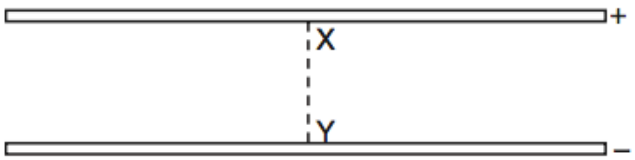
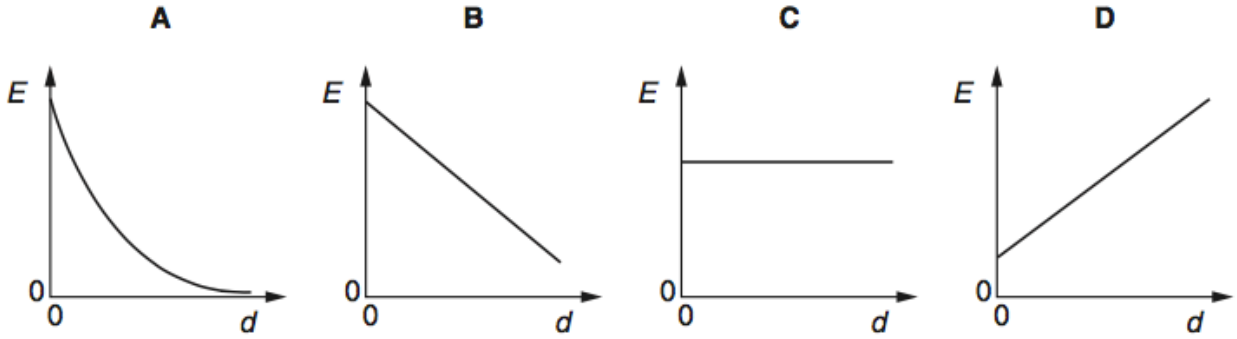
1)

An electric field exists in the space between two charged metal plates.

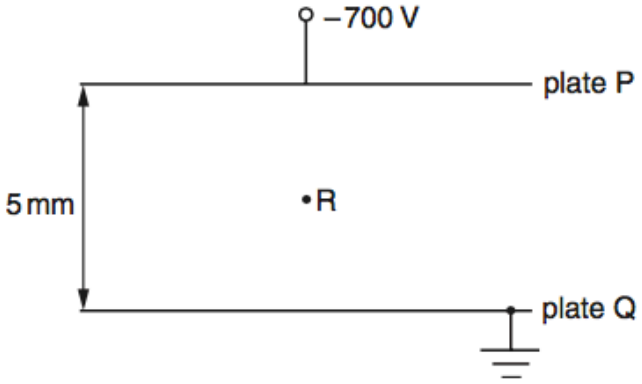


Which of the following graphs shows the variation of electric field strength *E* with distance *d* from X along the line XY?



2)

The diagram shows two metal plates P and Q between which there is a potential difference of 700 V. Plate Q is earthed.



What is the magnitude and direction of the electric field at point R?

A $1.4 \times 10^2\,N\,C^{-1}$ from P towards Q

B $1.4 \times 10^2\,N\,C^{-1}$ from Q towards P

C $1.4 \times 10^5\,N\,C^{-1}$ from P towards Q

D $1.4 \times 10^5\,N\,C^{-1}$ from Q towards P

3)

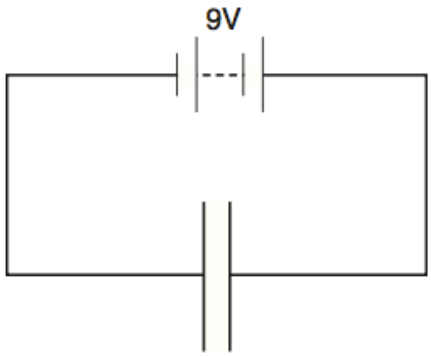
A potential difference V is applied between two parallel plates a small distance d apart, and produces an electric field of strength E between the plates.

What is the electric field strength between the plates when both V and d are doubled?

A $E/4$ **B** E **C** $2E$ **D** $4E$

4)

In the circuit below, the distance between the two parallel plates is 2.0×10^{-3} m. An electron is situated between the plates.



What is the force on the electron?

A 3.2×10^{-22} N

B 2.9×10^{-21} N

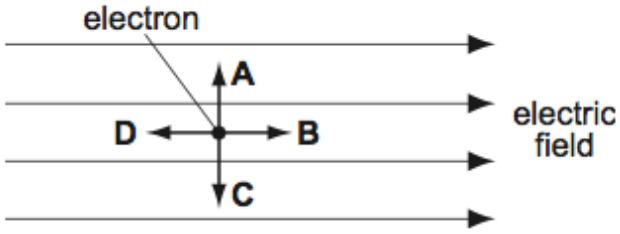
C 8.9×10^{-18} N

D 7.2×10^{-16} N

5)

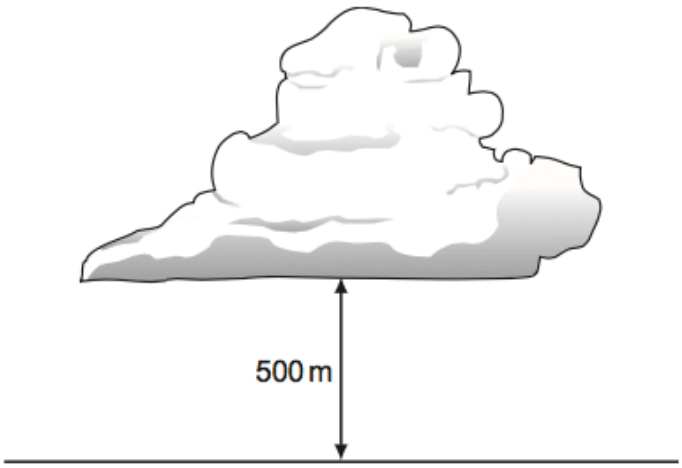
The diagram shows an electron in a uniform electric field.

In which direction will the field accelerate the electron?



6)

The diagram shows a thundercloud whose base is 500 m above the ground.



The potential difference between the base of the cloud and the ground is 200 MV. A raindrop with a charge of 4.0×10^{-12} C is in the region between the cloud and the ground.

What is the electrical force on the raindrop?

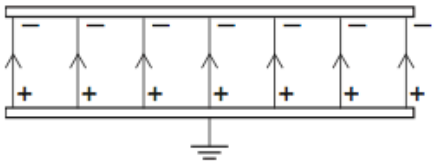
A 1.6×10^{-6} N **B** 8.0×10^{-4} N **C** 1.6×10^{-3} N **D** 0.40 N

7)

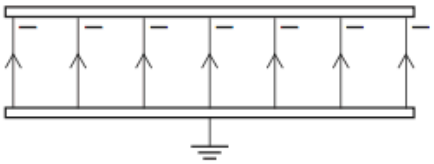
Two parallel, conducting plates with air between them are placed close to one another. The top plate is given a negative charge and the bottom one is earthed.

Which diagram best represents the distribution of charges and the field in this situation?

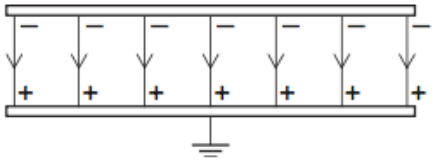
A



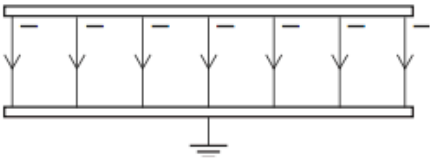
B



C



D



8)

In a uniform electric field, which statement is correct?

A All charged particles experience the same force.

B All charged particles move with the same velocity.

C All electric field lines are directed towards positive charges.

D All electric field lines are parallel.

9)

The diagram shows a pair of metal plates 4.0 mm apart connected to a 9.0 V battery.

What is the electric field between the plates?

A $4.4 \times 10^{-4}\,N\,C^{-1}$

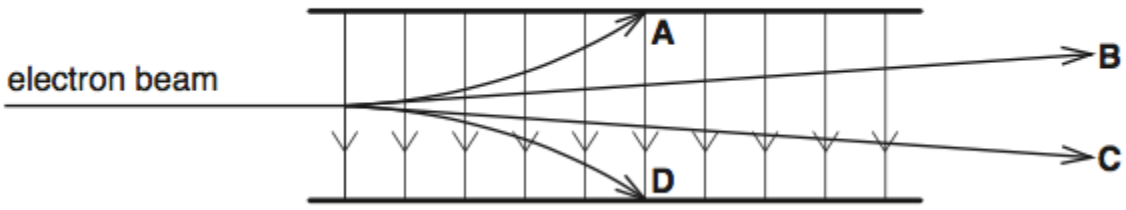
B $3.6 \times 10^{-2}\,N\,C^{-1}$

C $36\,N\,C^{-1}$

D $2.3 \times 10^{3}\,N\,C^{-1}$

10)

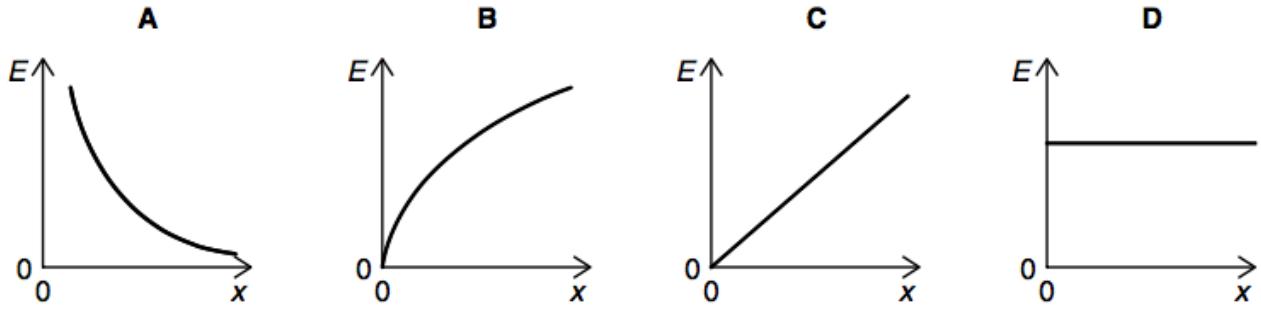
Which path shows a possible movement of an electron in the electric field shown?



11)

Two parallel conducting plates are connected to a battery, one plate to the positive terminal and the other plate to the negative. The plate separation is gradually increased, the plates remaining connected to the battery.

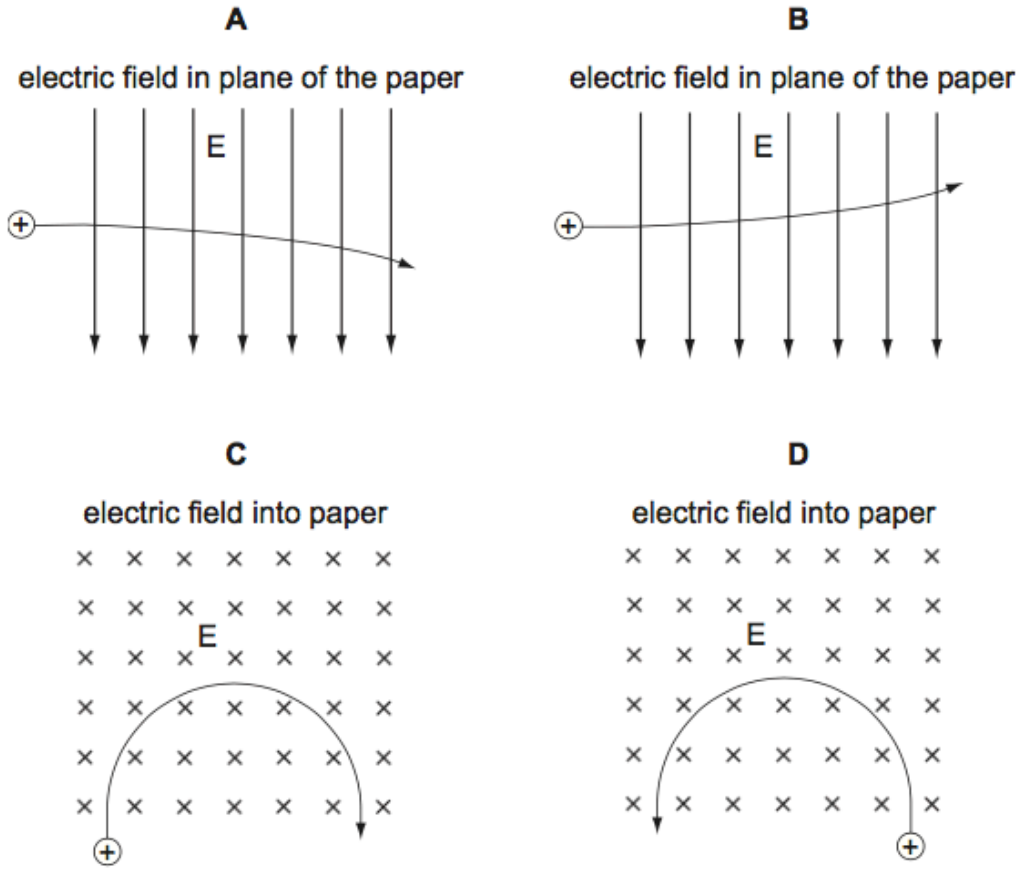
Which graph shows how the electric field *E* between the plates depends on the plate separation *x*?



12)

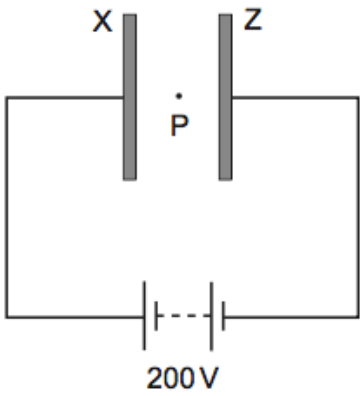
A positively charged particle is projected into a region of uniform electric field E.

Which diagram represents the motion of the particle in the electric field?



13)

Two large parallel plates X and Z are placed 5.0 mm apart and connected as shown to the terminals of a 200 volt d.c. supply.



A small oil drop at P carries one excess electron.

What is the magnitude of the electrostatic force acting on the oil drop due to the electric field between the plates?

A 6.4×10^{-15} N

B 6.4×10^{-18} N

C 1.6×10^{-19} N

D 4.0×10^{-24} N