

MATH MAVEN'S MYSTERIES

Name: _____

Date: _____

The Secret of E. Quation The Great

Hi, Math friends! Lean in close as I tell you a tale about a great and powerful magician—E. Quation The Great!

A blinding flash of light and a billow of white smoke briefly hid the tall gentleman in the royal blue cape on stage. As the smoke cleared, a gasp arose from the awestruck audience. Standing before them the magician now held a rabbit that had disappeared only moments before. The crowd applauded thunderously and shook their heads in amazement.

“Thank you, ladies and gentlemen!” bellowed the powerful magician, E. Quation The Great. When the applause died down, E. Quation twirled his shiny black mustache and with a twinkle in his eye announced: “Now, for my most amazing trick...”

At that moment, the velvet curtain behind him slowly parted to reveal an enormous, ornate balance. Between the two empty scales was a large red needle that pointed straight up to the number zero. A lovely young woman in a shiny silver outfit stood by the balance.

“Ladies and gentleman,” said the magician proudly. “Let me introduce my lovely assistant, Polly Gone.” The magician took her by the hand and helped her onto the right-hand scale. When Polly sat on the scale, it lowered to the floor and the red needle leaned to the right.

E. Quation continued: “Now, a gentleman would never ask a lady her weight, but in this case, it’s essential to my magic! Polly, could we ask you how much you weigh?”

“Certainly! I weigh 120 pounds,” replied Polly. The audience responded with polite applause.

E. Quation then raised the white rabbit above his head: “Ladies and gentleman, this rabbit weighs



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a mere 2 pounds. Let's see how this furry animal measures up to Miss Polly Gone." At that, he took off his top hat, lowered the rabbit inside, and placed both on the left scale of the balance. Since Polly Gone was much heavier than the rabbit, the scale didn't budge.



But suddenly, the lights dimmed and E. Quation raised his arms, exclaiming:

"Magic scale,
Hear me tonight:
Make light become heavy
And heavy become light!"

Another billow of white smoke puffed on stage, concealing the magician and the scale. The audience was not prepared for the magical sight that appeared when the smoke cleared: Although both Polly and the rabbit in the hat remained on opposite scales, they seemed to be perfectly balanced. Plus, the red needle pointed directly to the zero! The magician whirled around with both arms raised in a gesture of triumph. The music swelled to a loud crescendo as the audience jumped to their feet and applauded wildly.

I know a magician never reveals his secrets, but in this case I just had to ask. After the show, I snuck backstage and summoned up the courage. "Mr. E. Quation the Great," I said shyly. "Would you tell me how you did your last trick?"

"Dear Math Maven!" he replied. "Although I have great respect for your work, I can only reveal three little hints: It involves magic weights, a one-pound hat, and ALGEBRA!"

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Solve the Mystery!

Okay, Mathematicians! Can you figure out E. Quation's secret?

Here's a little hint:

The magician's magic scale had a secret compartment of extra weights on the LEFT balance side, away from the audience. When the smoke filled the stage, E. Quation quickly and secretly changed the weight. How heavy were those secret weights? Help the Math Maven figure it out!

Use a letter (such as "m" for "magic"!) to represent the UNKNOWN. Now, circle the equation that best describes E. Quation's trick:

- A. $120 + 2 + 1 = m$
- B. $120 \times 2 + 1 = m$
- C. $120 = 2 + 1 + m$
- D. $120 / 2 + 1 = m$

Bonus question: How heavy WERE those secret weights?

Use this space to show your work: