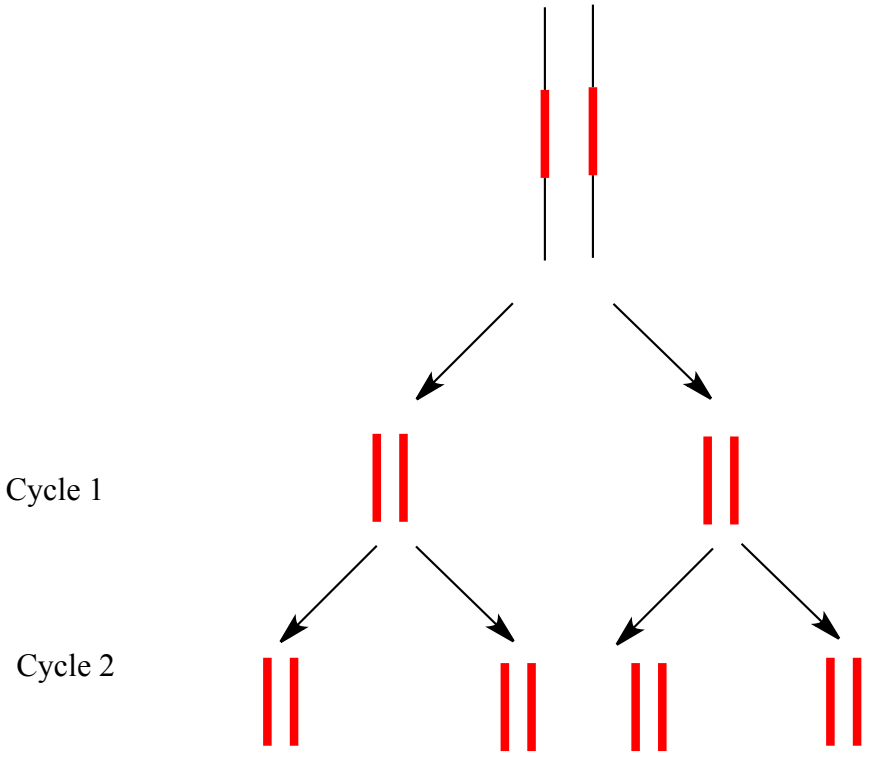
CONCEPT: POLYMERASE CHAIN REACTION

- **Polymerase chain reaction** (**PCR)** is a method for amplifying DNA
  - □ Includes multiple _____ of:
    1. Exposing the DNA to high temperatures to separate the two strands
    2. Lowering the temperature to allow for complementary **primers** to bind to initiate replication
    3. **DNA polymerase** begins replicating the DNA
  - □ Important for creating billions of copies of a desired nucleotide sequence which can be used in:
    - Diagnostics and forensics applications
    - Comparing DNA molecules
    - Testing for presence of a specific DNA sequence
    - Quantifying the amount of DNA (**qPCR)** or RNA **(RT-PCR)** in a sample

EXAMPLE:



PRACTICE

1. How many copies of DNA exist after 4 cycles of PCR?
    a. 4
    b. 8
    c. 16
    d. 32

2. Which of the following shows the correct order of steps for PCR?
    a. Melting DNA strands → Primer Binding → DNA polymerase replication
    b. Primer Binding → Melting DNA strands → DNA polymerase replication
    c. Melting DNA strands → DNA polymerase replication → Primer Binding