

Listing of Bookmarks

Front cover

Publisher's notes

Preface

Listing A - Z

A

"A" in Velocity Formula

ABS brakes - the function of

ABS peculiarities

Acceleration Rate - formulae

Acceleration and Deceleration Factor - formulae

Alphabet - Greek

Angle of Takeoff

Angle of Sliding Friction

Angular Acceleration

Angular Momentum

Angular Velocity

Aquaplaning

Arc - Height at any point along the horizontal distance

Arc - Highest point reached in an arc

Arc - Horizontal distance to a point opposite the highest point in an arc

Arc - Maximum height obtained by a known velocity

Arc - Time to reach any horizontal distance along the path of an arc

Arc - Time to maximum height

Arc - Value of the length (measuring)

Arc - Velocity necessary to raise an object to a specific height

B

Bicycles - acceleration

Bicycles - formulae

Bicycles - rider's RPM

Bicycles - turns

Brakes - collision - sign of front brake use

Brake lag

Braking and turning - non-ABS vehicles

C

Cartesian Co-ordinates

Centre of Mass

Centre of Mass of two bodies

Centroid of a damaged area

Centrifugal Force

Centrifugal skid mark

Centripetal Force

Chord

Circle

Circumference

Closing velocity - use of effective mass

Co-ordinates Right Hand and Left Hand

Coefficient

Coefficient of Sliding Friction

Collins J.C. - pedestrian speed formula

Combined Speeds

Conservation of Linear Momentum

Critical Speeds on Curves

Crush Coefficients

Crush - crush for speed estimates (2, 4 and 6 equidistant L measurements)

Crush - Equidistant or Non-equidistant L Measurements

Crush non-central - for determining effective mass

Crush Speed - Rule of Thumb

D

Damage

D - the distance in slide to stop

D - the average distance

Degree

Delta
Delta P and Delta V
Diagrams - linear momentum
Diameter
Distance accelerated in time
Distance accelerated in time from a stop
Distance covered while accelerating from a stop or skidding to a stop
Distance skid in a know time
Distance in the slide to stop formula
Distance required to bring a vehicle to a stop
Distance skid - determining time used
Dissipation of Energy
Division
Drag Factor - friction force
Drag factors for individual wheels
Drag factor - two vehicle system
Drag factor for a vehicle towing an unbraked trailer
Drag sled - construction
Drift Angle
Dynamics
Dynamic Crush

E

EBS (Equivalent Barrier Speed)
EBS and Delta V (when to use the combined speeds formula)
Energy
Energy - kinetic
Energy - principle of conservation of
Eubanks - pedestrian & cyclist collision speed - moving
Eubanks - pedestrian & cyclist collision speeds - stopped
Evasion distance and lane change formula

F

f
F
Fall - formula and derivation
Fall and Slide Quadratic
Fall - speed determination
Friction (drag factor) from Speed and Time
Friction (drag factor) from Speed and Distance)
Friction (drag factor) from Distance and Time
Friction(drag factor) from a drag sled
Friction (drag factor) on a curve
Friction - slide to stop
Friction - vehicle braking and steering capabilities
Force - horizontal

G

Gap Skid
Glass - fractures from direct impact
Gouge marks
Grade Percent
Gravity
Gravity - centre of on passenger cars
Greek alphabet
Guardrail deflections

H

Heat
Higgins - vehicle speed - pedestrian collision formula
Horsepower
Hydroplaning

I

Impact Forces
Impact Forces - Consequences
Impulse - momentum equation
Inertial Parameter Estimation
Inertial Tendencies

J&K

Joule
Kinematics
Kinetic Energy
Kinetics

Km/h - kilometer per hour
Knot - Nautical Mile per Hour

L

Law of Cosines
Law of Sines
Law of Tangents
Lift off - speed formula
Light - Law of Inverse Squares
Light - second law of reflection
Light - second law of refraction
Light - rotating mirror
Limpert - pedestrian impact formulae
Linear Momentum
Lines, slopes and Angles
Low speed rear impact collisions

M

m - as a variable in formulae
Mass
Math operation rules and symbols
Middle ordinate
Minimum speed formula - slide/skid to stop
Moment
Moment of Inertia
Momentum
Momentum - original 360 method
Momentum - break apart collisions
Momentum - broadside or rear-end
Momentum - conservation of
Momentum - head-on collision with no post-collision movement
Momentum - head-on collision with post-collision movement
Momentum - In-line collision - solving by simultaneous equations
Momentum - rear-end collision while both vehicles moving
Momentum - rear-end collision - lead vehicle stopped
Momentum - rear-end collision - same speed assumed
Momentum - right angled collision
Momentum - vector diagramming
Motorcycles
Motorcycles - counter-steer
Motorcycles - driver's injuries
Motorcycles - flutter
Motorcycles - front tire skid
Motorcycles - high-siding
Motorcycles - lateral friction
Motorcycles - lean angle
Motorcycles - manipulating a speed range from RPM
Motorcycles - problems for riders
Motorcycles - rake
Motorcycles - rear tire skid
Motorcycles - slide outs
Motorcycles - trail
Motorcycles - trajectory of driver and passenger (the Searle method)
Motorcycles - weave
Motorcycles - wobble

MPH

Multiplication

N

Newton
Newton's First Law
Newton's Second Law
Newton's Third Law
Northwestern - pedestrian collision formula

O

Overtuning speed - on curves

P

Parabola
Passing
PDOF - Principal Direction of Force
Pedestrian impact speeds
Perception and Reaction time

Pi
Pole impact speed approximation - frontal (Nystrom & Kost)
Pole impact speed - frontal collision - kinetic energy - Mak formula
Poundal
Pultar - pedestrian collision speed
Pythagorean Theorem

Q

Quadratic Equation

R

Radian
Radius
 Radius
 Radius - average used in Yaw formula
 Radius formula (standard)
 Radius - no chord or middle ordinate
 Radius of a circumscribed circle
 Radius - determining with a compass
 Radius - using the Pythagorean Theorem
 Radius - degree of curve
 Radius - maximum and minimum for a turning car
Reaction time
Reaction - distance formula
Reflection and Refraction
Restitution
Rich - pedestrian collision speed formula
Roll Over Speed - minimum - after striking a curb
RR (Railroad) Crossing - AASHTO triangle

S

Salt
Searle - pedestrian and cyclist impact speed formula
Seat belt inspection
Side scuff
Sideslip - Yaw
Skid - slip skid
Sliding friction - angle of
Slide to stop - derivation
Slide Stop
Slide stop - sides of vehicle on different surfaces
Slip angle
Snowmobiles - drag factors
Speed
Speed - tachometers and gearing
Speed - maximum from which to stop at a given distance
Speed of a rotating vehicle - kinetic energy method
Statics
Static crush
Stiffness coefficients from test crashes
Stiffness coefficients from test crashes with Impactors
Stop - slide to - with weight shift
Superelevation
Stcherbatcheff - solving for speed from pedestrian throw distance

T

Tachometers for speed
Tangent offset equation
Test skids
Throw distance
Time to skid to a stop or accelerate from a stop
Time to slow from one speed to another
Time to skid or accelerate from a stop
Time - in a circular path
Tip over speed
Trailer - improper loading - effect on coefficient of friction
Trailer tracking
Trigonometric Equations
Truck speed - engine and transmission

U&V

Uniform Acceleration
Vault - derivation of the formula
Vault

- Vector
- Velocity
- Velocity, height and time of a free falling body
- Velocity/Time/Distance
- Velocity - initial
- Velocity at any time in an acceleration or a skid
- Velocity - from kinetic energy
- Velocity at any distance in an acceleration or a skid
- Velocity - initial - when distance, time and acceleration rate known
- View in right angled and oblique angled collisions - for time to collision

W

- Weight Transfer
- Wind speed - Overturning vehicles
- Wood - pedestrian impact speed
- Work

X,Y&Z

- Yaw
- Yaw - critical curve speed - derivation
- Yaw - COLM - check of pre-collision speed
- Yaw - Radius of gyration
- Yaw - Sine correlation
- Yaw - striations
- Yaw - striation angle measurement
- Z Axis

Author

Appendices

- Conversion of Quantities & Units
- Weather Facts
- Notes for the Expert Witness
- URL List
- Liquid Weights
- PDOF - article by C. Gregory Russell
 - PDOF - Cover
 - Principal Direction of Force
 - Mathematical Basis
 - Derivation of the Law of the Principal Direction of Force Formula
 - Derivation of the Law of Sines
 - The Error
 - The Ambiguous Case.
 - Identifying the Error
 - Establishing proper signage
- Sunposition - a lecture by Ralph Bouwmeester
- Sun & Shadow Modeling
 - Accident Reconstruction
 - Role of Sun/Shade
 - Blinding
 - Glare and Reflection
 - Contrast
 - Illumination and Visibility
 - Shade Induced Roadway Icing
 - Establishing/Confirming Time of Day
 - Analysis
 - Altitude and Azimuth
 - Declination and Hour Angle
 - Standard Time vs. Solar Time
 - Elliptical Orbit and Axis Tilt
 - Equation of Time
 - Trigonometric Applications
 - Need for Accuracy
 - Presentation of Results
- Rules of Thumb
- Altitude and Azimuth rates of change
- Road Grade Corrections
- Glossary
- Engine R.P.M.- motorcycles

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EULA