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| **± A Proton between Oppositely Charged Plates** |
| A uniform electric field exists in the region between two oppositely charged parallel plates 1.53 cm apart. A proton is released from rest at the surface of the positively charged plate and strikes the surface of the opposite plate in a time interval 1.47×10−6 s.

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| Part A |  |
| Find the magnitude of the electric field.

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| Hint A.1 | **How to approach the problem** |
| ***Hint not displayed*** |
| Hint A.2 | **A relationship between electric force and electric field** |
| ***Hint not displayed*** |

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| Hint A.3 | **Calculate the acceleration of the proton** |
| ***Hint not displayed***  |
| Hint A.4 | **Calculate the force on the proton** |
| ***Hint not displayed***  |

**Use 1.60×10−19 C for the magnitude of the charge on an electron and 1.67×10−27 kg for the mass of a proton.**

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| ANSWER: |

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|  |  | ***Answer not displayed*** |   \rm{N/C} |  |

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| Part B |  |
| Find the speed of the proton at the moment it strikes the negatively charged plate.

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| Hint B.1 | **How to approach the problem** |
| ***Hint not displayed*** |
| ANSWER: |

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|  |  | ***Answer not displayed*** |   \rm{m/s} |  |

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