Magnet Physics Summer Assignments and Class Supply List

Greetings Students and Welcome to Physics!

To get us started, the Summer assignments are comprised of 2 parts. Book Report and Math Review

These assignment are due on the First Day of Class. Each will count as a separate Quiz Grade.
The Westlake Honor Code is in effect for this assignment.
Please govern yourselves accordingly.
This summer assignment will review a great deal of the prerequisite knowledge expected of you. Math skills are an important part of what is expected in the class.
It is VERY important that these assignment be completed individually.

Assignment 1: Book Report
Choose 1 book from the list below to read. Be prepared to have a lively discussion about your book on Day 1. If you are led to read more than one, feel free to do so, but you will only receive one grade for one book report.

Your book report must be sent ELECTRONICALLY TO bennettv@fultonschools.org AND you must bring a hardcopy printout the first day of school.

Prepare a quality, type written report that thoroughly answers the following questions:
a. What are some of the things that you found to be the most intriguing about what you read and why?
b. What are the new words/terms that you found in the reading? Make a list and define those terms.

- Newton’s Football - The Science Behind America’s Game by Allen St. John and Ainissa Ramirez
- A Short History of Nearly Everything by Bill Bryson
- Physics for Future Presidents by Richard Muller
- Fizz - Nothing is as it Seems by Zvi Schreiber
- The Evolution of Physics by Albert Einstein and Leopold Infeld
- Origins: Fourteen Billion Years of Cosmic Evolution by Neil deGrasse Tyson and Donald Goldsmith
- Black Apollo of Science: The Life of Ernest Everett Just by Kenneth R. Manning
- Rocket Girl: The Story of Mary Sherman Morgan, America’s First Female Rocket Scientist by George D. Morgan
The packet will be collected and graded by the teacher to assess the student’s efforts to recall this information. Be sure to **SHOW ALL WORK** to receive credit.

---

**I. Order of Operations (PEMDAS)**

- **Parenthesis** and other grouping symbols.
- **Exponential expressions**.
- **Multiplication, Division**
- **Addition & Subtraction**

Tutorial:
- [http://www.regentsprep.org/Regents/Math/orderop/Lorder.htm](http://www.regentsprep.org/Regents/Math/orderop/Lorder.htm)

Simplify each numerical expression. Show all work! Only use a calculator to check.

1) \[ 6 + 2 \times 8 - 12 + 9 \div 3 \]

2) \[ 25 - (2^3 + 5 \times 2 - 3) \]

3) \[ -2 \cdot (-30) + 0.5 \cdot 20 \]

4) \[ \frac{15 - [8 - (2 + 5)]}{18 - 5^2} \]
II. Evaluating Algebraic Expressions

To evaluate an algebraic expression:

- Substitute the given value(s) of the variable(s).
- Use order of operations to find the value of the resulting numerical expression.

Tutorials:
http://www.purplemath.com/modules/evaluate.htm

Evaluate.

1) \(x \left( \frac{y + 3z^2}{2} \right) - 2x\) if \(x = \frac{1}{2}, y = 4, z = -2\)

2) \(12a - 4a^2 + 7a^3\) if \(a = -3\)

3) \(-b + \sqrt{b^2 - 4ac}\) if \(a = 1, b = -4, c = -21\)

4) \(1.2(3)^x\) if \(x = 3\)

5) \(\frac{3(x + y) - 2(x - y)}{5x + y}\) if \(x = 3\) and \(y = 4\)

6) \(2\left(\frac{1}{3}\right)^x\) if \(x = 2\)

7) \(A = P \left(1 + \frac{r}{n}\right)^{nt}\) if \(P = 650, r = 6\%\), \(n = 2, t = 15\)

8) If \(k \odot n = k^3 - 3n\),
then evaluate \(7 \odot 5\)
### III. Solving Literal Equations

Solving for a variable in an equation is often what is required when solving Physics problems. Let’s see your skills in this area.

<table>
<thead>
<tr>
<th>Equation</th>
<th>Show work here</th>
</tr>
</thead>
<tbody>
<tr>
<td>( P = I RT )</td>
<td></td>
</tr>
<tr>
<td>Solve for ( T )</td>
<td></td>
</tr>
<tr>
<td>( V = \pi r^2 h )</td>
<td></td>
</tr>
<tr>
<td>Solve for ( h )</td>
<td></td>
</tr>
<tr>
<td>( A = \frac{x + y^2}{2} )</td>
<td></td>
</tr>
<tr>
<td>Solve for ( y )</td>
<td></td>
</tr>
<tr>
<td>( A = \frac{r}{2L} )</td>
<td></td>
</tr>
<tr>
<td>Solve for ( L )</td>
<td></td>
</tr>
</tbody>
</table>

\[ \text{Solve } V = \frac{1}{3} \pi h^2 (3r - h) \text{ for } r \]

\[ \text{Solve } h = vt - 16t^2 \text{ for } v \]

\[ \text{Solve } h = vt - 16t^2 \]

Solve the equation for variable \( t \)

\[ \text{Solve } F = \frac{gm_1m_2}{d^2} \text{ for } g \]
IV. Solving Linear Equations

To solve linear equations, first simplify both sides of the equation. If the equation contains fractions, multiply the equation by the LCD to clear the equation of fractions. Use the addition and subtraction properties of equality to get variables on one side and constants on the other side of the equal sign. Use the multiplication and division properties of equality to solve for the variable. Express all answers as fractions in lowest terms.

Tutorials:
Solving Linear Equations: http://www.purplemath.com/modules/solvelin.htm
Solving Equations: http://www.regentsprep.org/Regents/Math/solveq/LSolvEq.htm

Examples:

a) \(3(x + 5) + 4(x + 2) = 21\)
\[3x + 15 + 4x + 8 = 21\]
\[7x + 23 = 21\]
\[7x = -2\]
\[x = -\frac{2}{7}\]

b) \(2(5x - 4) - 10x = 6x + 3(2x - 5)\)
\[10x - 8 - 10x = 6x + 6x - 15\]
\[-8 = 12x - 15\]
\[7 = 12x\]
\[\frac{7}{12} = x\]

c) \(\frac{2}{3}x + 5 = 6x - \frac{3}{4}\)
\[\frac{2}{3}x + 5 = 6x - \frac{3}{4}\]
[12]
\[\frac{2}{3}x + 5 = 6x - \frac{3}{4}\]
\[8x + 60 = 72x - 9\]
\[69 = 64x\]
\[\frac{69}{64} = x\]

Solve for the unknown variable:

1) \(3n + 1 = 7n - 5\)

2) \(2[x + 3(x - 1)] = 18\)

3) \(6(y + 2) - 4 = -10\)

4) \(2x^2 = 50\)

5) \(5 + 2(k + 4) = 5(k - 3) + 10\)

6) \(6 + 2x(x - 3) = 2x^2\)

7) \(\frac{2}{3}x - 18 = \frac{x}{6}\)

8) \(\frac{x - 2}{3} = \frac{2x + 1}{4}\)
Be sure to bring with you the First Day of Class these Supplies:

1 composition notebook for labs
2 inch 3 ring binder
    Calculator
Notebook Paper
5 Dividers
Highlighters
    Pencils
    Erasers