



# The Williston Northampton School Math Team

Submit your answers by May 10th, 2021 at [www.wbgmc.org](http://www.wbgmc.org).

Answers must be exact or in terms of  $\pi$ . Answers can be written in decimal or fraction form. Each question is worth one point. Students have 30 minutes to complete all questions. Calculators are allowed.

To be eligible to compete in the WBGMC, students must meet all of the following criteria:

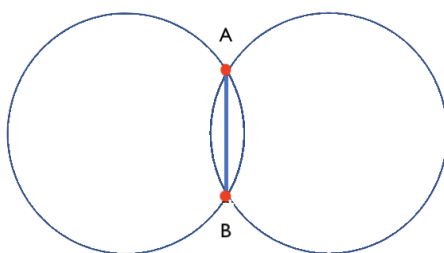
- Have a passion for problem-solving!
- Be female or non-binary in gender identity.
- Be in grade 9 or below OR under 15.5 years of age on May 10th, 2021.

## 1 Questions

- A bucket contains only fruits, of which 25 percent are blueberries, 15 percent are strawberries, 30 percent are apples, 5 percent are pineapples, and the rest are peaches. What percent of the fruits that are not berries are apples?
- The sum of 2 positive numbers is 7 times their difference. What is the ratio of the larger number to the smaller?
- Each cell in the table below is populated with the following products. How many of the cells will be populated with an even number?

$1 \times 1$	$1 \times 2$	$1 \times 3$	$1 \times 4$	$1 \times 5$	$1 \times 6$	$1 \times 7$	$1 \times 8$	$1 \times 9$	$1 \times 10$	$1 \times 11$	$1 \times 12$
$2 \times 1$	$2 \times 2$	$2 \times 3$	$2 \times 4$	$2 \times 5$	$2 \times 6$	$2 \times 7$	$2 \times 8$	$2 \times 9$	$2 \times 10$	$2 \times 11$	$2 \times 12$
$3 \times 1$	$3 \times 2$	$3 \times 3$	$3 \times 4$	$3 \times 5$	$3 \times 6$	$3 \times 7$	$3 \times 8$	$3 \times 9$	$3 \times 10$	$3 \times 11$	$3 \times 12$
$4 \times 1$	$2 \times 4$	$4 \times 3$	$4 \times 4$	$4 \times 5$	$4 \times 6$	$4 \times 7$	$4 \times 8$	$4 \times 9$	$4 \times 10$	$4 \times 11$	$4 \times 12$
$5 \times 1$	$5 \times 2$	$5 \times 3$	$5 \times 4$	$5 \times 5$	$5 \times 6$	$5 \times 7$	$5 \times 8$	$5 \times 9$	$5 \times 10$	$5 \times 11$	$5 \times 12$
$6 \times 1$	$6 \times 2$	$6 \times 3$	$6 \times 4$	$6 \times 5$	$6 \times 6$	$6 \times 7$	$6 \times 8$	$6 \times 9$	$6 \times 10$	$6 \times 11$	$6 \times 12$
$7 \times 1$	$7 \times 2$	$7 \times 3$	$7 \times 4$	$7 \times 5$	$7 \times 6$	$7 \times 7$	$7 \times 8$	$7 \times 9$	$7 \times 10$	$7 \times 11$	$7 \times 12$
$8 \times 1$	$8 \times 2$	$8 \times 3$	$8 \times 4$	$8 \times 5$	$8 \times 6$	$8 \times 7$	$8 \times 8$	$8 \times 9$	$8 \times 10$	$8 \times 11$	$8 \times 12$
$9 \times 1$	$9 \times 2$	$9 \times 3$	$9 \times 4$	$9 \times 5$	$9 \times 6$	$9 \times 7$	$9 \times 8$	$9 \times 9$	$9 \times 10$	$9 \times 11$	$9 \times 12$
$10 \times 1$	$10 \times 2$	$10 \times 3$	$10 \times 4$	$10 \times 5$	$10 \times 6$	$10 \times 7$	$10 \times 8$	$10 \times 9$	$10 \times 10$	$10 \times 11$	$10 \times 12$
$11 \times 1$	$11 \times 2$	$11 \times 3$	$11 \times 4$	$11 \times 5$	$11 \times 6$	$11 \times 7$	$11 \times 8$	$11 \times 9$	$11 \times 10$	$11 \times 11$	$11 \times 12$
$12 \times 1$	$12 \times 2$	$12 \times 3$	$12 \times 4$	$12 \times 5$	$12 \times 6$	$12 \times 7$	$12 \times 8$	$12 \times 9$	$12 \times 10$	$12 \times 11$	$12 \times 12$

- The linear equation  $8x + 6y = 48$  forms a triangle with the positive coordinate axes. What is the sum of the lengths of the 3 altitudes of this triangle?
- How many integers not exceeding 2021 are multiples of 3, 5 but not 7?
- Both circles below have a radius of 1. AB has a length of 1 as well. The midpoint of AB is in line with the center of both circles. Find the area of intersection of the two circles.



Submit your answers by May 10th at [www.wbgmc.org](http://www.wbgmc.org). For more information about the WBGMC, please contact Williston's Math Department Head, Josh Seamon, at [jseamon@williston.com](mailto:jseamon@williston.com).