Well, do I have to say “I told you so”? That’s just spooky!

Look! Wonderguy just came back into the office. He’s tearing into a package in the mail bin!

Now he’s... digging for a pencil and paper? He’s... working a math problem?!?

Uh, oh! Claire, Dillon, you’re the math gurus on the academic team. I’m going to stay here and keep these guys calm. I need you to go help Wonderguy. Is that okay?

But, Principal Willoughby, Wonderguy is probably ten times better at math than we are!

Yeah, well... just the same... I’m putting you in the game, guys. Don’t let us down!
Wonderguy?

Claire and Dillon are the best math students in the school. Can they help?

Ah... yeah, sure. Here is the problem.

#1

Insert a digit in the blank so that \_4268 is divisible by 9.

I have already ruled out "1".

\[ \begin{array}{c}
9 & \mid \overline{1585} \\
\underline{-9} & \underline{52} \\
-45 & -76 \\
-72 & -48 \\
-45 & -3 \\
\end{array} \]
"abc" = (a × 100) + (b × 10) + (c × 1)

Then pull one thing out of each place.

(a × 99 + a) + (b × 9 + b) + c

So, put all of your singles together.

(a × 99) + (b × 9) + (a + b + c)

Think about the 3-digit number "a b c", where "a", "b", and "c" are the hundreds, tens, and ones, in that order. That means that

The first two parts are divisible by 9, so if the last part, the sum of the digits, is divisible by 9, then the whole thing has to be divisible by 9!

4 + 2 + 6 + 8 = (4 + 6) + (2 + 8) = 20, so 7 more is 27!
Great googly-moogly!

Alright, here goes nothing!

Lucky guess!
One down, two to go!

Oh, yeah, baby!