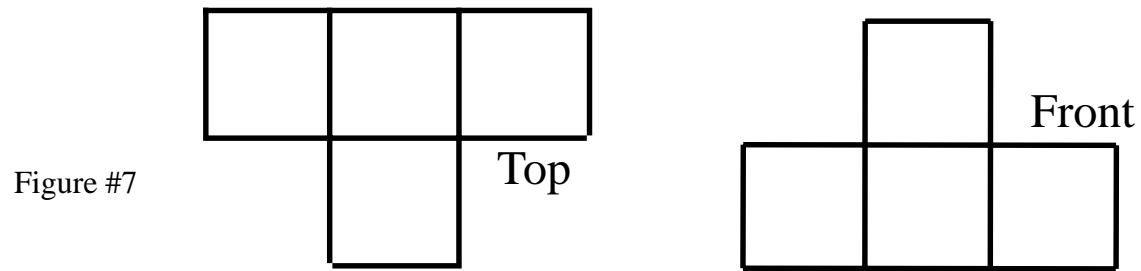


Figure #9

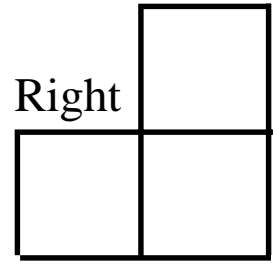
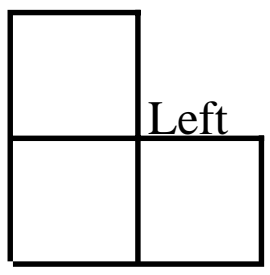
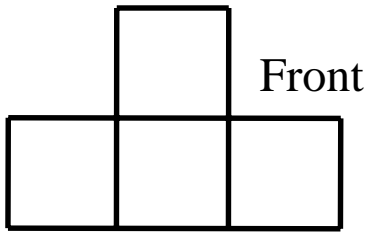
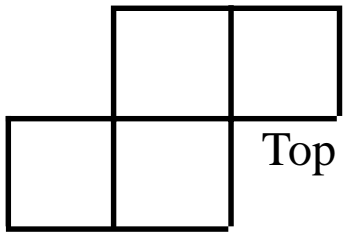


Figure #10

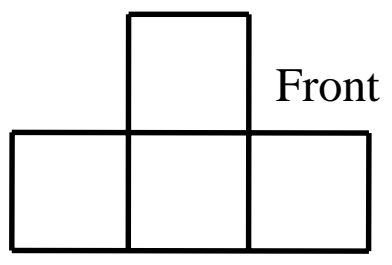
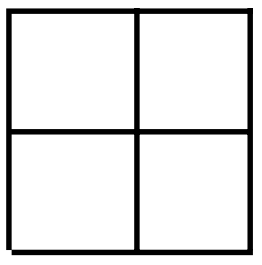
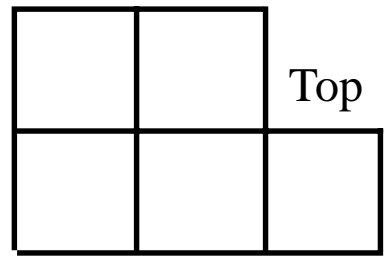
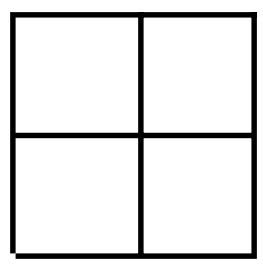


Figure #11

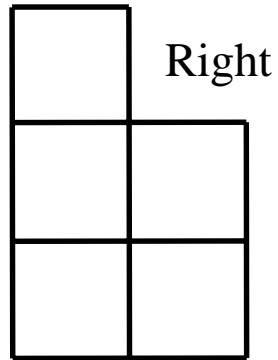
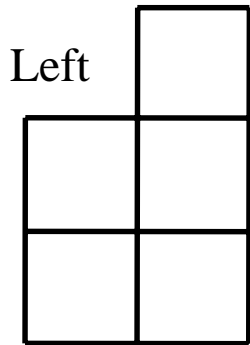
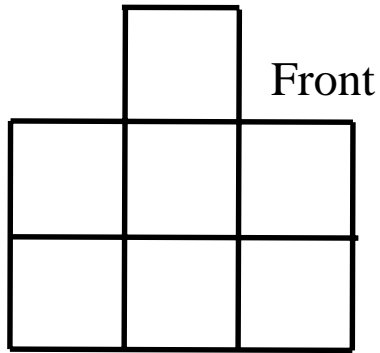
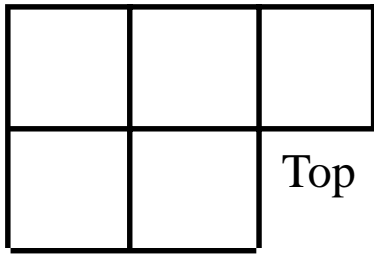
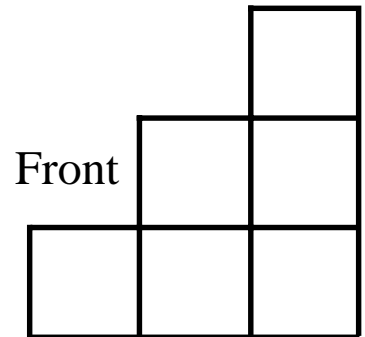
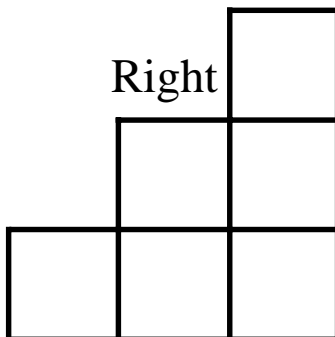
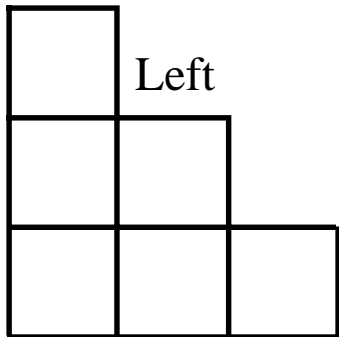
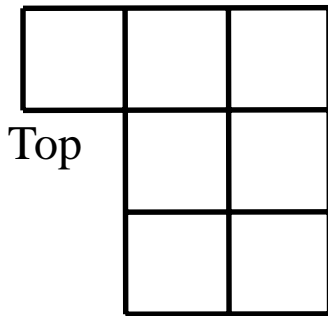


Figure #12



Name _____ Date _____

ESP Graphs

Partner Performance

Put an x in the circle if your partner correctly predicts the outcome of his coin toss.



Trial 1	0	0	0	0	0	0	percent correct:	_____
Trial 2	0	0	0	0	0	0	percent correct:	_____
Trial 3	0	0	0	0	0	0	percent correct:	_____
Trial 4	0	0	0	0	0	0	percent correct:	_____
Trial 5	0	0	0	0	0	0	percent correct:	_____
Trial 6	0	0	0	0	0	0	percent correct:	_____
Trial 7	0	0	0	0	0	0	percent correct:	_____
Trial 8	0	0	0	0	0	0	percent correct:	_____
Trial 9	0	0	0	0	0	0	percent correct:	_____
Trial 10	0	0	0	0	0	0	percent correct:	_____
Trial 11	0	0	0	0	0	0	percent correct:	_____
Trial 12	0	0	0	0	0	0	percent correct:	_____
Trial 13	0	0	0	0	0	0	percent correct:	_____
Trial 14	0	0	0	0	0	0	percent correct:	_____
Trial 15	0	0	0	0	0	0	percent correct:	_____
Trial 16	0	0	0	0	0	0	percent correct:	_____
Trial 17	0	0	0	0	0	0	percent correct:	_____
Trial 18	0	0	0	0	0	0	percent correct:	_____
Trial 19	0	0	0	0	0	0	percent correct:	_____
Trial 20	0	0	0	0	0	0	percent correct:	_____

Average Percent Correct: _____

Group Data:

Number of Times	Group Member Avg.	% Correct
0% correct _____	_____	_____
20% correct _____	_____	_____
40% correct _____	_____	_____
60% correct _____	_____	_____
80% correct _____	_____	_____
100% correct _____	_____	_____