

Name _____ Class Period _____

There are 21 problems and the class will divide into 7 groups. After round 1, team members A will move forward and B will move backward. C and D will be stationary at all times. Each person will hand in the project with ALL work shown. Each station will be 10 minutes with 3 problems per station. 5 pts each...105 max

STATION 1

1

Mrs. Travis wants to have a clown deliver balloons to her secretary's office. Clowns R Fun charges \$1.25 per balloon and \$6 for delivery. Singing Balloons charges \$1.95 per balloon and \$2 for delivery. What is the minimum number of balloons Mrs. Travis needs to purchase in order for Clowns R Fun to have a lower price than Singing Balloons?

- A 5
- B 6
- C 11
- D 12

This is a system of equations.
Write 2 equations, set e, and solve

2.

Mr. Ortega photographed the students in the math club. He arranged the students into 4 parallel rows. Each row had 3 more people than the previous row. If the first 2 rows had a total of 9 people, how many people total were in the group?

F 30	DRAW IT	
G 27	_____ row 1	}
H 24	_____ row 2	
J 21	_____ row 3	= 9
	_____ row 4	

3.

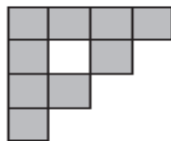
The first 4 stages of a certain fractal are shown below.



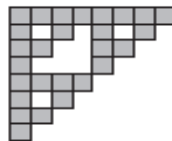
Stage 1



Stage 2



Stage 3



Stage 4

In each stage after the first, each square is divided into 4 squares, and then the bottom right square is removed. If the pattern continues, how many shaded square units will Stage 5 contain?

- F** 243
- G** 54
- H** 81
- J** 27

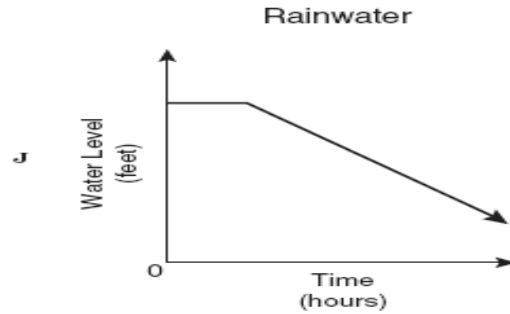
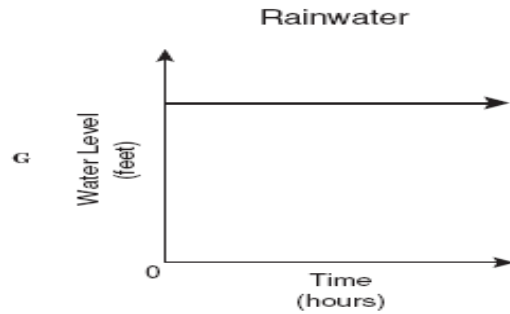
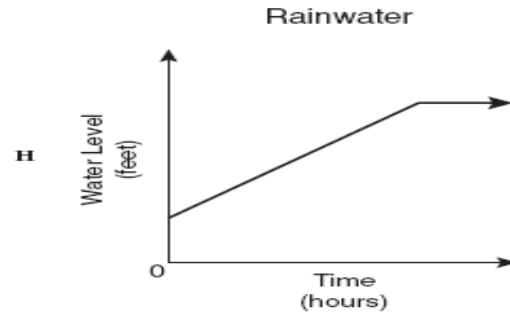
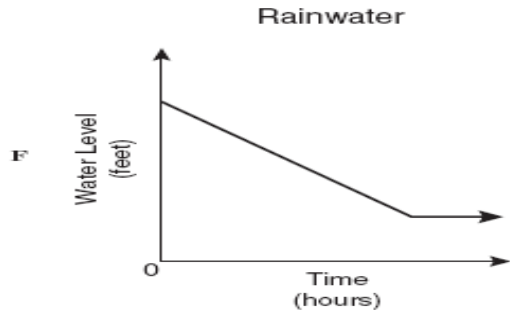
Who cares about what it says, make a table and count squares:

Stage	Squares
1	
2	
3	
4	
5	?

STATION 2

4

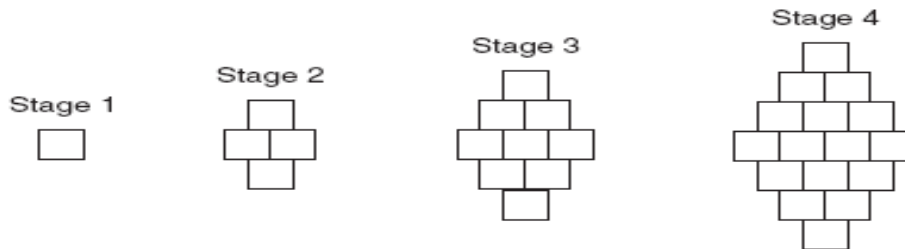
The water level in a creek was at a maximum height after a heavy rain. The water level in the creek receded at a constant rate for several hours until it leveled off to its regular height. Which of the following graphs best represents this information?



Run your finger along the graph as you read. Which graph follows the story?

6.

28 The blocks below are arranged in sequence to show a pattern.



Which expression can be used to determine the number of blocks at Stage n ?

- F** \sqrt{n}
- G** $(n - 1) + 1$
- H** $2n$
- J** n^2

5.

The pattern below represents the areas of several squares.

1, 9, 25, 49, ...

This pattern was formed by changing the length of the sides of the squares. How does each new length compare to the previous length?

- F** Each new length is 2 units greater.
- G** Each new length is $2\frac{1}{2}$ units greater.
- H** Each new length is 4 units greater.
- J** Each new length is 8 units greater.

How long is the side of a square with the area of 1? _____
 9? _____
 25? _____ 49? _____ How do these compare? _____

Make a table:

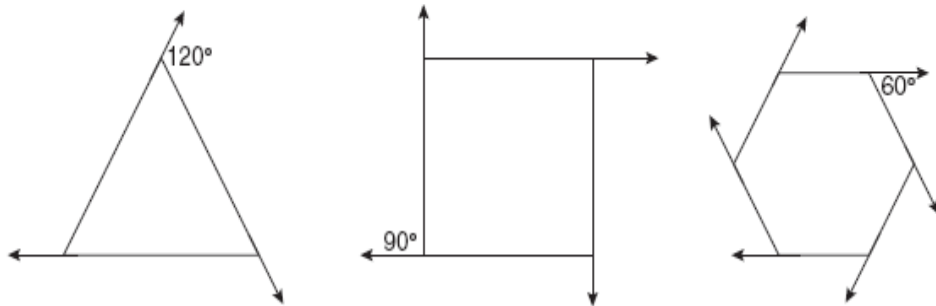
<u>Stage (n)</u>	<u>blocks</u>
<u>1</u>	_____
<u>2</u>	_____
<u>3</u>	_____
<u>4</u>	_____

Now use $y =$ program

STATION 3

7.

13 The measure of an exterior angle is shown for each of 3 regular polygons below.



Which expression best represents the measure in degrees of an exterior angle of a regular polygon with n sides?

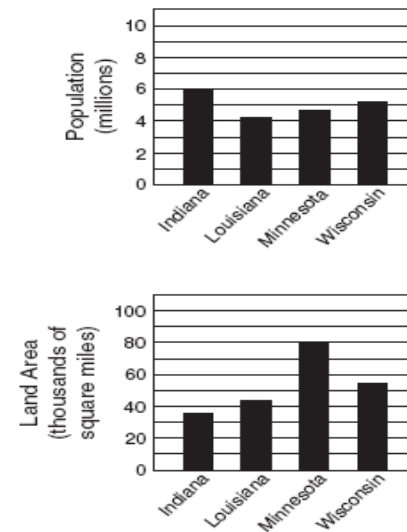
- A $30(n + 1)$
- B $\frac{360}{(n - 2)n}$
- C $30(n - 1)$
- D $\frac{360}{n}$

Make a table and use y -

$y =$ Sides	Ex Angle
3	
4	
6	

8.

The two bar graphs shown below represent the populations and land areas of four states.



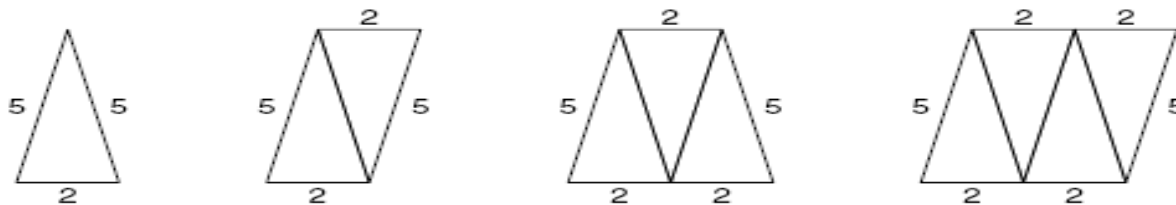
Based on the information given in the bar graphs, which of these four states is the least densely populated?

- A Indiana
- B Louisiana
- C Minnesota
- D Wisconsin

LEAST

9.

Below are congruent isosceles triangles arranged in a sequence to obtain a geometric pattern.



Which expression can be used to find the perimeter of a composite figure made up of t triangles arranged in this pattern?

- F $12t$
- G $2t + 10$
- H $5t + 2$
- J $12t - 5$

Make a TABLE

Triangles	Perimeter
1.	
2.	
3.	
4.	

Now, did you find the perimeter or add up all the sides?

STAYION 4

10. Mrs. Farmer asked her students to vote for their favorite vegetable. The number of votes each vegetable received is listed below.

- Beets received 17 votes.
- Carrots received 21 votes.
- Lettuce received 21 votes.
- Broccoli received 19 votes.
- Potatoes received 22 votes.

If a circle graph is constructed using these data, which of the following tables best represents the central angle of each sector?

Students' Favorite Vegetable

Vegetable	Central Angle
Beets	17°
Carrots	21°
Lettuce	21°
Broccoli	19°
Potatoes	22°

F

Students' Favorite Vegetable

Vegetable	Central Angle
Beets	61°
Carrots	76°
Lettuce	76°
Broccoli	68°
Potatoes	79°

H

Students' Favorite Vegetable

Vegetable	Central Angle
Beets	61°
Carrots	76°
Lettuce	76°
Broccoli	79°
Potatoes	68°

G

Students' Favorite Vegetable

Vegetable	Central Angle
Beets	68°
Carrots	76°
Lettuce	76°
Broccoli	61°
Potatoes	79°

J

How many degrees in a circle? ____ That eliminates one answer. ____ has the least number of votes, so eliminate ____ . ____ has most. Eliminate ____

11. 57 Which of the following equations best represents the relationship in the set of data shown below?

<i>x</i>	-4	-3	-1	2	4
<i>y</i>	24	17	9	12	24

A $y = -7x - 4$

B $y = \frac{3}{2}x^2$

C $y = -5x + 4$

D $y = x^2 + 8$

Use you basic $y=$ program

12. The years 707, 1001, and 2332 are examples of palindrome numbers. The year 2002 also represents a palindrome number. What is the nearest year before 2002 that also represents a palindrome number?

Palindrome words: racecar, mom, dad, etc.

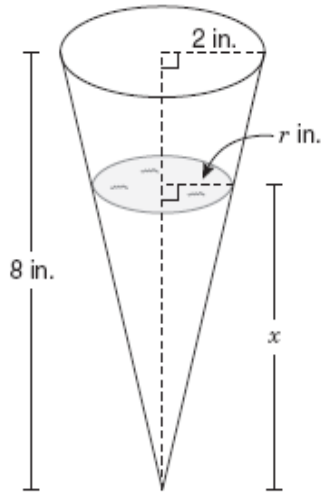
So what is a palindrome number? _____

There can only be one palindrome per century. Why _____
 What was the century before 2000? _____ Answer? _____

STATION 5

13.

The figure below shows a conical cup containing water. The water depth can be represented by x , and the area of the water surface can be represented by A . As the water depth changes, the area of the water surface changes, as shown in the table below.



Water Depth (inches)	Area of Water Surface (square inches)
1	$\frac{\pi}{16}$
2	$\frac{\pi}{4}$
3	$\frac{9\pi}{16}$
4	π
8	4π

Which equation best represents the relationship between the area of the water surface and the water depth?

F $A = \frac{\pi(2x - 1)^2}{16} \text{ in.}^2$

G $A = \frac{\pi x}{2} \text{ in.}^2$

H $A = \frac{\pi x^2}{16} \text{ in.}^2$

J $A = \frac{\pi x}{16} \text{ in.}^2$

This looks hard but is really just a $y =$ problem. Change the areas to a decimal and use your $y =$ program

Higher thought process. Each answer and equation has a π symbol in the top of the fraction, so we can just cross out all of them. Why? _____
 Now we don't have to worry about pi anymore.

14.

Casey conducted an experiment and recorded the data in the table shown below.

x	y
1	1
2	2
3	5
4	10

Which equation best describes these data?

F $y = x$

G $y = 2x - 1$

H $y = x^2 + x - 1$

J $y = (x - 1)^2 + 1$

Another $y =$ program

15.

According to the data shown below, which would be the best prediction of the number of passengers at the International Jetport for the year 2008?

Passengers at International Jetport

Year	Number of Passengers (millions)
1980	30.6
1985	38.5
1990	46.4
1995	54.3
2000	62.2

A 70.1 million

B 68.5 million

C 74.8 million

D 78.0 million

What is the year interval on the chart? _____

What is the passenger interval? _____

So, how many passengers in 2005? _____

2010? _____

2008? _____

STATION 6

16.

10 The table below shows h , the approximate height of an Ameri-Willow tree after t years.

Age of Ameri-Willow (years)	Height of Ameri-Willow (feet)
1	8
3	25
6	49
7	57
9	70

Which equation best fits these data?

F $h = 8.2 + 3.75t$

G $h = 1.12 + 7.82t$

H $h = 7.5 + 0.65t^2$

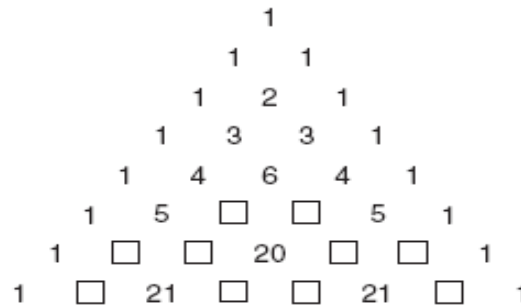
J $h = -1.24 + 9.75t$

Y = will not get it.

This is a LINEAR Regression.

17.

31 The figure below shows a partial view of Pascal's triangle.



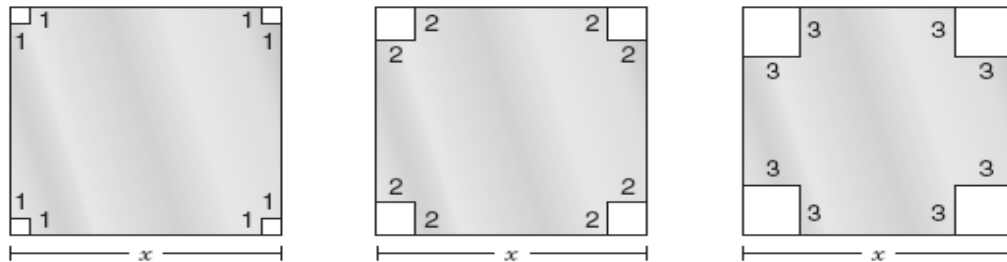
If each square represents a missing number in Pascal's triangle, which of the following could not be a missing number used to complete the partial view of Pascal's triangle shown above?

- A 24
- B 15
- C 35
- D 10

The secret to Pascal's triangle, if you don't see it, is the lower number is the sum of the two above it.

18.

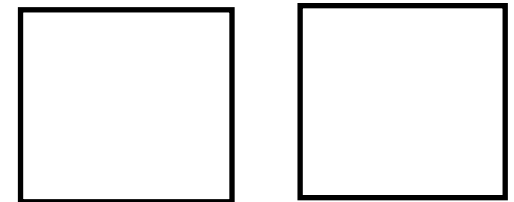
Four square pieces are cut from the corners of a square sheet of metal. As the size of the small squares increases, the remaining area decreases, as shown below.



If this pattern continues, what will be the difference between the first square's shaded area and the fifth square's shaded area?

- A 4 square units
- B 24 square units
- C 49 square units
- D 96 square units

Draw the 4th and 5th squares here



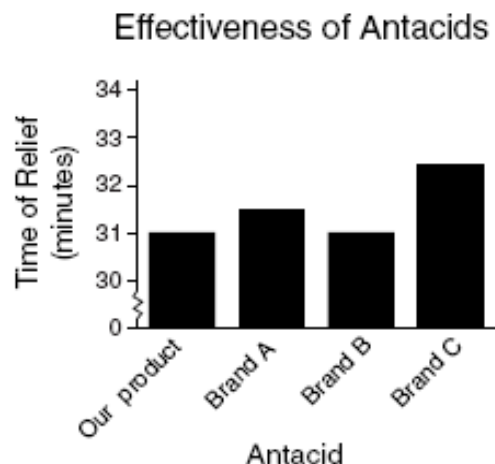
How many units are taken out of the first squares shaded area _____
 2nd square? _____ 3rd square? _____
 4th square? _____ 5th square? _____

Difference between 5th and 1st _____

STATION 7

19.

A pharmaceutical company claimed that its product relieves acid indigestion more quickly than any other antacid. The company used the graph below to support its claim.



According to the graph, which statement best describes the company's product?

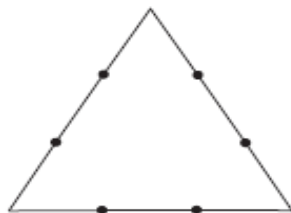
- A Its product works faster than some brands but much slower than others.
- B Its product works many times faster than the other brands.
- C Its product works in about the same time as the other brands.
- D Its product works somewhat slower than the other brands shown.

What is the range between the fastest and the slowest antacid? _____

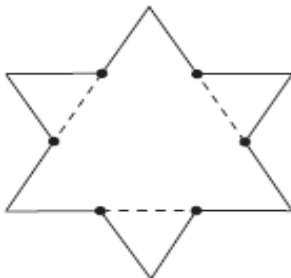
Is that much of a difference? _____

20.

A student begins drawing a fractal by dividing each side of an equilateral triangle into 3 segments.



The student then replaces the middle segments with 2 equal segments to form the sides of smaller equilateral triangles.



If the student repeats this process on the 12 sides of the second figure, how many sides will the next figure have?

- F 24
- G 36
- H 48
- J 60

So, the new triangle is in the middle of the line with space on each side. So, if we add a layer, there still has to be spaces on each side of the new triangles. Use the 2nd triangle and draw little triangles in the middle of each side and count.

21.

The table below shows the relationship between I , the current in milliamperes (mA) through a filament, and t , the filament's temperature in degrees Celsius.

Temperature, t (°C)	Current, I (mA)
80	320
90	360
100	400
110	440

Which equation best represents the relationship between the quantities in the table?

- A $I = \frac{1}{4}t$
- B $I = \frac{1}{40}t$
- C $I = 40t$
- D $I = 4t$

Table of Values. X on the left. So $I = \underline{\hspace{1cm}}$ and $t = \underline{\hspace{1cm}}$ Use y= program. Put fractions in (). Do it.