



CEMC at Home

Grade 11/12 - Friday, June 19, 2020

Relay Day - Part 1

As part of the CEMC's Canadian Team Mathematics Contest, students participate in Math Relays. Just like a relay in track, you "pass the baton" from teammate to teammate in order to finish the race, but in the case of a Math Relay, the "baton" you pass is actually a number!

Read the following set of problems carefully.

Problem 1: The numbers $x + 5$, 14, x , and 5 have an average of 9. What is the value of x ?

Problem 2: Replace N below with the number you receive.

Each of the three lines having equations $x + Ny + 8 = 0$, $5x - Ny + 4 = 0$, and $3x - ky + 1 = 0$ passes through the same point. What is the value of k ?

Problem 3: Replace N below with the number you receive.

Quadrilateral $ABCD$ has vertices $A(0, 3)$, $B(0, p)$, $C(N, 10)$, and $D(N, 0)$, where $p > 3$ and $N > 0$. The area of quadrilateral $ABCD$ is 50 square units. What is the value of p ?

Notice that you can answer Problem 1 without any additional information.

In order to answer Problem 2, you first need to know the mystery value of N . The value of N used in Problem 2 will be the *answer* to Problem 1. (For example, if the answer you got for Problem 1 was 5 then you would start Problem 2 by replacing N with 5 in the problem statement.)

Similarly, you need the answer to Problem 2 to answer Problem 3. The value of N in Problem 3 is the *answer* that you got in Problem 2.

Now try the relay! You can use this [tool](#) to check your answers.

Follow-up Activity: Can you come up with your own Math Relay?

What do you have to think about when making up the three problems in the relay?

Can you just find three math problems and put them together to form a relay?

In Part 1 of this resource, you were asked to complete a relay on your own. But, of course, relays are meant to be completed in teams! In a team relay, three different people are in charge of answering the problems. Player 1 answers Problem 1 and passes their answer to Player 2; Player 2 takes Player 1's answer and uses it to answer Problem 2; Player 2 passes their answer to Player 3; and so on.

In Part 2 of this resource, you will find instructions on how to run a relay game for your friends and family. We will provide a relay for you to use, but you can also come up with your own!