Notes

- Check the Course Calendar for Homework, EMCF and Quiz information.
- Practice Test 2 is available. Your score counts as a quiz grade.
- Test 2 is Oct 4 - Oct 8. You should have already registered on CourseWare.

23 Video help for section 3.7	24 Blank Slides EMCF11 due at 9am Homework 4 Due in Lab/Workshop Quiz 3 Closes (2.6 and 3.1)	25	26 Blank Slides EMCF12 due at 9am Homework 5 Posted	27 Video help with section 3.8	28 EMCF13 due at 9am (a correction was made to problem 7 on 9/23) Last day to apply for fall graduation with a $25 fee.	29 Review Problems for Test 2
30	October 1 EMCF14 due at 9am Homework 5 due in lab/workshop Quiz 4 Closes (3.2-3.4)	2 Online Live Review for Test 2 from 8:15-10:15pm. A link will appear here prior to the session.	3	4 Test 2 Starts	5	6
7	8 Test 2 Ends Quiz 5 Closes (3.5-3.6)	9	10	11	12	13

American Medical Students Association Second General Meeting

September 24, 2012
Farish Hall KIVA ROOM at 7:00 pm

Dr. Peak will be the main speaker and she will be giving information about a lot of pre-medical/medical school programs offered at our school for both under and upperclassmen! There is also free food and drinks!

Question: How does an object fall?

Assume the object falls at time $t = 0$ (starts its) from a height s_0 and initial velocity v_0.

Neglect air friction!

Setting – low altitude, close to sea level.

$s(t)$ = height from the ground

Important Terms: Position, velocity, speed, and acceleration.

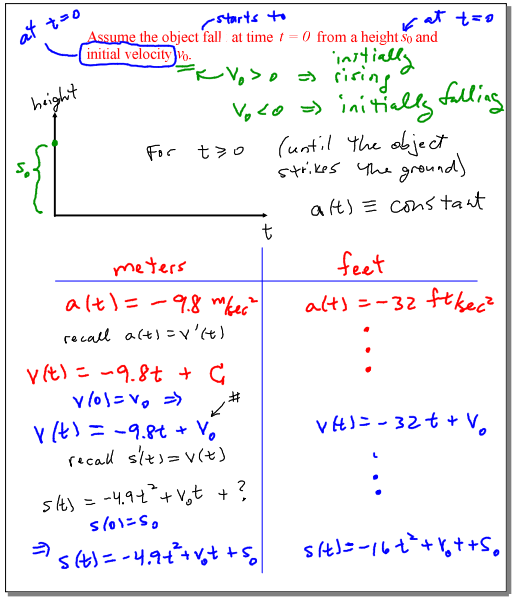
velocity = change in position wrt time

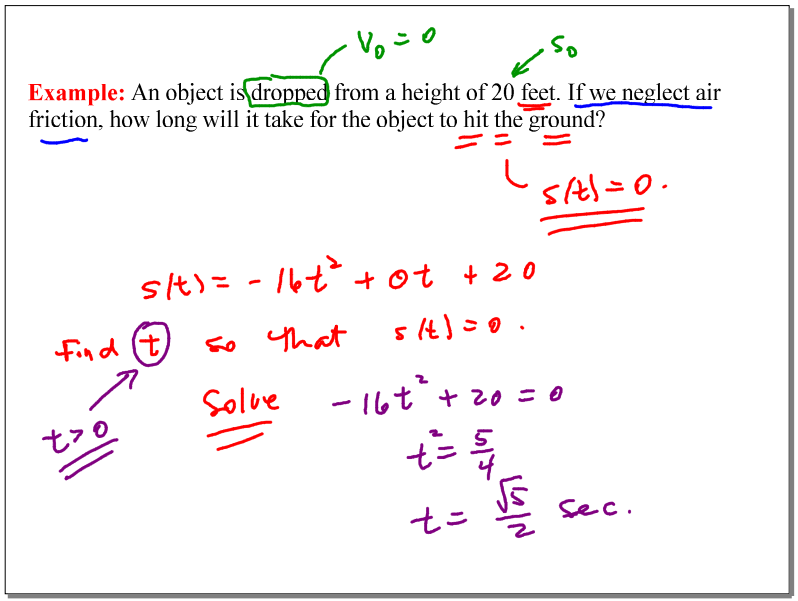
$= v(t) = s'(t)$

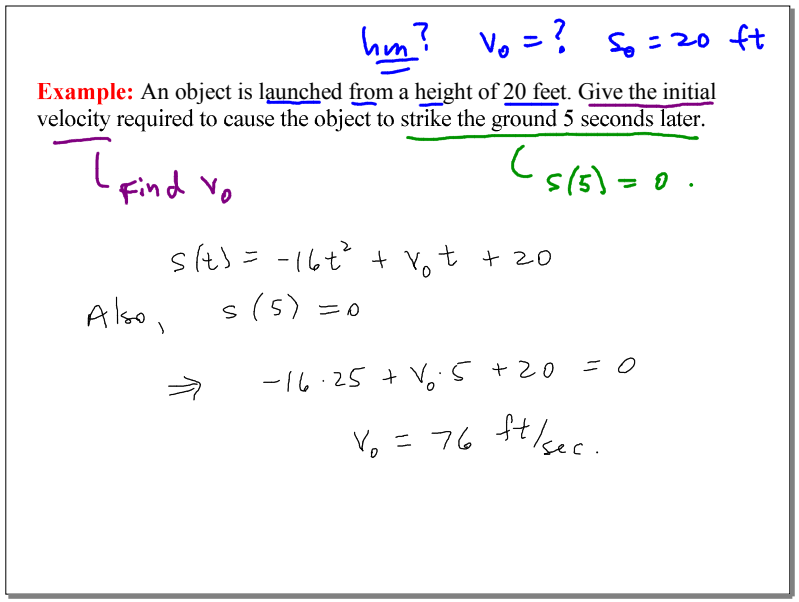
$a(t) = v'(t)$

speed $= |v(t)|$ = magnitude of velocity.

acceleration = change in velocity wrt time







Popper P07

1. What is the speed of the object in the previous example at the time that it is lauched?

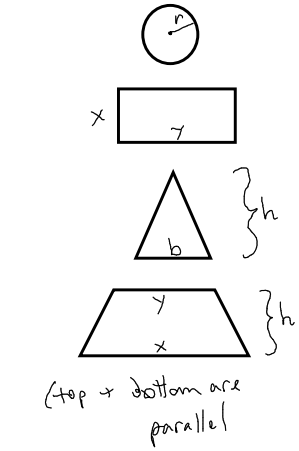
2. What is the speed of the object in the previous example when it hits the ground?

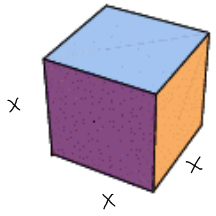
Rates of Change

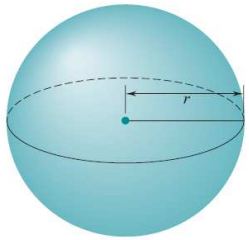
You must know...

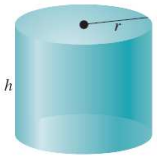
Areas, circumferences, volumes and surface areas of basic shapes.

Pythagorean Theorem

Shape	Area	Circumference
 (top + bottom are parallel)	πr^2 xy $\frac{1}{2}hb$ $\frac{1}{2}(x+y)h$	$2\pi r$ $2x+2y$ Not Needed Not Needed

Shape	Volume	Surface Area
Cube 	x^3	$6x^2$

Shape	Volume	Surface Area
Sphere 	$\frac{4}{3}\pi r^3$	$4\pi r^2$

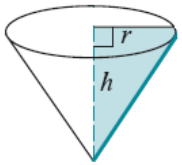
Shape	Volume	Surface Area
right circular cylinder 	$\pi r^2 h$	$2\pi r^2 + 2\pi r h$

Popper P07

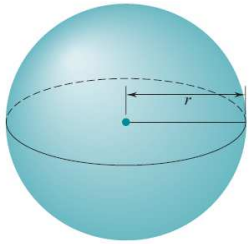
3. The volume of a sphere of radius 3 cm is _____ cm^3.

4. The surface area of a sphere of radius 3 cm is _____ cm^2.

5. The volume of a right circular cylinder of radius 3 cm and height 4 cm is _____ cm^3.

Shape	Volume	Surface Area
right circular cone 	$\frac{1}{3}\pi r^2 h$	Not Needed

Example: Give the rate of change of the surface area of a sphere with respect to its radius r.



$S = 4\pi r^2$

$\frac{dS}{dr} = 8\pi r$

Give the rate of change of the volume of a sphere with respect to its radius r.

$V = \frac{4}{3}\pi r^3$

$\frac{dV}{dr} = 4\pi r^2$

Example: A water tank in the shape of a right circular cone (with point down) is being filled with water. The height of the cone is 7 meters and the base of the radius of the top of the tank is 3 meters. Suppose water is being added to the tank at the rate of 1/10 m^3/sec. How fast is the depth of the water in the tank increasing when the tank contains 50 m^3?

See the video.