



Individual Test 7th/8th

1	A line passes through points $(3, a)$, $(2, 5)$, $(0, 0)$, and $(5, b)$. Find the value of $a + b$.
2	In degrees, what is the sum of the exterior angles of a square?
3	How many positive integers less than 20 are multiples of 3 but not 2?
4	Find the vertex of the following parabola: $y = 10x^2 + 60x + 90$
5	When an integer n is doubled, then 5 is subtracted from it, it is less than 7. When n is tripled and then 5 is subtracted from it, it is larger than 7. Find the value of n .
6	What is the probability of getting exactly 2 heads when flipping 3 coins?
7	Cathy has a bag of candies. She gave 3 pieces to Matthew, 6 pieces to Steven, and 7 pieces to Irving. If she now has $\frac{1}{9}$ of the candies left, how many candies were originally in the bag?
8	In triangle ABC , $AB = 5$, $BC = 4$, and $CA = 8$. Which angle is the largest?
9	Anna loves dogs so much that she owns 24 dogs, which all prefer to be walked in different ways. One-fourth of the dogs need to be walked for 2 hours at 7.5 miles/hour, three-eighths of the dogs need to be walked for 4.5 hours at 6 miles/hour, and the rest of the dogs need to be walked for 1 hour at 10 miles/hour. How far does Anna need to walk to take all of her dogs for a walk once, if she cannot walk more than one dog at a time?
10	If $f(x)$ is a linear function with slope of 5, by how much does $f(x)$ increase when x increases by 3?
11	The probability that it rains next Monday is 30%, and the probability that Matthew will bring an umbrella to school next Monday is 50%. What is the probability, as a percentage, that Matthew will not be soaked by rain next Monday? Assume that the two events are independent of each other.
12	Points X , Y , Z , and W are on a line in alphabetical order. If the distance YZ is 50, XZ is half of WZ , and XY is equal to YZ , how long is WZ ?
13	Find the sum of the first 10 positive integers.
14	How many 4 digit numbers can be formed using the digits 0, 3, 5, and 7 no more than once each?
15	Find the ratio of the area of an equilateral triangle with side length 5 to that of a square sharing a side with this equilateral triangle.
16	What is the perimeter of a semicircle with a radius of 5?

17	How many shortest ways possible can an ant travel from the origin to the point (3,3), if the ant can travel either 1 unit in the positive x direction or positive y direction?
18	The intersection point of lines representing $y = x + 5$ and $y = -3x - 7$ can be expressed in the form (a, b) . What is the value of $a + b$?
19	Matthew, Steven, and Cathy are building a house. It would take 5 days for Matthew to complete the job alone and two days if Steven and Cathy worked together. How long does it take to build the house when Matthew, Steven and Cathy work altogether?
20	Find the area of the triangle that has its vertices on points (0,1), (2,3), and (4,9)?
21	Two distinct numbers p and q are randomly selected between 1 and 20, inclusive. What is the probability that both these numbers are prime?
22	Which of the following is greatest? (Write down the letter corresponding to your answer.) A: The number of diagonals in a pentagon B: The sum of the solutions to the equation $x^2 - 5x + 6 = 0$ C: The greatest common divisor of 48 and 75 D: The product of 3.141592 and -4
23	A unit square is inscribed in a circle. If the side length of the square is 5, find the circumference of the circle.
24	Matthew, Steven, Cathy, Foris, and Irving took a math test scored out of 100. If Matthew, Steven, Cathy, and Foris scored 89, 96, 92, and 87 points respectively, how many points does Irving need to score so that the average score of the 5 people above will be 91 points?
25	If m is greater than x, x is greater than y, z is less than -1 but greater than m, and p is greater than 0, what is the sign of $mpxyz$?
26	Which of the following is the contrapositive statement to "If one is a middle school student, he or she is attending kpmt."? A: "If one is not a middle school student, he or she is not attending kpmt." B: "If one is attending kpmt, he or she is a middle school student." C: "If one is not attending kpmt, he or she is not a middle school student." D: "If one is a middle school student, he or she is not attending kpmt."
27	There are 10 math club students and 9 honors society members volunteering at KPMT. A total of 15 people are in only one of the two groups. How many students are in both math club and honors society?
28	Find the value of a if $\frac{a}{2} + \frac{x}{6} = 0.25x - \frac{x-12}{12}$.
29	Two BLARBs equal one BLABB. Three BLABBs equal ten BLALBs, and one BLALB equals two BABs. How many BABs equal 6 BLARBs?
30	Express 524_6 in base 10.

31	Cathy wants to start growing her own bananas. To speed up the process, she uses banana mega-trees. Each year, banana mega-trees drop 4 seeds on the ground, all of which grow into full banana mega-trees by the next year. If Cathy starts out by planting 4 banana mega-tree seeds, how many full trees are in her orchard after 4 years?
32	Irving takes himself and 9 of his friends to play paintball, which costs \$35.00 per person, not including the 10% sales tax. Glove rental costs an additional \$5.00 per person, which is not taxed. How much does Irving need to pay for the entire group to play paintball with gloves?
33	Sean chooses a number between 1 and 100. If the number has a remainder of 1 when divided by 2, 3, 4, 5, and 6, what is Sean's number?
34	50 Students have been given applications for registering for their classes. 30 people selected chemistry, 25 people calculus, and 8 people neither. Find the sum of the number of people who selected only chemistry and the number of people who selected only calculus.
35	The minute and hour hand of a clock are forming a 90 degrees angle for the first time after 3 o'clock. After how many minutes will the hands form a 180 angle?
36	Solve for a : $2^a = 256^{-0.25}$
37	How many prime numbers are between 1110_2 and 67_8 ?
38	How many positive integers less than 100 that are divisible by 3 but have a remainder of 1 when divided by 4 exist?
39	Let X be an integer that can be expressed as the product of three distinct primes. If the digits of X sum to 2, what is the smallest possible value of X ?
40	What is the name of the 3-D figure obtained by taking the convex hull of the centers of the faces on a cube?