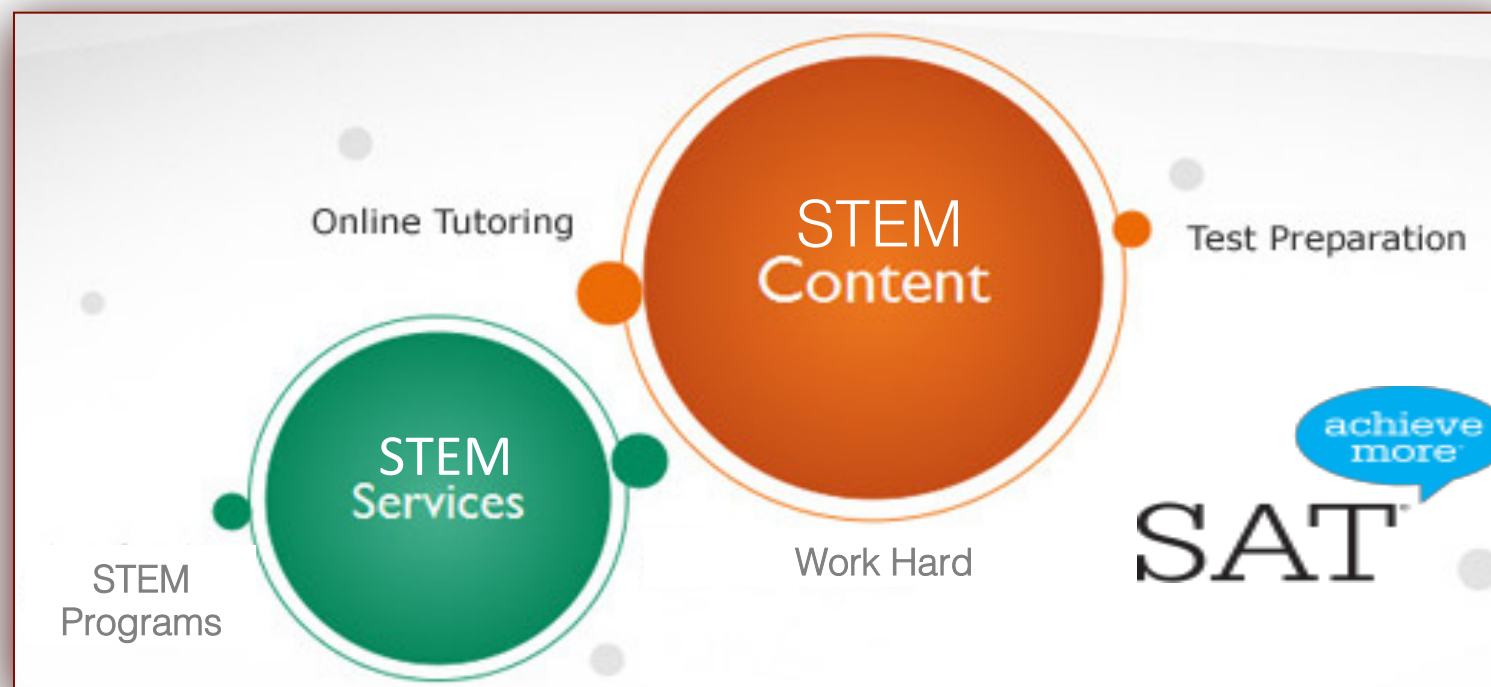


Scientific Literacy

College Success & Retention



Retention Rates in Science

64.6%

• All Students

41.6%

• African Americans

48.6%

• Hispanics

69.3%

• Whites

77.4%

• Asian Americans



STAY THE COURSE

- Less than half of African-American and Hispanic students who begin as science majors actually graduate with a STEM degree.
- Science Magazine, Vol. 324, June 2009.

Why College Retention Rates are Low

Incoming freshmen with an average ACT score do not necessarily possess the skills needed to succeed in introductory college level courses.

National	Average Composite Score	Average English Score	Average Math Score	Average Reading Score	Average Science Score
	21.1	20.5	21.1	21.3	20.9

ACT Benchmarks: Math 22; Reading 21; Science 24.

- Meeting the benchmark would indicate a student has a 50% chance of earning a “B” or better in the corresponding freshman college course.

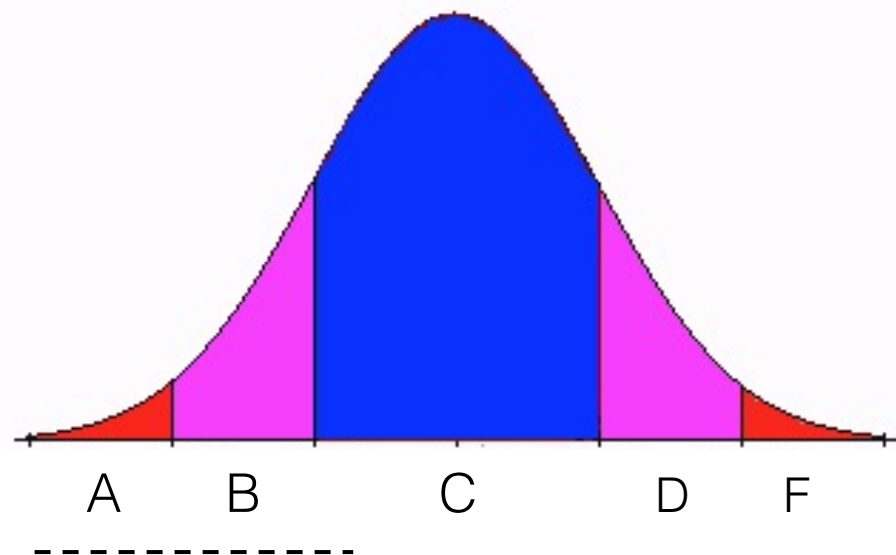
Convert ACT to SAT



Reading			Math		
SAT	ACT	%	SAT	ACT	%
800	36	99	800	36	99
770	34	99	770	33	98
740	33	98	740	32	97
710	32	96	710	30	95
680	31	93	680	28	91
650	30	90	650	26	85
620	28	84	620	25	80
590	26	77	590	24	72
560	24	69	560	22	64
530	22	59	530	20	54
500	20	49	500	19	44
470	19	38	470	17	35
440	17	28	440	16	25
410	15	20	410	15	17
380	14	12	380	15	11
350	13	8	350	14	7
320	11	4	320	13	4
290	10	2	290	13	2
260	8	1	260	11	1

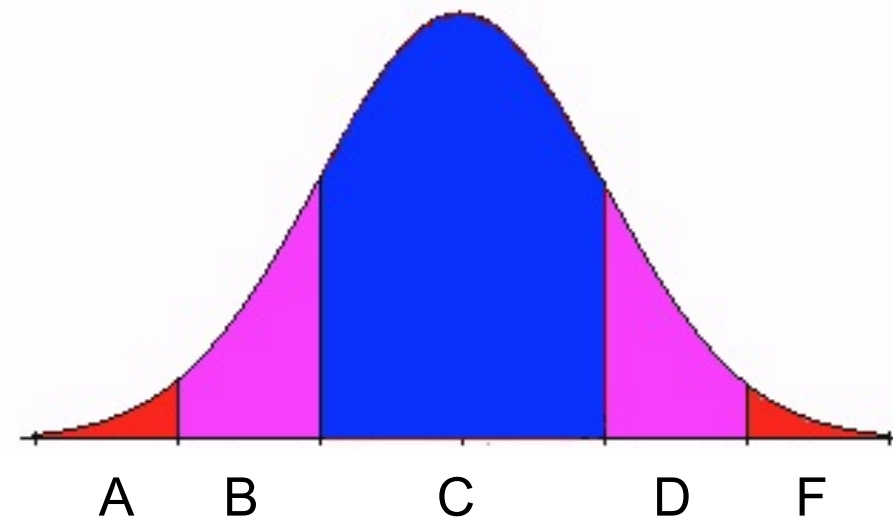
The Reality of College

High School Grade Distribution



Only the Top High
School Students
Attend College

College Grade Distribution



Why Students Leave STEM Majors

Introductory science courses for science majors do not do an adequate job of creating scientific literacy among science majors, resulting in:

- Boredom from terminology required to learn, and lack of connections; thereby, decreasing interest.
- Not relating the idea of what it means to be a scientist (self-efficacy).
- Perceived “hardness” of science classes.

Students may also leave STEM majors because

- Lack of support systems.
- Deficiency in academic skills, including group learning skills.
- Poor pedagogy: teaching about science, and not how to do science.

What Helps Increase Retention

- First semester freshmen science and mathematics students with a **clear understanding of career goals** are more likely to continue in their major.
- Teaching science to **convey the big-picture** facilitates scientific literacy. (Students develop more sophisticated conceptual understanding, and more positive regard for science, when fewer specifics are taught.)
- Proactive **future building strategies** such as freshmen seminar courses, enhances the student understanding and passion for science.
- Development of appropriate **skills and attitudes**.