



Speed Math 7th/8th

1	Evaluate: $1 + 3 + 5 \dots + 17 + 19 - 2 - 4 - 6 \dots - 18 - 20$
2	What is the product of the least common multiple and the greatest common factor of 25 and 78?
3	The ratio of 10 to what number is equivalent to 20% of 250?
4	25 two-legged monsters and four-legged monsters are trapped in a cage. If there is a total of 68 legs in the cage, how many four-legged monsters are there?
5	A fruit is randomly chosen from a basket of apples and oranges. If the probability that an apple is drawn is $\frac{2}{5}$ and there are 60 fruits in the basket, how many oranges are there?
6	If two numbers are relatively prime, what is their greatest common factor?
7	What is the sum of the interior angles in a hexagon?
8	What is the cube root of 8?
9	What is the height of an equilateral triangle with a side length of 4?
10	Evaluate: $1^7 \times 2^5 \times 3^3$
11	Matthew and Irving start running from the same point around a circular track in opposite directions. Matthew runs at a speed of 11 meters per second and Irving at a speed of 13 meters per second. If the length of the track is 144 meters, after how many seconds will Matthew and Irving meet?
12	If $x = -0.5$ and $y = -0.75$, what is the value of $2x - 4y$?
13	Evaluate: 2014×8
14	Express $\sqrt{882}$ as a decimal rounded to the nearest tenth.
15	The positive square root of n is 4. What is n^2 ?

16	Evaluate: 9×29513
17	The sum of 3 consecutive integers is 99. What is the median?
18	Simplify: $\frac{100}{\sqrt{6400}}$
19	Evaluate: $\frac{209}{19}$
20	What is the largest prime number that divides 120?
21	$12!$ is divisible by 10^n , where n is a positive integer. Find the maximum value of n .
22	Irving is placing 4 red, 3 green, and 2 blue marbles in a row on a table. How many ways can he do this so that the blue marbles are not next to each other?
23	X has a remainder of 1 when divided by 3. If X is less than 100, how many such possible positive integers are exist?
24	What is the mean of the median and mode of the set $\{1, 5, 6, 7, 8, 1, 2, 3, 4, 6, 6\}$?
25	What is the sum of the units digit of 2014^{2014} and the units digit of $5^5 \times 5^5$?
26	How many subsets of the set $\{1, 2, 3, 4, 5\}$ exist?
27	How many positive factors does 3^7 have?
28	How many prime numbers are between 23_6 and 56_8 ?
29	Matthew walks 12 miles east and 4 miles south. He then walks 3 miles east and 10 miles north. How far is Matthew now located from his starting location?
30	In triangle ABC, angle A has a measure of X degrees. If angle B is 10 degrees greater than angle A, express angle C in terms of X .
31	Steven can write a KPMT problem in two minutes and Matthew can write two problems in three minutes. How many more problems does Matthew write than Steven in half an hour?
32	Let $y = \frac{1}{2}x + 3$. For what value of x does $y = 8$?

33	Complete the statement: 29 is the ___th prime number.
34	Solve for x : $x^2 - 3x - 18 = 0$
35	How many integer values of x satisfy the inequality $10 - 2x < 5 < 10 - x$?
36	Let $m = 200$ and $n = \frac{1}{\left(\left((m^2)^0\right)^6\right)^{-5}}$. What is $1000 - n$?
37	What is the distance from the origin to the vertex of the parabola with the equation $y = (x - 4)^2 + 3$?
38	Find the sum of the first 20 positive odd integers.
39	If $5^2 + x^2 = 13^2$, $7^2 + y^2 = 25^2$, and $3^2 + z^2 = 5^2$, and x , y , and z are positive, what is $x + y + z$?
40	What is the distance between the point $(5, 5)$ and its reflection across the line $y = -x$?
41	The two digit number AB (A and B represent digits) is divisible by 2, 3, 4, 5, and 6. What is the value of $A + B$?
42	How many positive factors do 24 and 32 have in common?
43	What is the height of a rectangular prism with a volume of 108 and a base area of 18?
44	In rhombus $ABCD$, diagonal $AC = 5$ and $CD = 6$. What is area of the rhombus?
45	Chris jogs at 6 miles per hour to get to school on time, then runs home along the same path at 8 miles per hour to get the homework he forgot. He then sprints at 9 miles per hour back to school along the same path to avoid being late. What is the average speed, in miles per hour, of Chris's round-trip?
46	Evaluate: $\sqrt{\sqrt{36} * 7 + 7}$
47	Expand: $(4x)^2 + (3(x + 2))^2$
48	If the equation $5x^2 + 2ax + 4b = 0$ has only one solution and $a \geq 0$, express a in terms of b .

49	Simplify: $\frac{3^4(x^2y)^{-3}}{2^3x^{-2}y^3}$
50	What is the arithmetic mean of 3, $\frac{9}{4}$, and $\frac{15}{7}$?
51	What is the geometric mean of 11, 88, and 297?
52	What is the smallest number greater than 1 that is both a perfect cube and a square of a perfect square?
53	What is the area of the region bounded by the graph $y = x - 1 + 3$ and $y = 4$?
54	How many palindromes exist between 10 and 200?
55	How many composite numbers less than 40 exist?
56	400 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?
57	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?
58	Find the remainder when the result of the following operation is divided by 5: $2014 \times 2014 \times 2014 - (2013 \times 2013 \times 2013)$.
59	Find the 10th term of the sequence of which the initial term is 1 and the difference between the reciprocals of two consecutive terms is 2.
60	What is the height of the trapezoid with base lengths of 5 and 7 and an area of 24?