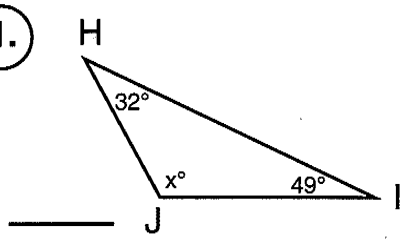
Math 1351 Activity 3(Chapter 12)(Due by EOC Apr. 8) Group #_____

Directions: Find the missing angle measure in each triangle. When you have completed a problem, look at the blank lines at the bottom of the page. Notice if any of the angle degrees of the letters match the degrees under the blank lines. If they do, write the letter of the angle on the line. The resulting message will be the answer to the riddle.

1.



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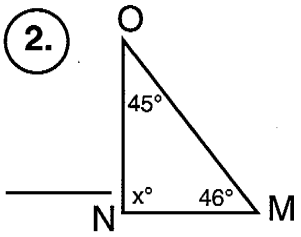

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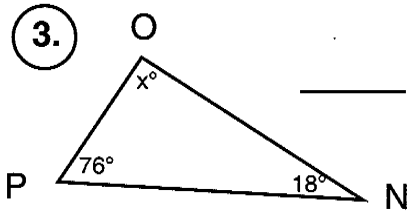

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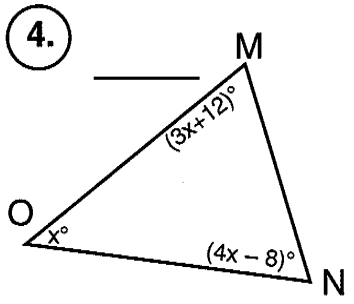
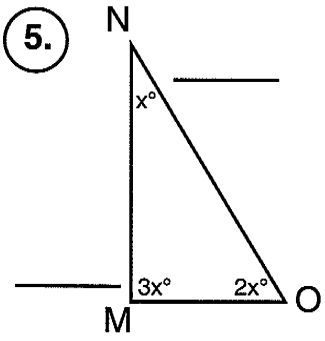


5.



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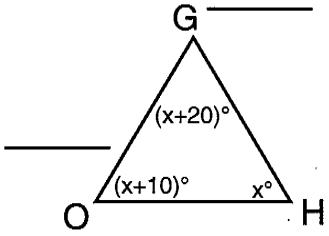

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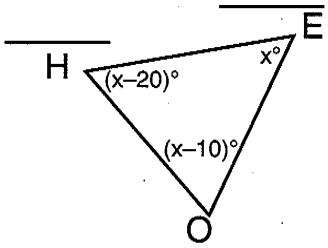
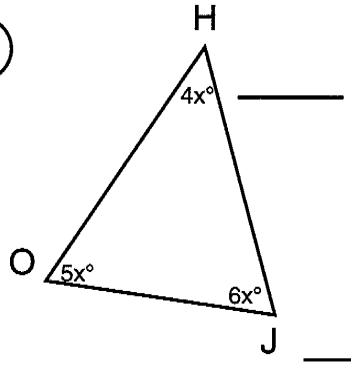


8.



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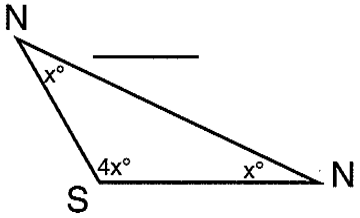
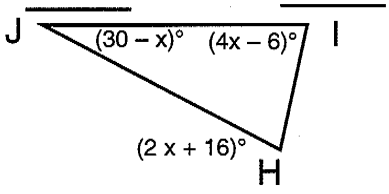


10.



Question: What did they call Mr. John John's little boy?

2°	86°	48°	89°	99°	22°	50°	30°	120°	60°	80°

Fill-in the table for each of the indicated regular polygons. You may need to draw each polygon on your own paper to determine the number of diagonals each vertex has.

Name of regular polygon	Number of sides	Number of vertices	Number of diagonals per vertex	Number of triangles produced by the diagonals of a vertex	Angle sum of the regular polygon
Triangle	3	3	0	1	180°
Quadrilateral	4	4	1	2	360°
Pentagon	5				
Hexagon	6				
Heptagon	7				
Octagon	8				
Decagon	10				
Dodecagon	12				

Follow these rules to find measures of angles in <u>regular</u> polygons:

number of triangles = number of sides – 2
interior angle sum = number of Δs • 180°
one interior angle = interior angle sum ÷ number of sides
exterior angle sum = 360°
one exterior angle = 360° ÷ number of sides

Solve for the indicated measure. Locate answers in the decoder to find the name of the man who patented the geodesic dome (a structure like the one at EPCOT center in Orlando, Florida). ALL POLYGONS REFERRED TO BELOW ARE REGULAR.

1. The measure of one interior angle of a hexagon.
2. The measure of one interior angle of a dodecagon.
3. The measure of one exterior angle of an octagon.
4. The measure of one exterior angle of a quadrilateral.
5. The interior angle sum of a pentagon.
6. The exterior angle sum of a 27–sided polygon.
7. The measure of one interior angle of a nonagon.
8. The measure of one exterior angle of a decagon.
9. The measure of one exterior angle of a dodecagon.
10. The measure of one interior angle of a triangle.
11. The measure of one interior angle of a pentagon.
12. The measure of one exterior angle of a nonagon.
13. The measure of one interior angle of an octagon.

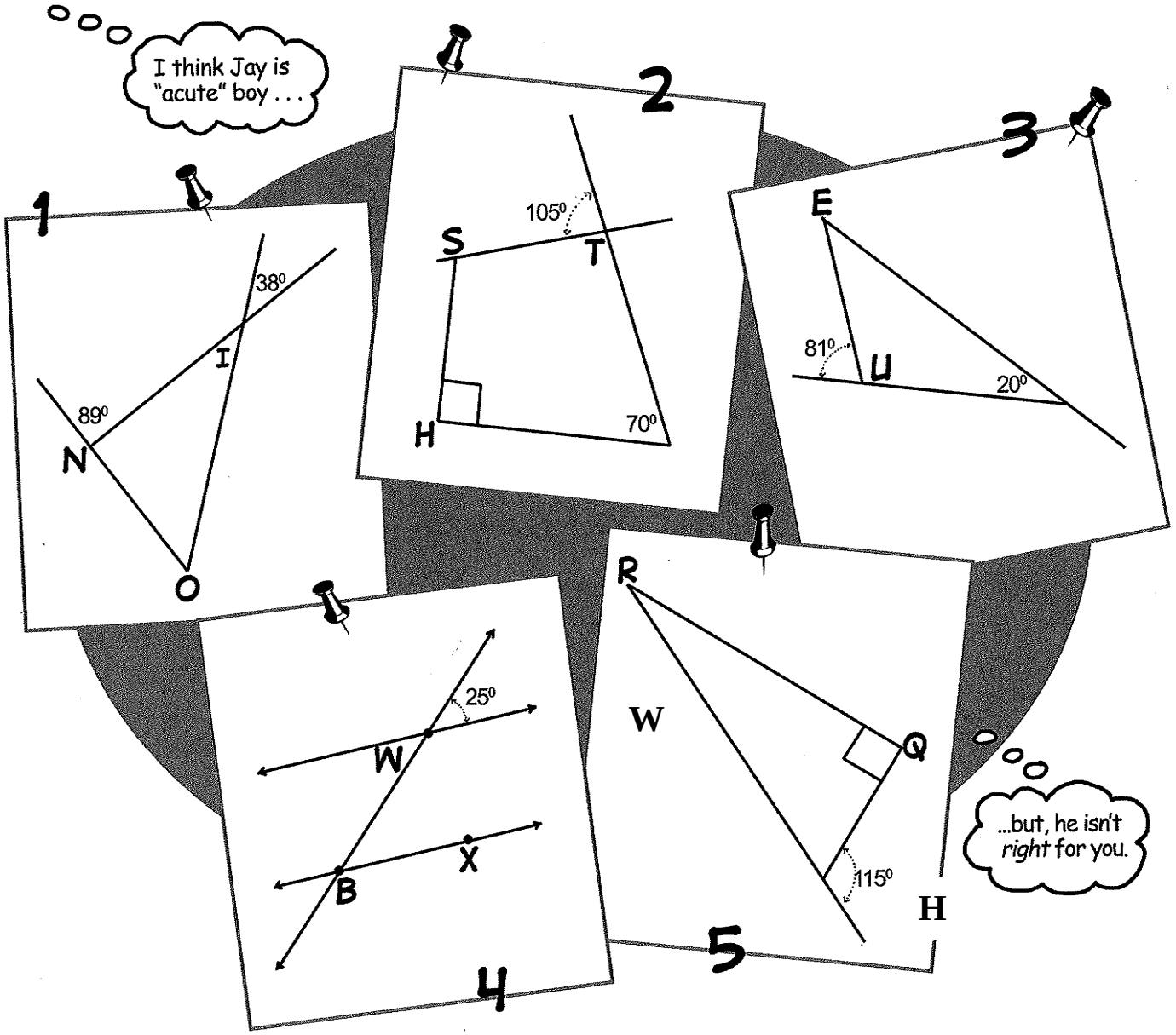
decoder

360°	B
40°	C
140°	E
30°	F
135°	I
60°	K
120°	L
150°	M
108°	N
90°	R
36°	S
45°	T
540°	U

___.	___	___	___	___	___	___	___	___	___	___	___
4	6	5	12	10	2	13	11	8	3	7	4

___	___	___	___	___	___
9	5	1	1	7	4

Some measurements for angles in the figures are written beneath the blank lines. However, some measurements are missing. Find the measurements for all the angles. Then use them to solve the riddle below.



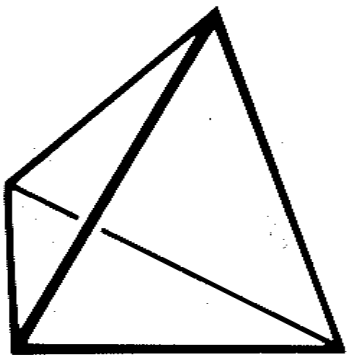
When does a "cute" angle cease to be cute?

25°	90°	61°	91°	38°	75°	125°	51°	155°	75°	99°	125°	61°

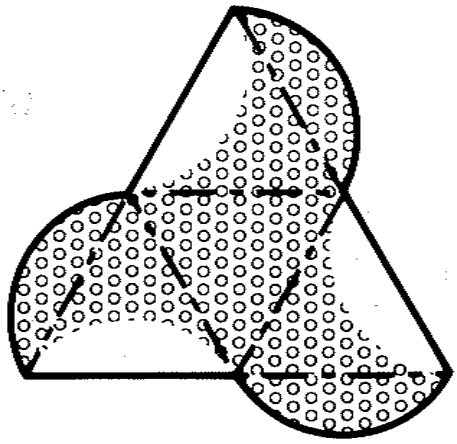
1. Cut out the nets on the next few pages and glue them up into the indicated polyhedra. Use them to help you fill-in the table regarding the polyhedra.

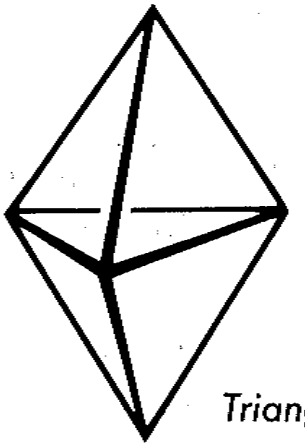
Polyhedron	Number of Faces	Number of Edges	Number of Vertices
Tetrahedron	4		
Triangular Dipyramid	6		
Octahedron	8		
Pentagonal Dipyramid	10		
Dodecadeltahedron	12		
Tetracaidecadeltahedron	14		
Hexacaidecadeltahedron	16		
Icosahedron	20		

2. Write an equation that relates the values of the number of faces, *F*, the number of edges, *E*, and the number of vertices, *V* for the polyhedral.

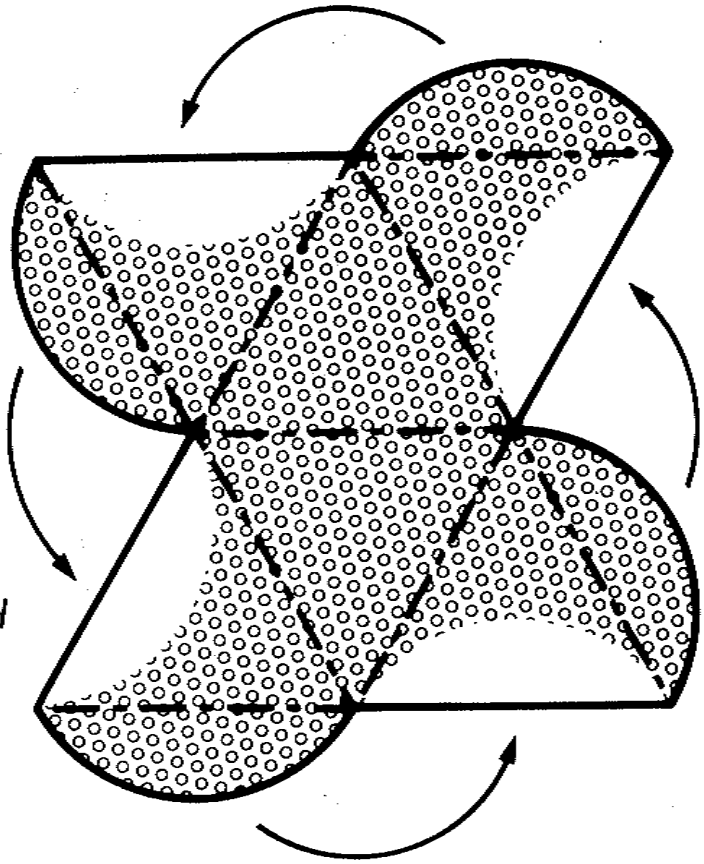


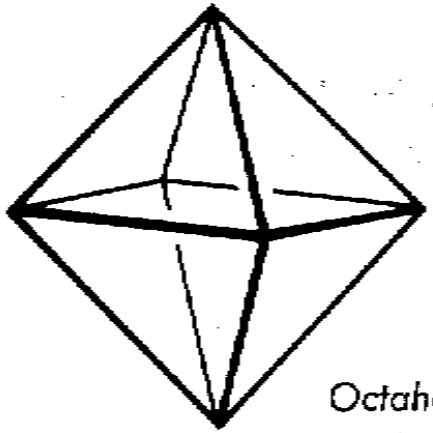
Tetrahedron



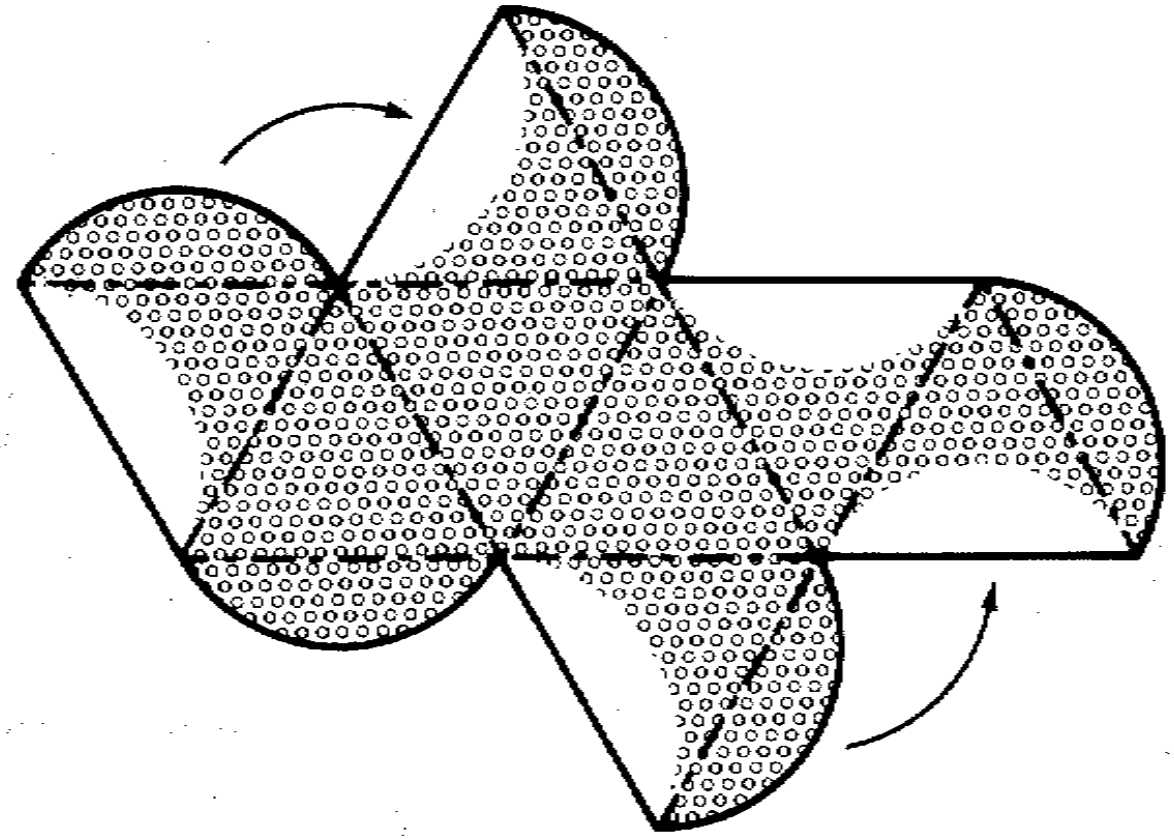


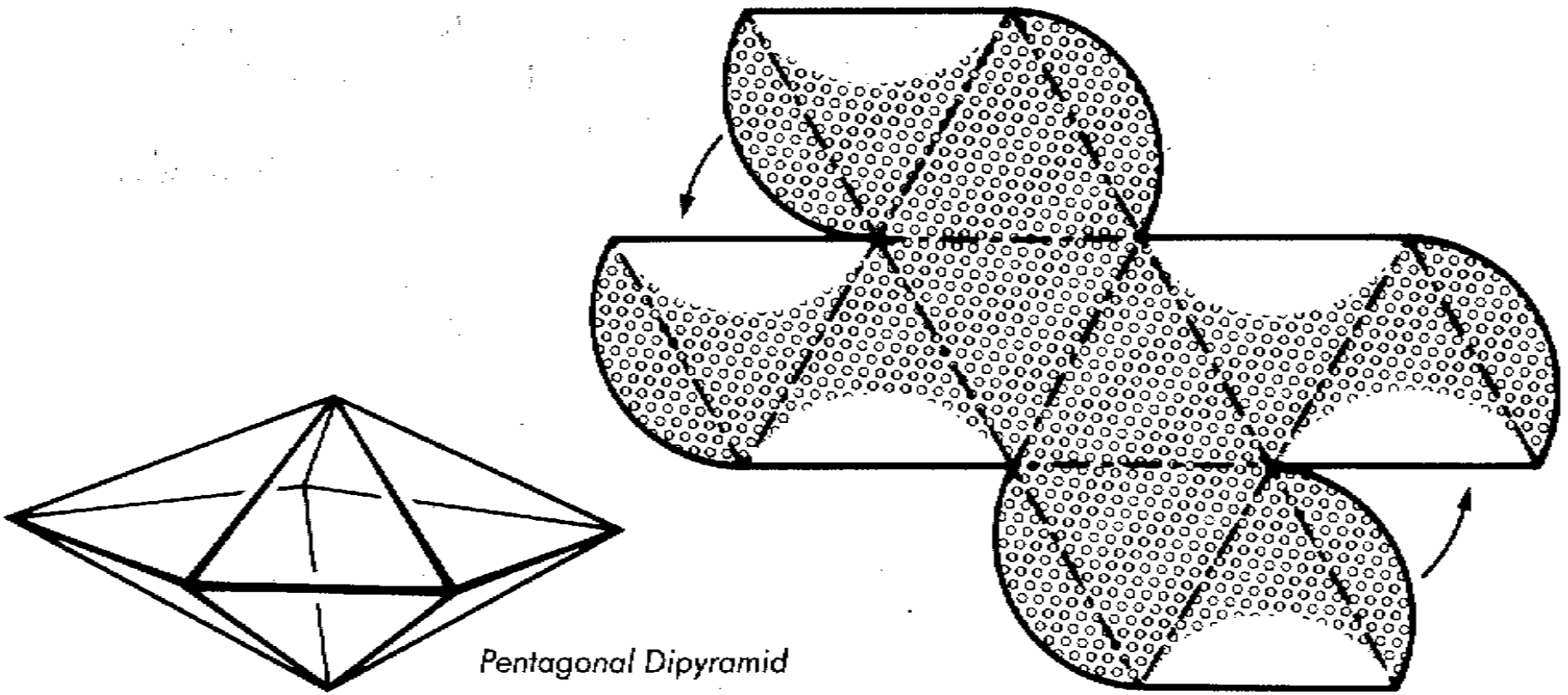
Triangular Dipyramid



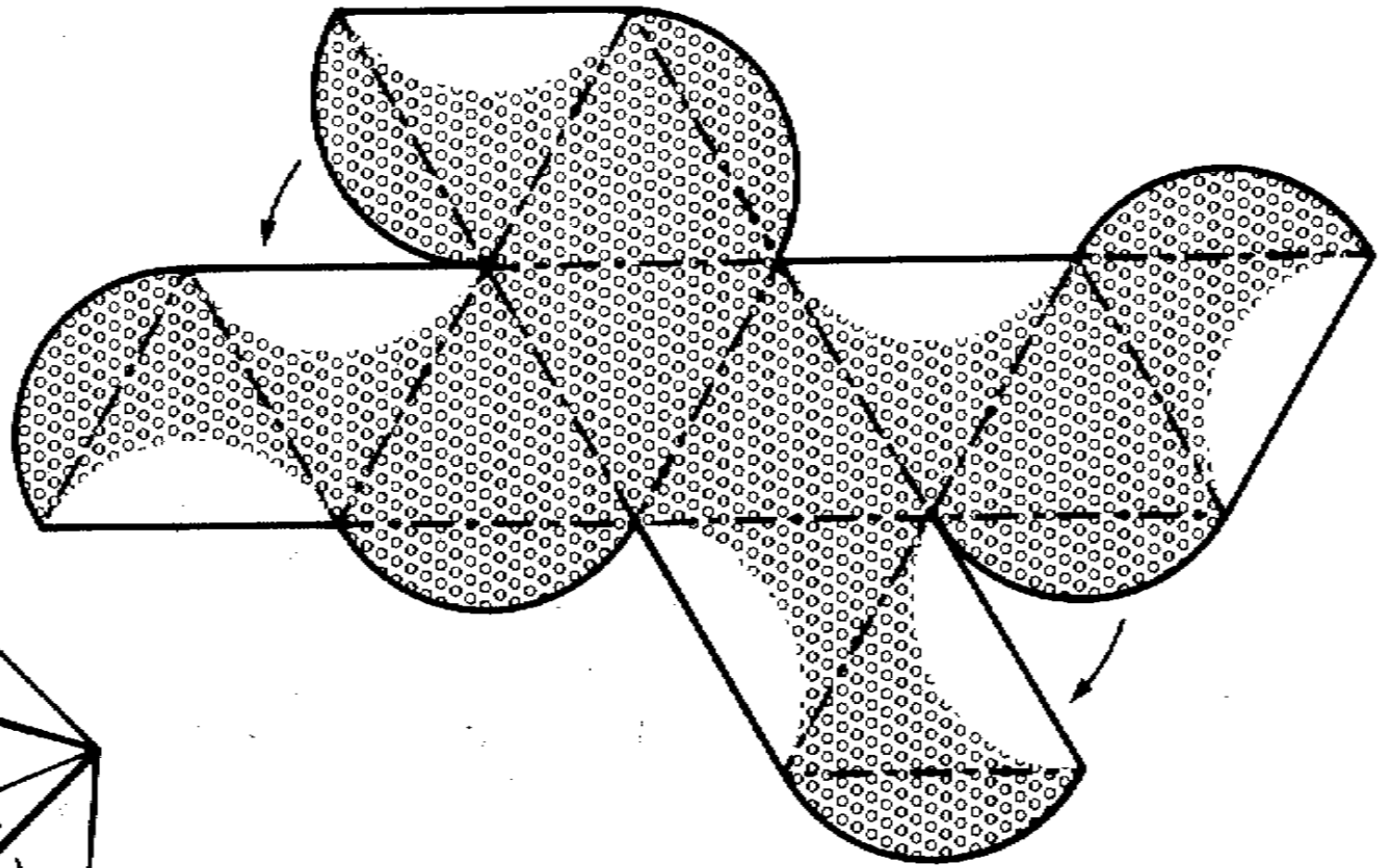


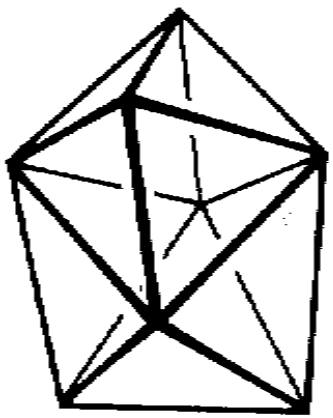
Octahedron



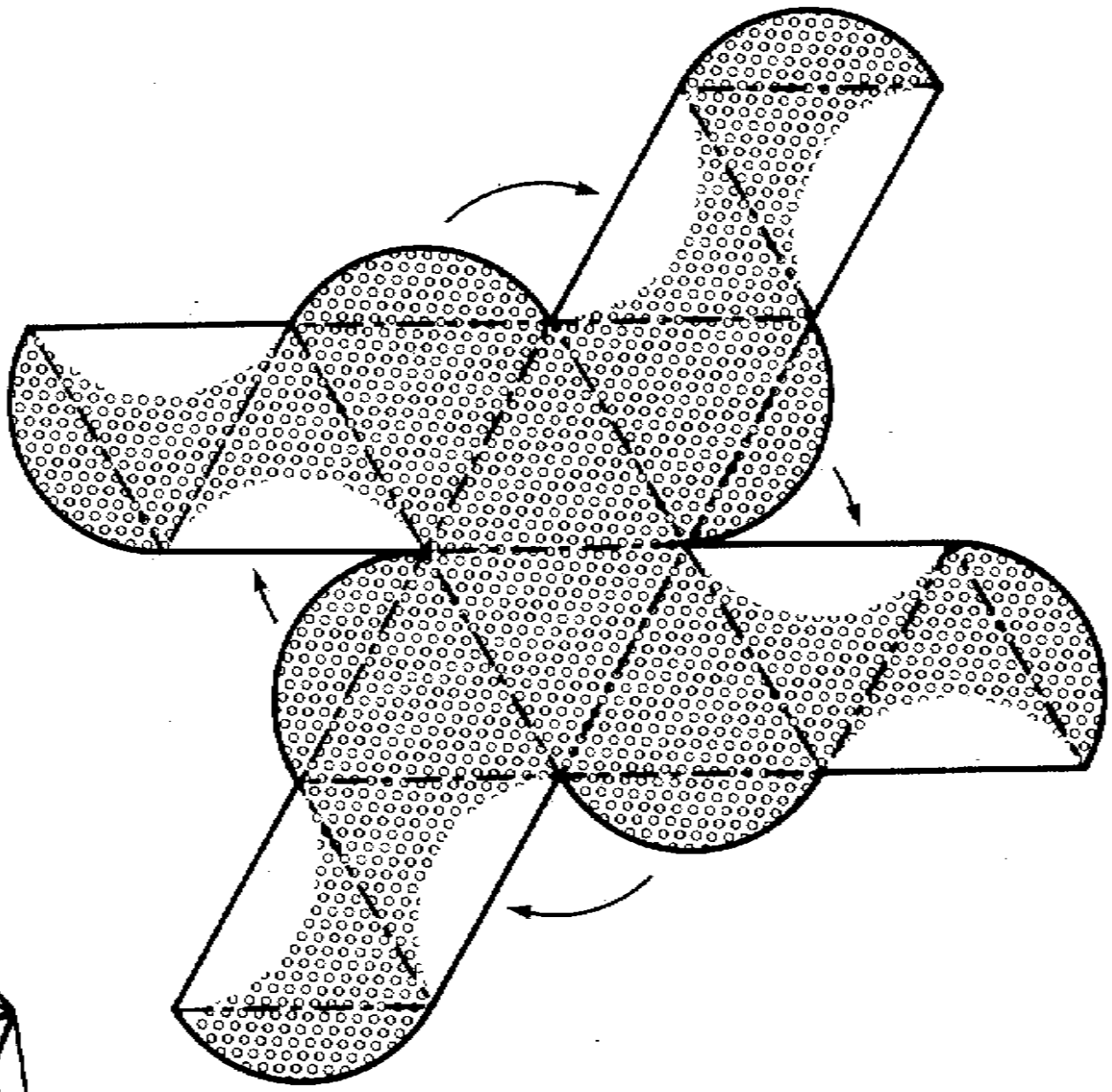


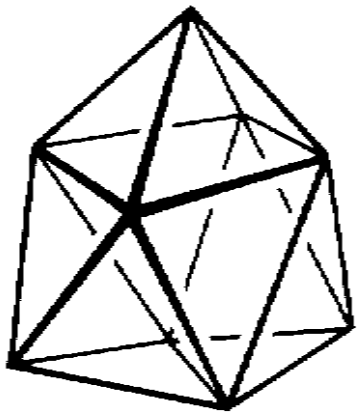
Pentagonal Dipyramid



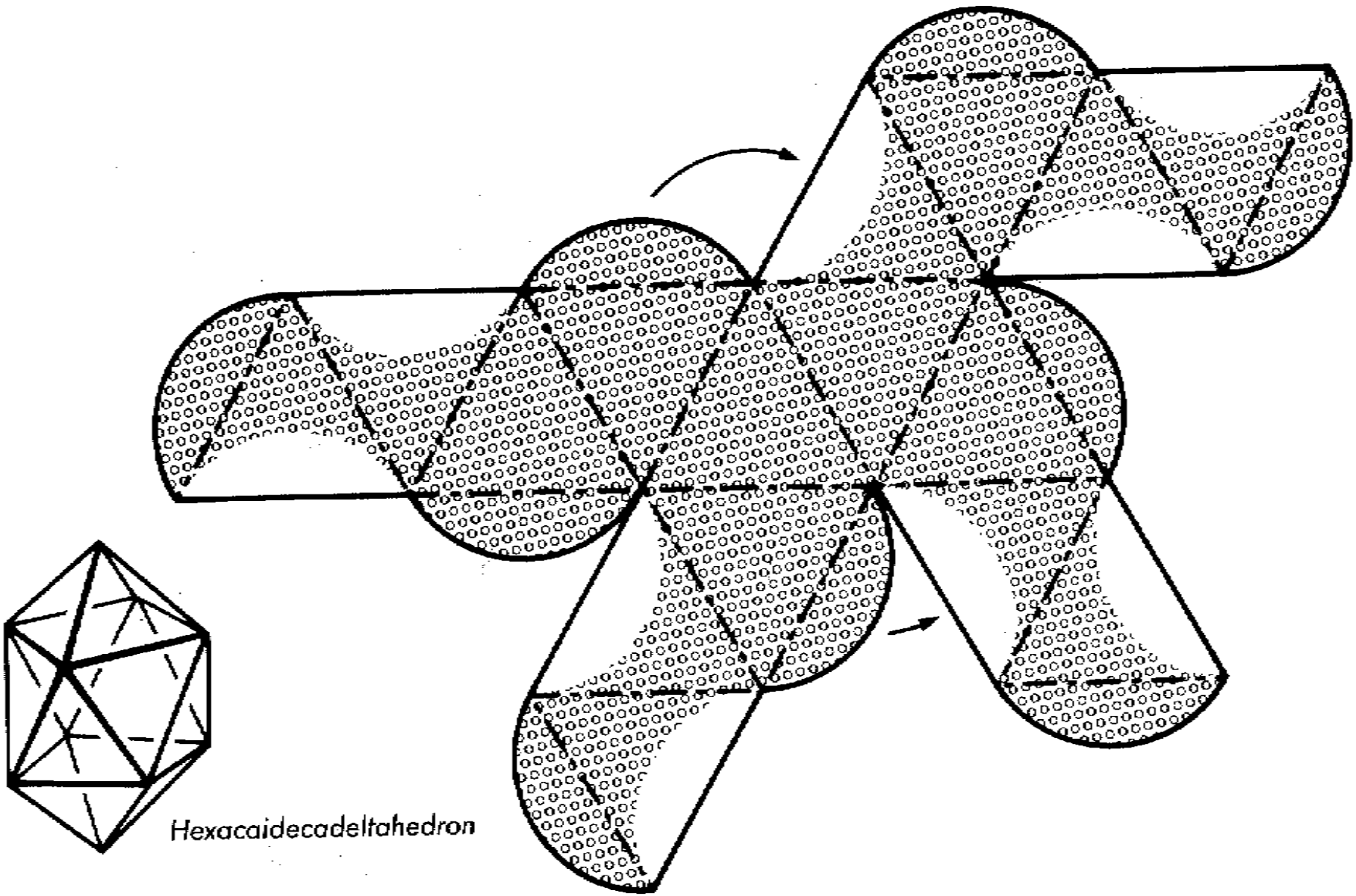


Dodecadeltahedron

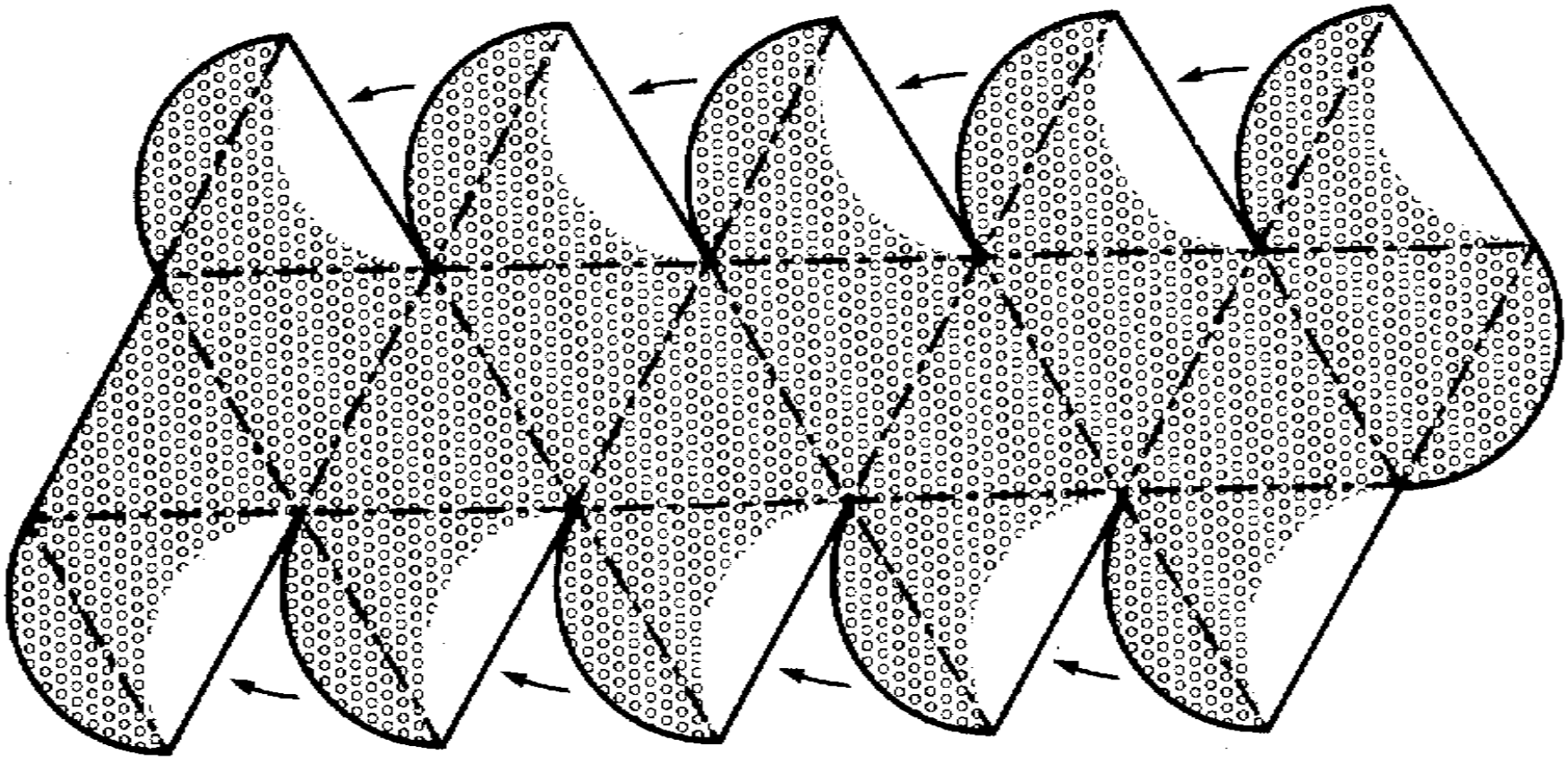


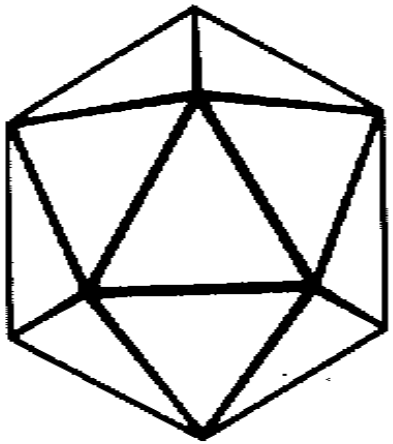


Tetracaidecadeltahedron



Hexacaidecadeltahedron

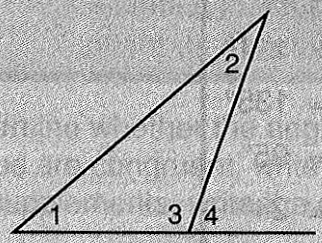




Icosahedron

In any triangle, the measure of one exterior angle is equal to the sum of its remote interior angles.

An exterior angle and its adjacent interior angle are supplementary.

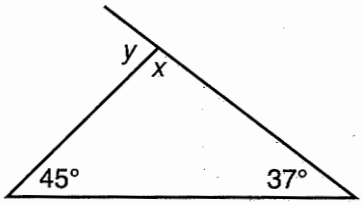


$\angle 1 + \angle 2 = \angle 4$

$\angle 3 + \angle 4 = 180°$

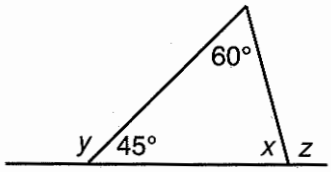
$\angle 1 + \angle 2 + \angle 3 = 180°$

1.



$x =$ _____ $y =$ _____

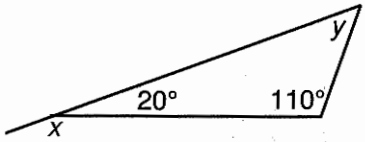
2.



$x =$ _____ $y =$ _____

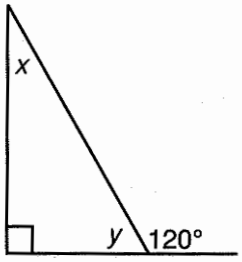
$z =$ _____

3.



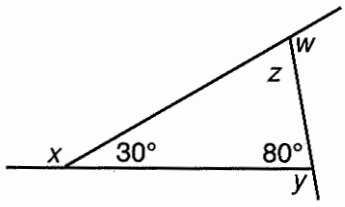
$x =$ _____ $y =$ _____

4.



$x =$ _____ $y =$ _____

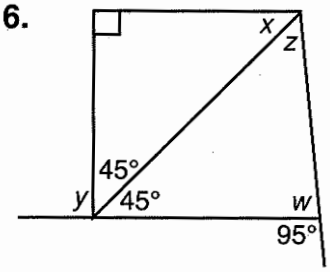
5.



$w =$ _____ $x =$ _____

$y =$ _____ $z =$ _____

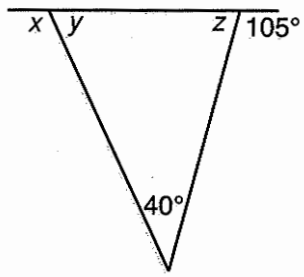
6.



$w =$ _____ $x =$ _____

$y =$ _____ $z =$ _____

7.



$x =$ _____ $y =$ _____

$z =$ _____

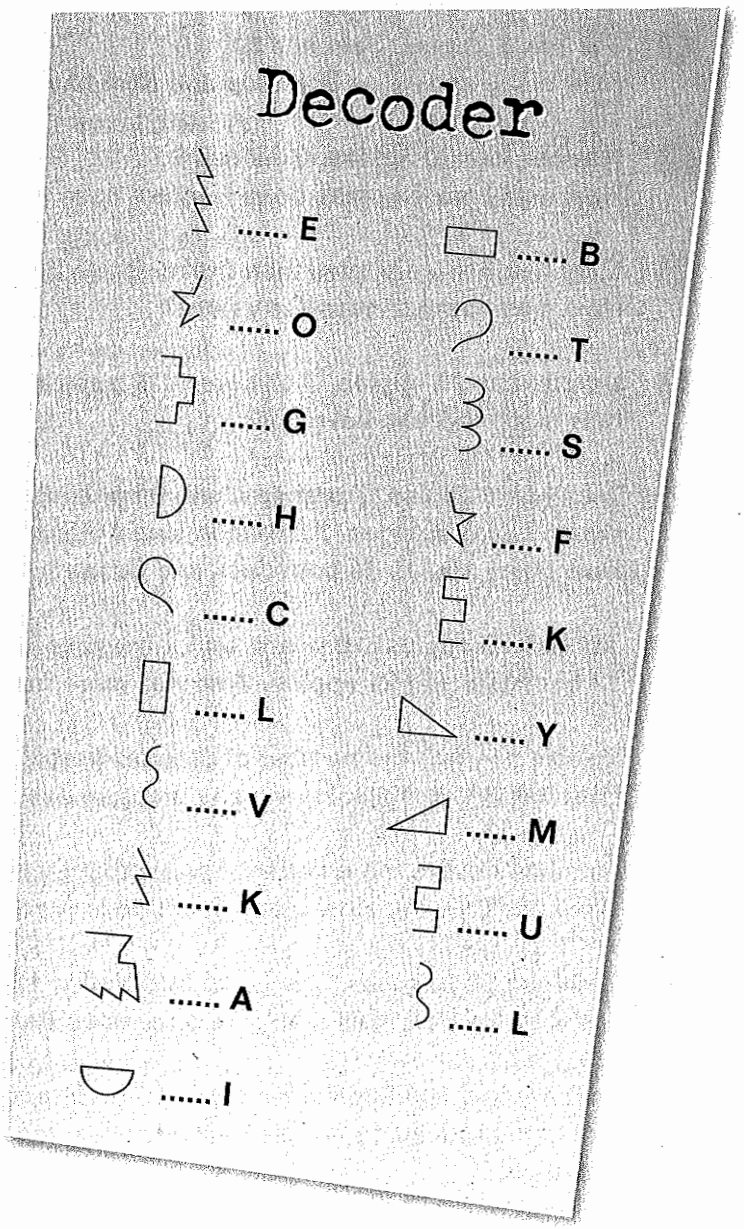
Riddle 33

What is the last thing that the trapeze flier wants to be?

What to Do

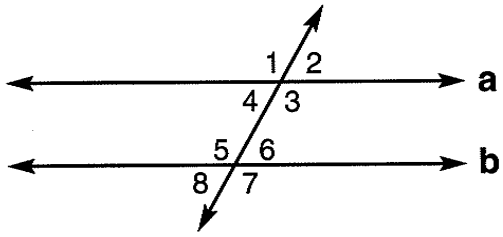
Find the symmetrical shapes. Then use the Decoder to solve the riddle by filling in the blanks at the bottom of the page.

1.  ____
2.  ____
3.  ____
4.  ____
5.  ____
6.  ____
7.  ____
8.  ____
9.  ____
10.  ____



___	___	___		___	___	___	___		___	___	___
6	3	9		4	10	1	7		5	8	2

Directions: There are three correct answers for each problem. Circle the single INCORRECT statement. The letters next to the incorrect answers will provide the solution to the riddle when they are placed on the blank lines, which match the problem numbers, below.



a || b

1. Which is incorrect?
- A) $\angle 1 \cong \angle 3$
- E) $\angle 2 \cong \angle 4$
- O) $\angle 1 \cong \angle 8$
- U) $\angle 1 \cong \angle 5$

2. Which is incorrect?
- A) $\angle 2 \cong \angle 6$
- E) $\angle 3 \cong \angle 6$
- I) $\angle 5 \cong \angle 7$
- O) $\angle 6$ is supplementary to $\angle 7$

3. Which is incorrect?
- L) $\angle 8$ is supplementary to $\angle 7$
- M) $\angle 2 \cong \angle 8$
- N) $\angle 6 \cong \angle 7$
- T) $\angle 3$ is supplementary to $\angle 4$

4. Which is incorrect?
- R) $\angle 2 \cong \angle 7$
- S) $\angle 3 \cong \angle 7$
- N) $\angle 4 \cong \angle 8$
- T) $\angle 5$ is supplementary to $\angle 6$

5. If $\angle 1 = 120°$, then . . .
- R) $\angle 7 = 120°$
- S) $\angle 6 = 120°$
- T) $\angle 2 = 60°$
- N) $\angle 4 = 60$

6. If $\angle 6 = 48°$, then . . .
- R) $\angle 5 = 132°$
- S) $\angle 2 = 48°$
- T) $\angle 3 = 48°$
- N) $\angle 4 = 48°$

7. If $\angle 4 = 39°$, then . . .
- R) $\angle 6 = 141°$
- S) $\angle 5 = 141°$
- T) $\angle 1$ = is supplementary to $\angle 4$
- N) $\angle 2$ is vertical to $\angle 4$

8. Which is incorrect?
- M) $\angle 5$ is vertical to $\angle 7$
- D) $\angle 1$ is vertical to $\angle 3$
- Y) $\angle 8$ is complementary to $\angle 5$
- E) $\angle 6$ is supplementary to $\angle 7$

9. Which is incorrect?
- A) $\angle 6$ and $\angle 8$ are vertical angles
- E) $\angle 3$ and $\angle 5$ are alternate interior angles
- I) $\angle 5$ and $\angle 6$ are vertical angles
- O) $\angle 4$ and $\angle 6$ are alternate interior angles

10. Which is incorrect?
- E) $\angle 3$ and $\angle 7$ are corresponding angles
- F) $\angle 3$ and $\angle 6$ are alternate interior angles
- G) $\angle 5$ and $\angle 1$ are corresponding angles
- H) $\angle 5 + \angle 2 = 180°$

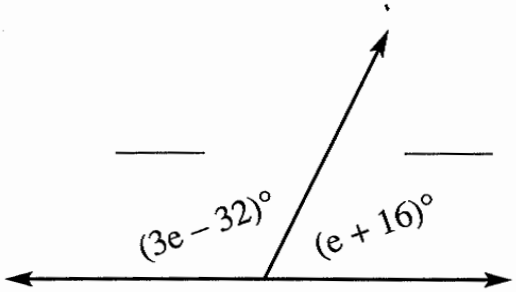
Question: What professional football team is the square of a prime number?

10	1	4	6	8		3	9	3	2	7	5

°

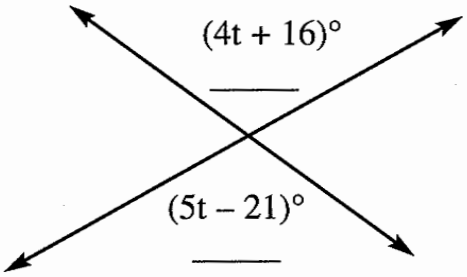
Directions: Each pair of angles is either vertical, complementary, or supplementary. Find the degree measure of each angle. On the way, you will find the variable in each problem. To find the answer to the question, write the variable on its matching line at the bottom of the page.

1.



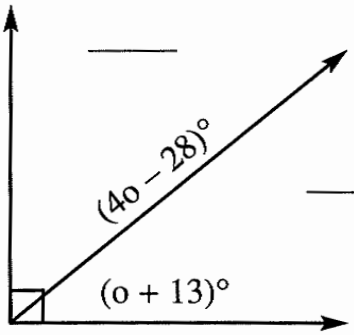
e = _____

2.



t = _____

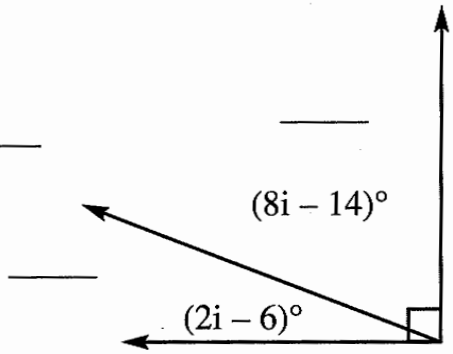
3.



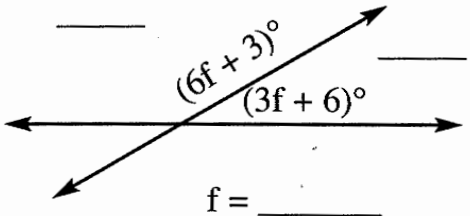
o = _____

4.

i = _____

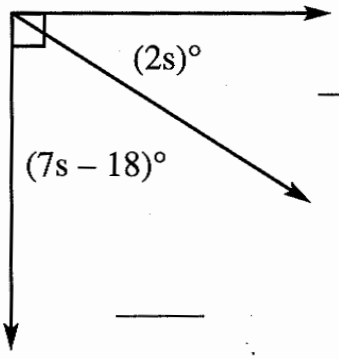


5.



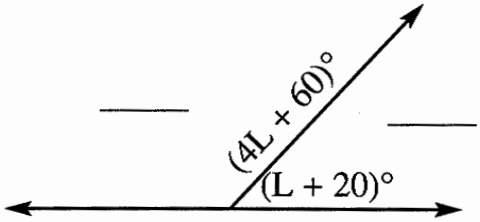
f = _____

6.



s = _____

7.



L = _____

Question: What meal can you get from standing on a hot sidewalk?

19°	11°	20°	20°	49°	37°	21°	19°	12°	21°	20°	49°

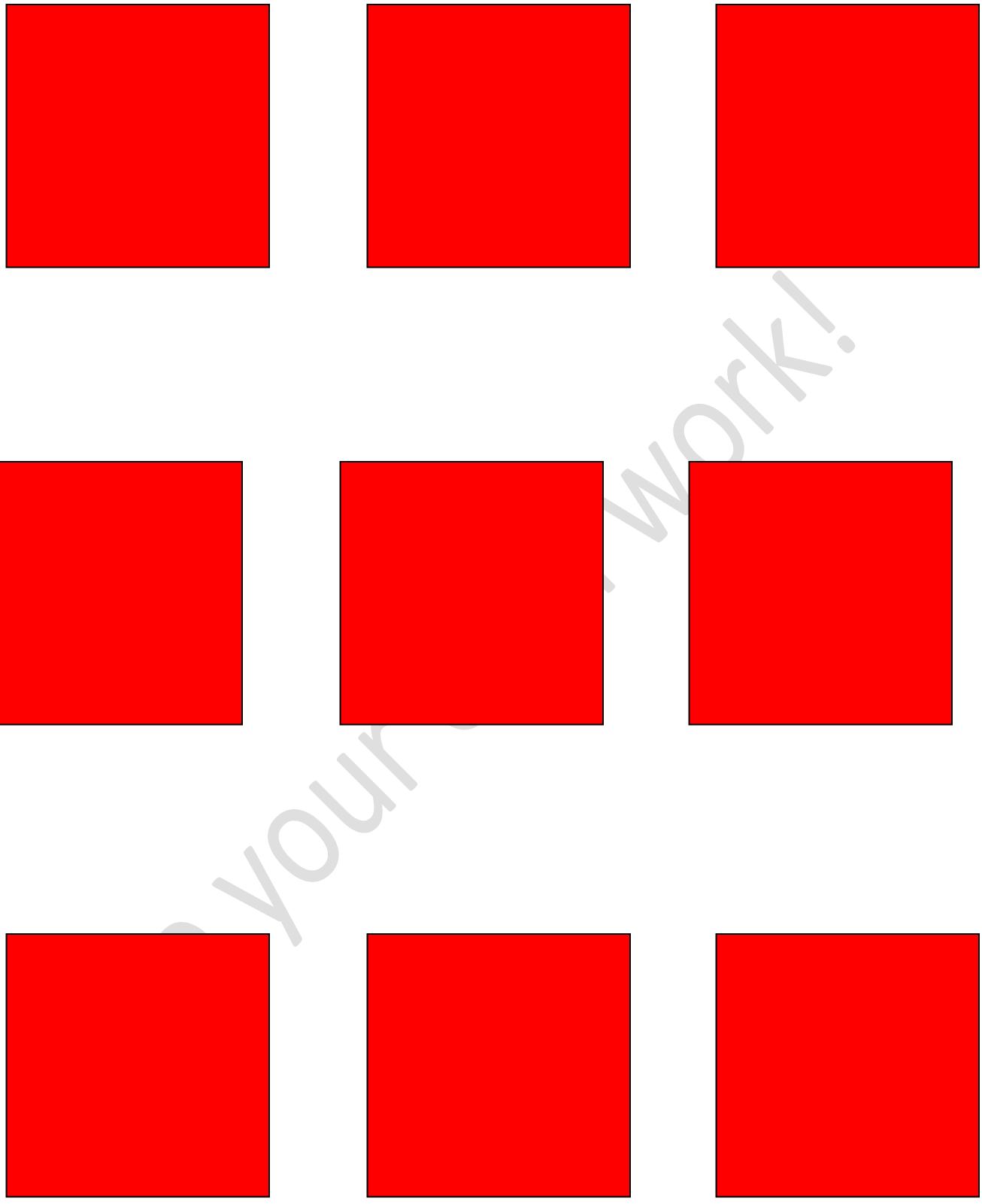
Square tessellation:
Use 6 red squares to make as much of the tessellation as possible.
Find the vertex arrangement.

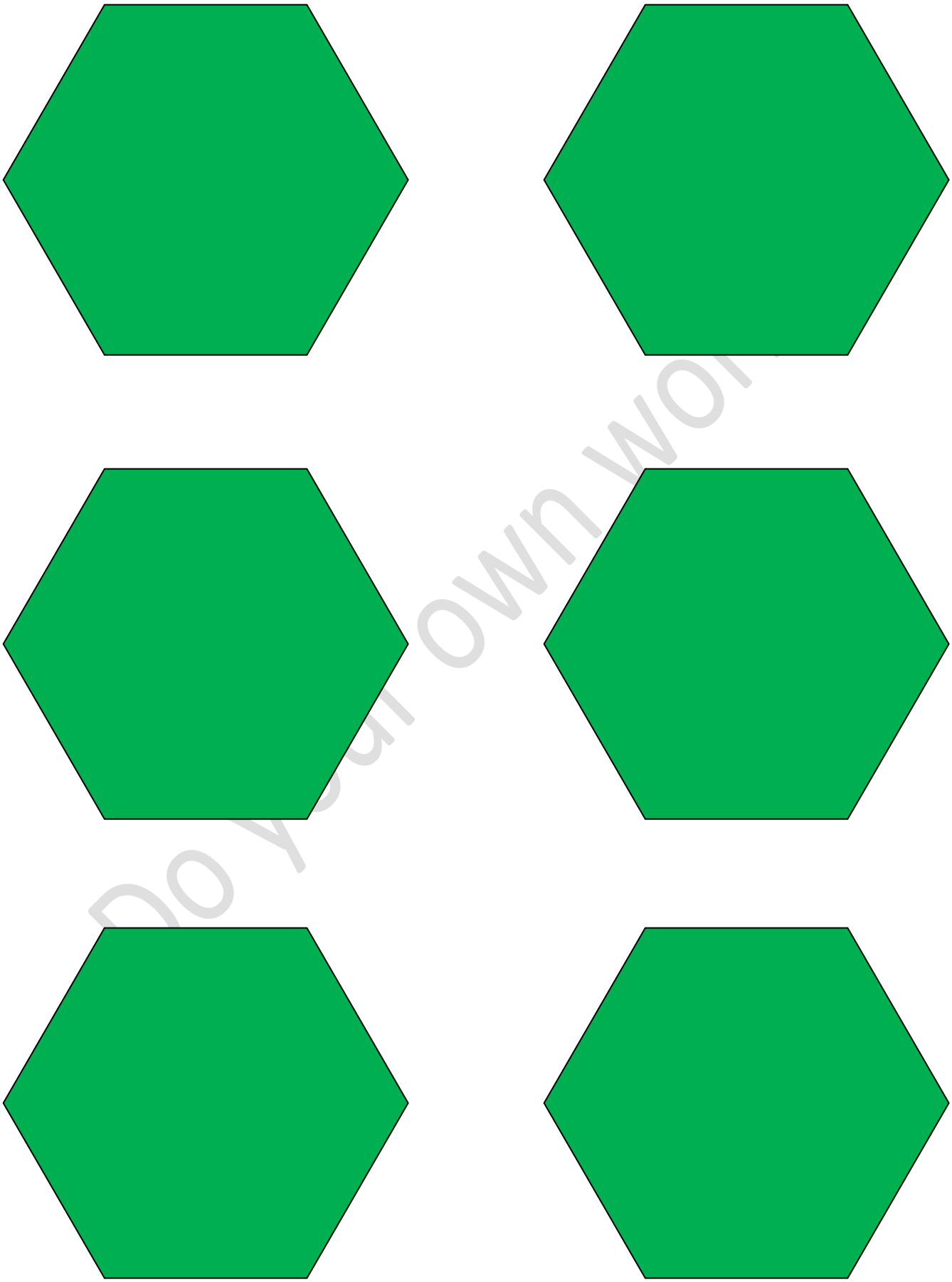
Hexagon tessellation:
Use 6 green hexagons to make as much of the tessellation as possible.
Find the vertex arrangement.

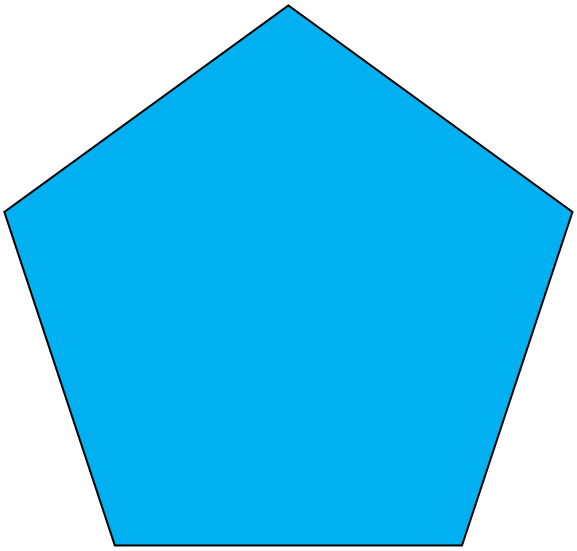
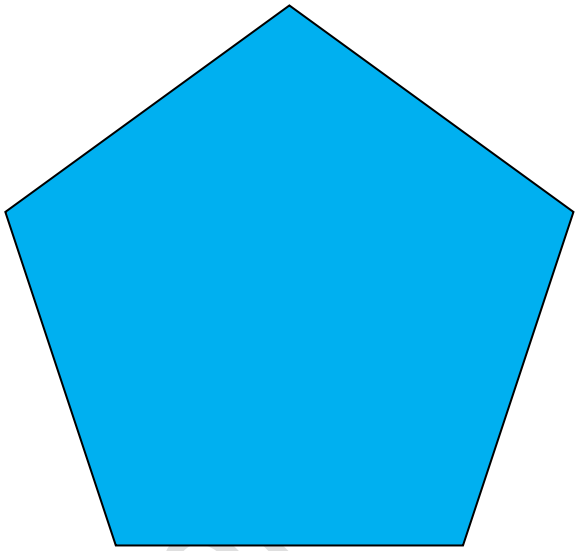
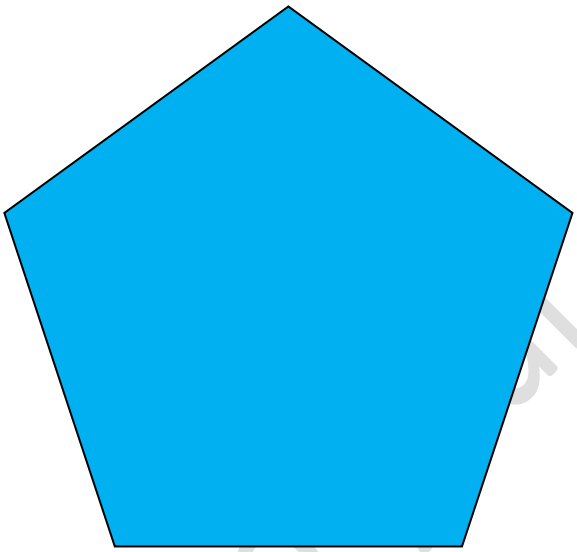
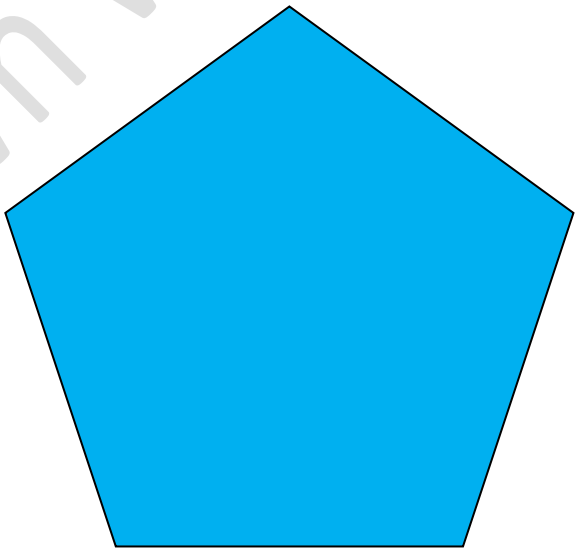
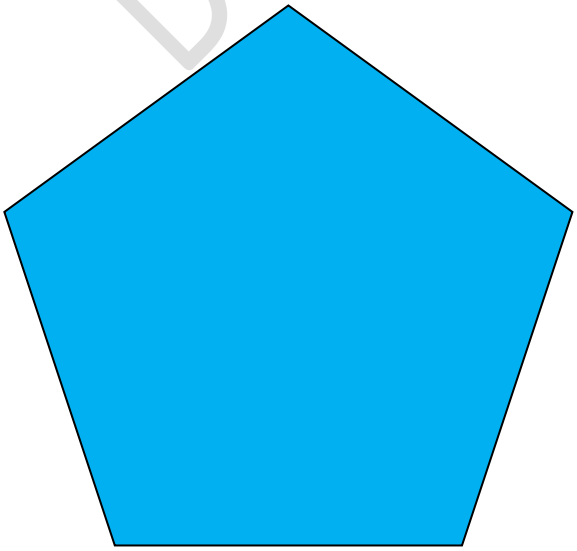
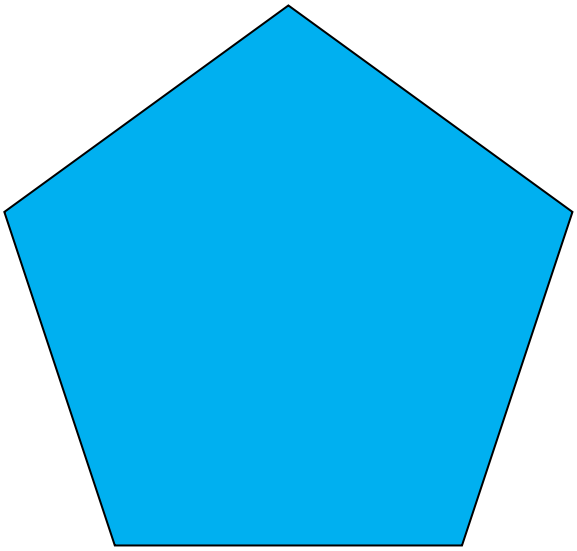
Pentagon tessellation:
Use as many blue pentagons as you like to make as much of the tessellation as possible.

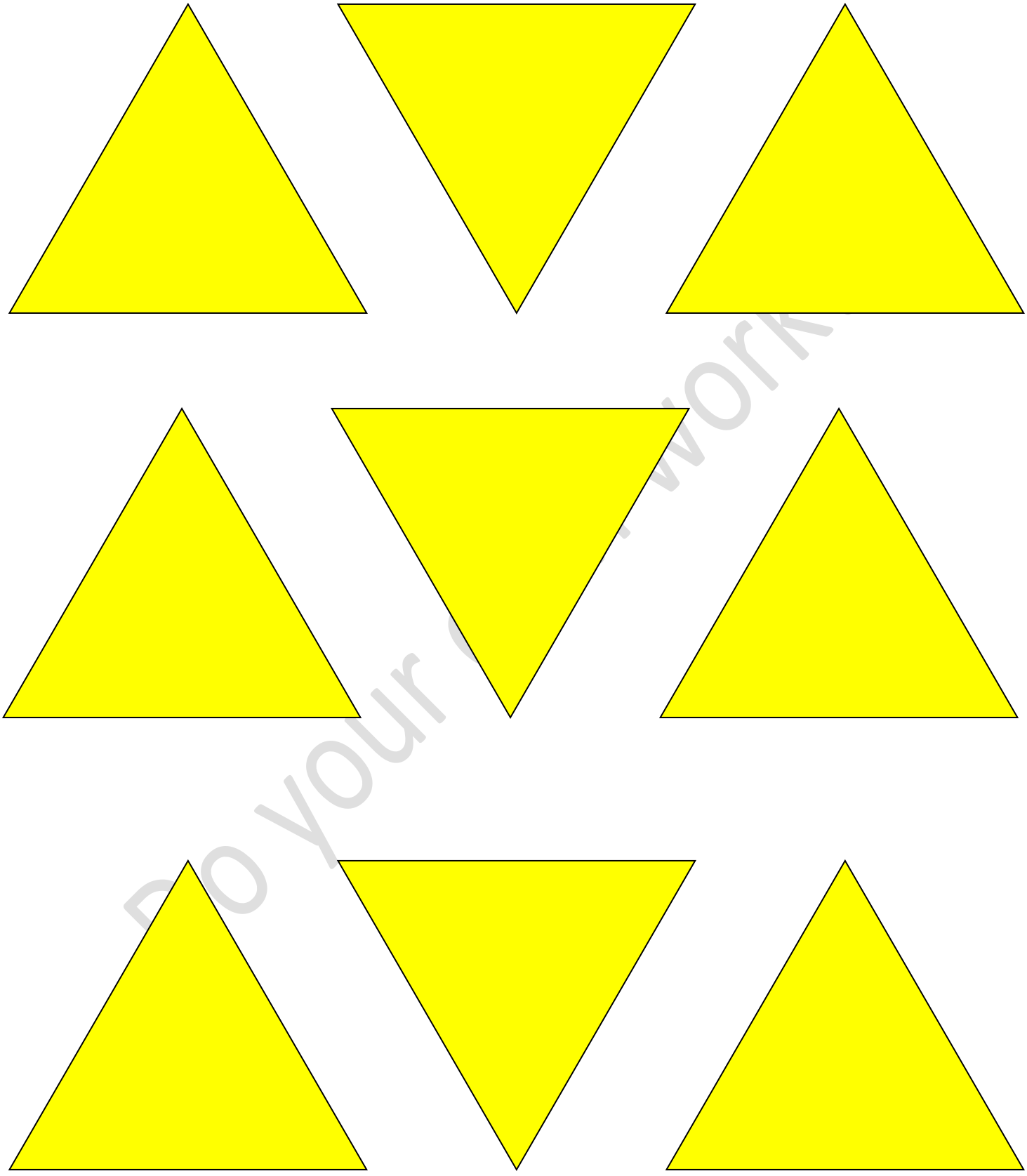
Triangle tessellation:
Use 6 of the yellow triangles to make as much of the tessellation as possible.
Find the vertex arrangement.

Use scissors to trim the pieces as needed, and scotch tape to hold them in place.





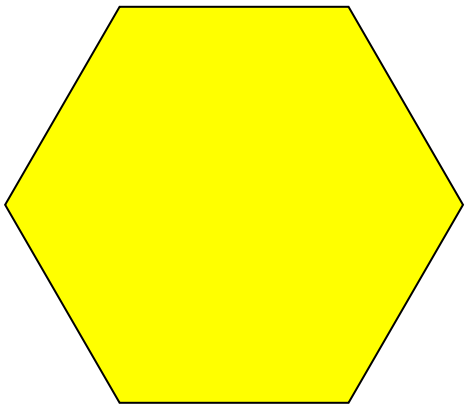
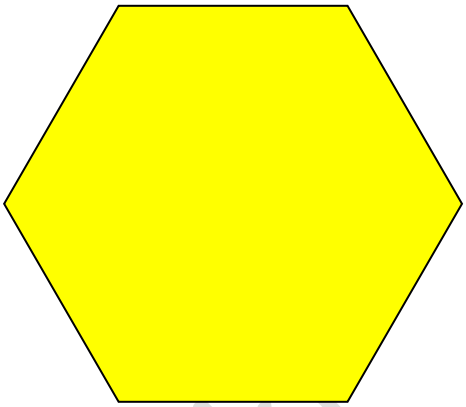
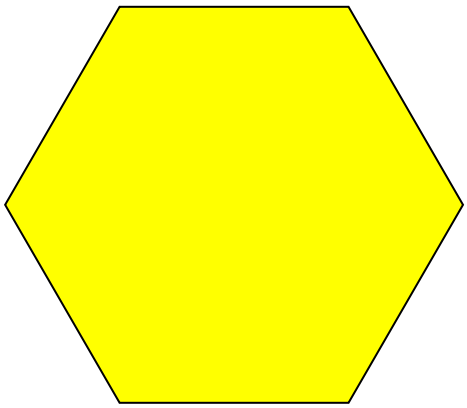
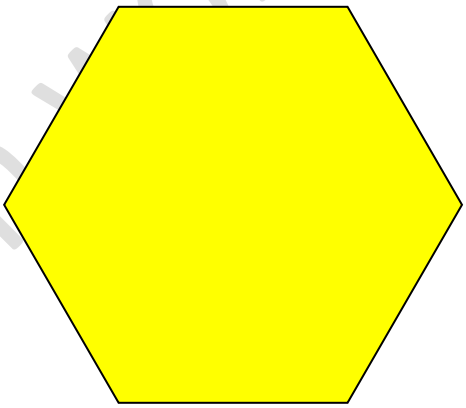
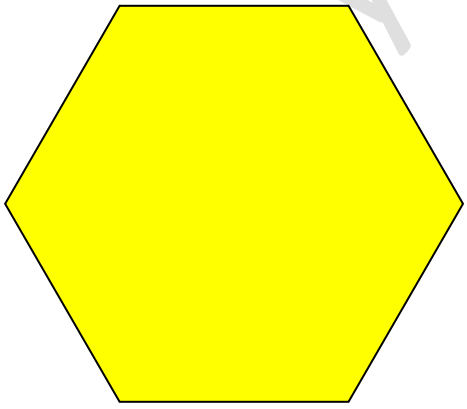
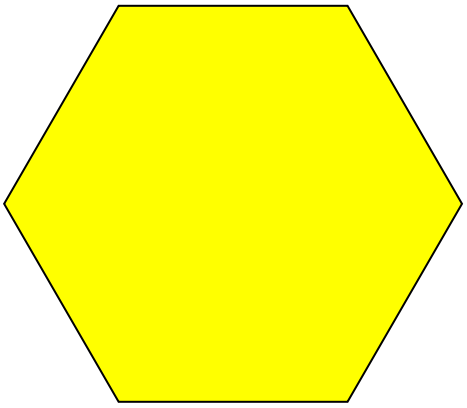


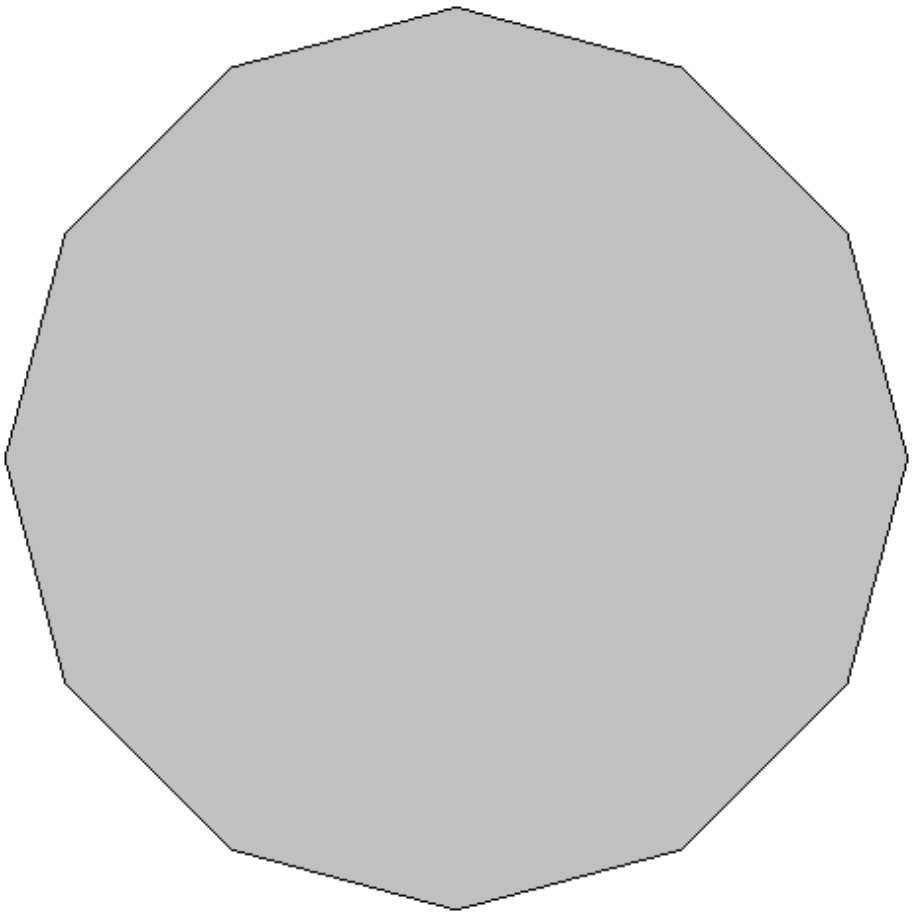
Octagons and squares semiregular tessellation:
Use 6 gray octagons and 12 green squares to make as much of the tessellation as possible.
Find the vertex arrangement.

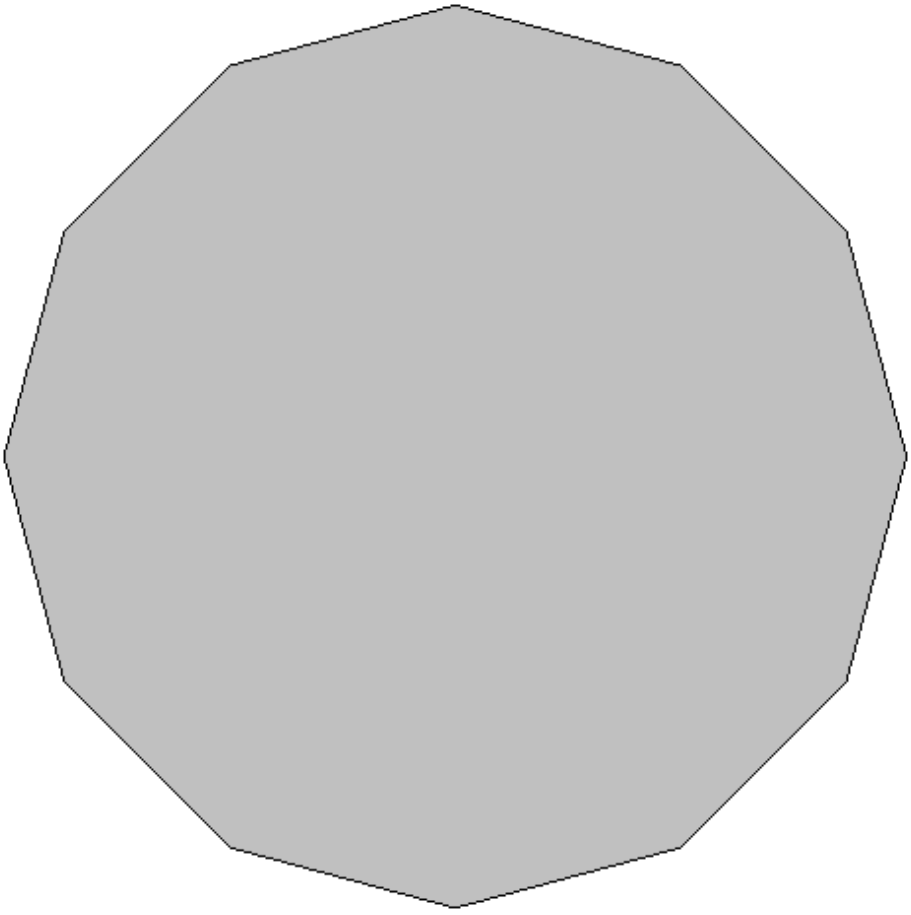
Dodecagons, squares, and hexagons semiregular tessellation:
Use 2 gray dodecagons, 12 yellow hexagons, and 12 green squares to make as much of the tessellation as possible.
Find the vertex arrangement.

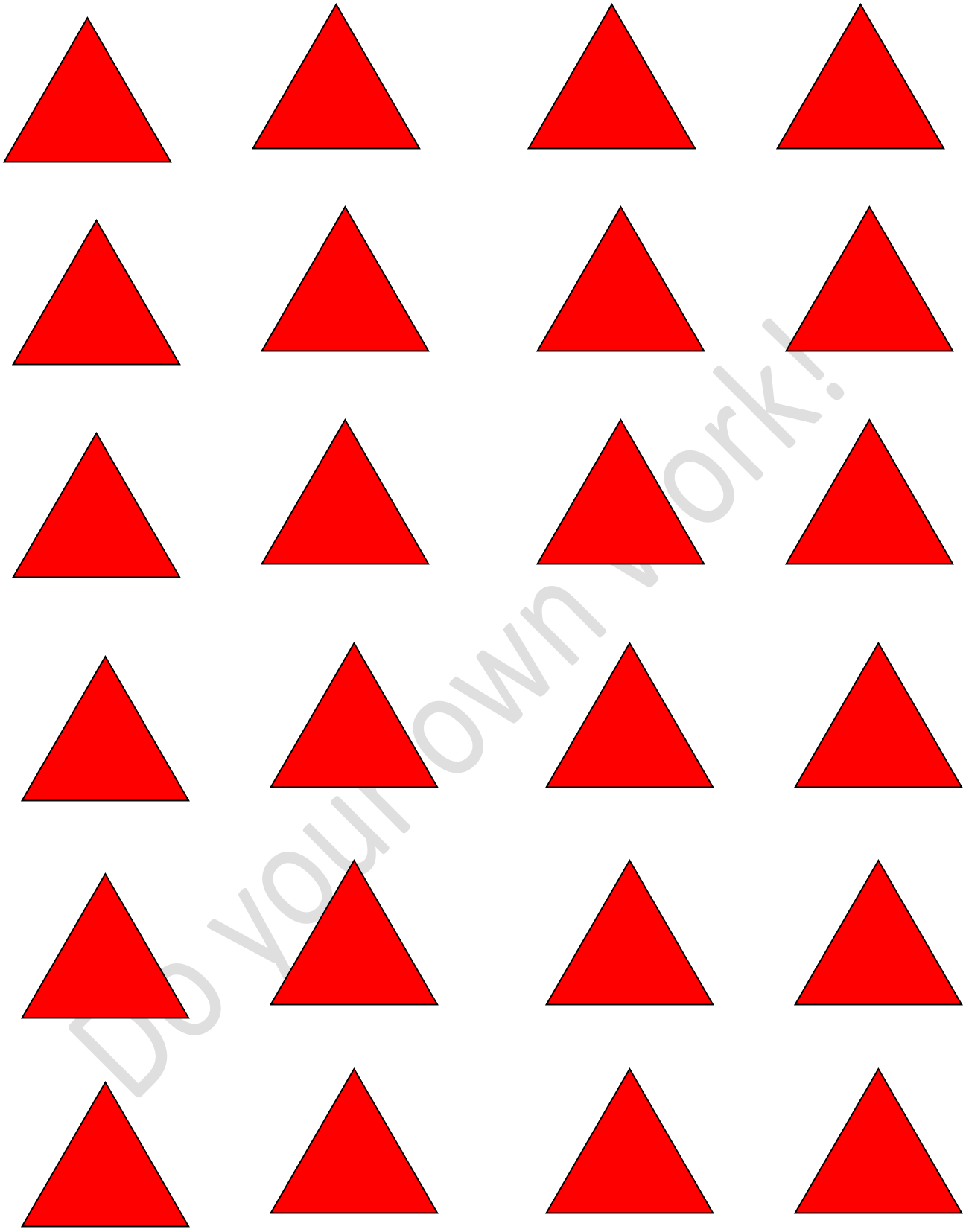
Hexagons, triangles, and squares tessellation:
Use 6 yellow hexagons, 24 green squares, and 24 red triangles to make as much of the tessellation as possible.
Find the vertex arrangements.

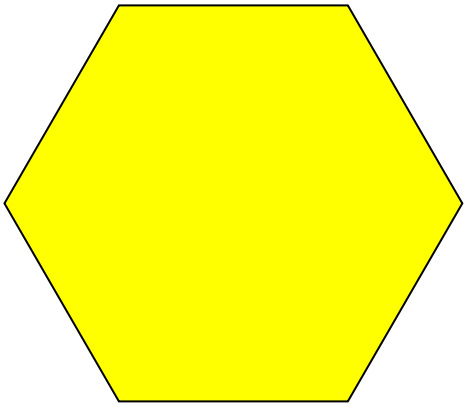
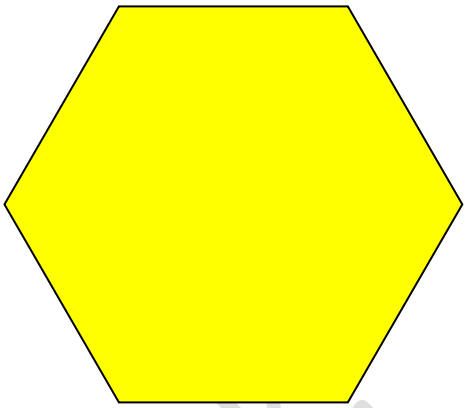
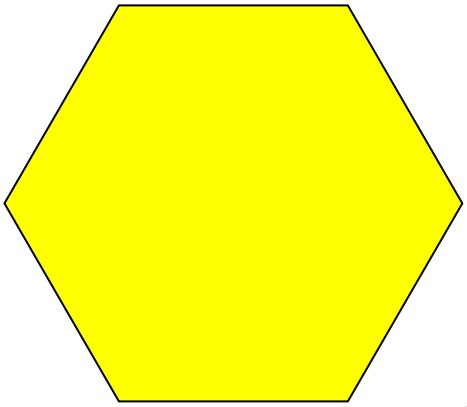
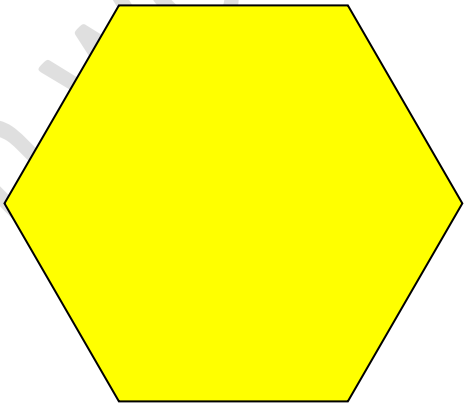
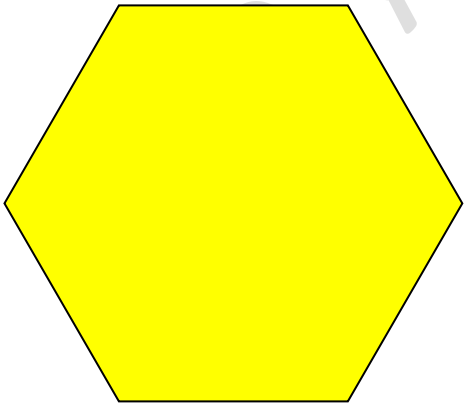
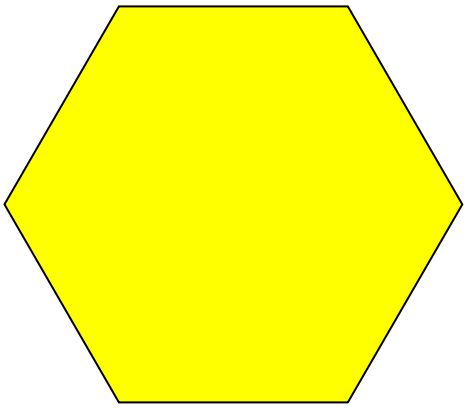
Use scissors to trim the pieces as needed, and scotch tape to hold them in place.

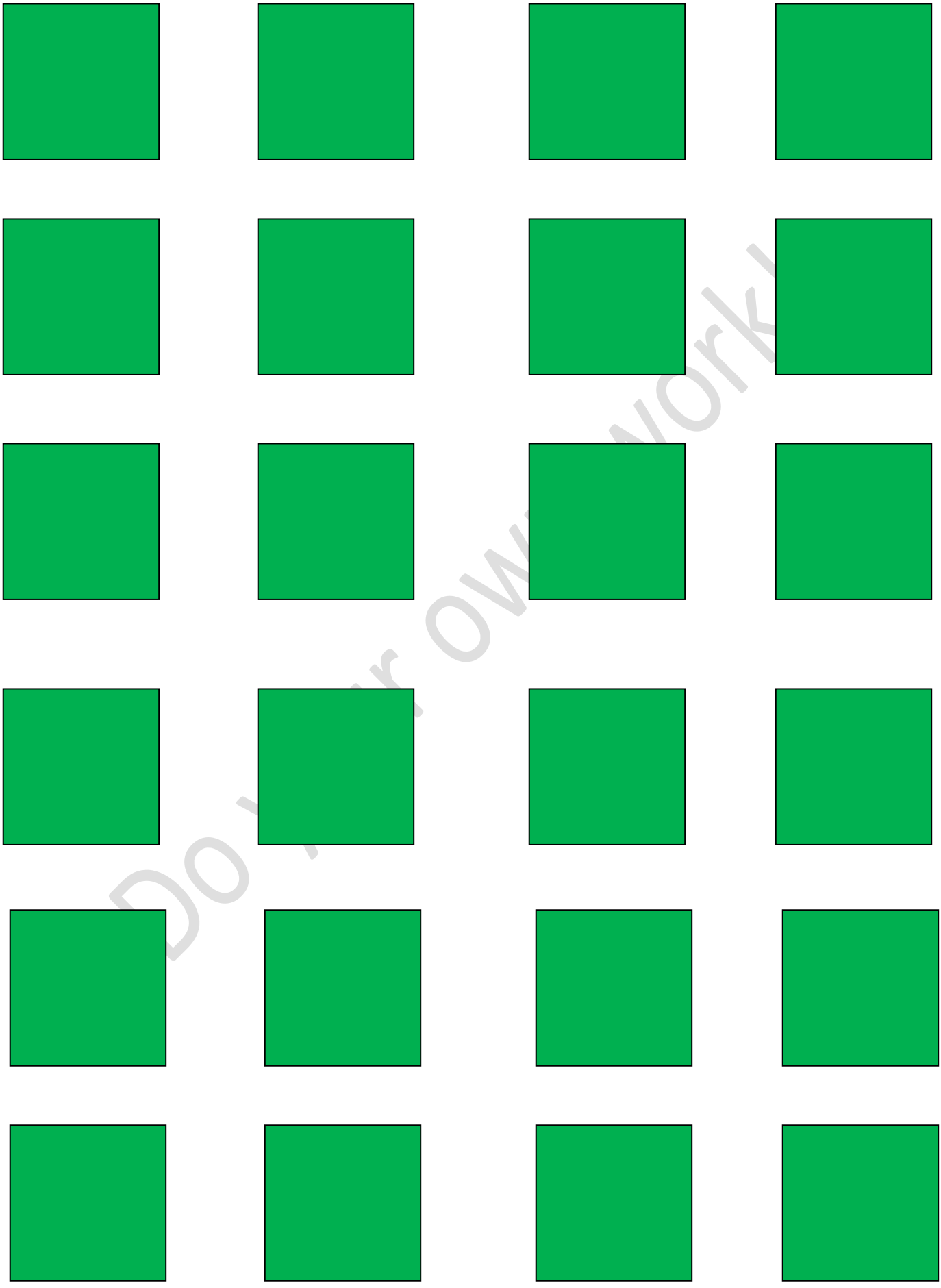







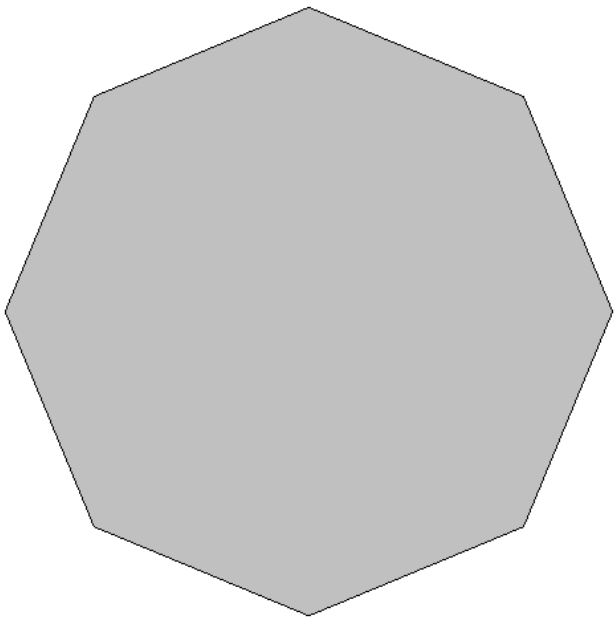
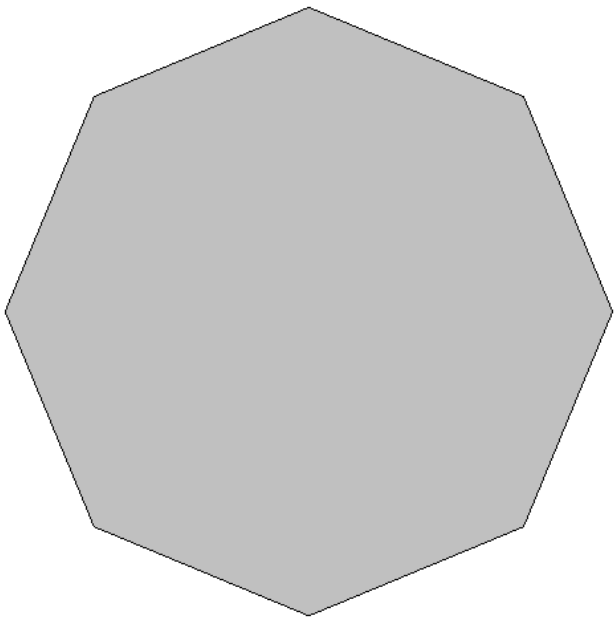
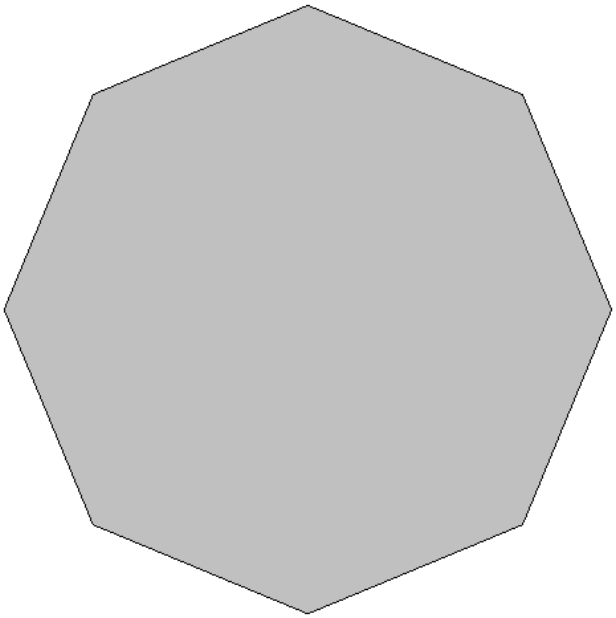
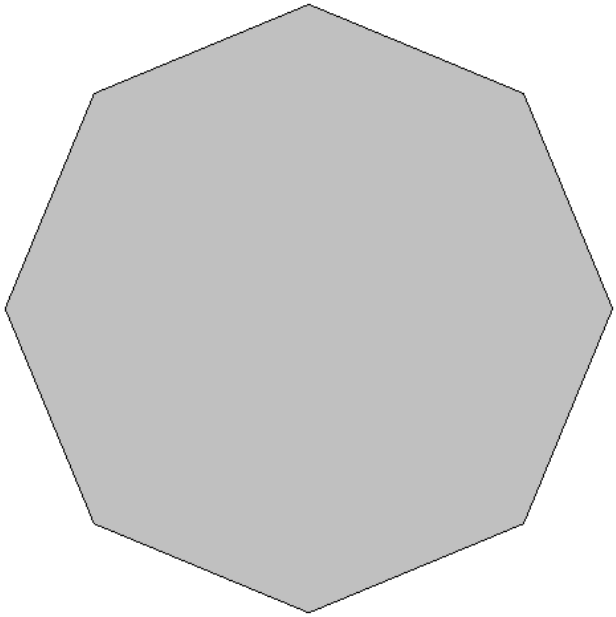
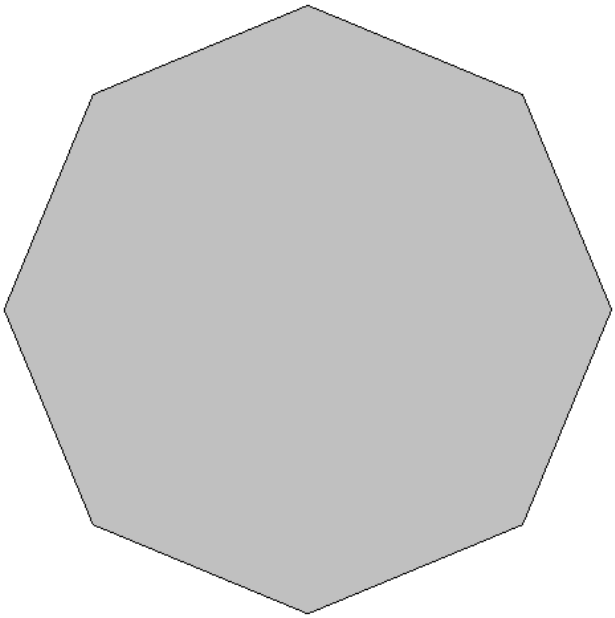
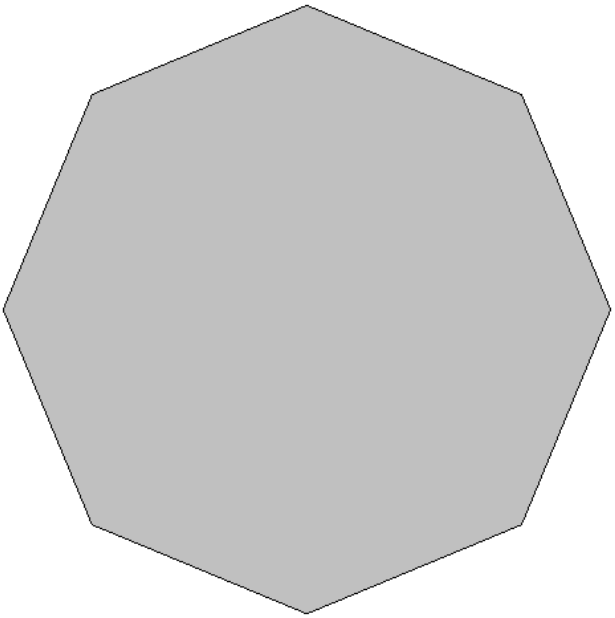






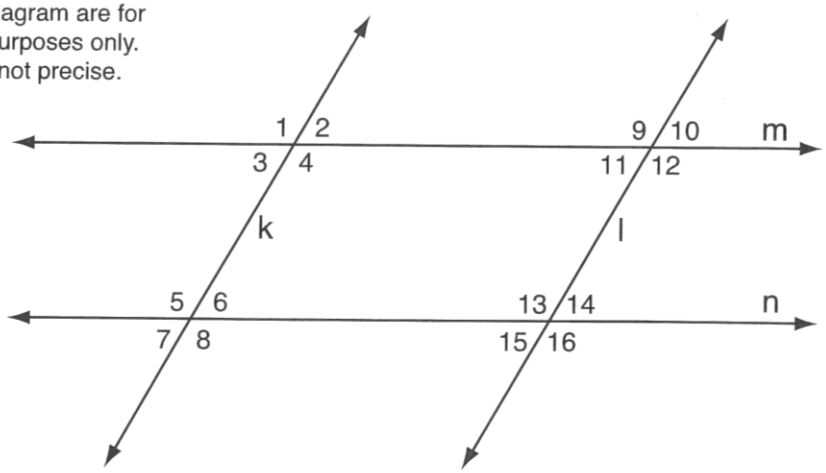


Find the measure of the angles using the given information. Match the measure with its corresponding letter and fill in the blanks to reveal the only non–presidents to appear on U.S. currency.

1. **If** $\angle 1 = 135°$, $\angle 2 =$ _____ .
2. **If** $\angle 3 = 62°$, $\angle 6 =$ _____ .
3. **If** $\angle 13 = 130°$, $\angle 16 =$ _____ .
4. **If** $\angle 9 = 110°$, $\angle 13 =$ _____ .
5. **If** $\angle 9 = 110°$, $\angle 14 =$ _____ .
6. **If** $\angle 10 = 60°$, $\angle 15 =$ _____ .
7. **If** $\angle 4 = 105°$, $\angle 5 =$ _____ .
8. **If** $\angle 4 = 105°$, $\angle 6 =$ _____ .
9. **If** $\angle 11 = 65°$, $\angle 14 =$ _____ .
10. **If** $\angle 9 = 125°$, $\angle 15 =$ _____ .
11. **If** $\angle 10 = 52°$, $\angle 3 =$ _____ .
12. **If** $\angle 7 = 83°$, $\angle 14 =$ _____ .
13. **If** $\angle 8 = 113°$, $\angle 13 =$ _____ .
14. **If** $\angle 12 = 140°$, $\angle 4 =$ _____ .
15. **If** $\angle 16 = 100°$, $\angle 3 =$ _____ .
16. **If** $\angle 9 = 100°$, $\angle 1 =$ _____ .
17. **If** $\angle 6 = 68°$, $\angle 11 =$ _____ .

Angles in diagram are for reference purposes only. Angles are not precise.



m // n

k // l

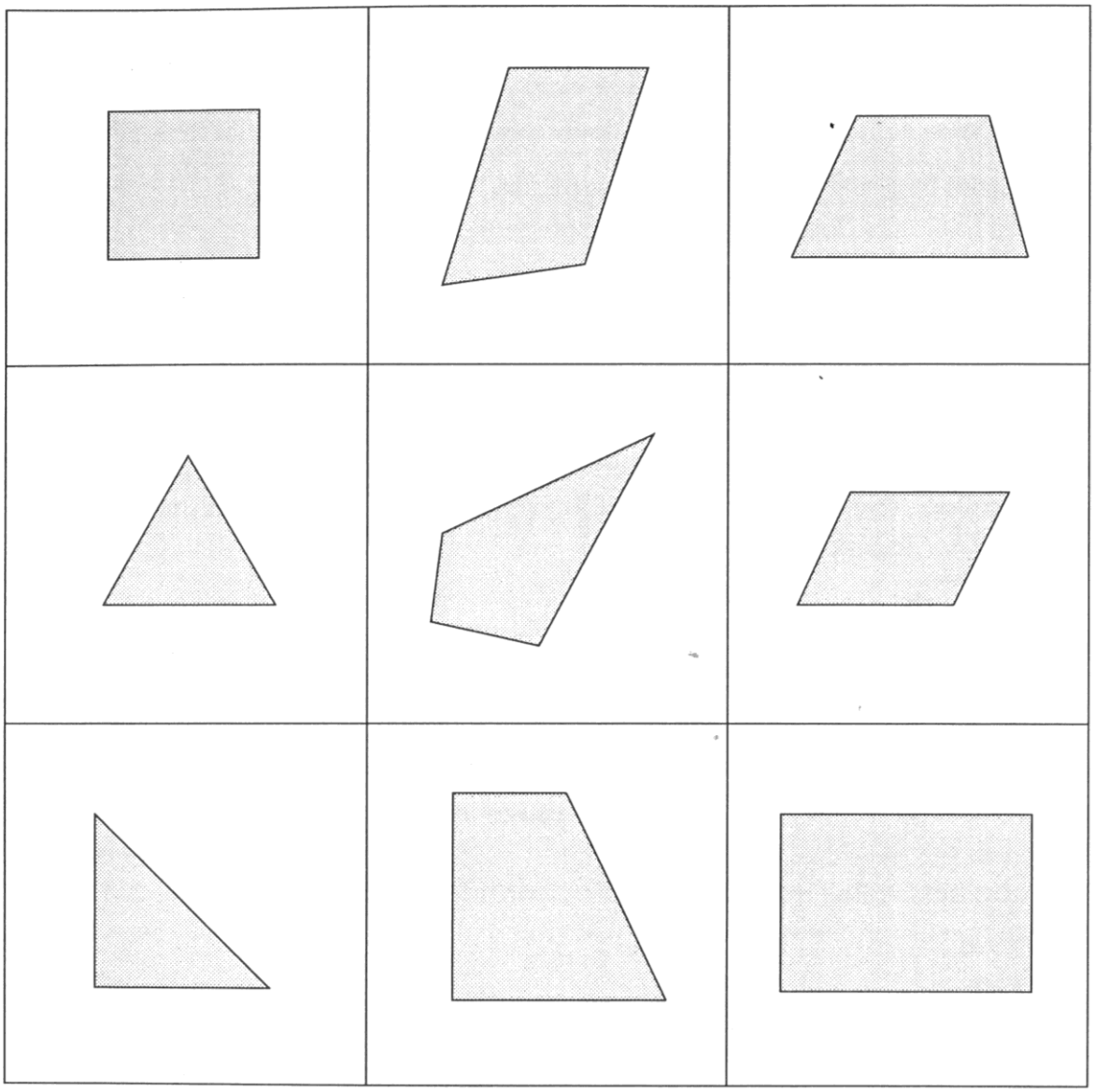
A	B	E	F	H	I	J	K	L	M	N	O	R	S	T	U	Y
52°	55°	60°	65°	70°	105°	80°	100°	75°	110°	113°	68°	62°	83°	130°	45°	140°

12	1	12	11	13	.	10	11	13	3	5	17	13	14			

AND

10	6	13	15	11	4	7	13	9	2	11	13	16	8	7	13	

Shape Bingo



Shape Bingo

Players
Two players

Materials
5 red disks, 5 blue disks, 1 die, and 2 cubes
Label one cube with the following faces:

rectangle	triangle	four sides	three sides	polygon	quadri-lateral

Label the second cube with the following faces:

no 45-degree angle	a 45-degree angle	a right angle	no right angle	parallel lines	no parallel lines

Object
To get three disks in a row—horizontally, vertically, or diagonally

To Start
Choose the starting player by rolling the die. The player with the higher number goes first.

Rules
1. The starting player rolls both cubes and covers with a disk any shape that matches the information on the two top faces of the cubes. If a player cannot find a figure that matches, he or she loses a turn.
2. Players alternate turns.
3. The first player to get three disks in a row wins.

See the Shape Bingo Link on my Webpage!!!