Physical Science Essential Facts Binder
Honors Physical Science- Physics

Binder Checks

Binder Check	Date	Organization- Contents in Order TOC Up to date 5/25 Points	Content- Completeness of Worksheets 20/25 Points	Total Points Achieved 25/25	Notes
1					
2					
3					
4					

Appendix A- Formulas

Common Metric Prefixes

Kilo	Hecto	Deca	Base	deci	centi	milli

Speed	Variable	Unit	**Velocity**	Variable	Unit	**Acceleration**	Variable	Unit

Momentum	Variable	Unit	**Force**	Variable	Unit	**Weight**	Variable	Unit

Potential Energy	Variable	Unit	**Kinetic Energy**	Variable	Unit	**Work**	Variable	Unit

Power	Variable	Unit	**Ohm's Law**	Variable	Unit	**Electrical Power**	Variable	Unit

The Bottom Line
FACE IT, Nobody owes you a living,
What you achieve or fail to achieve in your lifetime,
is directly related to what you do or fail to do.
No one chooses his parents or childhood,
but you can choose your own direction.
Everyone has problems and obstacles to overcome,
but that, too, is relative to each individual.
NOTHING IS CARVED IN STONE,
you can change anything in your life,
if you want to badly enough,
Excuses are for losers;
Those who take responsibility for their actions
are the real winners in life.
Winners meet life's challenges head on,
knowing there are no guarantees,
and give it all they've got.
And never think it's too late or too early to begin.
Time plays no favorites
and will pass whether you act or not.
TAKE CONTROL OF YOUR LIFE.
Dare to dream and take risks…
Compete.
If you aren't willing to work for your goals,
don't expect others to.
---Believe in Yourself---

Notation

Addition and subtraction are notated the same in physics equations as in basic mathematics, but not so for multiplication or division.

Two letters or numbers next to each other show multiplication. $F = ma = m \; x \; a$

A letter below another letter means division. $v = \dfrac{d}{t} = d \div t$

Equations are Equal

The equal sign means that both sides are equal. Therefore, anything done to one side must be done to the other or the equation is no longer equal.

Equal ⟶ $35 = v_f - 10$

Not Equal ⟶ $35 = v_f - 10 + 10$

Equal ⟶ $35 = v_f - 10$

Still Equal ⟶ $35 + 10 = v_f - 10 + 10$

The Algebra

The following shows only the four most common algebraic operations. There are many more. They will be presented to you as necessary.

Division Moves Multiplication

Variables	Numbers
$F = ma$	$35 = 7a$
$\dfrac{F}{m} = \dfrac{ma}{m}$	$\dfrac{35}{7} = \dfrac{7a}{7}$
$\dfrac{F}{m} = a$	$5\text{m/s}^2 = a$

Multiplication Moves Division

Variables	Numbers
$P = \dfrac{W}{t}$	$12 = \dfrac{W}{3}$
$Pt = \dfrac{W}{t}t$	$12(3) = \dfrac{W}{3}3$
$Pt = W$	$36 \text{ J} = W$

Subtraction Moves Addition

Variables	Numbers
$F_{net} = F_1 + F_2$	$15 = F_1 + 6$
$F_{net} - F_2 = F_1 + F_2 - F_2$	$15 - 6 = F_1 + 6 - 6$
$F_{net} - F_2 = F_1$	$9 \text{N} = F_1$

Addition Moves Subtraction

Variables	Numbers
$\Delta V = V_f - V_i$	$24 = V_f - 8$
$\Delta V + V_i = V_f - V_i + V_i$	$24 + 8 = V_f - 8 + 8$
$\Delta V + V_i = V_f$	$32 \text{m/s} = V_f$

Order Matters!

"Please Excuse My Dear Aunt Sally" will help you remember you order of operations: Parenthesis; Exponents; Multiply; Divide; Add; Subtract.

Correct

$2(4 - 2) + 3 = 2(2) + 3 = 4 + 3 = 7$

Incorrect

$2(4 - 2) + 3 = 2(2) + 3 = 2(5) = 10$