

12.49

Solenoid has $N = 2000$ turns in $L = 1.0 \text{ m}$, so

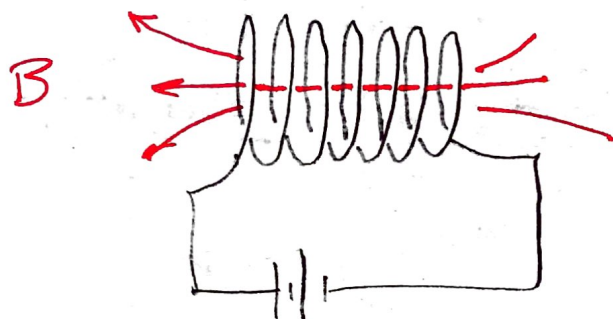
$$n = \frac{N}{L} = \frac{2000 \text{ turns}}{\text{m}}$$

$$I = 5.2 \text{ A}$$

$$B_{\text{solenoid}} = \mu n I$$

$$= (4\pi \times 10^{-7}) (2000) (5.2 \text{ A})$$

$$= \boxed{0.13 \text{ T}} \quad (\text{in center})$$



12.50

$$n = \frac{12 \text{ turns}}{1 \text{ cm}} \times \frac{100 \text{ cm}}{1 \text{ m}} = \frac{1200 \text{ turns}}{\text{m}}$$

$$B = \mu n I, \text{ so } I = \frac{B}{\mu n}$$

$$I = \frac{2.0 \times 10^{-2} \text{ T}}{(4\pi \times 10^{-7}) (1200)}$$

$$I = \boxed{13.3 \text{ A}}$$