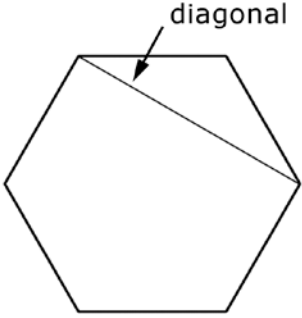
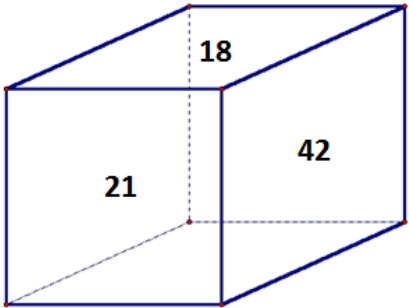
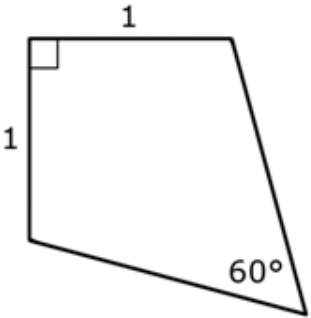
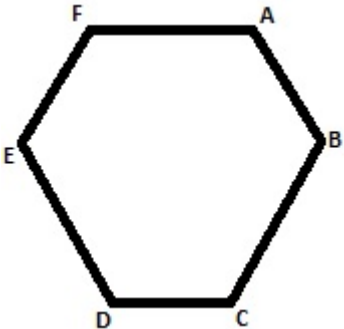




Knights of Pi Math Tournament – Dec. 4, 2010
 Individual Test 5th/6th

1	How many sides does a rectangle have?
2	Evaluate: $500 - 100 - 100 - 100 - 100 + 500$
3	What is the largest value in the given set of integers: $\{1, 9, 3, 10, 2\}$?
4	Evaluate: $(4 * 3 \div 3 + 1) - (4 + (1 + 2 + 3) \div 2)$
5	Sophia owns 16 bananas. Irving owns 12 bananas. If Sophia gives Irving 3 bananas, how many bananas does Irving now own?
6	What is 75% of 80?
7	A particular ball bounces to half the height it was dropped from. If this ball is dropped from 128 feet, how many feet high will the ball bounce to on its 3rd bounce?
8	Find the next number in the sequence: 8, 13, 18, 23, ...
9	How many ways can I make change for \$1.00 with only quarters and nickels?
10	The area of a particular rectangle is 121. Given that the side lengths are all equal, what is the perimeter of this rectangle?
11	What is the product: $11 \cdot 27$?
12	How many integers are there between -2 and 10 if you do not count -2 and 10 ?
13	10 students are on the chess team and 15 students are on the math team. If 7 students are on both the chess team and the math team, how many students are there total?
14	4 people are in the library. If each person shakes hands with all the other people once, how many handshakes will take place?
15	<p>How many 1×1 squares will be in figure 5 if the pattern is continued?</p> <div style="text-align: center;"> <p>fig. 1 fig. 2 fig. 3 fig. 4</p> </div>
16	A parallelogram has 3 of its vertices at $(1,4)$, $(2,1)$, and $(3,8)$. Given that the fourth vertex is located in the first quadrant, list all possible coordinates of the fourth vertex as ordered pairs (x, y) .
17	Today is a Saturday December 4th, 2010. What day of the week will it be 80 days from now? (Give your answer as Monday, Tuesday, Wednesday...)
18	How many positive factors does 24 have?

19	How many minutes are there in one day?
20	Solve the following equation for x : $154 = 7x + 21$
21	How many diagonals can be drawn in a regular hexagon? 
22	Find x so that the numbers $2x + 2$, $6x - 2$, and $10x - 6$ are all equal.
23	I own x number of bikes and y number of tricycles. Given that I own only bikes and tricycles, I own at least one of each, and there are a total of 30 wheels, how many ordered pairs (x, y) are possible?
24	A mysterious man plays a game with you. You pay him 3 dollars and you roll a standard 6-sided die. Whichever number you roll, the mysterious man pays you that many dollars. What is your expected net earnings in cents ?
25	3 boys and 3 girls seat themselves around a circular table. What is the probability that the boys and girls are alternately seated when randomly arranged?
26	If $n^2 = 5329$ and n is a positive integer, find n .
27	Austin forgets how to spell his own name. He knows the first letter is "A" and the last letter is "n." He decides to randomly arrange the letters "u," "s," "t," and "i," and insert them between the "A" and the "n." In how many ways can he misspell his name?
28	Let X be the greatest common factor of 6, 14, and 22. Let Y be the least common multiple of the same 3 integers. What is the product $X \cdot Y$?
29	10 is the arithmetic mean of 10 numbers. If 2 numbers -6 and 8 are removed, what is the arithmetic mean of the remaining 8 numbers?
30	The sum of 3 consecutive even numbers is 2010. What is the smallest of these numbers?
31	A rectangular prism has areas of 18, 21, and 42. What is the volume of this rectangular prism? 

32	<p>Which one of the following numbers is rational? (Give your answer as A, B, C, or D.)</p> <p>A. $\sqrt[3]{676}$ B. $\sqrt[3]{0.8}$, C. $(-1)^{\frac{3}{8}}$, D. $\sqrt{(0.09)^{-1}}$</p>
33	<p>6 identical chocolate cookies are to be distributed to Bob, Billy, and Billy-Bob-Joe. If each child receives at least one cookie, how many ways are there to distribute the cookies?</p>
34	<p>Austin has an 80% chance of attending the ARML competition this year. If Austin goes, Brian has a 90% chance of attending (because they are best friends). If Austin does not go, Brian has a 50% chance of attending. Given that Brian attended ARML, what is the probability Austin was also there? (Express your answer as a simplified fraction.)</p>
35	<p>What is the area of the kite?</p> 
36	<p>Define the “knave sum” of a set of positive integers $\{a, b, c \dots\}$ to be $2^{a+b+c+\dots}$. If the knave sum of $\{1,2,3,4,5,6\} = X * 4^6$, find the value of X.</p>
37	<p>6 third graders are paired into 3 groups of 2. Suzie and Austin are two of the students. Suzie does not like Austin (actually, nobody likes Austin). What is the probability Suzie will not be paired with Austin if groups are randomly assigned?</p>
38	<p>Express the positive difference between $.\overline{27}$ and $.27$ as a fraction.</p>
39	<p>An equiangular (all the angles have equal measure, but the sides are not necessarily congruent) hexagon $ABCDEF$ has $\overline{AB} = \overline{CD} = \overline{EF} = 1$ and $\overline{BC} = \overline{DE} = \overline{FA} = 2$. What is the area of hexagon $ABCDEF$?</p> 
40	<p>25 desks are arranged into 5 rows and 5 columns. A student occupies each desk. The teacher declares that there will be a seating change. Every student is to move to a directly adjacent (in front, left, right, or behind) desk. If only one student may occupy each desk, how many new seating arrangements are possible?</p>