_____

## Planning a Dog Park

Your parents have asked you to design an enclosed area in your backyard for your dog.

- The enclosed area can be in the shape of a square or a rectangle.
- The area will be enclosed with a fence that cannot be attached to another structure (i.e., the house, shed, etc.).
- There is 72 yards of fencing available.
- The dimensions of your rectangular backyard is 30 yards by 35 yards.

What is the largest area in your backyard that can be enclosed for your dog? What are the dimensions of this enclosed area? Justify how you know that your design provides the largest area.
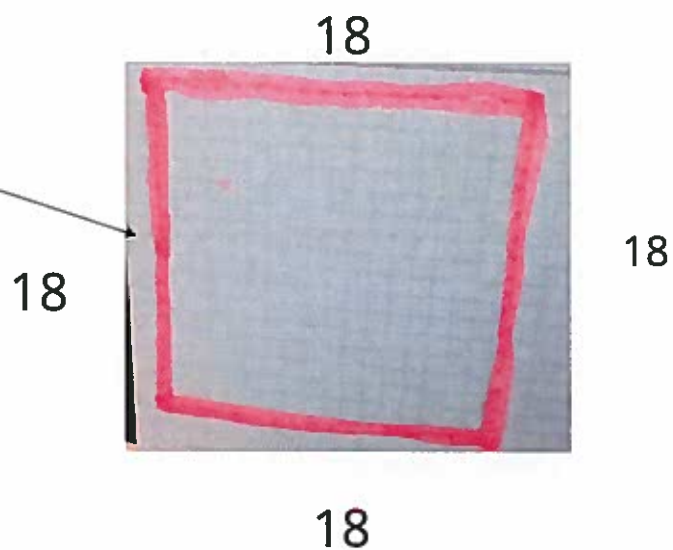
Sequel: What is the largest area in your backyard for your dog if the enclosure can be a circle? How does this change your answer?

# Our Data :)

- Enclosed Area (Can be Rectangle Or Square)
- Both a square or rectangle has 4 sides
- 72 (total perimeter)/4 = 18

# Our Answer

18x4=72

18

18

18

18

18

# How we got our answer…………

We knew that the enclosed are could be a square and a rectangle, which each have 4 sides. So we decided if we wanted to find what shape our answer would end up being we decided to divide 72/4 which equals 18. Then, we graphed it and found that if we did 18 for 4 sides, the lines all matches up to make a square, because each side was equal with 18 units on each side.

**18x4=72  (18 by 18 by 18 by 18 to get 72)**

Name_____

## Planning a Dog Park

Your parents have asked you to design an enclosed area in your backyard for your dog.

- The enclosed area can be in the shape of a square or a rectangle.
- The area will be enclosed with a fence that cannot be attached to another structure (i.e., the house, shed, etc.).
- There is 72 yards of fencing available.
- The dimensions of your rectangular backyard is 30 yards by 35 yards.

What is the largest area in your backyard that can be enclosed for your dog?  What are the dimensions of this enclosed area?  Justify how you know that your design provides the largest area.

$72 \div 4 = 18$

18 is the close estimate

$18*4=$  $\begin{array}{r} 18 \\ *4 \\ \hline 72 \end{array}$  18 on each side would make a square

$\begin{array}{r} 18 \\ 4\overline{)72} \\ -4\phantom{0} \\ \hline 32 \\ -32 \\ \hline 0 \end{array}$

$18*18$

Area: $\begin{array}{r} 18 \\ *18 \\ \hline 324 \end{array}$

$20*16$

$\begin{array}{r} 20 \\ +20 \\ \hline 40 \end{array}$  $\begin{array}{r} 16 \\ +16 \\ \hline 32 \end{array}$  $\begin{array}{r} 40 \\ +32 \\ \hline 72 \end{array}$

Area: $\begin{array}{r} 20 \\ *16 \\ \hline 120 \\ +200 \\ \hline 320 \end{array}$

$24*12=$  $\begin{array}{r} 24 \\ *12 \\ \hline 48 \\ +240 \\ \hline 288 \end{array}$

$19*17=$  $\begin{array}{r} 19 \\ *17 \\ \hline 63 \\ +190 \\ \hline 153 \end{array}$

Areas
$16*18 = 324$
$20*16 = 320$
$10*26 = 260$
$28*8 = 224$
$24*12 = 288$
$22*14 = 308$
$19*17 = 153$

I think that the largest area that can be enclosed for the dog would be 324 and the dimensions are 18*18. I have 7 examples of dimensions that would fit in the yard and the largest area is 18*18. The farther the numbers were getting 20*16 → 10*26 → 24*12 the smaller the area was.

Sequel: What is the largest area in your backyard for your dog if the enclosure can be a circle?  How does this change your answer? The area for the circle is 382 and the area for the square is 324. The circle is bigger because the perimeter is the same also

Grade 6 Task

95.5
*04.0
(382)

12.0
*11.5

40

12

11.5

40

11.5

11.5

12
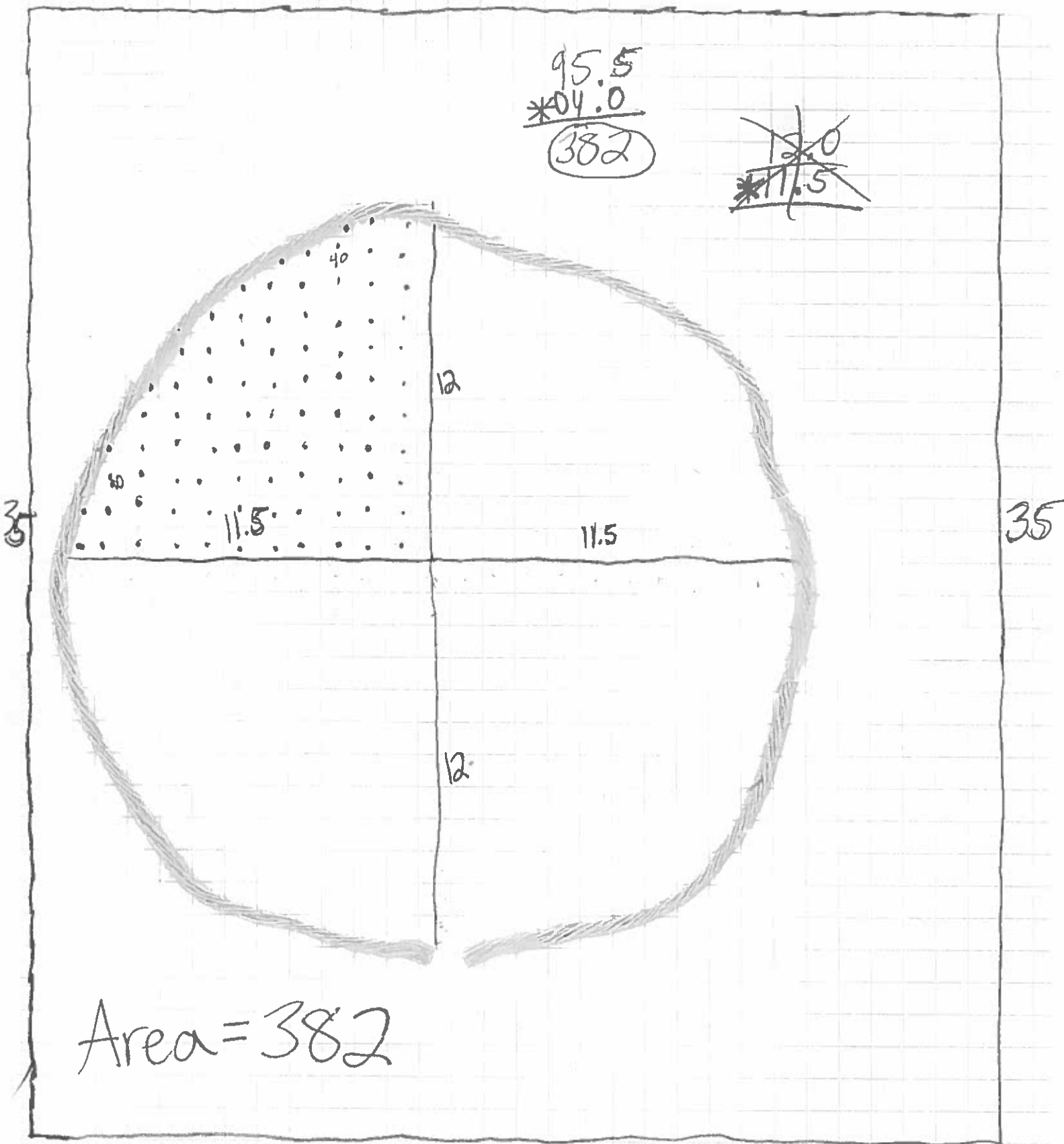
Area = 382

CALCULATIONS FOR

PREPARED BY

DATE

HULL NO.

APPROVED BY

DATE

PAGE NO.

35

35

30

## Planning a Dog Park

Your parents have asked you to design an enclosed area in your backyard for your dog.

- The enclosed area can be in the shape of a square or a rectangle.
- The area will be enclosed with a fence that cannot be attached to another structure (i.e., the house, shed, etc.).
- There is 72 yards of fencing available.
- The dimensions of your rectangular backyard is 30 yards by 35 yards.

What is the largest area in your backyard that can be enclosed for your dog?  What are the dimensions of this enclosed area?  Justify how you know that your design provides the largest area.

For The dog 18 by 18 is largest fencing, because it has $4\overline{)72}^{\,18}$ the most area and
It fits perfectly in the 72 yards available, They all have the same perimeter,

18 by 18

$P = 18 + 18 + 18 + 18 = 72$

$A = 18 \times 18 = 344$
King

We found a property: The greater the distance between the Length and width, or width and height, the less the area will be, To get the largest area you have to make all the sides equal or closest in value to eachother,

30 by 6

$P = 30 + 6 + 30 + 6 = 72$

$A = 30 \cdot 6 = 120$

20 by 16

$P = 20 + 16 + 20 + 16 = 72$

$* = 20 \cdot 16 = 320$

Sequel: What is the largest area in your backyard for your dog if the enclosure can be a circle?  How does this change your answer?
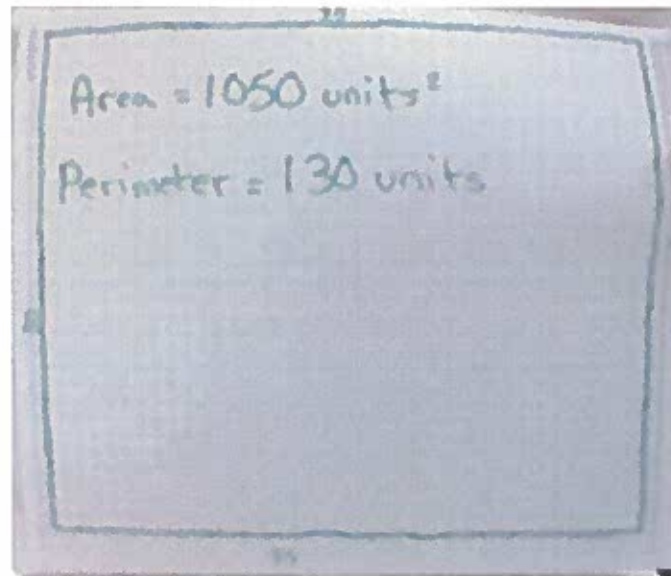
## LOWEST AREA

P= 30 + 6 + 30 + 6=72

A= 30 x 6= 120

## Fence area

AREA= 30 x 35

AREA= 1500



Area = 1050 units$^2$

Perimeter = 130 units
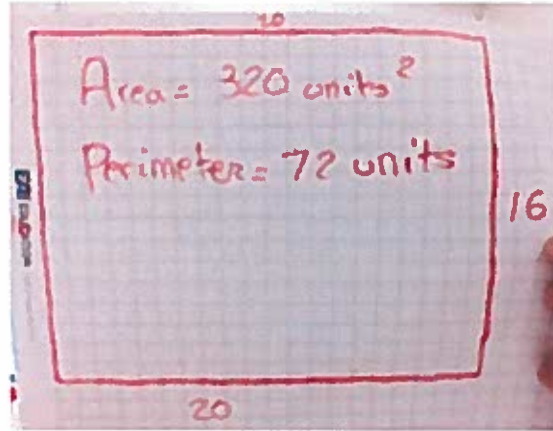
## Largest Area

Area=324 units squared

Perimeters=72 units
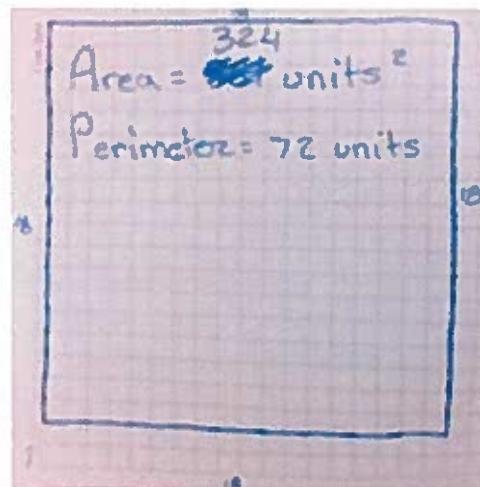


324

Area = ~~324~~ units$^2$

Perimeter= 72 units

## Planning a Dog Park

Your parents have asked you to design an enclosed area in your backyard for your dog.

- The enclosed area can be in the shape of a square or a rectangle.
- The area will be enclosed with a fence that cannot be attached to another structure (i.e., the house, shed, etc.).
- There is 72 yards of fencing available.
- The dimensions of your rectangular backyard is 30 yards by 35 yards.

What is the largest area in your backyard that can be enclosed for your dog? What are the dimensions of this enclosed area? Justify how you know that your design provides the largest area.

When my group and I used the Geoboards, we found that the area is 29 × 34 because we scaled the dimentions down and measured Area and Perimeter using S+S+S+S = P and S×S = A².

Sequel: What is the largest area in your backyard for your dog if the enclosure can be a circle? How does this change your answer?

## STUDENT E

### Planning a Dog Park

Your parents have asked you to design an enclosed area in your backyard for your dog.

- The enclosed area can be in the shape of a square or a rectangle.
- The area will be enclosed with a fence that cannot be attached to another structure (i.e., the house, shed, etc.).
- There is 72 yards of fencing available.
- The dimensions of your rectangular backyard is 30 yards by 35 yards.

What is the largest area in your backyard that can be enclosed for your dog? What are the dimensions of this enclosed area? Justify how you know that your design provides the largest area.

Sequel: What is the largest area in your backyard for your dog if the enclosure can be a circle? How does this change your answer?

# RECTANGLE 16x20

P: 72
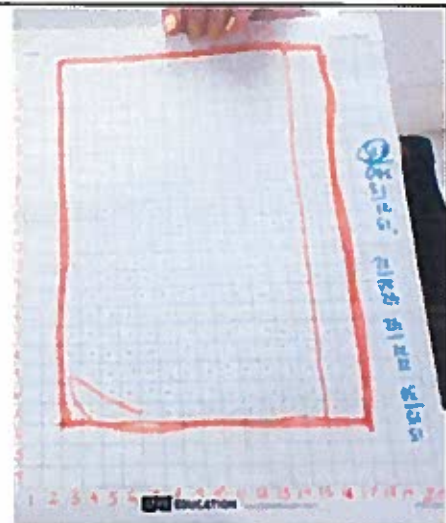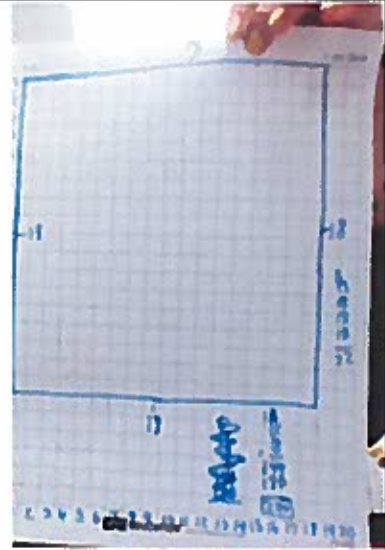
A: 320
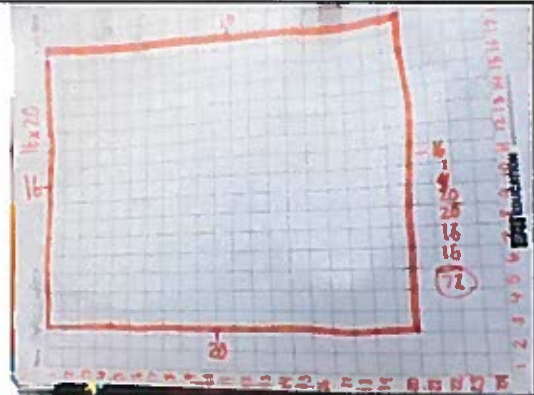


# RECTANGLE 15x21

P: 72

A: 315

# SQUARE 18x18

P: 72

A: 324



# Justification - square

The square has the largest area, we know this because although, all 3 shapes take up the whole 72 yards of fencing, the square has 324 yards of area while the 16x20 rectangle has an area of 320 and the 15x21 has an area of 315.
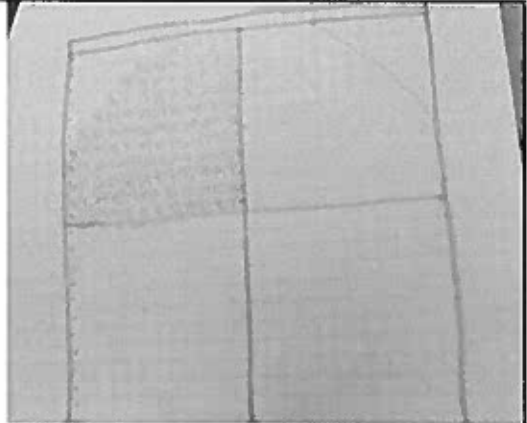
# CIRCLE

72 ÷ 3 = Diameter

Diameter : 24 yards

Radius: 12 yards

Circumference: 72 yards

Area Estimate: 414



# Justification

The shape with the largest area is the circle. We know this because the area of the circle is 414 yards, the square is 324, the 16x20 rectangle is 320, and the 15x21 rectangle is 315. They each have the same perimeter, using all 72 yards of fencing but the circle still has the most amount of area given.
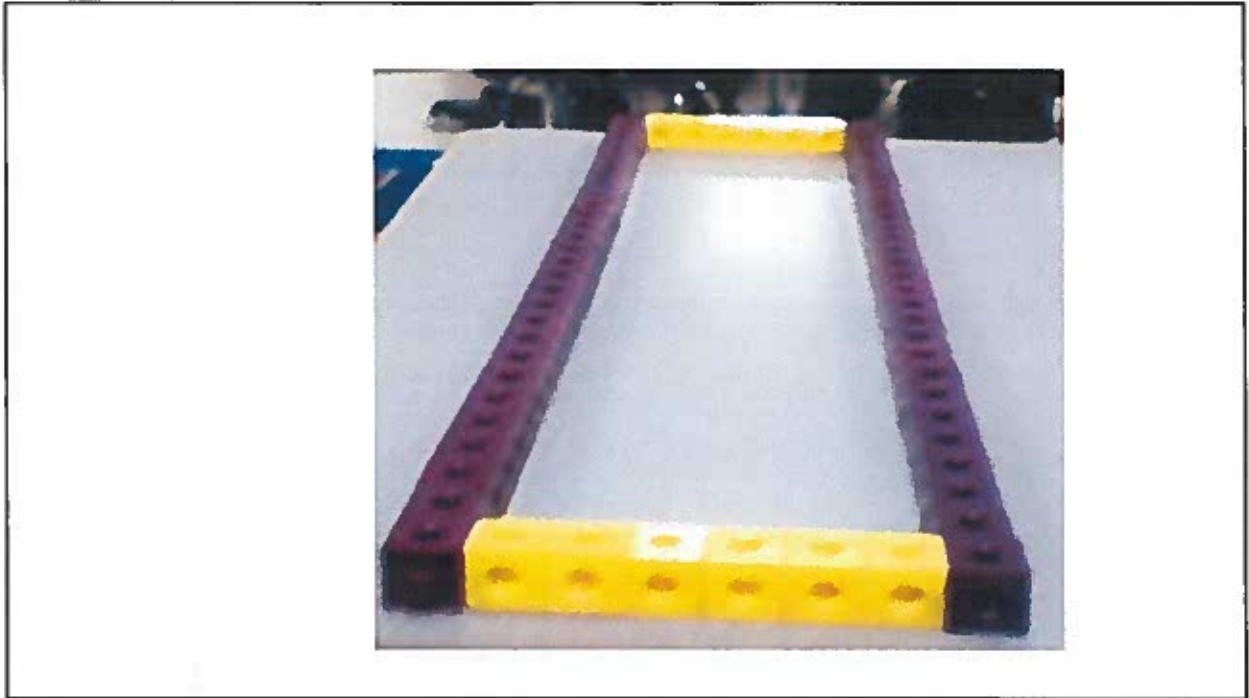
# STUDENT F

_____

## Planning a Dog Park

Your parents have asked you to design an enclosed area in your backyard for your dog.

- The enclosed area can be in the shape of a square or a rectangle.
- The area will be enclosed with a fence that cannot be attached to another structure (i.e., the house, shed, etc.).
- There is 72 yards of fencing available.
- The dimensions of your rectangular backyard is 30 yards by 35 yards.

What is the largest area in your backyard that can be enclosed for your dog?  What are the dimensions of this enclosed area?  Justify how you know that your design provides the largest area.

Sequel: What is the largest area in your backyard for your dog if the enclosure can be a circle?  How does this change your answer?

Length: 30

Width: 6

Area: 180

## Explation

This is the largest area because we multplied 30 by 6. The product of 30 and 6 was 180. In the picture the area looks big.