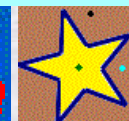


**MATH SPOKEN HERE!**  
an arithmetic and algebra dictionary



# Absement and 'nth Derivatives of Displacement' Presented Dynamically & Analytically

[pdf & video of this page](#)



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**absement**  
/æbsɪmənt/

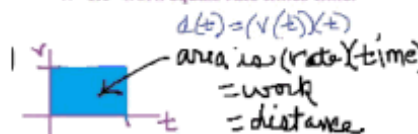
## Cumulative Function

Cumulative Function	$F(x)$
function	$f(x) = F'(x)$
rate of change of the function	$f'(x) = F''(x)$
rate of change of the rate of change	$f''(x) = F'''(x)$

**absement** - absence from initial placement  
**absition** - absence from initial position

**absition**  
/æbsɪʃən/

Think back to 6th grade.  
D=RT distance equals rate times time  
W=RT work equals rate times time.



$D(t)$  is the absement - cumulative displacement  
 $D(t)$  is the absition - cumulative distance  
 $D(t)$  is cumulative distance  $\int d(t) dt = D(t)$   
 $d(t)$  is the distance  $\int v(t) dt = d(t)$   
 $v(t)$  is the velocity  $\int a(t) dt = v(t)$   
 $a(t)$  is acceleration

Download [absement.gsp](#)

- |   |   |
|---|---|
| 0 - toc                                       | 8 - PARTITION & SUMS 4 boxes                        |
| 1 - time, t                                   | 9 - Reimann & Sums                                  |
| 2 - displacement, distance, $s(t)$            | 10 - SUMS absement, input [a,b]                     |
| 3 - definition of derivative                  | 11 - absement, n=32                                 |
| 4 - $s(t)$ , $s'(t)$                          | 12 - absement plus c                                |
| 5 - $s(t)$ , $s'(t)$ , $s''(t)$               | 13 - play absement plus c                           |
| 6 - emojis, $f$ , $f'$ , $f''$ , tangent line | 14 - arcsine actual fx graphed                      |
| 7 - trace derivatives                         | 15 - arcsine mesh - use $F(x)$ plot to plot arcsine |

[Download Geometer's Sketchpad for Free!](http://www.keypress.com/gsp/download)  
at <http://www.keypress.com/gsp/download>

## The Languages of the Math Classroom

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### MOTHER TONGUE & OTHER TONGUE(S)

← Most Sophisticated and also the Most Basic →

### MOSTLY MATH TONGUES

← Most Sophisticated, Most Basic →

#### VERBAL / Auditory

formal spoken mathematics  
informal spoken mathematics  
spoken symbol  
symbol speak  
calculatoreze/computereze  
web speak

#### WRITTEN / Symbolic

written word  
written symbol  
semisymbolic  
calculator symbol

#### PICTORIAL / Visual

DIGITAL MANIPULATIVE  
moving picture  
static picture  
numeral  
graph  
nonverbal body language

#### CONCRETE / Kinesthetic

object  
model  
manipulative/token

#### Communication Environments:

Private Conversation, Lab, Classroom, Lecture Hall, Remote Live, Video, Paper book, E-book, pdf File

### Suggestions

- Choose a modality first.  
VERBAL / Auditory  
WRITTEN / Symbolic  
PICTORIAL / Visual  
CONCRETE / Kinesthetic
- Usually, introduce in the most concrete.
- Summarize in the most abstract.
- The Mother Tongue is both the most concrete & the most abstract.
- Sometimes use multiple modalities at the same time.
- Strive for comfort in all modalities, not just your favorite.

- Repeation improves retention, especially in different modalities.
- Need a review before new material?  
Don't review with a computation of symbols if you can review with a picture of the computation.
- Before mentioning velocity or acceleration, dynamically/kinesthetically present a derivative with the definition, slope of the secant, slope of the tangent.
- Mention the word absement when you introduce displacement, velocity, and acceleration.
- At that time, just call it the total displacement.
- The concept of "cumulative function" is much more important than "absement."

## Cumulative Function

Cumulative Function  
function

rate of change of the function

rate of change of the rate of change

$F(x)$

$f(x) = F'(x)$

$f'(x) = F''(x)$

$f''(x) = F'''(x)$



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