

Name _____

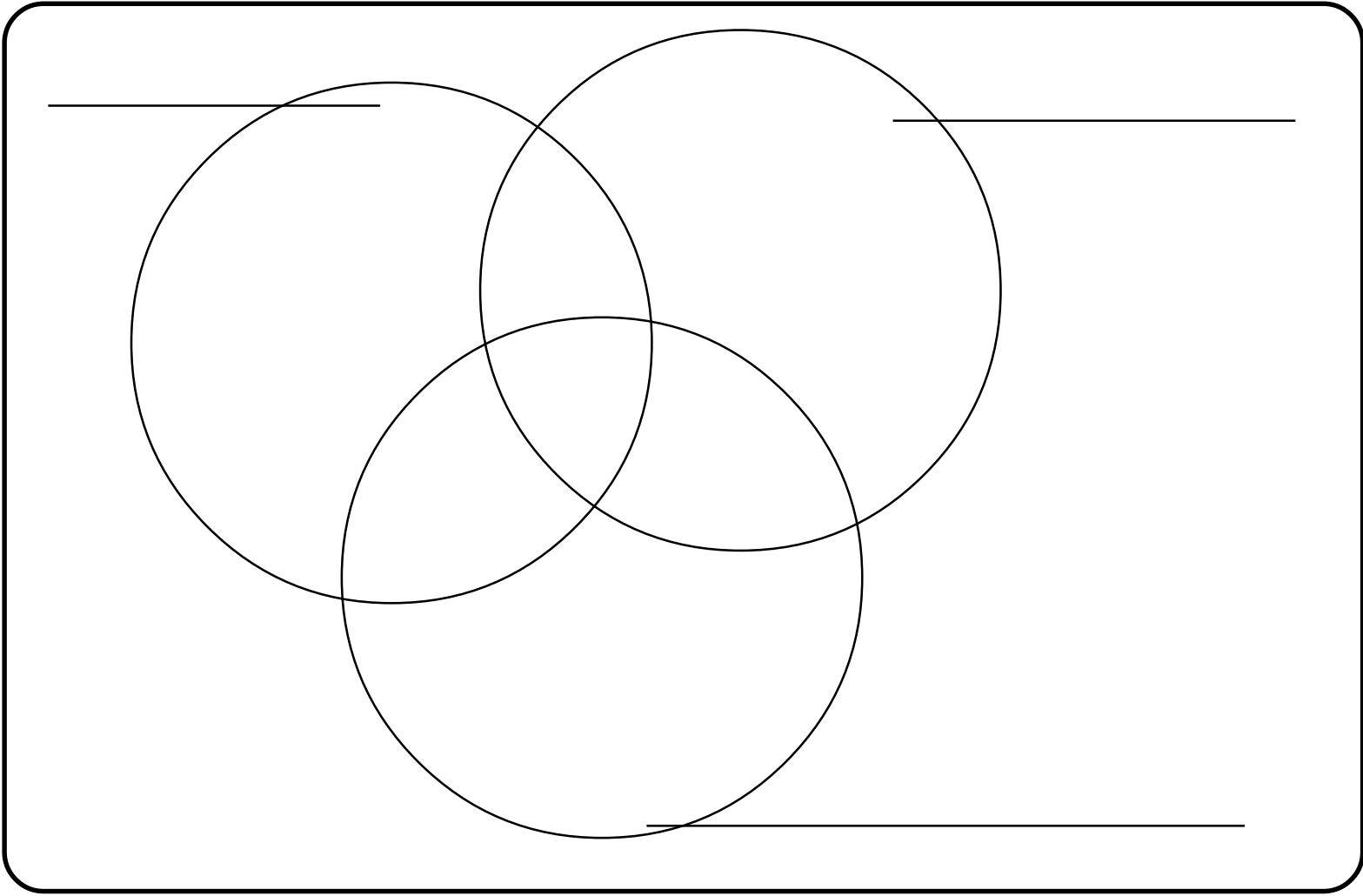
Date ____/____/____

FOOD	Calories per serving	Fat grams per serving	Calories from Fat per serving*
Nutri•Grain Bar	140 calories	3 g	27 calories

* 1 gram fat = 9 calories

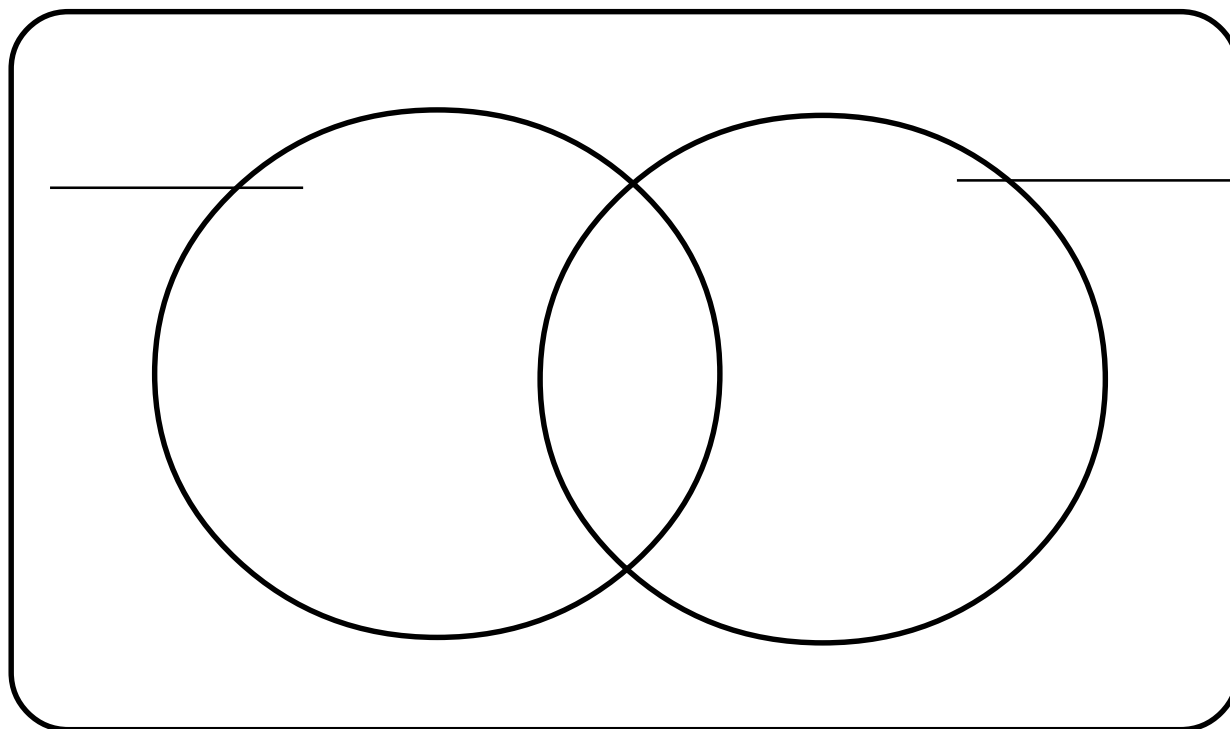


Attributes			
2 even	3 odd	4 one digit is 3	5 multiples of 7
6 factors of 12	7 factors of 24	8 multiples of 5	
9 one digit is 5	10 prime	11 multiples of 3	12 factors of 40



- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
- 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

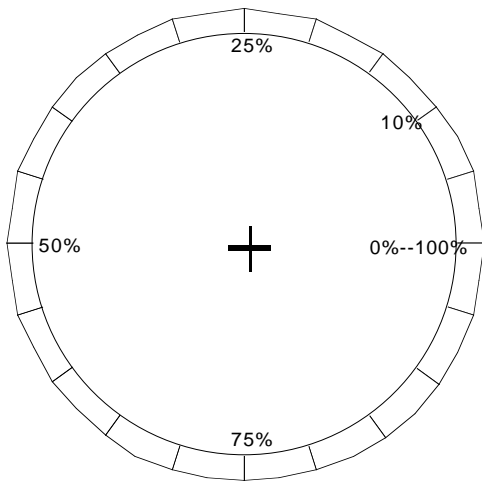
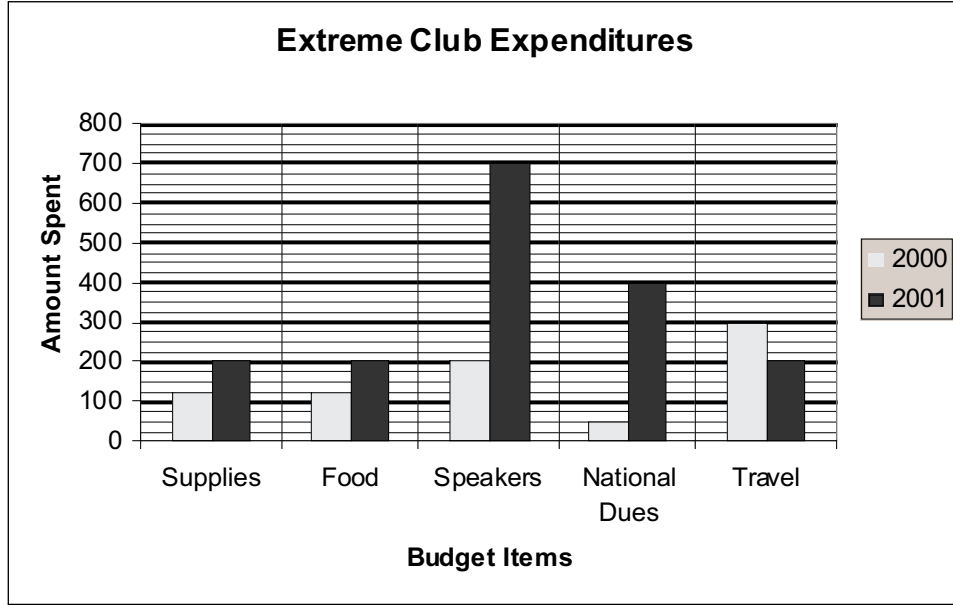
Attributes		
1 odd	2 even	3 factors of 25
4 factors of 100	5 multiples of 4	6 composites



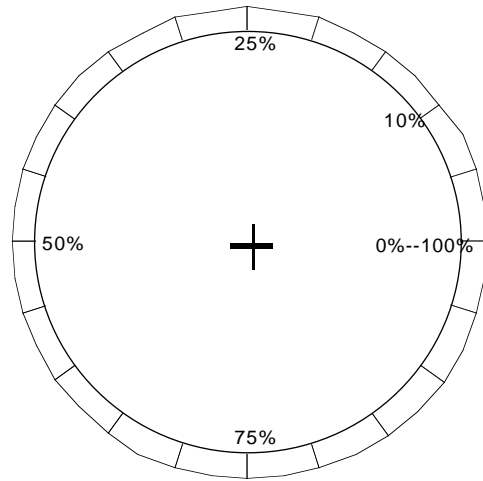
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Double Bar Chart vs. a Double Pie Chart

The following graph shows how a certain club used its money over a two year period. Redraw the graph as two pie charts. Answer the questions on the next page.



2000



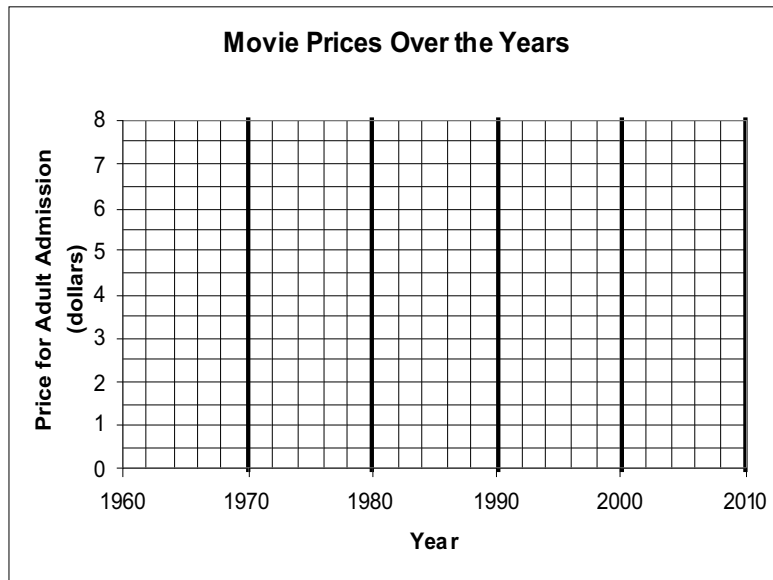
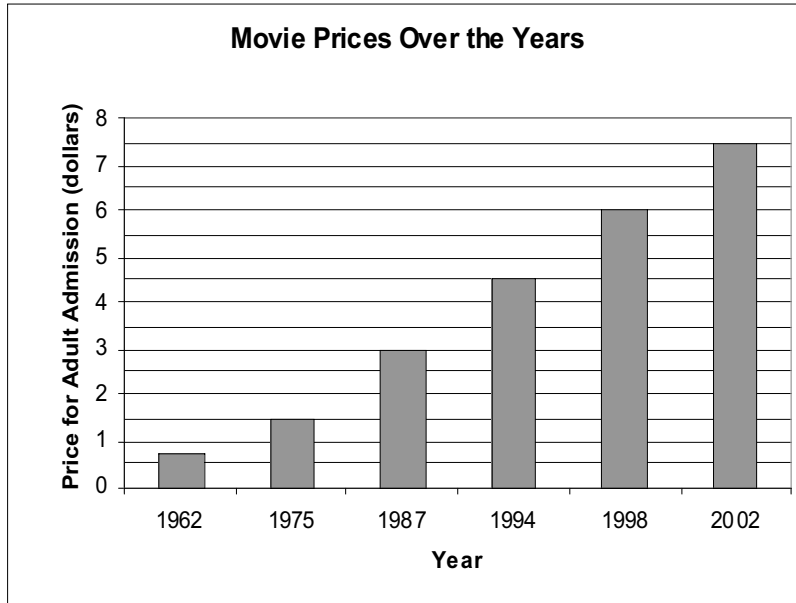
2001

Double Bar Graph vs. Double Pie Chart

1. How much more was spent for travel than speakers in the year 2000?
2. How did the money spent for speakers change from the year 2000 to the year 2001?
3. What budget item accounted for about 38% of the total budget in the year 2000?
4. What budget item accounted for about 24% of the total budget in the year 2001?
5. Which budget item increased the most?
6. Which budget item increased the most when considered as a percentage of the total?
7. Which form of the information was most useful?
8. On which items was it easiest to use the bar graph?
9. On which items was it easiest to use the pie chart?

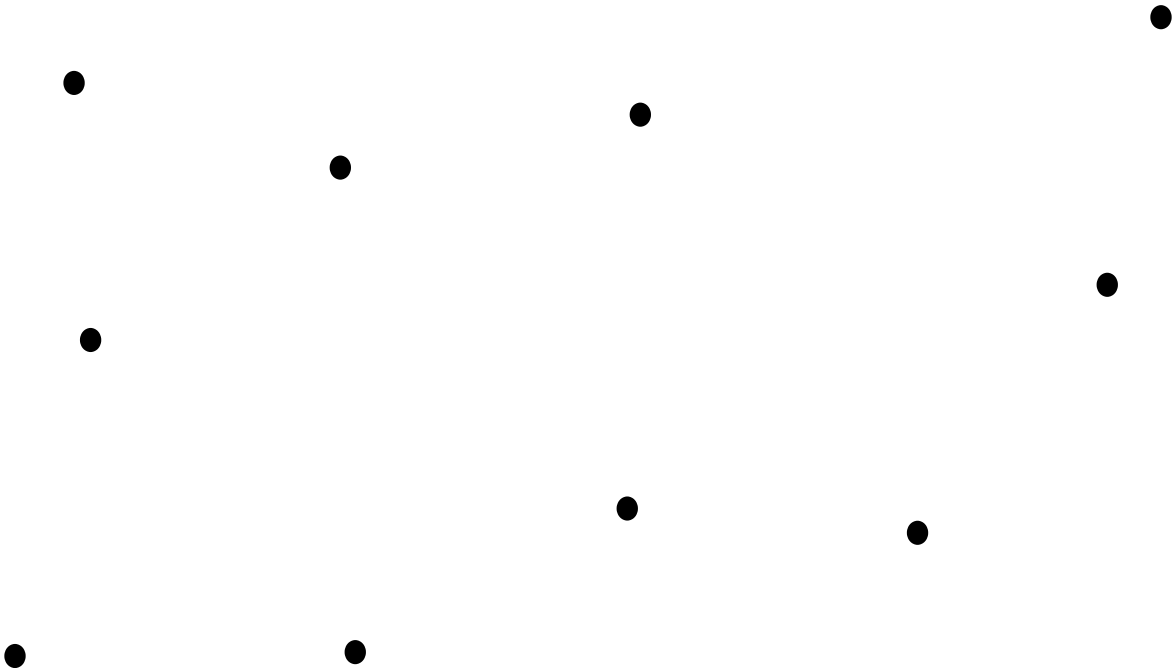
Bar Chart vs. a Line Graph

The following graph shows how movie prices changed over a number of years. Create a line graph showing the same information. Answer the questions which follow.

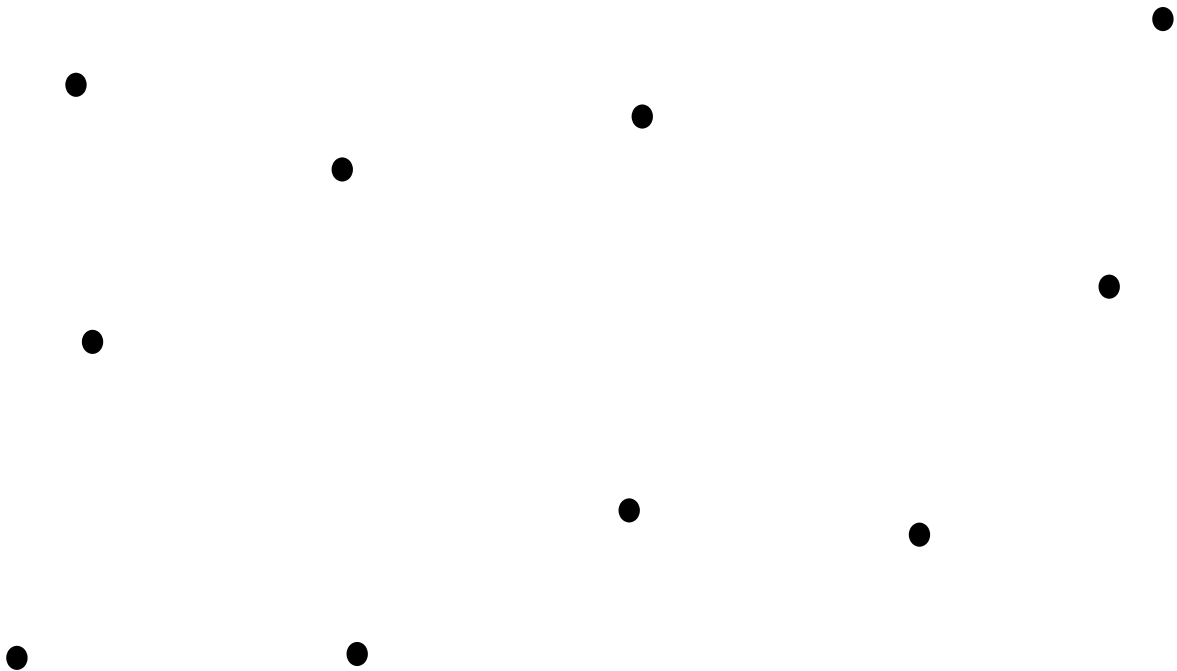


1. How much did movie prices increase per year between 1962 and 1975?
2. How much did movie prices increase per year between 1998 and 2002?
3. Predict the movie price in the year 2010?
4. Which graph shows a better picture of how movie prices are changing? Why?

Name _____ Date _____



Name _____ Date _____



Name _____

Date _____

Select a 4 x 4 grid of 16 days on the calendar below. (You may wish to try the outlined square first.)

1- Find the sum of each diagonal:

a. _____ b. _____

2- Find the sum of the four corners and the sum of the four inside numbers:

a. _____ b. _____

3- What pattern do you see? _____

September						
Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

4- For another month, choose a 4 x 4 square and find other combinations of numbers that result in a *special sum*.

Record them below and name the *special sum* for each.

Math

Calendar

special sums: _____

special sums: _____

5- Why do you think these *special sum* patterns occur?

Explain carefully: _____

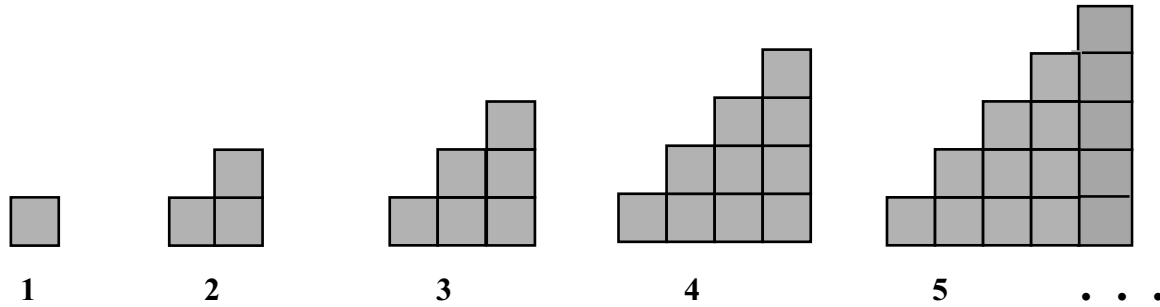
6- If you know the first number in any 4 x 4 square on a different calendar, how could you determine the *special sum* without adding?

Extension: Mark off a 4 x 4 square on a different calendar sheet. Find the *special sum*. What happens with a 4 x 4 square on a hundred board?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Problem Solving with Pascal

1. Consider the geometric “stair step” pattern below. What is the area of the 15th figure in this pattern?

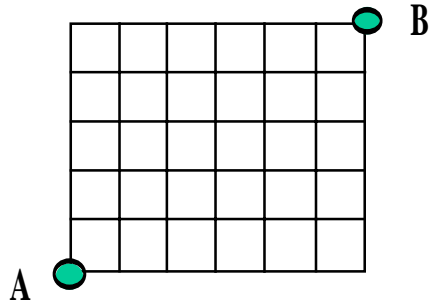


What is the total of all blocks used in 15 figures of this pattern?

2. An ice cream shop claims to have 31 different flavors. How many different triple-scoop cones can be made? Note: chocolate, chocolate, then vanilla is the same as chocolate, vanilla, then chocolate. Hint: Start with a simpler problem. What if there were fewer flavors to consider?

<u>Number of flavors</u>	<u>Number of Triple Scoop Possibilities</u>
1	1
2	4 (CCC, VVV, CCV, CVV)
3	_____
4	_____
5	_____
⋮	
31	_____

3. How many paths are there from A to B in this diagram, if you may only travel up and to the right?



4. How many different ways are there to trace the letters in the given order in the word “Mathematics” in the figure below?

M
 M A
 M A T
 M A T H
 M A T H E
 M A T H E M
 M A T H E M A
 M A T H E M A T
 M A T H E M A T I
 M A T H E M A T I C
 M A T H E M A T I C S

Hint: Start with a simpler problem.

How many ways to trace M in this figure? M 1

How many ways to trace MA in this figure? M 2
M A

How many ways to trace MAT in this figure?

M
 M A
 M A T

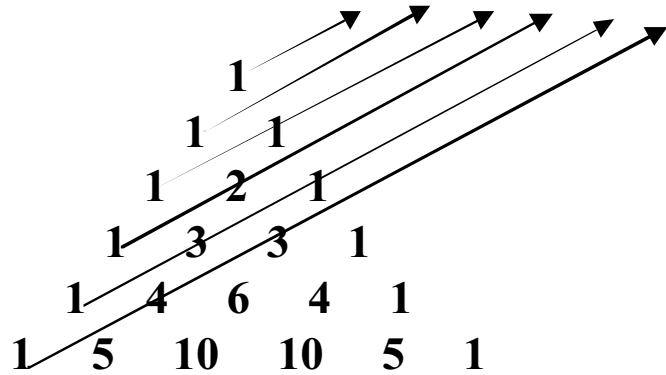
Can you find a pattern?

5. “On the first day of Christmas my True Love gave to me a partridge in a pear tree. On the second day of Christmas my True Love gave to me, two turtle doves AND a partridge in a pear tree.” Wow, that’s one gift on the first day, and 3 more gifts on the second day! How many gifts will this lover get in all the twelve days of Christmas?
6. Coin Connection – When you toss a given number of coins, how many ways are there to get a fixed number of heads? Complete this chart and find a connection to Pascal’s Triangle.

Number of Coins	Ways to Get This Number of Heads						
	0	1	2	3	4	5	6
2							
3							
4							
5							
6							

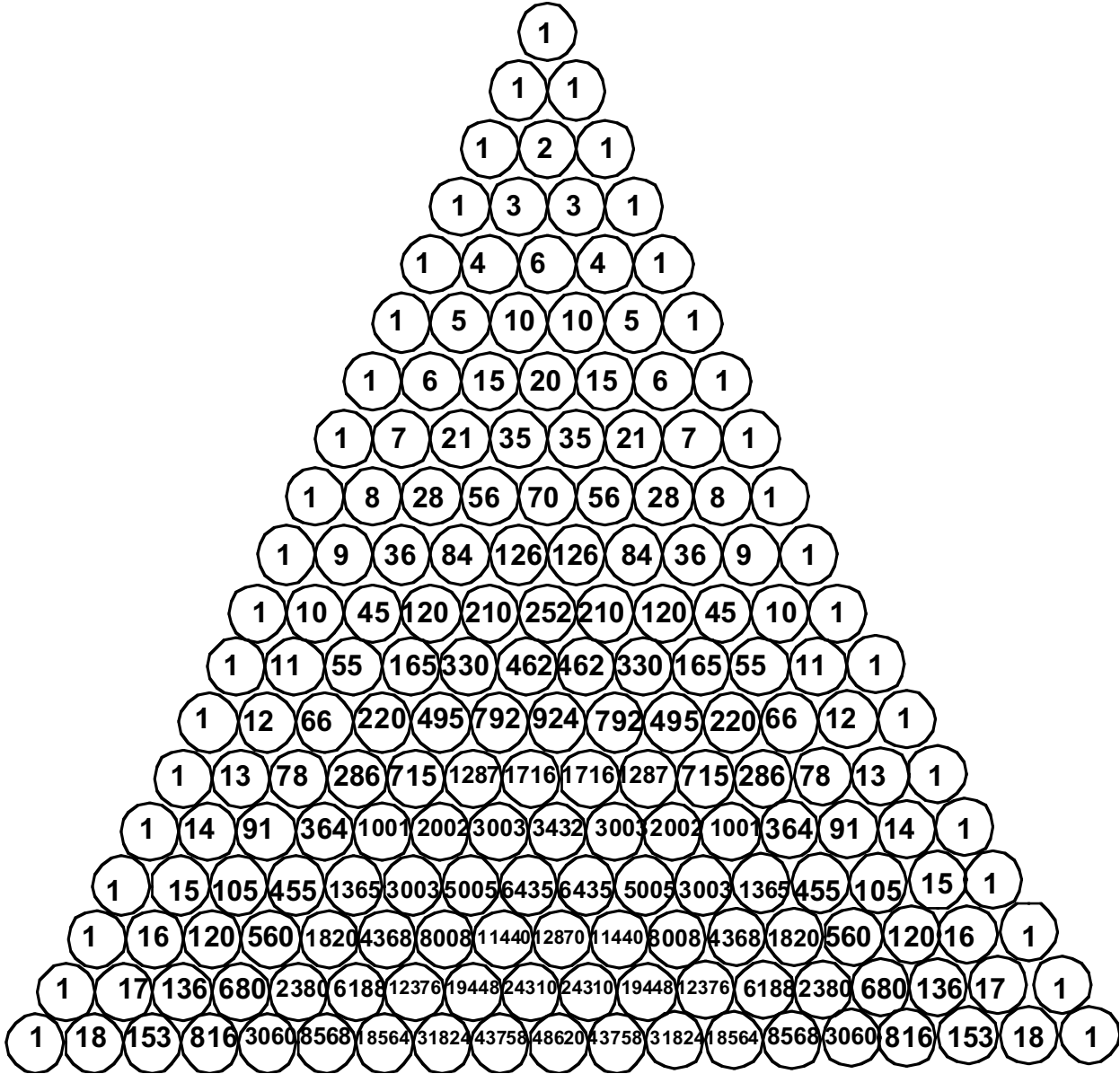
Patterns in Pascal's Triangle

1. What patterns do you see in Pascal's triangle? How would you generate the next row?
2. What pattern do you see from adding the numbers in each row?
3. What pattern do you see when you add up the diagonals as shown?



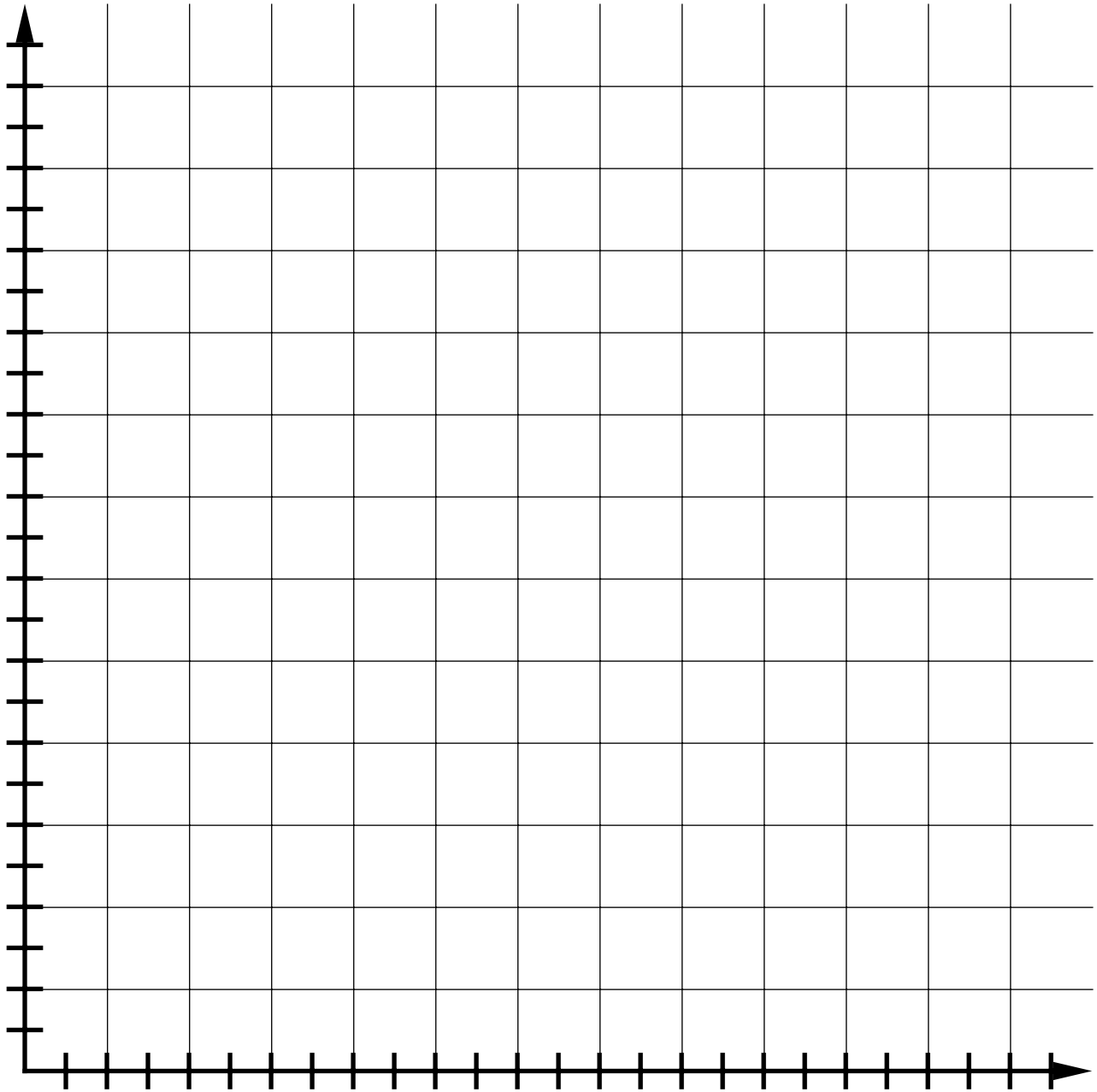
4. Choose any number in the triangle. Shade the six numbers surrounding the number you chose, so that the petals alternate between two colors. Multiply the three numbers of matching color. What do you find about these two products? Can you explain why this happens?
5. Color in all the multiples of 2. What pattern do you see? Color in all the multiples of 3 or 4 or 5. What patterns do you see?
6. Pick five colors and assign each one to a number 0,1,2,3, or 4. Divide the numbers in Pascal's triangle by 5. Note whether the remainder of each number is 0,1,2,3, or 4. Color code the cells in the triangle by matching the color to the remainder number.

PASCAL'S TRIANGLE



Name _____

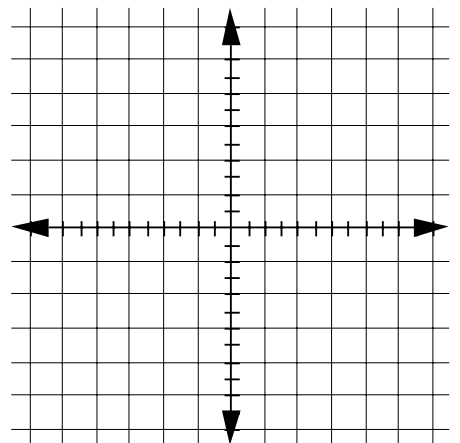
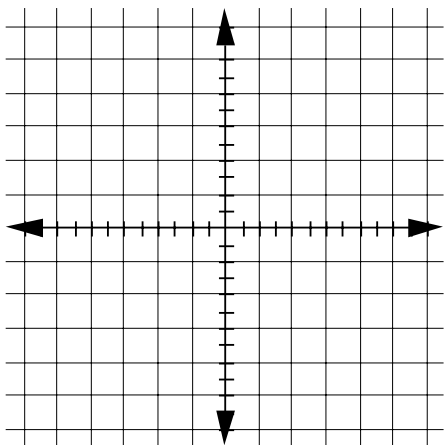
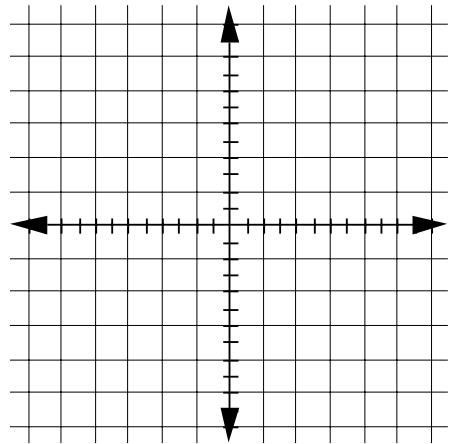
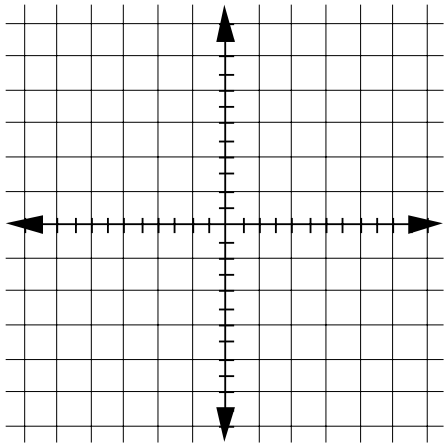
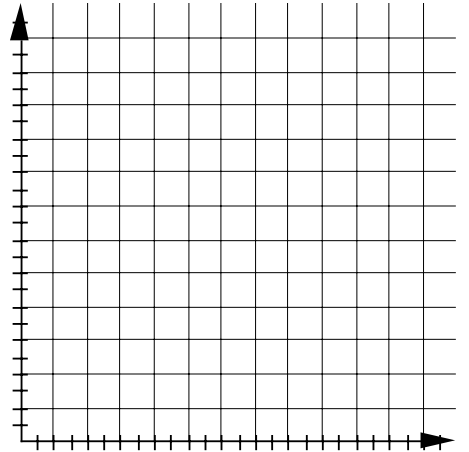
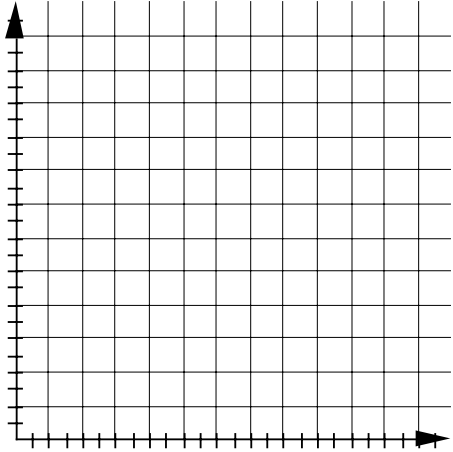
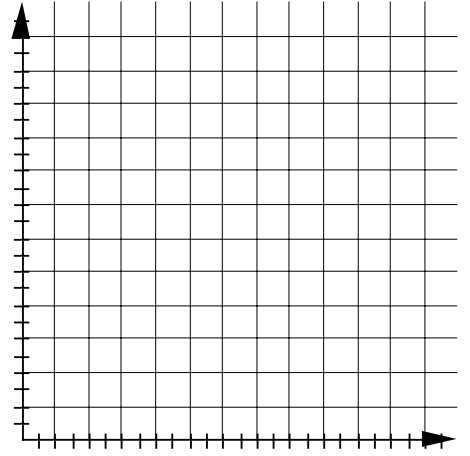
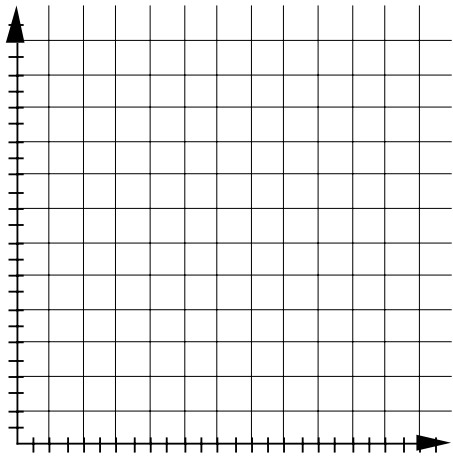
Date _____



Name _____

Date _____

x	2	3	4	5	6	7	8	9	10	11	12
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											



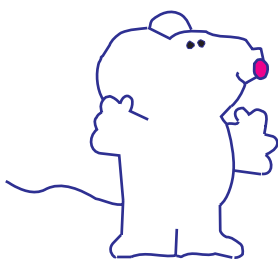
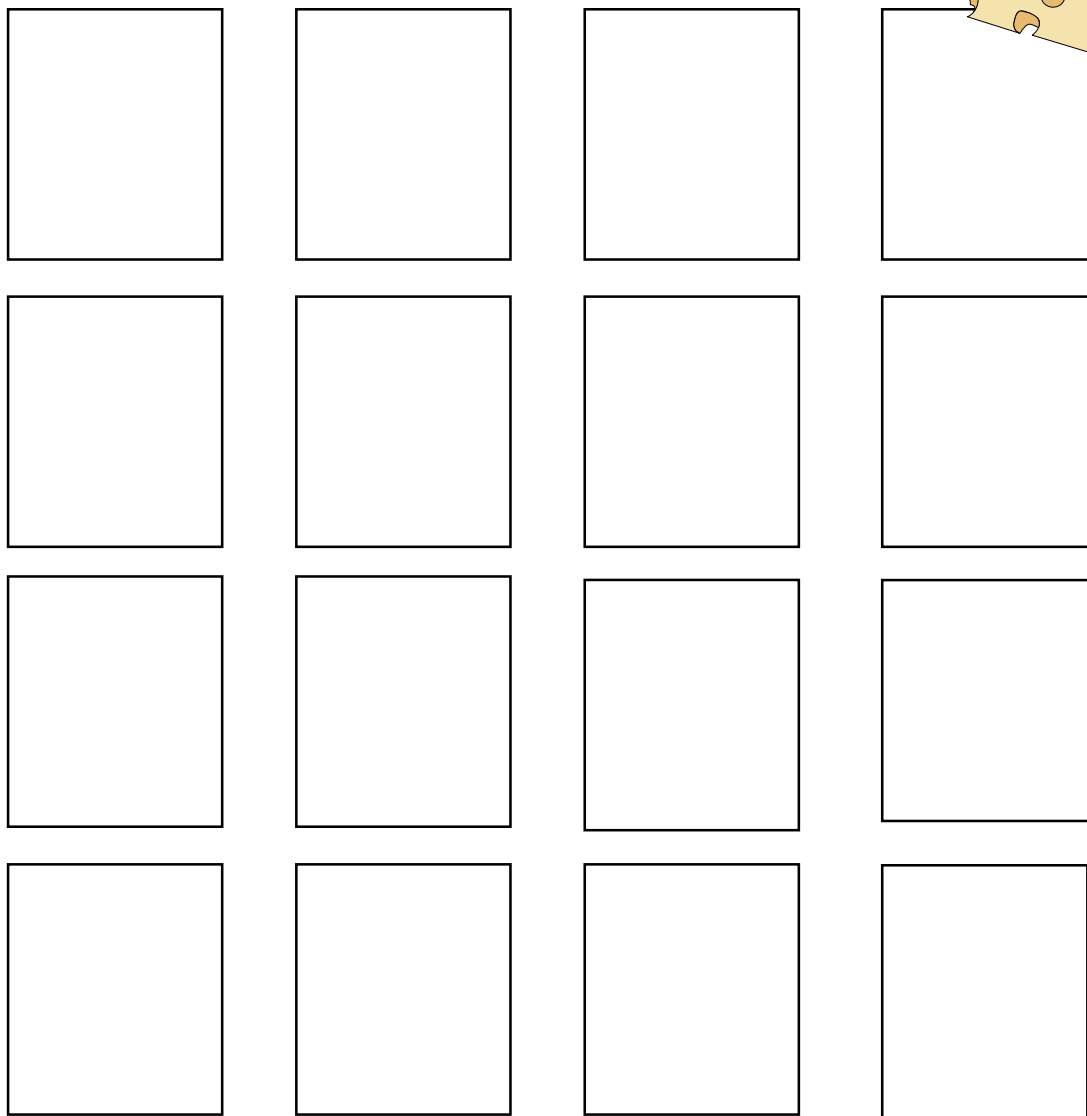
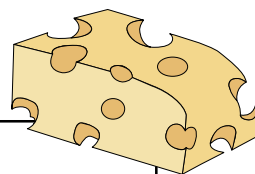
Name _____

Date _____

Hundred Board

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

The Mouse and the Maze



Name _____

Date _____

Pascal's Triangle

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
1 8 28 56 70 56 28 8 1
1 9 36 84 126 126 84 36 9 1
1 10 ? ? 210 ? ? ? 45 ? 1



Can you continue the pattern?

Name _____ Date _____

Words and Symbols Square Puzzle

<p style="text-align: center;">$(T + J) + 300$</p> <p style="text-align: center;">The amount of money the brothers have together.</p> <p style="text-align: center;">$(T + J) - 150$</p>	<p style="text-align: center;">$150 - T$</p> <p style="text-align: center;">If the stereo is reduced by 50% and the boys buy it together, how much will they have left?</p> <p style="text-align: center;">$(J + T) - 300$</p>	<p style="text-align: center;">$J - 300$</p> <p style="text-align: center;">The additional amount of money the brothers need to buy the stereo together.</p> <p style="text-align: center;">$T - J$</p>
<p style="text-align: center;">$225 - (T + J)$</p> <p style="text-align: center;">If Joe pays for half of the stereo, how much will he have left?</p> <p style="text-align: center;">$T + J$</p>	<p style="text-align: center;">$J - 150$</p> <p style="text-align: center;">The additional amount of money Tom needs to buy the stereo alone.</p> <p style="text-align: center;">$051 + J$</p> <p style="text-align: center;">Joe agrees to pay for half the stereo, but he doesn't have enough. How much will he have to borrow?</p>	<p style="text-align: center;">$J - 300$</p> <p style="text-align: center;">Tom has more money than Joe. How much more does he have?</p> <p style="text-align: center;">$T + 300$</p> <p style="text-align: center;">If Joe earns an additional \$150, how much money will he have?</p>
<p style="text-align: center;">$T - 225$</p> <p style="text-align: center;">If Tom pays the entire bill for the stereo, how much will he have left?</p> <p style="text-align: center;">$225 + (T + J)$</p>	<p style="text-align: center;">$J + 300$</p> <p style="text-align: center;">If the stereo price is reduced by 25% and the boys buy it together, how much will they have left?</p> <p style="text-align: center;">$300 - T$</p> <p style="text-align: center;">If the stereo price is reduced by 50% and the boys still don't have enough, how much will they need?</p>	<p style="text-align: center;">$300 - 25T$</p> <p style="text-align: center;">If Tom earns an additional \$300, how much will he have?</p> <p style="text-align: center;">$150 - (T + J)$</p>

Two brothers, Tom and Joe, want to buy a stereo to share. The stereo costs \$300.

T = The amount of money that Tom now has.

J = The amount of money that Joe now has.

Name _____ Date _____

Equation Dominoes

★ $12 + 4x = 36$	When Joe is 12 years older, he will be 36. How old is he now? ★	★ $x + 12 = 36$	If Tom had twice as much money as he has now, he would have \$36. How much does he have now? ★
★ $2x = 36$	When 36 brownies are shared among all club members, each gets 12. How many club members are there? ★	★ $\frac{36}{x} = 12$	Joe is 2 years older than his brother. The sum of their ages is 12. How old is Joe's brother? ★
$x + (x + 2) = 12$	Two years ago, Joe was 36 years old. How old is he now? ★	★ $x - 2 = 36$	When a package of candy is shared among 12 friends, each gets 36 pieces. How many pieces of candy were in the package? ★
★ $\frac{x}{12} = 36$	After Tom reads 36 pages of his magazine, he still has 12 pages to read. How many pages are in the magazine? ★	$x - 36 = 12$	Pete's dog weighs 12 pounds more than Joe's dog. The dogs weigh 36 pounds together. How much does Joe's dog weigh? ★
★ $x + (x + 12) = 36$	Joe bought 36 ride tickets. The total cost for tickets is \$9. What is the price of each ride ticket? ★	★ $36x = 9$	When an athletic team is divided into two groups, each group has 36 people in it. How many people are on the team? ★

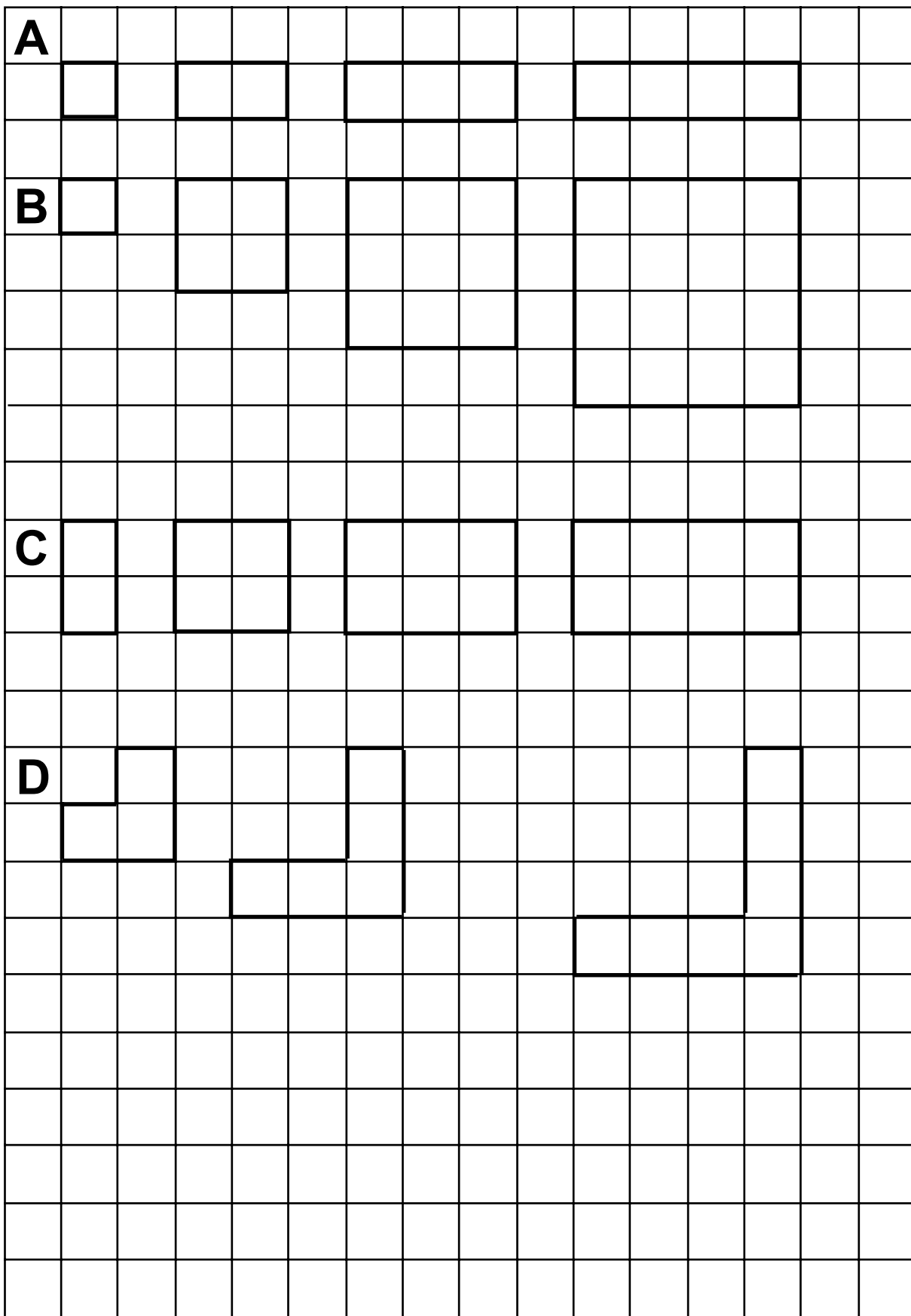
Name _____ Date _____

Name _____

Date _____

$\frac{x}{2} = 36$	<p>Five statues are in a box that weighs one pound. The total weight is 36 pounds. How much does each statue weigh?</p>	$5x + 1 = 36$	<p>A family of 5 gets a \$4 discount on their dinner bill. The total cost is \$36. What would be the cost for each person with no discount?</p>
$5x - 4 = 36$	<p>Five envelopes each contain the same amount of money. After \$14 is removed, \$36 is left. How much was in each envelope?</p>	$5x - 14 = 36$	<p>Joe has some baseball cards, and his brother has $\frac{1}{3}$ as many as Joe. Together they have 36. How many cards does Joe have?</p>
$x + \frac{1}{3}x = 36$	<p>Joe wants to deal a deck of 12 cards equally among the players. Each one gets six cards, how many players are there?</p>	$\frac{12}{x} = 6$	<p>Joe has some baseball cards, and his brother has $\frac{1}{3}$ as many as Joe. Joe has 36 more than his brother. How many does Joe have?</p>
$x - \frac{1}{3}x = 36$	<p>Joe has \$36. The amount he has is \$2 more than half the amount his brother has. How much does his brother have?</p>	$\frac{1}{2}x + 2 = 36$	<p>There are 36 members at a club meeting. After some leave, there are 27 left. How many members remain?</p>
$36 - x = 27$	<p>Moe bought a box of cookies. He had a dozen more at home. When he divides them among six people, each gets 7. How many in a box?</p>	$\frac{x + 12}{6} = 7$	<p>Joe has \$36. After he goes to the movies twice, he has \$6 left. How much did it cost to go to the movies each time?</p>
$36 - 2x = 6$	<p>Joe has \$36. After he buys 12 tapes, he has \$18 left. How much does each tape cost?</p>	$36 - 12x = 18$	<p>Joe has 12 baseball cards. He buys four packs and then he has a total of 36 cards. How many cards are in each pack?</p>

Perimeter and Area Patterns

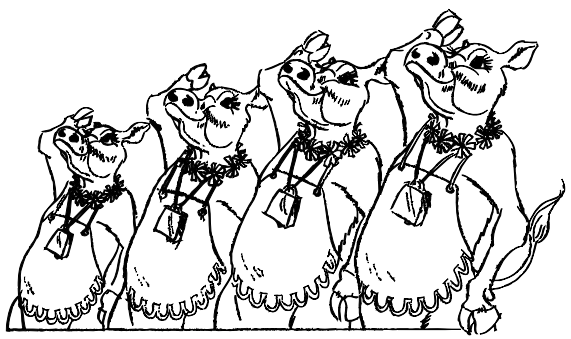
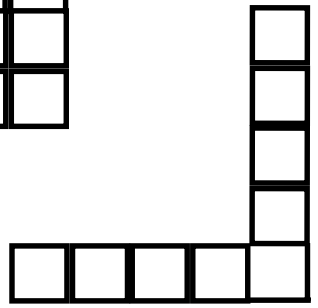
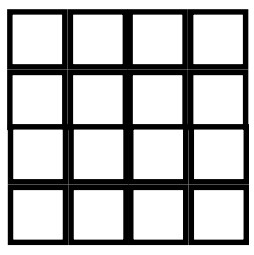
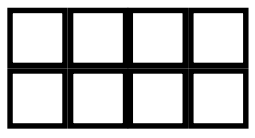


Perimeter and Area Pattern Recording Page

Complete the charts below for the four geometric patterns on the Perimeter and Area page. Can you predict the areas and perimeters for the figures not shown? Can you find a formula for the n th figure in the pattern? That is, can you find a formula with n as a variable that will help you calculate the area or perimeter when you plug in a number for n , the figure number in the pattern?

Pattern	Number	Perimeter	Area	Pattern	Number	Perimeter	Area
A	1	_____	_____	B	1	_____	_____
A	2	_____	_____	B	2	_____	_____
A	3	_____	_____	B	3	_____	_____
A	4	_____	_____	B	4	_____	_____
A	5	_____	_____	B	5	_____	_____
A	10	_____	_____	B	10	_____	_____
A	100	_____	_____	B	100	_____	_____
A	1000	_____	_____	B	1000	_____	_____
A	n	_____	_____	B	n	_____	_____

Pattern	Number	Perimeter	Area	Pattern	Number	Perimeter	Area
C	1	_____	_____	D	1	_____	_____
C	2	_____	_____	D	2	_____	_____
C	3	_____	_____	D	3	_____	_____
C	4	_____	_____	D	4	_____	_____
C	5	_____	_____	D	5	_____	_____
C	10	_____	_____	D	10	_____	_____
C	100	_____	_____	D	100	_____	_____
C	1000	_____	_____	D	1000	_____	_____
C	n	_____	_____	D	n	_____	_____



Block Patterns

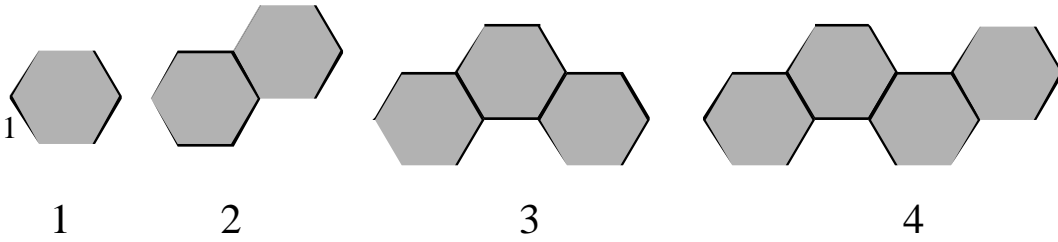


Figure Number	Perimeter
1	6
2	_____
3	_____
4	_____
5	_____
6	_____
10	_____
100	_____
<i>n</i>	_____

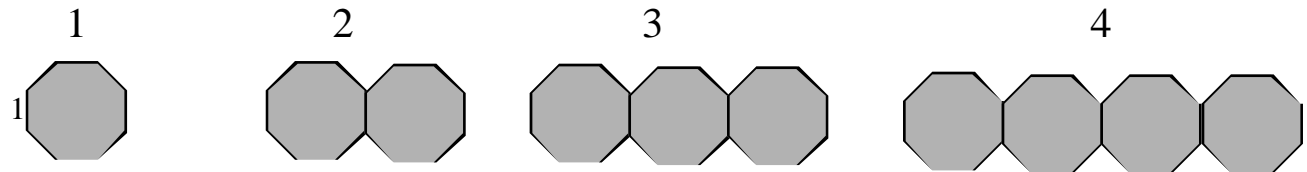


Figure Number	Perimeter
1	8
2	_____
3	_____
4	_____
5	_____
6	_____
10	_____
100	_____
<i>n</i>	_____



Block Patterns

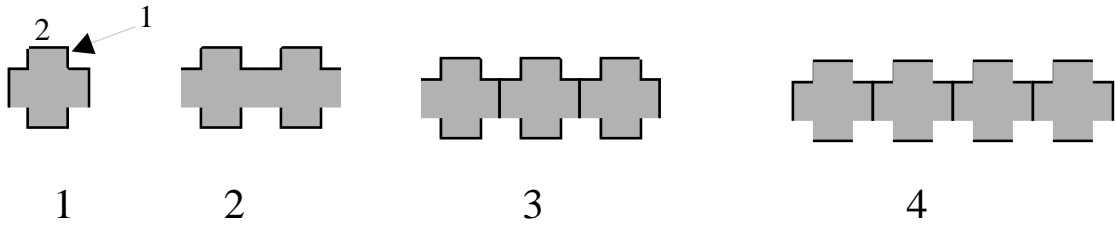


Figure Number	Perimeter
1	16
2	_____
3	_____
4	_____
5	_____
6	_____
10	_____
100	_____
<i>n</i>	_____

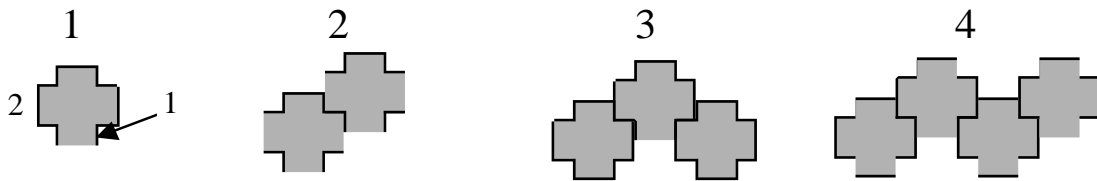


Figure Number	Perimeter
1	16
2	_____
3	_____
4	_____
5	_____
6	_____
10	_____
100	_____
<i>n</i>	_____

