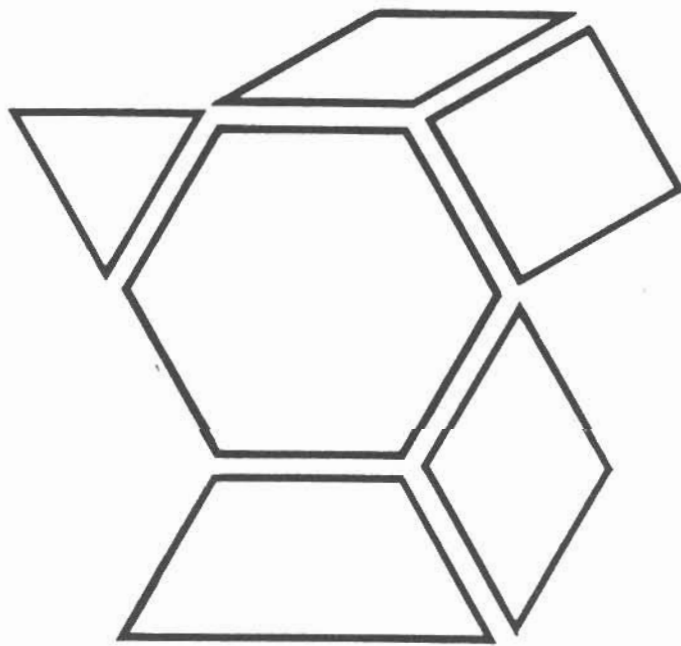
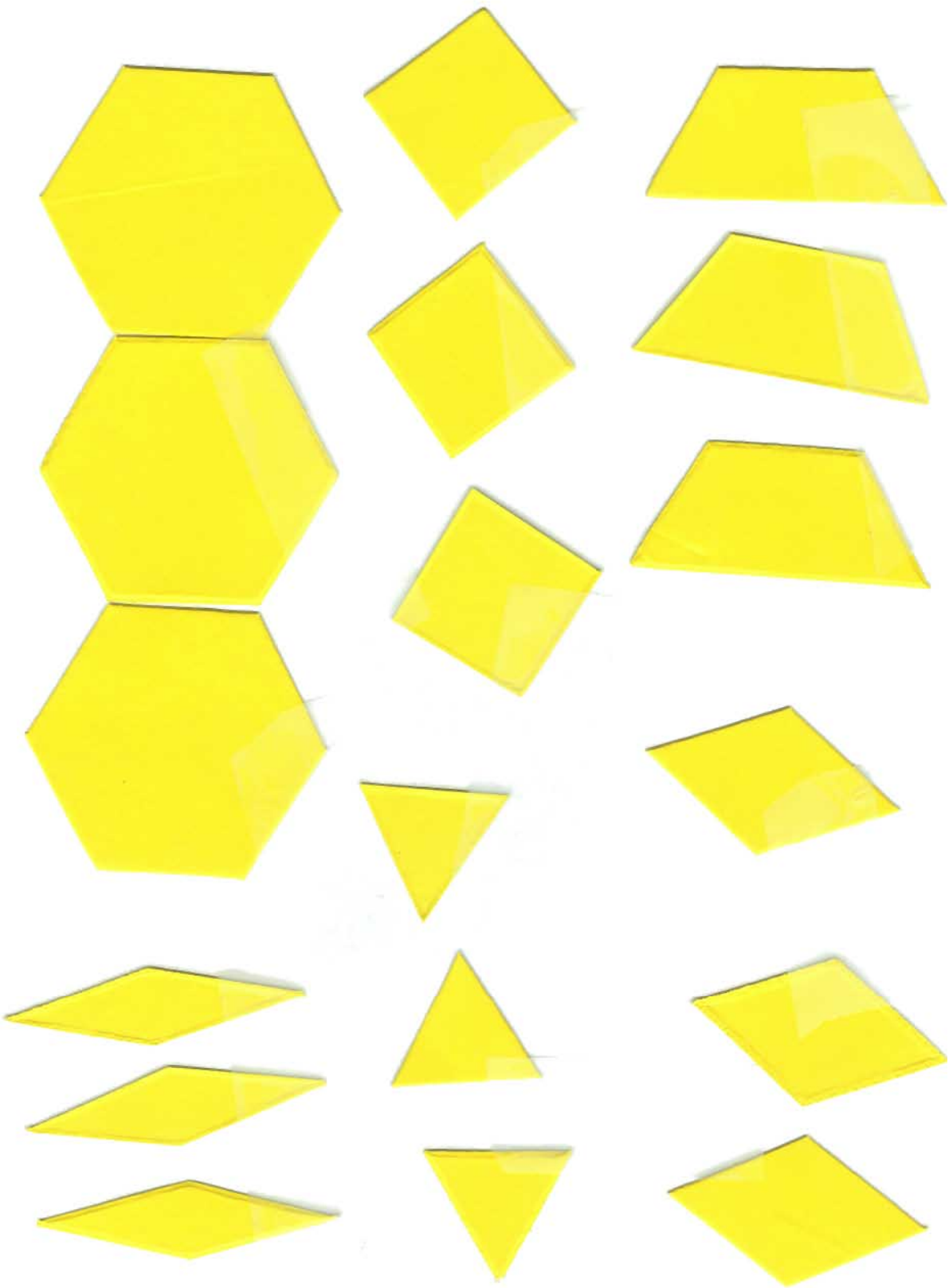
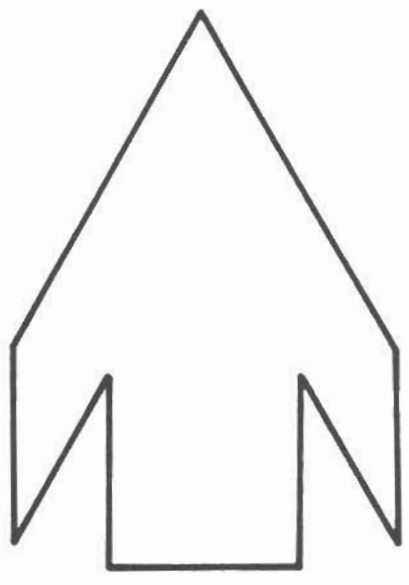
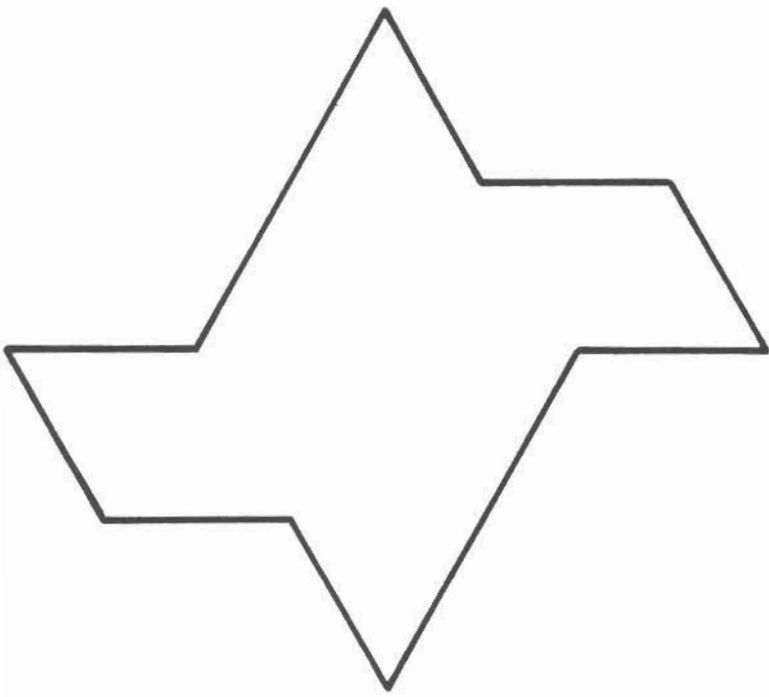


PATTERN BLOCKS

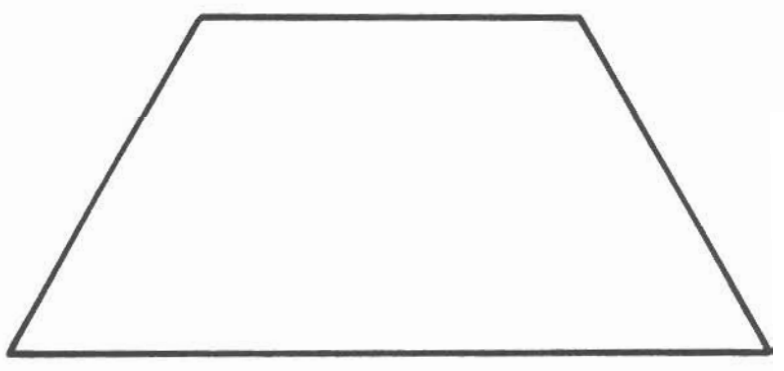
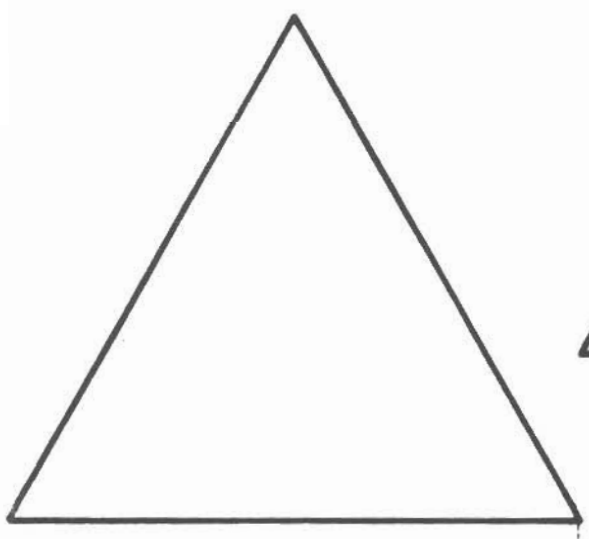


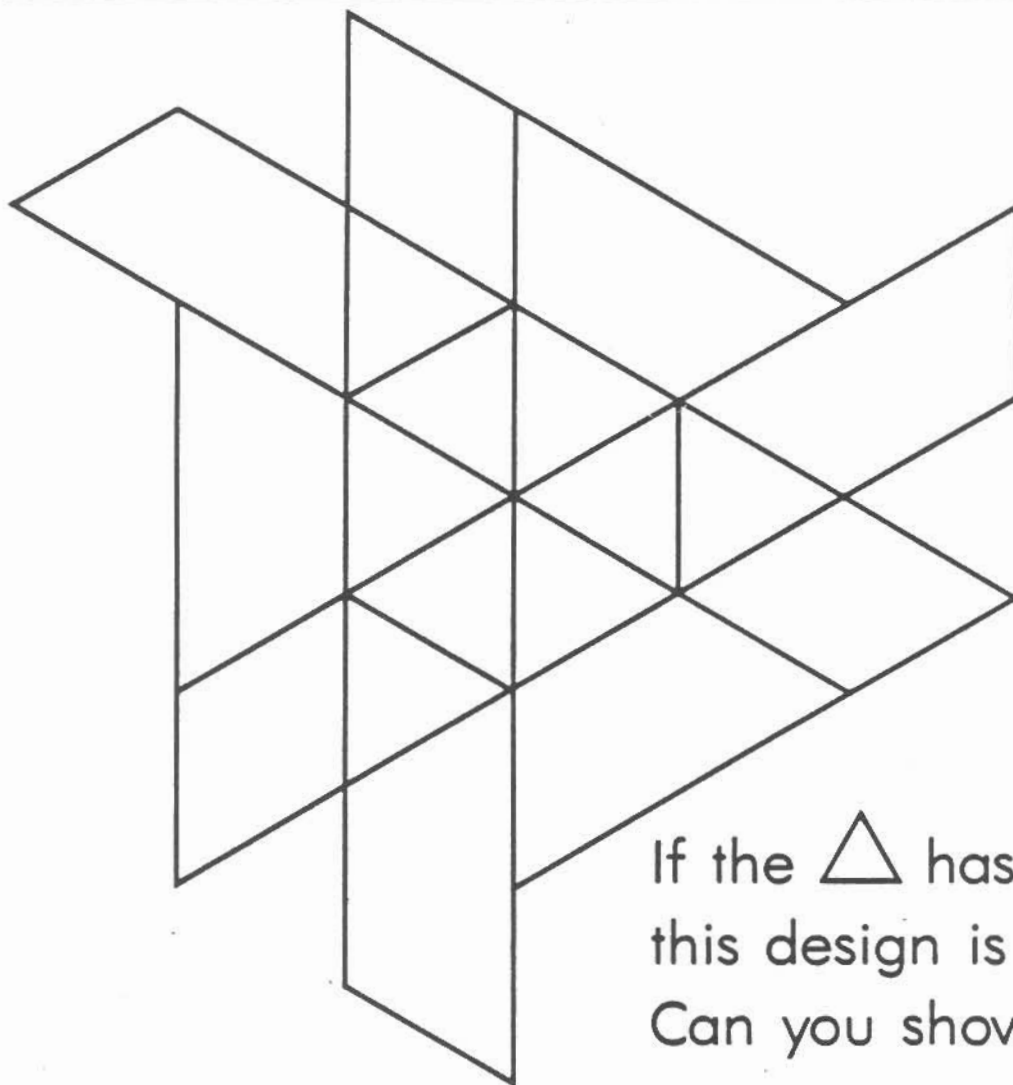


Cover each figure with 5 blocks.



Cover each figure with 6 blocks.





If the \triangle has a value of 1,
this design is worth 33.
Can you show why?

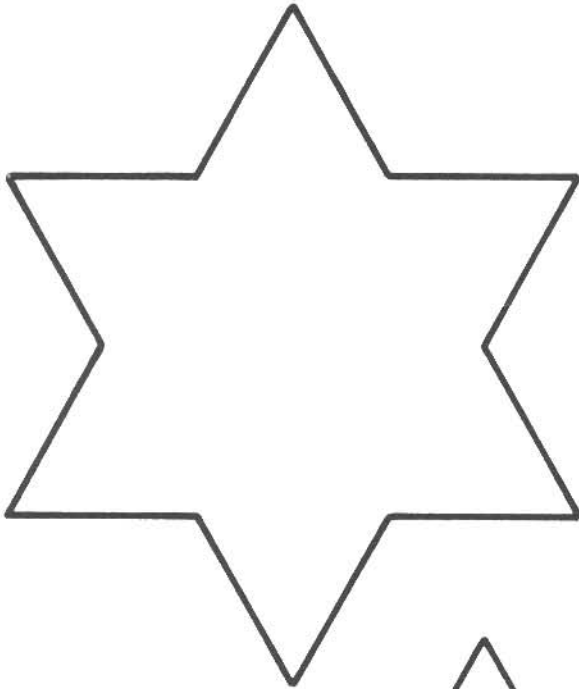
Build your own design with 18 blocks.

Use only , , , and .

If the \triangle has a value of 1, how much
is your design worth?

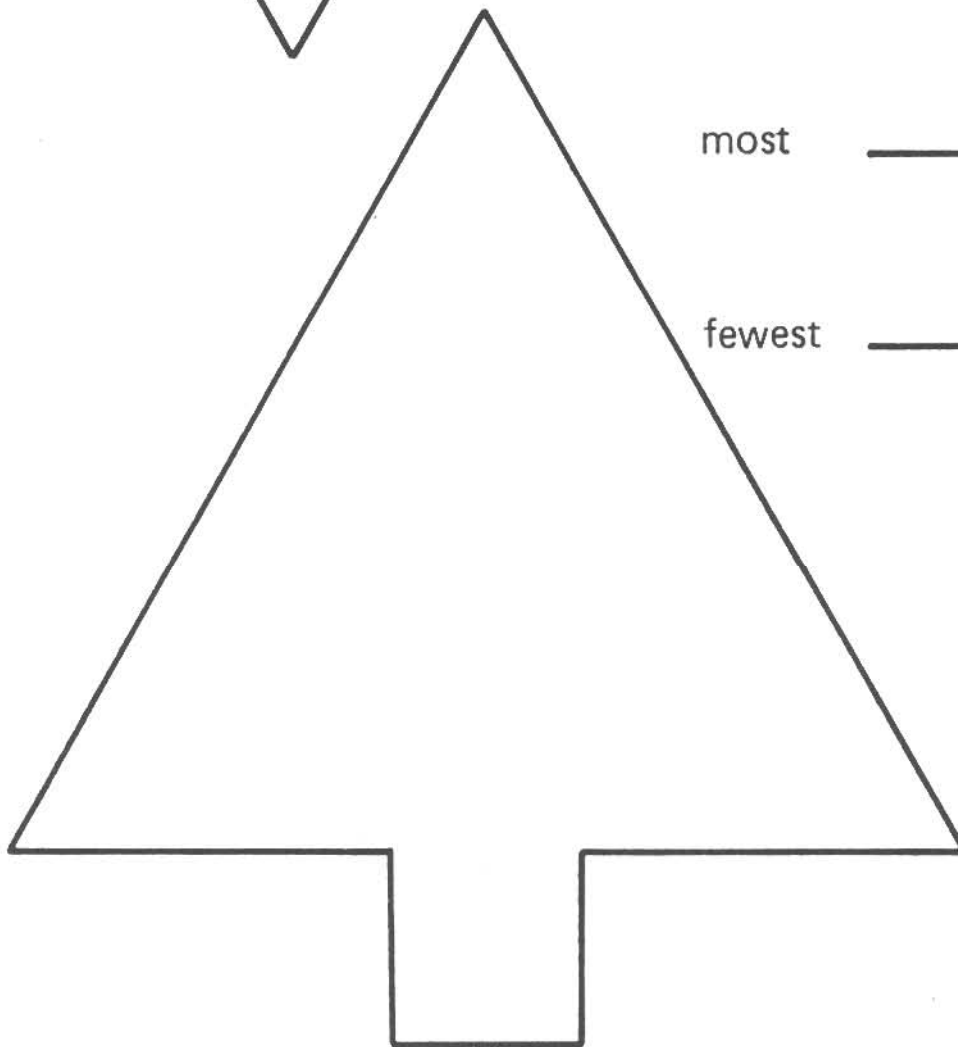
If the \triangle has a value of 5, how much
is your design worth?

Cover these using the *most* blocks you can. Then do it again using the *fewest* blocks you can.



most _____

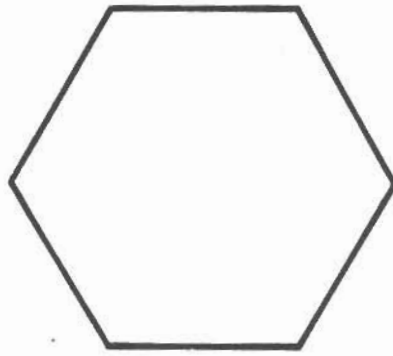
fewest _____



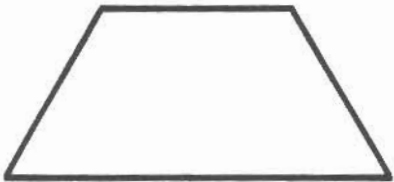
most _____

fewest _____

If the yellow hexagon is 1,

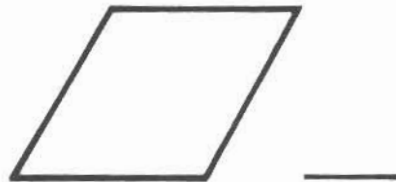


the red trapezoid is

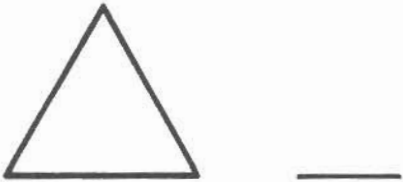


$\frac{1}{2}$.

What is the blue rhombus?



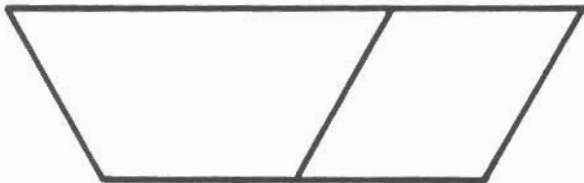
What is the green triangle?



What are the triangle and rhombus?

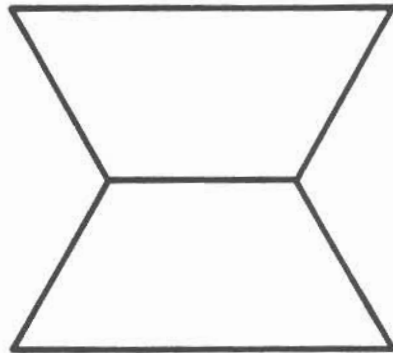


What are the rhombus and trapezoid?



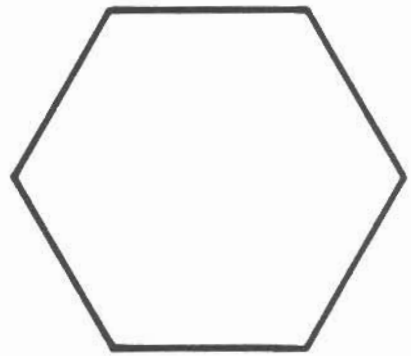
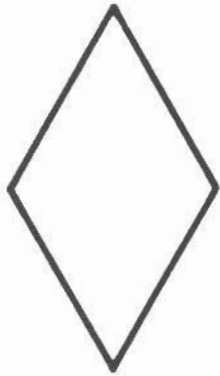
_____ + _____ = _____

What are two trapezoids?



_____ + _____ = _____

FRACTIONS



IF =

THEN =

=

=

$\frac{1}{2}$			
$\frac{1}{3}$			
$\frac{1}{4}$			
$\frac{1}{5}$			
$\frac{1}{6}$			









In the activities that follow, this figure represents ONE whole.



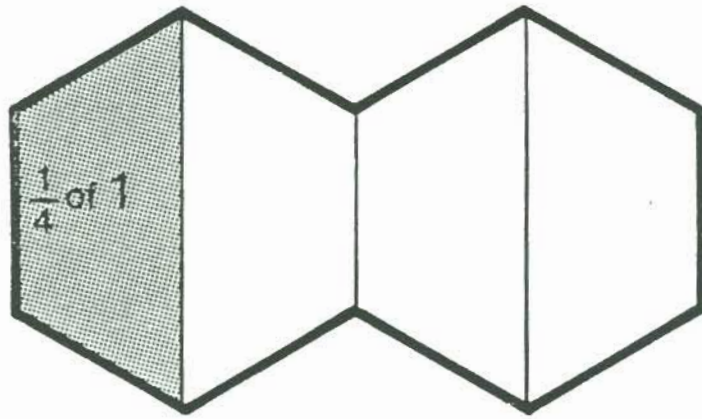
I can cover the figure above with hexagons, trapezoids, parallelograms and triangles.



Complete the sentences.

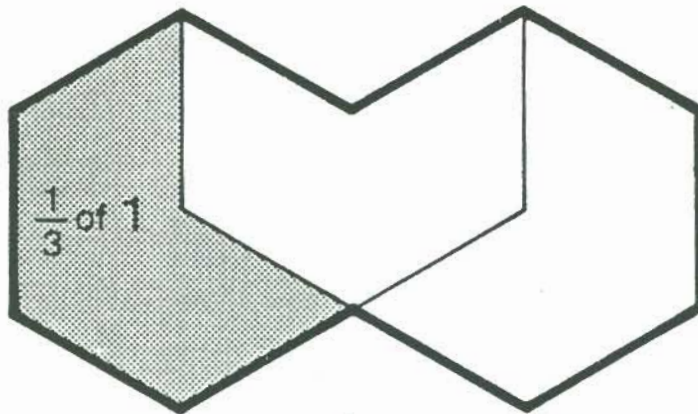
_____		cover one whole	
_____		cover one whole	
_____		cover one whole	
_____		cover one whole	

$\frac{1}{4}$ of 1 means one of four equal parts of one whole.



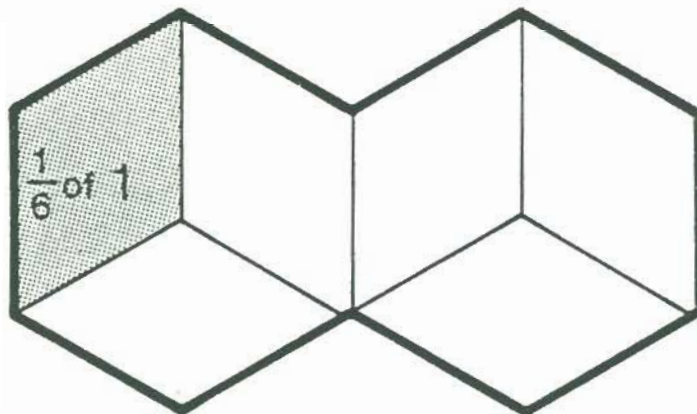
$$\frac{1}{4} \text{ of } 1 \text{ or } \frac{1}{4} \times 1 = \frac{1}{4}$$

$\frac{1}{3}$ of 1 means one of _____ equal parts of one whole.



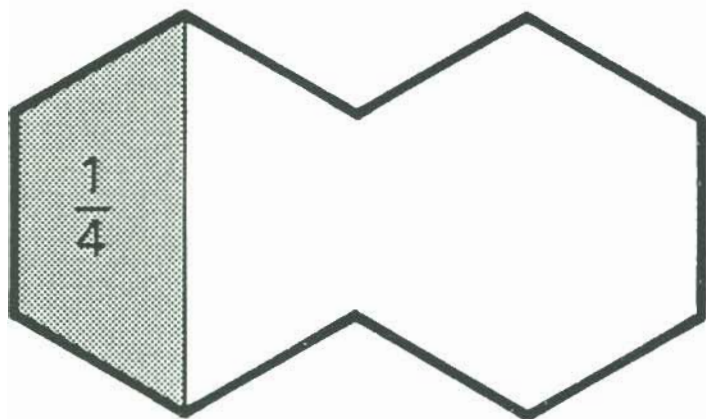
$$\frac{1}{3} \text{ of } 1 \text{ or } \frac{1}{3} \times 1 = \square$$

$\frac{1}{6}$ of 1 means one of _____ equal parts of one whole.

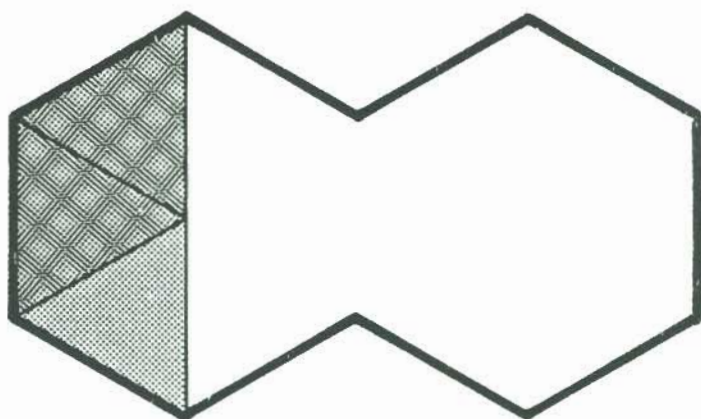


$$\frac{1}{6} \text{ of } 1 \text{ or } \frac{1}{6} \times 1 = \square$$

$\frac{2}{3} \times \frac{1}{4}$ means two of three equal parts of one-fourth.



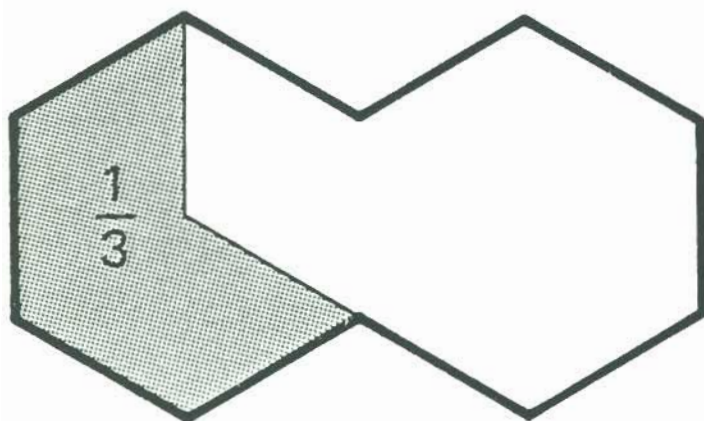
one-fourth



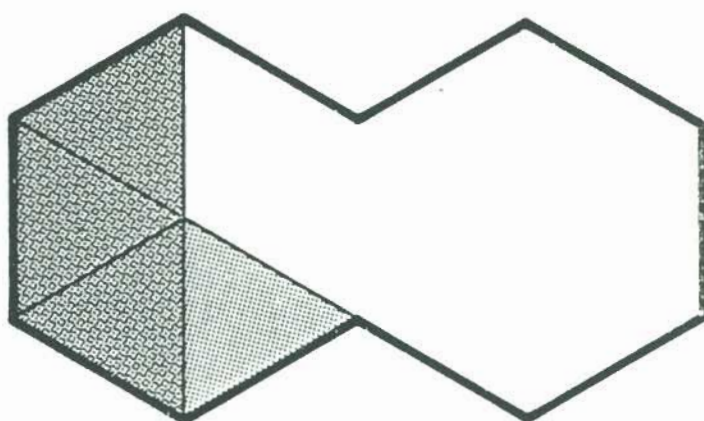
2 of 3 equal parts of one-fourth

$$\frac{2}{3} \times \frac{1}{4} = \frac{2}{12} \text{ or } \frac{1}{6}$$

$\frac{3}{4} \times \frac{1}{3}$ means _____ of _____ equal parts of one-third.



one-third



3 of 4 equal parts of one-third

$$\frac{3}{4} \times \frac{1}{3} = \square$$

Solve using pattern blocks.

1) $\frac{2}{3} \times \frac{1}{2} = \square$

(2 of 3 equal parts of $\frac{1}{2}$)

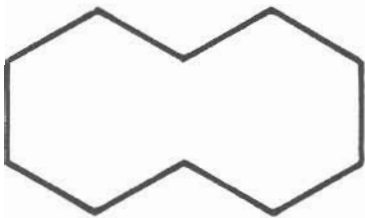
2) $\frac{5}{6} \times \frac{1}{2} = \square$

(5 of 6 equal parts of $\frac{1}{2}$)

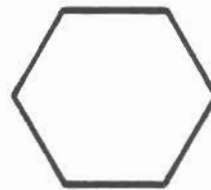


1) $1 \div \frac{1}{2}$ means

In one whole, there are how many halves?



needs how many



to cover it? _____

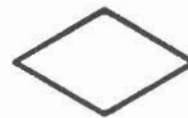
$$1 \div \frac{1}{2} = \square$$

2) $\frac{1}{2} \div \frac{1}{6}$ means

In one-half, there are how many sixths?



needs how many



to cover it? _____

$$\frac{1}{2} \div \frac{1}{6} = \square$$

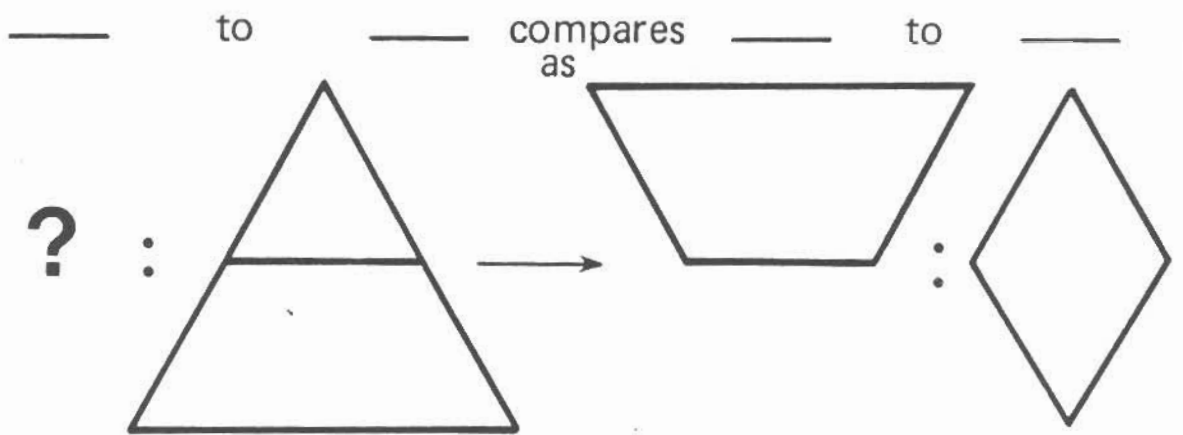
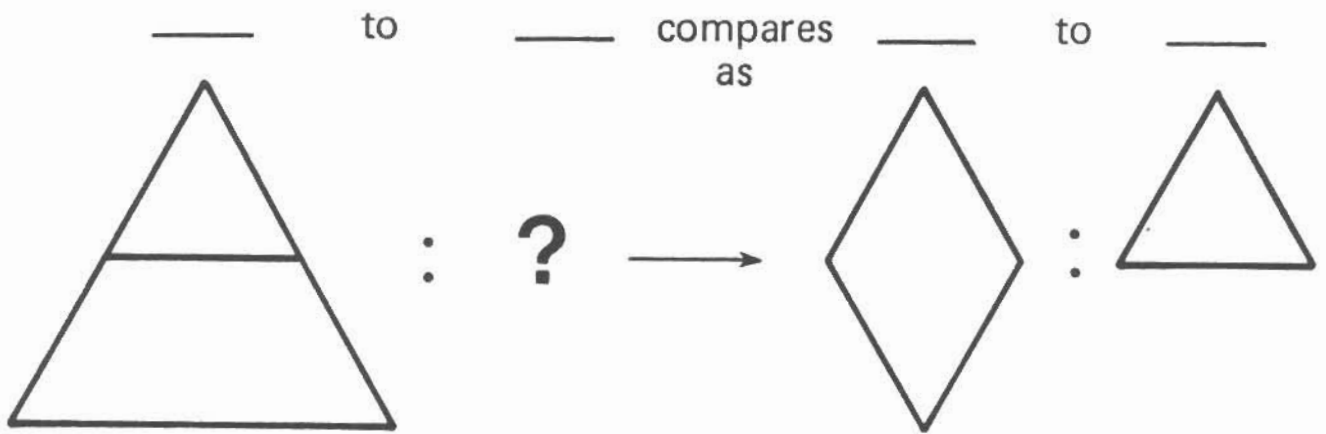
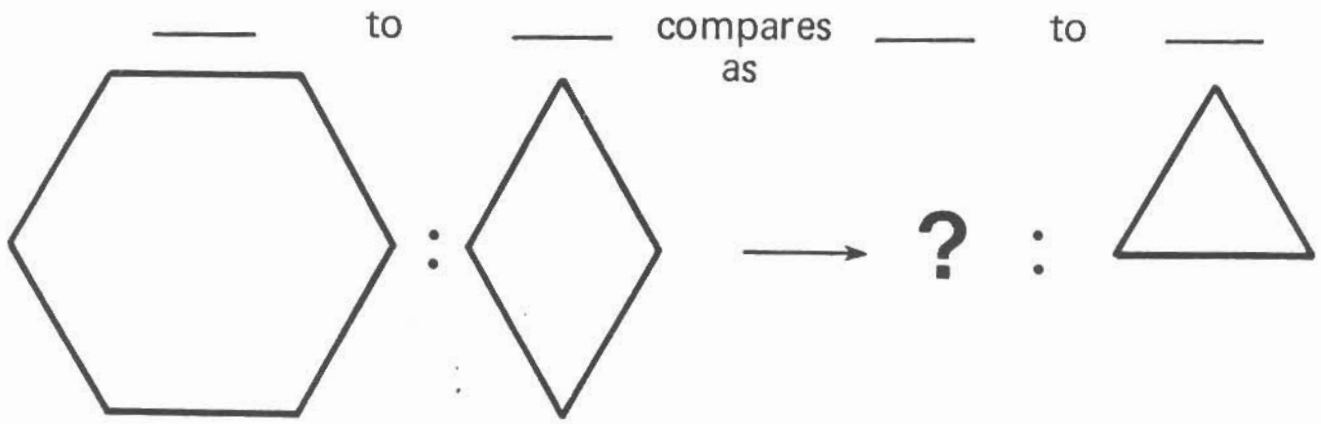
3) $\frac{1}{3} \div \frac{1}{6}$ means

In one-third, there are how many sixths?

_____ needs how many _____ to cover it? _____

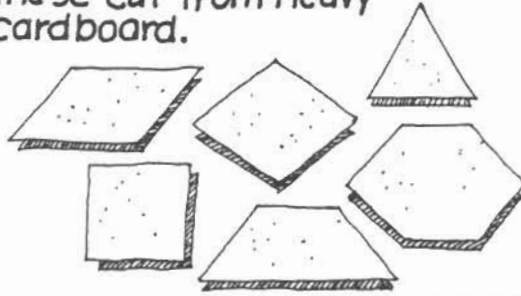
$$\frac{1}{3} \div \frac{1}{6} = \square$$

Trace your answers.



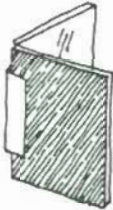
MIRROR MATH

You need some shapes like these cut from heavy cardboard.

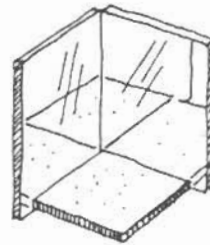


You need a copy of the SHAPELY FIGURES sheet. Cut out the shapes and use them for this activity.

You also need 2 small rectangular mirrors taped together like this.

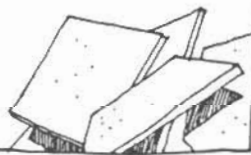


Set the square between the mirrors. Make sure the mirrors fit snugly around one corner of the square.



Draw what you see.

Guess what would happen if you did this with the other shapes.


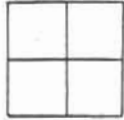
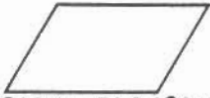

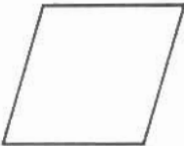
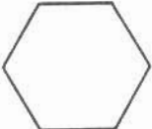



Now try it. Draw what you see for each one.



Does it matter which corner of the shape you fit snugly between the mirrors?

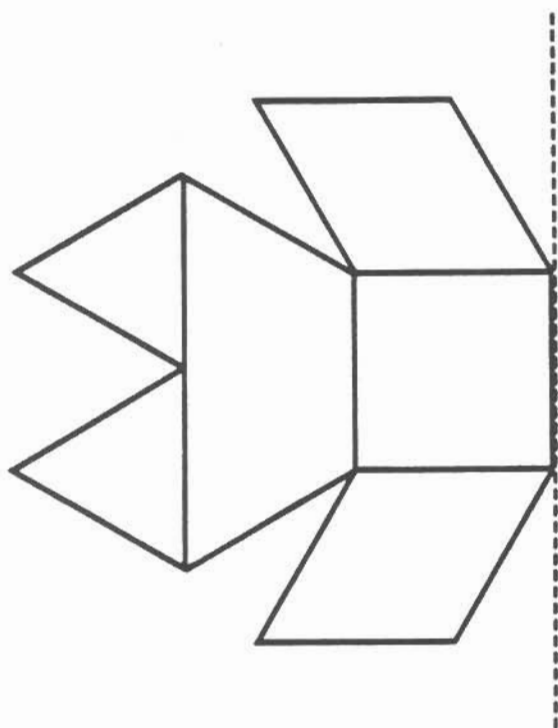
Making predictions about how shapes will look in the mirrors and then testing them is a good way to learn about shapes.

Shape	How many do you see?	Draw what you see.
 SQUARE	4	
 PARALLELOGRAM		
 EQUILATERAL TRIANGLE		
 RHOMBUS		
 REGULAR HEXAGON		
 RECTANGLE		



Which shapes look different depending on which corner you use?
 Draw what you see.

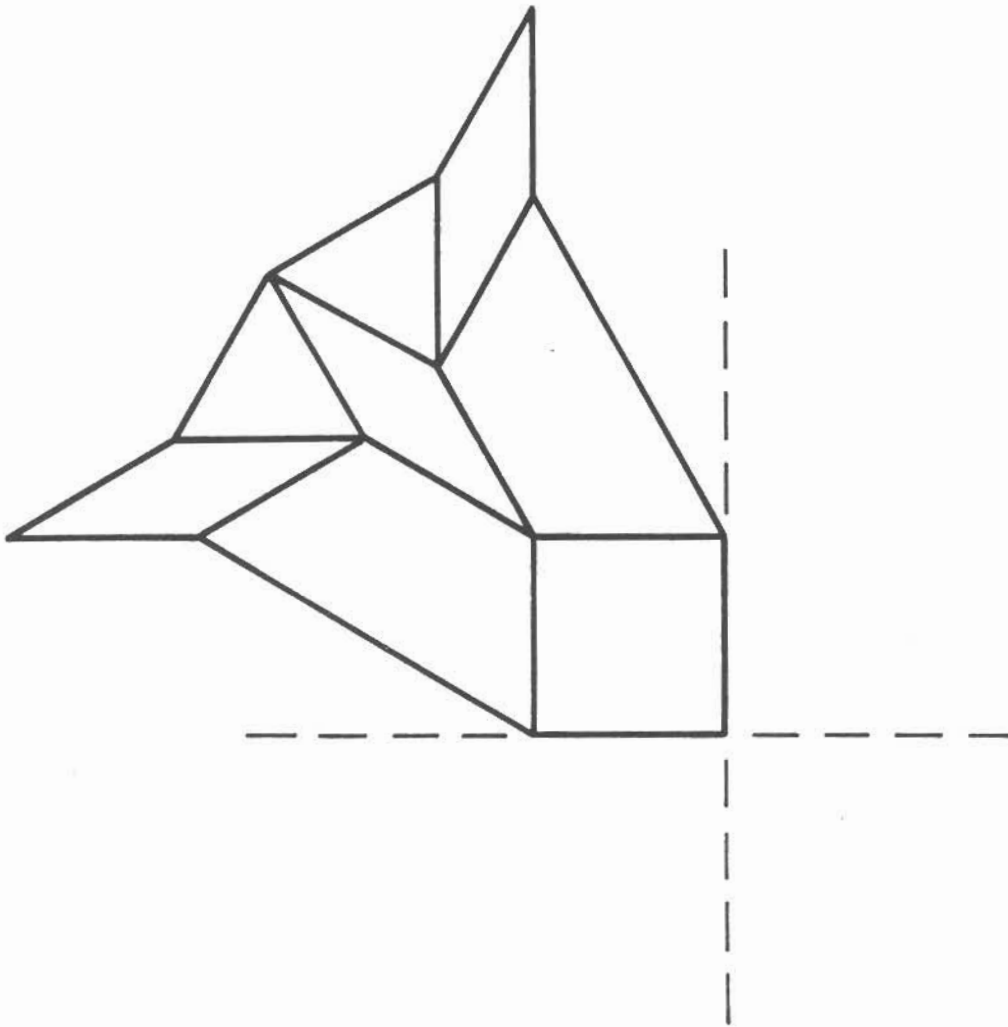
What happens when you use 2 sets of mirrors? Try it with each shape.



Build the mirror image of this design on the other side of the dotted line.

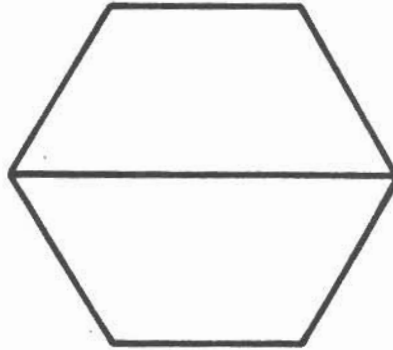
Check by using a mirror.

Complete the design so that it has four lines of symmetry.
(Hint: there will be four orange squares in the center.)



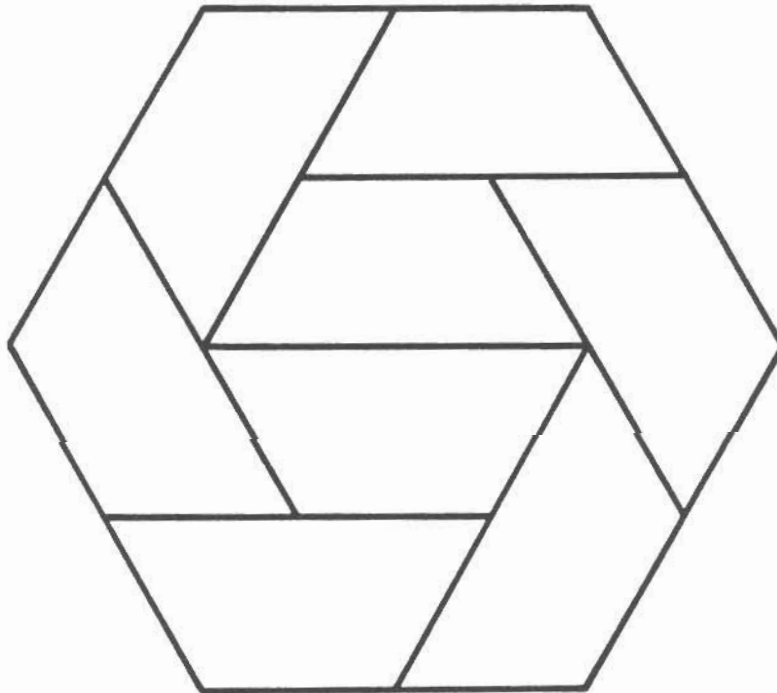
What happens when you try to build larger hexagons using hexagons?

Let's use trapezoids to build hexagons.



The first hexagon (1) takes _____ blocks.

The second hexagon (2) takes _____ blocks.

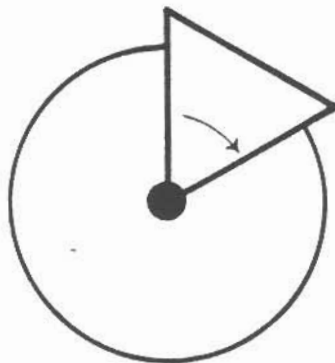


Finish the pattern:

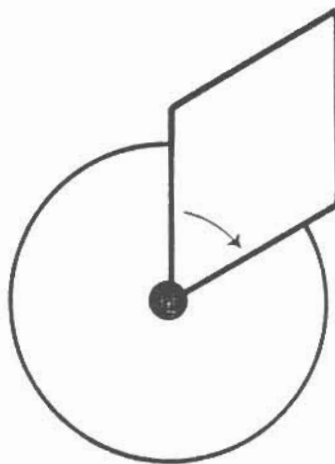
Number of figure	Blocks used
3	_____
4	_____
5	_____

Since we know there are 360° in a circle we can find the degrees in the angles of each of the pattern block pieces.

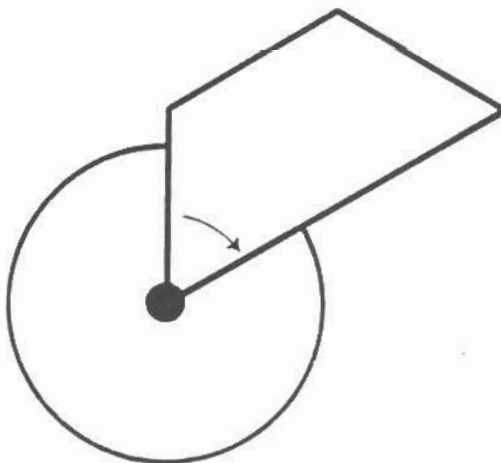
It takes _____ green triangles to cover the circle, so each small angle measures _____ of 360° or _____ degrees.



If we use the small corner, it takes _____ blue rhombi to cover the circle, so each small angle measures _____ of 360° or _____ degrees.



If we use the small corner, it takes _____ red trapezoids to cover the circle, so each small angle measures _____ of _____ or _____ degrees.



EJECT

For 2 players

GET READY

You will need the yellow, red, blue, and green Pattern Blocks.

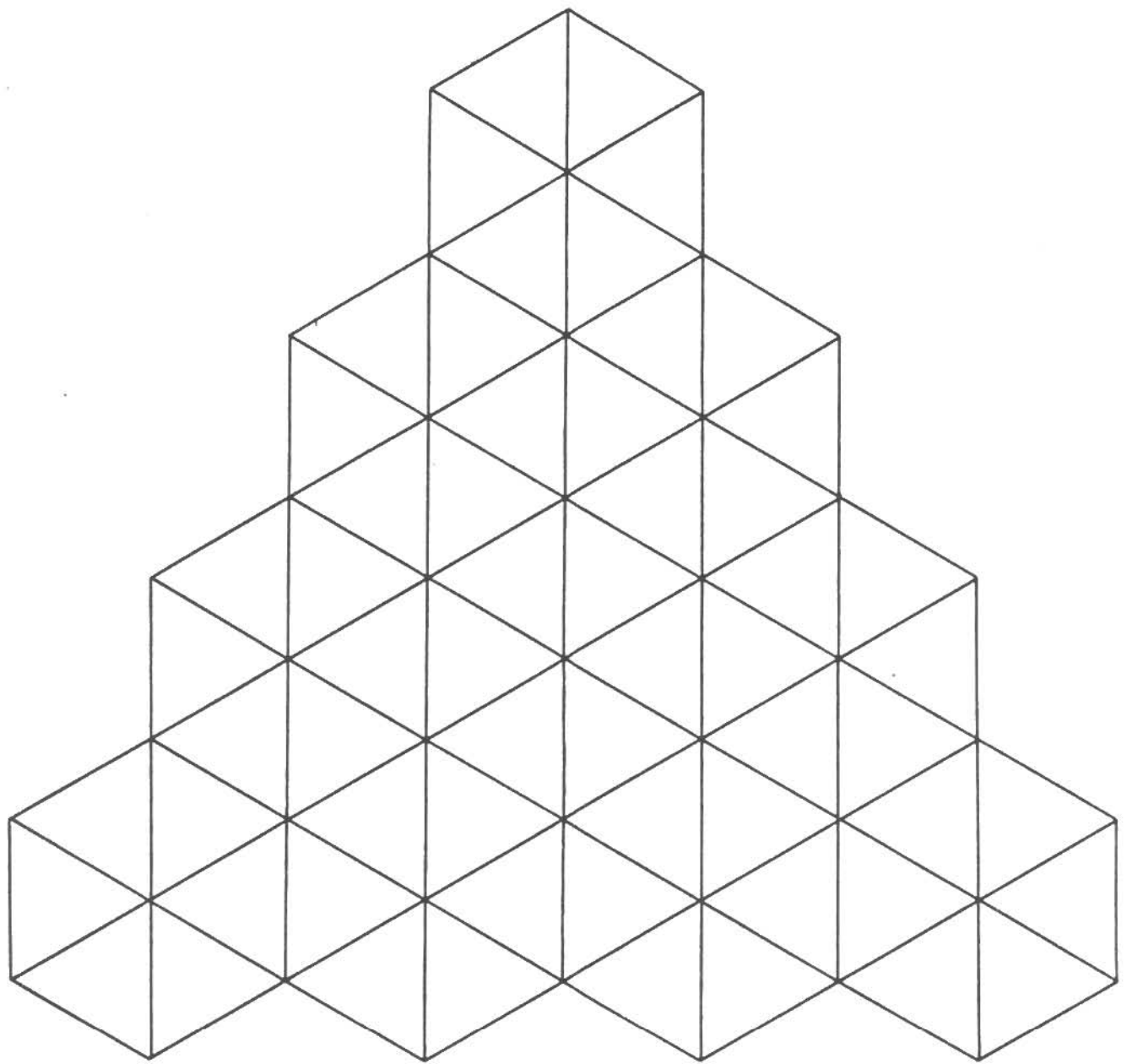
Take turns closing your eyes and drawing one block from the pile quickly.

The player who draws the smaller block goes first.

PLAY

Take turns placing one block anywhere on the design on the playing board. No two blocks of the same color may touch, except by a point.

The player who places the last block, to cover the design completely, or the last block that can legally be played, is the winner.



EJECT

Covering a design logically