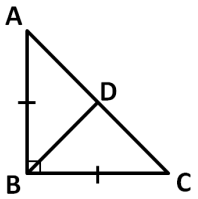
"Math Is Cool" Championships — 2017-18

4th Grade — March 16, 2018

Individual Contest

Record all answers on the colored cover sheet. 35 minutes, 40 problems, ~92% of individual score.
No talking during this individual test. A 5-minute time warning will be given.

	Questions 1-30: 2 points each
1	What is the sum of 7 and 44?
2	Round 7128.1548 to the nearest thousand.
3	How many different (unique) letters are in the name BOONPONGMANEE?
4	Find the number that goes in the blank: __ + 17 = -3
5	Write the fraction 7/50 as a percentage.
6	Kai preheats the oven for 15 minutes, and then bakes his apple pie at 450 degrees for 10 minutes. Then he reduces the temperature to 350 degrees for 30 minutes. How many total minutes is the oven on in the process of Kai's cooking?
7	What is the average of 3, 20, and 25?
8	If I randomly pick one day out of a week, what is the probability, as a percentage, that the English name of the day ends in the letter 'Y'?
9	If a pack of gum costs $1 and contains 15 sticks of gum, how many dollars will 45 sticks of gum cost?
10	There are 5 giraffes in the "Biff and Eho Zoo." Each giraffe eats 75 pounds of leaves every day. How many total pounds of leaves do the giraffes eat in a week?
11	Kylo Ren, Captain Phasma, and three identical First Order Stormtroopers line up. If Kylo Ren insists on being first, how many different ways can the five of them line up?
12	Parker and Brendan go fishing. Brendan catches 3 fish for every 2 fish that Parker catches. If Parker caught 38 fish, how many did Brendan catch?
13	Evaluate: 11,111 × 11
14	Abe earns $6 per week by doing yard work. He has $5 saved, and wants to buy a game that costs $33, including tax. How many weeks will it take him to earn the money needed to buy the game?
15	To stay at a healthy weight, cats should eat 30 calories per day for each pound that they weigh. Using this guideline, how many calories per day should a 9-pound cat eat?
16	The hungry caterpillar takes one bite out of a leaf on Monday, two bites on Tuesday, three bites on Wednesday, and so on, until Sunday when he rests and doesn't eat anything. How many bites total does he eat in one week of eating like this?

17	Nikhil can decorate a Christmas tree at a rate of 3 ornaments per minute. Subha can decorate a Christmas tree at a rate of 6 ornaments per minute. A fully decorated Christmas tree has 36 ornaments. How many SECONDS will it take Nikhil and Subha to fully decorate their Christmas tree, if they work together?
18	What time will it be 566 minutes after 4:20 A.M.?
19	2.34×10^3 is written in scientific notation. Write this number as a whole number in standard notation.
20	In the right triangle shown, point D is the midpoint of the hypotenuse. If side BC = 10, find the area of triangle ADB. 
21	Two mice are racing around the edges of a 2-ft by 2-ft square, starting at the same corner (vertex) and both going in a clockwise direction. One mouse travels at a constant rate of 1 foot per second, and the 2nd mouse travels twice as fast. After 22 seconds, how far apart are the mice?
22	What is the median of the following data set: {12, 25, 21, 15, 13, 19}
23	Alana is always Snapchatting Jaden and has 11 filter options from which she randomly selects. As a common fraction, what is the probability that she chooses the dog filter or the flower crown filter?
24	How many prime numbers are between 66 and 88?
25	Abum takes a 5×5 grid of unit squares and draws two diagonals to connect opposite corners. Altogether, through how many unit squares do the two diagonals pass?
26	When the month, day, and two-digit year are written in the form m/d/yy (i.e., without extra zeros), some dates form palindromes, which read the same way forwards and backwards (ignoring the slashes). 8/14/18 is one example of a palindrome date. What is the total number of palindrome dates that will occur in 2018 (including the example listed)?
27	Biff and Eho go to the movies. They spend a total of $9.42 at the movies, paying together with a $10 bill, and they get their change in coins. Biff says, "Great! I got three coins from the change!" Eho replies, "I got three coins too, but they're all pennies." In cents, how much is the smallest value coin received by Biff worth?
28	Vincent is a fidget spinner master. While Edward can spin a gadget spinner 500 times per minute, Vincent can make it spin 25% faster than Edward. How many spins does Vincent get per minute?
29	If a tree sprout is 2 inches tall today, and the tree grows at an average rate of 1.3 inches per month, how many inches tall will the tree be five years from today?
30	Three different whole numbers (A, B, and C) make the equation $A \times B = C$ true. What is the smallest possible sum of $A + B + C$?

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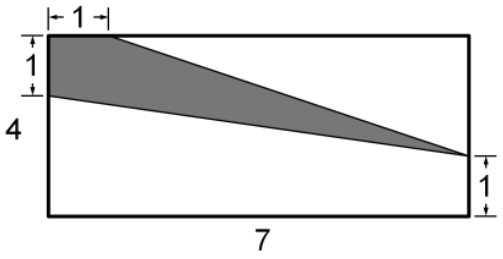
Challenge Questions: 3 points each	
31	When two fair, six-sided dice are rolled, what is the probability that neither die shows a six? Answer as a common fraction.
32	I am thinking of a number N, such that the least common multiple of N and 7 is 91. What is the smallest possible value of N?
33	9 Doggos equal 12 Puppers, 4 Puppers equal 10 Leos and 8 Leos equal 7 Giras. How many Giras are equal to 24 Doggos?
34	If A@B is defined as $A@B = [(A + B)/(A - B)]^2$, then what is the value of 1@2 ?
35	The sum of two numbers is 109 and their difference is 43. What is the smaller of the two numbers?
36	Viknesh rides his bike from his house to school every day, taking him 15 minutes to get to school in the morning. When Callum gives him a ride home at the end of the day, the trip only takes 3 minutes. If Callum drives an average speed of 40 miles per hour (mph), how fast, in mph, does Viknesh bike to school?
37	Three distinct counting numbers have an average of 10. What is the largest possible value of the median for these three numbers? Recall that counting numbers don't include zero.
38	What is the area of the shaded region of the 4 by 7 rectangle at right? 
39	How many unique groupings of 3 students can a teacher make from her class of 21 students?
40	Evaluate: $\dfrac{1}{\dfrac{1}{\dfrac{1}{\frac{1}{4}+\frac{1}{4}}+\dfrac{1}{\frac{1}{4}+\frac{1}{4}}}+\dfrac{1}{\dfrac{1}{\frac{1}{4}+\frac{1}{4}}+\dfrac{1}{\frac{1}{4}+\frac{1}{4}}}}$