Unit 7 Lesson 1: Exponent Review

1 Which One Doesn't Belong: Twos (Warm up)

Student Task Statement

Which expression does not belong? Be prepared to share your reasoning.

$$2^3 \qquad\qquad\qquad\qquad 3^2$$

$$8 \qquad\qquad\qquad\qquad 2^2 \cdot 2^1$$

2 Return of the Genie

Student Task Statement

Mai and Andre found an old, brass bottle that contained a magical genie. They freed the genie, and it offered them each a magical $1 coin as thanks.

- The magic coin turned into 2 coins on the first day.

- The 2 coins turned into 4 coins on the second day.

- The 4 coins turned into 8 coins on the third day.

This doubling pattern continued for 28 days.

Mai was trying to calculate how many coins she would have and remembered that instead of writing $1 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$ for the number of coins on the 6th day, she could just write 2^6.

1. The number of coins Mai had on the 28th day is very, very large. Write an expression to represent this number without computing its value.

2. Andre's coins lost their magic on the 25th day, so Mai has a lot more coins than he does. How many times more coins does Mai have than Andre?

3 Broken Coin

Student Task Statement

After a while, Jada picks up a coin that seems different than the others. She notices that the next day, only half of the coin is left!

- On the second day, only $\frac{1}{4}$ of the coin is left.

- On the third day, $\frac{1}{8}$ of the coin remains.

1. What fraction of the coin remains after 6 days?

2. What fraction of the coin remains after 28 days? Write an expression to describe this without computing its value.

3. Does the coin disappear completely? If so, after how many days?