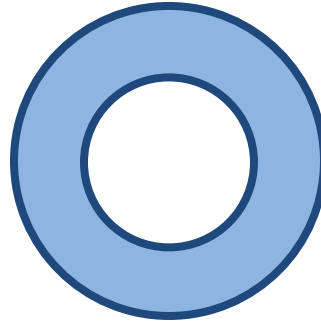
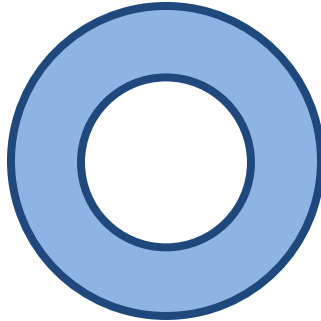
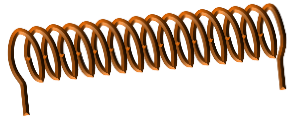


## CONCEPT: MAGNETIC FIELD BY TOROIDAL SOLENOIDS

- Remember: Magnetic Field at the center of a LOOP →  $B =$
- Magnetic Field at the center of a SOLENOID →  $B =$

- Solenoids can be arranged in a doughnut shape to form Toroidal Solenoids aka "Toroids" →



→  $B =$  \_\_\_\_\_

- NOTE \_\_\_\_\_ is back, AND \_\_\_\_\_ NOT \_\_\_\_\_!
- $B$  exists between \_\_\_\_\_ and \_\_\_\_\_, zero outside.
- $R$  is "mean radius" = \_\_\_\_\_

EXAMPLE: A 300-turn toroidal solenoid has inner and outer radii 12 and 16 cm, respectively. If 5 A of current runs through the wire, what is the magnitude of the magnetic field produced:

- (a) at the center of the solenoid
- (b) at 14 cm away from the center
- (c) at 20 cm away from the center