
Contest Corner: The 2021 State Tournament of Mathematics Returns

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1 Introduction

The 48th OCTM State Tournament of Mathematics returned from its COVID hiatus this fall. The annual mathematics competition is open to any student taking high school mathematics courses. The format and time frame changed for 2021. This year the tournament took place on a school day between September 20 and October 8 at each participant's home school and the contest was administered and scored by teachers at the participating school. In prior years the 60 minute contest was held the last Saturday of February at test centers located through the state.

The 48th State Tournament of Mathematics consisted of 40 questions to be completed in 45 minutes. The questions covered a wide range of high school mathematics topics from algebra through precalculus and statistics. Participants were able to use any calculator but may not have internet access.

The Ohio High School Mathematics Invitational Olympiad (OHMIO) also makes a return in 2021. Results from the State Tournament of Mathematics are used to select invited students. Qualifying Olympians participate on November 6, 2021 on the campus of Capital University.

One of the main benefits of participating and preparing for competition is that student mathematical talent is enhanced. Under the direction of a teacher or coach, problem solving prowess is developed when mathletes strive, individually or in groups, to correctly solve problems they solved incorrectly or did not know how to approach. Practice for competition is motivating to many students and facilitates interest in mathematics and other STEM areas. There are many local, state and national mathematics competitions. Table 1 shows a few competitions worth considering.

Table 1. Local, Regional, and State Mathematics Competitions

- Ohio Council of Teachers of Mathematics—ohioctm.org/Student-Contests
- The Math League—www.mathleague.com/
- Stanford Math Tournament—stanford.edu/group/sumo/smt
- American Regions Math League—arml.com
- Atlantic-Pacific Mathematics League—atpacmath.com
- American Mathematics Competitions—maa.org/math-competitions
- Purple Comet! Math Meet!—purplecomet.org

As a practice for your students, consider the 15 minute practice contest shown in Table 2.

Table 2. Practice Contest Items	
	<u>ANSWERS</u>
1. If you ski 10km/hr you will arrive at your destination by 1pm. If you do 15km/hr you will arrive at 11am. How fast must you ski to get there by noon?	12km/hr
2. A t-shirt originally cost \$20 but was marked down by 20% during the winter. By what percent should the shirt now be marked up so its cost returns to \$20?	25%
3. What is the last digit of the number 3^{1001} ?	3
4. What is the shortest distance between the point (20, 20) and the line whose equation is $x + y = 20$?	$10\sqrt{2}$ units
5. How many integers x satisfy $ x-10 \leq 10$?	21
6. If $\ln(x) = 20$, then the value of $\ln(20x)$ is closest to what positive integer?	23
7. Let n be a positive integer for which $5n! = (n + 1)!$. Find the value of n !	24
8. If each edge of a cube is increased by 10%, what is the percent increase in the surface area of the cube?	21



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