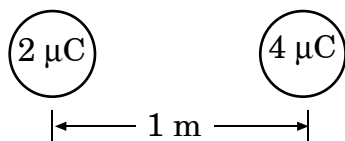
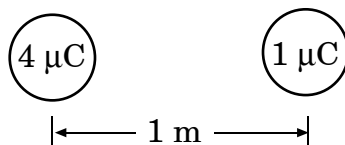


1. In which of the following cases is the force between the charges the ***greatest***?

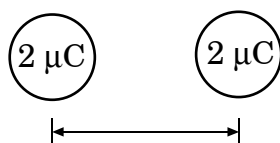
A



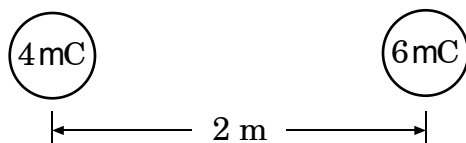
B



C



D



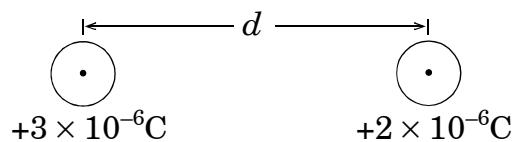
2. Two positive charges of  $6.0 \times 10^{-6}\ \text{C}$  are separated by 0.50 m. What force exists between the charges?

- A 6.5 N  
 B 1.3 N  
 C  $2.3 \times 10^{-9}\ \text{N}$   
 D  $3.6 \times 10^{-11}\ \text{N}$

3. If charges of  $+10.0\ \mu\text{C}$  and  $-50.0\ \mu\text{C}$  are separated by 0.200 m of air, what electrostatic force will the charges experience?

- A +224 N  
 B +112 N  
 C -112 N  
 D -224 N

4. Two charges,  $+3 \times 10^{-6}\ \text{C}$  and  $+2 \times 10^{-6}\ \text{C}$ , are separated by a distance,  $d$ , and experience a repulsive force of  $1.35 \times 10^{-2}\ \text{N}$ .

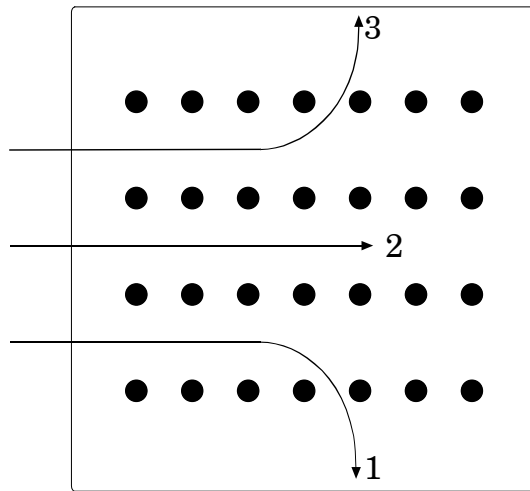


What is the value of  $d$ ?

- A 1 m  
 B 2 m  
 C 4 m  
 D 16 m

5. Two charges separated by a distance  $d$  exert a force  $F$  on each other. What is the force between the same charges if the distance is increased to  $2d$ ?
- A  $\frac{1}{4}F$
- B  $\frac{1}{2}F$
- C  $2F$
- D  $4F$
6. How far apart are two electrons if they exert a force of 3.0 N on one another?
- A  $2.3 \times 10^{-10}$  m
- B  $2.6 \times 10^{-14}$  m
- C  $8.8 \times 10^{-15}$  m
- D  $7.8 \times 10^{-29}$  m
7. Two equal charges, separated by a distance of 2 m, experience a force of 0.02 N. What are the magnitudes of the two charges?
- A  $3 \mu\text{C}$
- B  $4 \mu\text{C}$
- C  $7 \mu\text{C}$
- D  $9 \mu\text{C}$
8. A charged particle enters a region of magnetic field of  $4.0 \times 10^{-4}$  T with a speed of  $3.0 \times 10^6$  m/s and experiences a force of  $2.4 \times 10^{-3}$  N. What is the magnitude of charge on the particle?
- A  $5.6 \times 10^{-8}$  C
- B  $2.0 \times 10^{-6}$  C
- C 2.9 C
- D  $3.1 \times 10^{12}$  C

9. Three particles enter a region of uniform magnetic field (pointing out of page) and deflect as shown below.



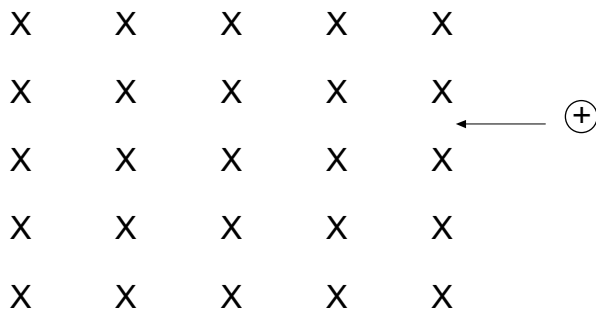
Which of the following statements is correct about the charge on the particles?

- A 1 is positive, 2 is neutral, 3 is negative.
- B 1 is negative, 2 is negative, 3 is positive.
- C 1 is positive, 2 is positive, 3 is negative.
- D 1 is negative, 2 is neutral, 3 is positive.

10. Two parallel wires are carrying current and an attractive force exists between them. Which description applies to the wires?

- A Current flows in opposite directions in the wires.
- B Current flows in the same direction in both wires.
- C The wires attract regardless of the direction of the current.
- D This does not happen because the force is always one of repulsion between the wires regardless of the direction of current.

11.

**Magnetic Field**

Note: The Xs represent a magnetic field directed into the paper.

What is the direction in which a positive charge is deflected when it enters the magnetic field as shown above?

A  $\longrightarrow$

B  $\longleftarrow$

C  $\uparrow$

D  $\downarrow$

**End of Sample Items Goal 9**

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## Answers to EOC Physics Sample Items

### Goal 9

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**1. Objective 9.01**

Assess the inverse square relationship among force, charge, and distance in Coulomb's Law.

**Thinking Skill:** Integrating                      **Correct Answer:** C

**2. Objective 9.01**

Assess the inverse square relationship among force, charge, and distance in Coulomb's Law.

**Thinking Skill:** Applying                      **Correct Answer:** B

**3. Objective 9.01**

Assess the inverse square relationship among force, charge, and distance in Coulomb's Law.

**Thinking Skill:** Applying                      **Correct Answer:** C

**4. Objective 9.01**

Assess the inverse square relationship among force, charge, and distance in Coulomb's Law.

**Thinking Skill:** Applying                      **Correct Answer:** B

**5. Objective 9.01**

Assess the inverse square relationship among force, charge, and distance in Coulomb's Law.

**Thinking Skill:** Analyzing                      **Correct Answer:** A

**6. Objective 9.01**

Assess the inverse square relationship among force, charge, and distance in Coulomb's Law.

**Thinking Skill:** Applying                      **Correct Answer:** C

**7. Objective 9.01**

Assess the inverse square relationship among force, charge, and distance in Coulomb's Law.

**Thinking Skill:** Applying                      **Correct Answer:** A

**8. Objective 9.03**

Analyze the relationship between moving electric charges and magnetic fields.

**Thinking Skill:** Applying                      **Correct Answer:** B

## Answers to EOC Physics Sample Items

### Goal 9

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- 9. Objective 9.03**  
Analyze the relationship between moving electric charges and magnetic fields.  
**Thinking Skill:** Analyzing                      **Correct Answer:** A
- 10. Objective 9.03**  
Analyze the relationship between moving electric charges and magnetic fields.  
**Thinking Skill:** Integrating                      **Correct Answer:** B
- 11. Objective 9.03**  
Analyze the relationship between moving electric charges and magnetic fields.  
**Thinking Skill:** Analyzing                      **Correct Answer:** D