

Name _____

Show your work, and circle your answers and use sig figs to receive full credit.

$$E = \frac{F}{q} \quad g = \frac{F}{m} \quad F = ma$$

1. What is the gravitational force on a 3.40 kg mass in a gravitational field with a strength of 9.81 N/kg?

2. A -140. μC charge experiences a force of 1.50 N to the right. What is the magnitude and direction of the electric field?

3. A 3.20 kg mass on the moon experiences a force of 5.15 N. What is the gravitational field strength on the moon?

4. A 72,100 N/C electrical field to the right exerts what force on a proton? (Force and direction)

5. A proton accelerates North at 9.58×10^8 m/s/s. What is the magnitude and direction of the electric field?

6. An electron is in a 317 N/C electric field to the West. What is the magnitude and direction of its acceleration?

$$g = \frac{GM}{r^2} \quad E = \frac{kq}{r^2} \quad (\leftarrow \text{not in data packet - memorize this!!!!})$$

7. What is the electrical field 82.0 cm to the right of a -2.10 μC charge? (Magnitude and direction)

8. Where is the electrical field 1.25×10^4 N/C straight up in the proximity of a 13.0 μC charge. (Location and distance)

9. I am 2.15 m to the left of an unknown charge, and there is an electric field of 1.65×10^5 N/C to the right. What is the magnitude and polarity of the charge? (How many C, and is it + or -)

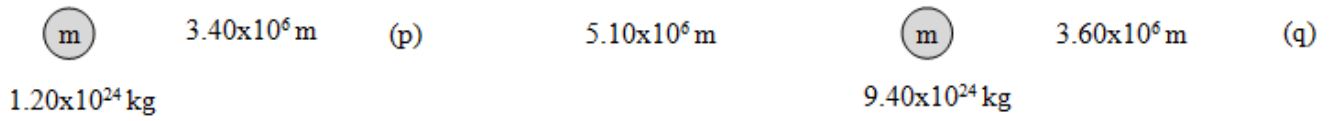
- 10a. What is the gravitational field on the surface of a planet with a mass of 1.60×10^{23} kg, and a radius of 1.85×10^6 m?

- 10b. What is the gravitational field 3.50 m to the left of a (very dense) mass of 6.40×10^{12} kg? (Magnitude and direction)

11. Where in the proximity of a 5.00 kg shot put is the gravitational field 2.08×10^{-11} N/kg to the right? (Location and distance)

12. I am 15.0 m to the right of an unknown mass and there is a gravitational field of 2.16 N/kg due to the mass. Which direction is the field, and what is the mass?

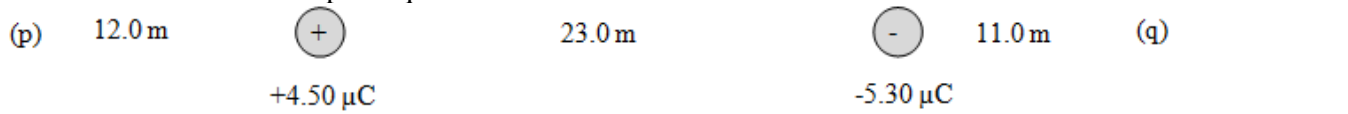
13. Find the gravitational field at p and q:



p = _____

q = _____

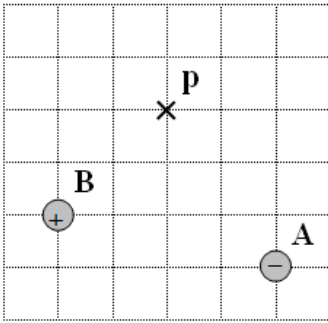
14. Find the electric field at p and q:



p = _____

q = _____

15. Find the electric field at point p. Draw the electric field vector, and label its magnitude and direction. Charge A is $-3.20 \mu\text{C}$, B is $+2.40 \mu\text{C}$, and each grid line is a meter.



16. Find the gravitational field at point p. Draw the gravitational field vector, and label its magnitude and direction. Mass A is $2.50 \times 10^{12} \text{ kg}$, B is $5.10 \times 10^{12} \text{ kg}$, and each grid line is a meter.

