



Individual Test 7th/8th

1	Evaluate: $17 + 18$
2	Evaluate: 6×8
3	Evaluate: $51 \div 3$
4	Find x : $3x + 7 = 25$
5	If r is the radius of a circle, then what is the area of the circle?
6	A rhombus has diagonals of length 12 and 7. What is its area?
7	Otto Matik has just bought a new potato-shredding machine! His machine can shred potatoes at a rate of 2 potatoes per minute. Otto wants to make mashed potatoes with three shredded potatoes. How many seconds will his machine take to shred those potatoes?
8	Gambit flips a fair, 2-sided coin 300 times, resulting in 250 heads and 50 tails. He flips the coin 200 more times. How many times can Gambit expect heads to show up?
9	Today is Saturday, December 12, 2009. On what day of the week does 2010 begin?
10	In a certain equation, $PV = nRT$. $n = 6$, $R = 8$, $T = 298$, and $V = 3$. What is the value of P ?
11	A frog is climbing out of a 13 foot well. He can climb 3 feet per day, but in the night he slides down 1 foot. How many days will it take for him to get out of the well?
12	Isaac Newton is standing next to an apple tree. The apple tree is 20 feet tall and casts a shadow 45 feet long. Isaac Newton casts a shadow 12 feet and 9 inches long. How many inches tall is Newton?
13	Evaluate: $\frac{2}{3} \times \frac{3}{9} \times \frac{15}{4} \div \frac{10}{7} \times \frac{8}{7} \div \frac{16}{11}$
14	At McDonald's, large fries cost \$2.30, and a 12-ounce Oreo McFlurry costs \$2.74. After an intense math club practice, Kevin and Andrew go to McDonald's and buy 4 large fries and 3 12-ounce Oreo McFlurries. How much money did they spend, before tax?
15	Rixing and Venecia are running a race. Rixing gets a 10 minute head start. When Venecia starts running, Venecia runs twice as fast as Rixing. How many minutes does it take for Venecia to catch up to Rixing, assuming the race has not yet finished?
16	The Knight of Pi is looking for his pie! He interviews four commoners to ask where it is. Three commoners are lying and one is telling the truth when they make these claims: Angry Commoner: "The Bouncing Commoner did it!" Bouncing Commoner: "I didn't take your pie." Crazy Commoner: "Sorry, the Angry Commoner took your pie." Dancing Commoner: "The Bouncing Commoner is telling the truth." Now the knight knows who took his pie! Who was it?

31	Shawn and Arnie were playing a game of ping-pong. Jingpeng walks by. If the ping-pong ball is on Shawn's side of the table, Shawn has a $\frac{5}{18}$ probability of hitting Jingpeng with the ping-pong ball. If the ping-pong ball is on Arnie's side of the table, Arnie has a $\frac{4}{9}$ probability of hitting Jingpeng with the ping-pong ball. Given that the ping-pong ball has an equal probability of being on either side of the table, what is the probability that Jingpeng is struck by the ping-pong ball the next time Arnie or Shawn hits the ball?																							
32	<p>Brian and Andrew were playing StarCraft against each other. When the game begins, each player's race is determined randomly, with each of the three races having $\frac{1}{3}$ probability of showing up. For a given matchup, the victor is shown. What is the probability that Brian wins?</p> <table border="1"> <tr> <td colspan="2"></td> <td colspan="3" style="text-align: center;">Andrew</td> </tr> <tr> <td colspan="2"></td> <td>Terran</td> <td>Protoss</td> <td>Zerg</td> </tr> <tr> <td rowspan="3" style="text-align: center;">Brian</td> <td>Terran</td> <td>Brian</td> <td>Brian</td> <td>Andrew</td> </tr> <tr> <td>Protoss</td> <td>Brian</td> <td>Brian</td> <td>Brian</td> </tr> <tr> <td>Zerg</td> <td>Andrew</td> <td>Brian</td> <td>Brian</td> </tr> </table>			Andrew					Terran	Protoss	Zerg	Brian	Terran	Brian	Brian	Andrew	Protoss	Brian	Brian	Brian	Zerg	Andrew	Brian	Brian
		Andrew																						
		Terran	Protoss	Zerg																				
Brian	Terran	Brian	Brian	Andrew																				
	Protoss	Brian	Brian	Brian																				
	Zerg	Andrew	Brian	Brian																				
33	Jesse felt a pang of guilt for eating Mr. Nonis's trail mix. He confessed to Mr. Nonis, and Mr. Nonis makes Jesse a deal: if Jesse rolls a pair of fair, six-sided dice and gets doubles (both dice show the same number), Jesse gets off free. If not, then Jesse has to mop the floor of the school. What is the probability that Jesse has to mop the floor?																							
34	Follow these instructions carefully: start with the number of states in the United States. Multiply by 3. Add the number hours in a day. Multiply by the number of races in StarCraft. Subtract the positive difference between 5 and its square, minus 1. Multiply by the number of wheels on a bicycle. Add the number of wheels on a unicycle. Multiply by the number of wheels on a tricycle. Take the sum of the digits in this number. Multiply by this question number. Subtract 29. Divide by 5. Find the sum of the positive integer divisors of this number. This sum is the answer to this question.																							
35	Evaluate: $\sin(45^\circ + 30^\circ)$																							
36	James and Vivian play rock paper scissors. James has a $\frac{2}{9}$ probability of choosing rock, a $\frac{1}{3}$ probability of choosing paper, and a $\frac{4}{9}$ probability of choosing scissors. Vivian has a $\frac{3}{37}$ probability of choosing rock, a $\frac{10}{37}$ probability of choosing paper, and a $\frac{24}{37}$ probability of choosing scissors. What is the probability that James wins plus the probability that they tie minus the probability that Vivian wins?																							
37	When an exclamation mark appears after a number, it denotes a factorial. To find the factorial of a number, multiply together all positive integers from 1 up to that number. For example, $3!$ is $1 \times 2 \times 3$. To find the determinant of a two-by-two matrix, multiply the top-left number by the bottom-right number, and subtract the product of the top-right number and the bottom-left number. Given a rhombus with diagonals of length x and y , its area is $\frac{xy}{2}$. What is the sum of the answers to questions 1, 2, and 3?																							

38	Lord Voldemort is buying snakes. There are an infinite number of four varieties of snakes: garter snakes, king cobras, boa constrictors, and coral snakes. Lord Voldemort wants to buy six snakes. How many ways can he choose the snakes (assume all snakes of the same species are indistinct)?
39	Austin only has a few minutes left on his math test! Help him find this determinant: $\begin{vmatrix} \sin 30^\circ & 49 \\ \sqrt[6]{64} & \ln(e) \end{vmatrix}$
40	Solve for x : $x = 2\sqrt{-9 + 6\sqrt{-9 + 6\sqrt{-9 + \dots}}}$