Math Maven's Mysteries

The Colossal Circus Caper

Hey there, my clever detectives! Math Maven here, with a mystery of gigantic proportions—and I need your brain power to help me crack it.

It all started this morning, as I was reading the local paper. I had just turned to an article about the Colossal Circus coming to town, when the phone rang.

"Hello?" I said.

"Oh, Math Maven—thank goodness you're home!" shrieked a panic-stricken voice. "This is Circus Simon, the ring leader of the Colossal Circus. We have a big—and I mean BIG—problem!"

"I'll be right there," I assured him.

When I arrived at the circus grounds, I knew right away why Circus Simon had been in such a state. An enormous elephant was swinging its trunk from side to side, knocking people over and letting out a roar like I've never heard before! Now, I know elephants are usually gigantic, but this one was almost the size of a house!

A short man in a red cape ran over to me, clearly distressed. "Math Maven, thank goodness!" he panted. "I'm Circus Simon. As you can see, we've got a huge problem on our hands."

"I can only imagine you're talking about the elephant," I said. "What in the world have you been feeding it?"

"Funny you should ask," he said, exasperated. "At 8 o'clock this morning, Betsy the zoo keeper noticed two strange men feeding Ella, our 15-foot prize elephant. Betsy wanted to find out who they were, but they took off too quickly. Oh, but they did leave this." He handed me a note, which read:
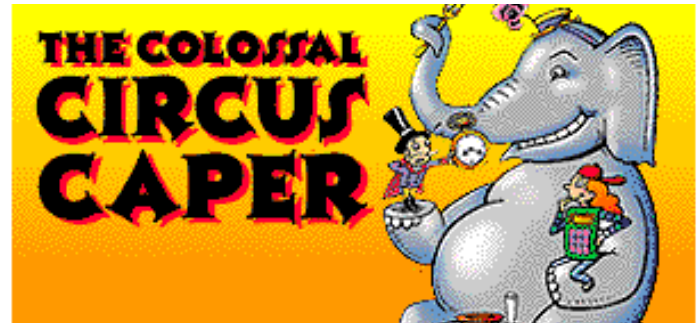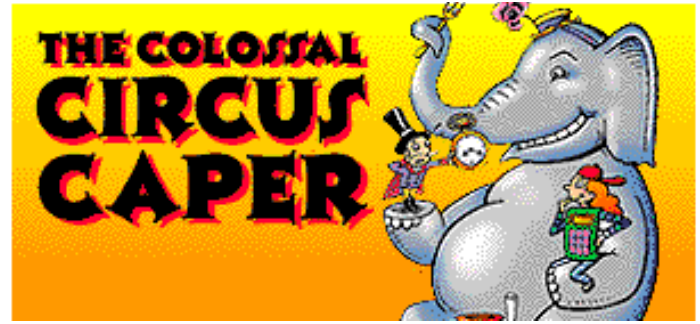
Notes:

Name: _____

Date: _____

The Colossal Circus Caper

So, you think the circus is coming to town? Not if WE can help it! You might as well cancel tonight's 8:00 o'clock show, because your precious elephant isn't going to fit into the circus tent. We've fed her a little treat that will double her size every hour!

Now, don't panic—we're animal lovers too, and wouldn't want to hurt your elephant. This magic potion only lasts five hours, at which time she'll start shrinking by one third every hour until she returns to her normal size.

Signed,
Huge Hilda and Sidekick Shrimpy

"It's the first night of the circus, Math Maven," Circus Simon pleaded. "We can't cancel the show. The kids will be so sad! Is there anything you and your math detectives can do?"

"How high is the entrance to the circus tent?" I asked.

"It's only 30 feet tall," he said, a look of panic in his face. "And at the rate Ella's growing, she'll never fit!"

"Remember, Simon," I assured him, "At some point, Ella will stop growing and start shrinking."

"But will it be in time for the show?"

"I don't know," I said, scratching my head. "I'll need some help with that one."

Notes:

Solve the Mystery!

Okay, super sleuths. Will Ella be able to fit in the tent before the 8:00 p.m. show? Remember, at 8:00 o'clock this morning, Ella was 15 feet. For the next five hours, she doubled in size every hour. After five hours, she will shrink every hour by one third until she returns to her normal size.

In this mystery, you'll need your TIME and MEASUREMENT skills. You might want to create a table to help you figure this one out. In your table, record how tall Ella was at 8:00 a.m., at 9 a.m., and so on. (Note: Round Ella's height at each hour to the nearest whole number.)

Circus Simon is anxious to know if the show will go on! At 8:00 p.m., Ella the elephant must be able to walk through the 30-foot tall entrance. Will she make it? How tall will Ella be at 8:00 o'clock this evening?

    A. 9 feet
    B. 15 feet
    C. 28 feet
    D. 85 feet

Use this space to show your work: