Electric Potential Practice Name:_____

Reflection and Self-Assessment

Completion: Circle the statement that best describes the completion of this practice.

- I completed every question on the practice.
- I did not complete some questions on the practice because:

_____

Answer Checking: Circle the statement that best describes how you checked your answers

- I checked all my answers against the key at the back and corrected any that were incorrect.
- I did not check all my answers and correct any mistakes because:

_____

Online Worked Solution: Circle the statement that best describes how you used the online worked solutions.

- I did not use the online worked solution at all.
- I used the online solution to understand some questions I got incorrect.
- I used the online solution to help me learn how to answer some questions.

Confidence: Circle the statement that best describes your confidence in answering questions of this type in the future.

- I am confident I can answer nearly any question of this type correctly without using notes or other assistance.
- I am confident I can answer **MOST** questions of this type correctly without using notes or other assistance.
- I am **NOT** confident I can answer most questions of this type correctly without using notes or other assistance.

Time: Circle the statement below that best describes the total amount of time you spent actively working on this practice:

Less than an hour	Between one and two hours	Between two and three hours	Between three and four hours	More than four hours

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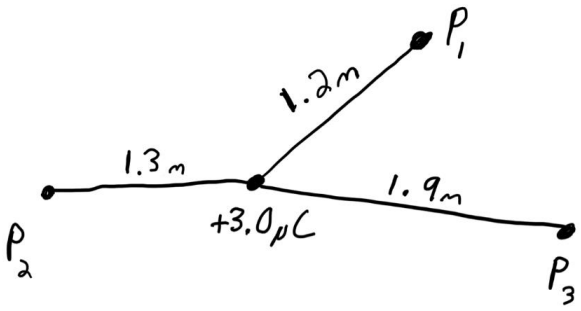
1. Near a positive charge will the electric potential be positive or negative?

2. Near a negative charge will the electric potential be positive or negative?

3. A 2.50 μC charge has 2.84 J of electric potential energy. What is the electric potential at the charge?

4. A $-45.2\ \mu C$ charge has 4.63 J of electric potential energy. What is the electric potential at the charge?

5. What is the electric potential at each of the indicated points surrounding a $+3.0\ \mu C$ charge.



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6. A $-260\ \mu C$ charge is fixed in place. What is the electric potential:
   a. 6.5 metres from the charge

   b. 2.5 metres from the charge

   c. 0.25 metres from the charge

7. What is the electric potential at a point 0.26 metres from a $+35\mu C$ charge and 0.76 metres from a $+26\ \mu C$ charge?

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8. What is the electric potential at a point 1.42 metres from a $+8.5\mu C$ charge and 1.96 metres from a $-9.6\ \mu C$ charge?

9. What is the electric potential difference between a point 2.5 metres away from a $+23\mu C$ charge compared to a point 0.11 metres away from the charge?

10. How much work is needed to move a $+1.2\ \mu C$ charge from a point with electric potential of $25\ V$ to a point with electric potential of 65 V?

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11. A $-2.5\ \mu$C charge is moved from a point with electric potential of -26 volts to a point with electric potential of +36 volts.
    a. Will the work done to the charge be positive or negative?

    b. How much work done to the charge?

12. A 0.19 kg, $-0.25\mu C$ object is accelerated from rest through a potential difference of 350 volts. What is its final speed?

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13. A 0.021 kg, $+1.7 \times 10^{-9}\ C$ charged object is accelerated from rest through a potential difference of -2500 volts. What is its final speed?

14. How much work is required to move a +65 μC object through a potential difference of 24 volts?

15. How much work is required to move a $-2.3\ \mu C$ charge through a potential difference of -85 volts?

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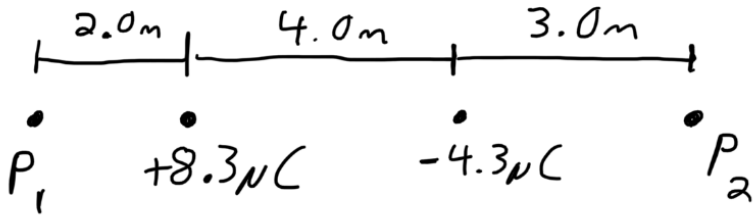
16. Consider the diagram shown.



a. What is the electric potential at P1 (consider the effect of both charges)?

b. What is the electric potential at P2 (consider the effect of both charges)?

c. What is the electric potential difference between P1 and P2?

d. How much work is required to move a $-2.0\ \mu C$ charge from P1 to P2?

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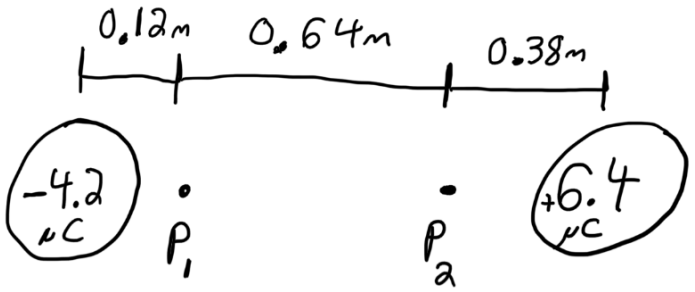
17. Consider the diagram shown:



a. What is the electric potential difference between P1 and P2?

b. $-1.0C$ of charge moves from P1 to P2, as it does so the lost potential energy is converted to other forms of energy by a complex apparatus, how much energy can be generated in this way?

c. If it takes 2.0 seconds for the charge to move from P1 to P2, what is the power output?

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18. A battery creates areas of high and low potential at either terminal. Electrons are then allowed to flow from the low potential terminal to the high potential terminal through a wire. A particular battery has a potential difference of 24 volts between its low and high potential terminals.

    a. If -2.0 C of charge is allowed to flow from the low potential terminal to the high potential terminal how much work is done to the **charge**?

    b. If a lightbulb is connected to the wire, how much light energy can be created if all the energy lost from the charge is converted into light energy?

    c. If a motor is connected to the wire, how much mechanical energy can be created if all the energy lost from the charge is converted into mechanical energy?

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Answer Key				
1) Positive	2) Negative	3) 1.14×10^6 V	4) -1.02×10^5 V	5)P1: 22 000 V P2: 21 000 V P3: 14 000 V
6a) -360 000 V	6b) -930 000 V	6c) -9 300 000 V	7)$1.5 \times 10^6 V$	8) 9800 V
9) 1 800 000 V	10) 4.8×10^{-5} J	11a) Negative	11b) -1.6×10^{-4} J	12) 0.030 m/s
13)0.020 m/s	14) 0.0016 J	15) 0.00020 J	16a) 31 000 V	16b) -2200 V
16c) $-33\ 000$ V	16d) 0.066 J	17a) 360000V	17b) 360 000 J	17c) 180 000 W
18a) -48 J	18b) 48 J	18c) 48 J		