



PROBLEM OF THE WEEK #3  
(Fall 2020)

My ultra-secret society urgently needs to deliver a vital piece of new technology to our hidden co-conspirator, Master Agent Z, without letting it fall into the wrong hands.

We've designed the item to be composed of five sophisticated and secret components, which are useless on their own. In fact, even if our enemies should capture four of the five components, it wouldn't do them any good at all. Unfortunately, the same is true for Master Agent Z — we have to make sure she receives all five components.

Worse, we know that two enemy spies will be on the lookout — but we have no idea where they are and can't predict their movements. Several of us have volunteered to carry the components to Master Agent Z, traveling at the same time by different and circuitous routes, but we have to be prepared for the possibility that two of the couriers will be captured. We've produced several copies of each component, and the couriers can each carry multiple components if necessary.

What is the smallest number of couriers we can send to ensure that at least one copy of each component gets to Master Agent Z, but without giving the enemy spies a chance to obtain copies of all five components by capturing two couriers?

[Please fully explain your answer.]

Email your solution to [kwonmi@uwplatt.edu](mailto:kwonmi@uwplatt.edu) by 4:00 P.M. on Wednesday, October 7, 2020.

Every week, the best solution submitted earns a \$10 Platteville gift certificate; the top scorer each semester also wins a cash award. Good luck!

You can always see the Problem of the Week (and complete rules) online at:

<http://uwpmath.weebly.com/>