



Knights of Pi Math Tournament – Dec. 14th,
2013

Speed Math 5th/6th

1	Find the distance between the points (0,3) and (3,0).
2	Evaluate: 15^2
3	What is the sum of the first 5 squares, starting with 1?
4	A fruit is randomly chosen from a basket of apples and oranges. If the probability that an apple is drawn is $\frac{3}{5}$ and there are 60 fruits in the basket, how many oranges are there?
5	Evaluate: 55×35
6	Evaluate: 2014×8
7	What is the positive square root of 16?
8	There are 40 blue and 60 red balls in a basket. If Steven selects one ball from this basket, what is the probability that the ball will be red?
9	What is the positive difference between the integer quotient and the remainder when 16 is divided by 5?
10	Express $\sqrt{882}$ rounded to the nearest integer.
11	Evaluate: $96 \div 4 - 9$
12	A koala sleeps for about 20 hours a day. What fraction of a day does it sleep?
13	Evaluate: $209/19$
14	Find the area of a right triangle with side lengths 5, 13, and 12.
15	What is the product of the least common multiple and the greatest common factor of 25 and 78?
16	Find the surface area of a rectangular prism with width = 6, length = 5, and height = 10.
17	What is the prime factorization of 869?
18	25 two-legged monsters and four-legged monsters are trapped in a cage. If the sum of the number of legs is 68, how many four-legged monsters are there?

19	What is the sum of the interior angles of a hexagon?
20	The two digit number ab (a and b represent digits) is divisible by 2, 3, 4, 5, and 6. What is the value of $a + b$?
21	The ratio of 10 to what number is equivalent to 20% of 250?
22	If two numbers are relatively prime, what is their greatest common factor?
23	If $x = -0.5$ and $y = -0.75$, what is the value of $2x - 4y$?
24	What is the height of a rectangular prism with a volume of 108 and a base area of 18?
25	The sum of 3 consecutive integers is 99. What is the median?
26	Let E be the intersection of the diagonals of square ABCD. How many triangles of any size are in the resulting figure? ABE is one such triangle.
27	Steven and Matthew each flipped a coin. What is the probability that Steven will get heads, and Matthew, tails?
28	What is 96% of 7? Express your answer as a decimal.
29	Evaluate: $\sqrt{(\sqrt{36} \times 7 + 7)}$
30	Simplify: $100/\sqrt{6400}$.
31	How many integer values of x satisfy the following inequality: $10 - 2x < 5 < 10 - x$?
32	Evaluate: $1^2 \times 2^3 \times 3^4$
33	What is the base 10 value of the digit 2 in the base 5 number 17023?
34	Twice the positive integer n is a perfect cube. If n is less than 5, what is the cube root of $2n$?
35	In the land of BLAB, 4 BLARBs and 2 BLALBs cost \$620 and 3 BLARBs and 1 BLALB cost \$440. How much does 1 BLARB cost?
36	If it takes 3 people of equal strength to move a cart that weighs 0.4 tons, how many people are required to move a cart that weighs 6 tons?
37	How many positive factors does 3^7 have?
38	In triangle ABC, angle A measures x degrees. If angle B is 10 degrees greater than angle A, express, in terms of x , angle C.

39	How many positive factors do 24 and 32 have in common?
40	What is the largest prime number that divides 120?
41	Tree A is 5 meters taller than tree B, and tree B is 4 meters taller than tree C. If tree A is 19 meters tall, what is the ratio of the height of tree A to that of tree C?
42	Steven bought a mechanical pencil using a \$5 bill and received a change of \$1.25. Irving bought a pen using three \$1 bills and received a change of \$0.75. How much more does the mechanical pen cost than the pen?
43	Express 10,085 in scientific notation.
44	How many solutions to the equation $3x + 2y = 5$ exist?
45	The sum of five consecutive even integers is 100. What is the smallest of these five integers?
46	Beaker A is $\frac{3}{5}$ filled with water and beaker B is $\frac{1}{3}$ filled with orange juice. If half of the amount of water present in beaker A is transferred to beaker B, Beaker B will be $\frac{1}{2}$ filled. If the maximum capacity of beaker A is 400ml, find the maximum capacity of beaker B.
47	How many integers between 5 and 25 are multiples of 2 or 3, but not both?
48	Evaluate: 258×242 .
49	The sum of the first n consecutive positive integers is 78. What is n ?
50	What is the area of the region bounded by the graph $y = x - 1 + 3$ and $y = 4$?
51	Gary is guessing 2 multiple choice questions with 5 answer choices. If only one choice per question is correct, what is the probability that he'll get at least one question right?
52	Evaluate: $(7! \times 6!)/(5! \times 4!)$
53	What is the smaller angle, in degrees, formed by the hour hand and the minute hand of a clock face at 4:00am?
54	What is the arithmetic mean of 3, $\frac{9}{4}$, and $\frac{15}{7}$?
55	What is the smallest number greater than 1 that is both a perfect cube and a square of a perfect square?
56	How many palindromes exist between 10 and 200?
57	How many composite numbers less than 30 exist?

58	100 KPMT participants are shaking hands with each other. If only one handshake can occur per two participants, what is the total number of handshakes that can occur?
59	Matthew the Magician is entertaining KPMT students after the competition. For one of his tricks, he asks Cathy to select a number between 1 and 100. He then asks her to add 7 to her number, multiply the result by 2, subtract 4, divide by 2, and then subtract the original number. What should Matthew say is her final result?
60	Find the remainder when the result of the following operation is divided by 5: $2014 \times 2014 \times 2014 - (2013 \times 2013 \times 2013)$