----- Problem 1 -----  For a damped block-spring oscillator, the block has a mass of 0.380 kg, and the spring has a spring constant of 130 N/m. As the block oscillates its amplitude decreases over time due to damping described by a damping coefficient of 0.088 kg/s.

- The block is pulled from equilibrium and then released from rest. How long will it take for the oscillator’s amplitude to decrease to only 10% of its starting value?

- What is the period of the block’s oscillation?

- How many cycles will the block have covered over the time it takes for its amplitude to decay to 10% of its starting value?

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Answers

1. $t_{10\text{percent\_remains}} = 19.886 \text{ s}$
   
   $T_{\text{with\_damping}} = 0.33971 \text{ s}$

   (# of cycles) = 58.538