# Connecting Data to Systemic Improvement, Classroom Instruction, and Student Success

**Instructional Support Workshop** 



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#### OUR MISSION

Helping people achieve education and workplace success



#### OUR VALUES

Excellence

**Diversity** 

Leadership

**Empowerment** 

Learning

Sustainability



#### **ACT Learning Insights Team**

What We Do

Insights from ACT Research

Insights from ACT Data

LIT-designed Professional Learning Experiences Insights from Professional Practice

Raise Academic Standards and Increase Achievement to Ensure All Students Are College and Career Ready (CCR)



#### **Workshop Objectives**

Introduction

- Describe ACT's definition of college readiness
- Explain ACT's K-Career Continuum and the role of each assessment
- Identify key characteristics of the assessments
- Understand the Core Practice Framework as a way to organize your efforts
- Develop insights about curriculum, instruction, and interventions at the district, school, and classroom levels.



#### Introduction

College and Career Readiness

# What does College and Career Readiness mean to you?



# ACT's K-Career Continuum



#### **ACT's Definition of College Readiness**

College Readiness is the level of preparation a student needs to be equipped to enroll and succeed without remediation – in a credit-bearing, first-year course at a two-year or four-year institution, trade school, or technical school.



#### Preparation for College and Career

Prepare all students for success, no matter which path they choose after graduation.

In the next decade, *nearly two-thirds* of new jobs created in the U.S. will require some post-secondary education or considerable on-the-job training.

#### COLLEGE AND WORKFORCE TRAINING READINESS



#### Ready for College and Ready for Work: Same or Different?

#### Executive Summary

Results of a new ACT study provide empirical evidence that, whether planning to enter college or workforce training programs after graduation, high school students need to be educated to a comparable level of readiness in reading and mathematics. Graduates need this level of readiness if they are to succeed in college-level courses without remediation and to enter workforce training programs ready to learn job-specific skills.

We reached this conclusion by:

- · Identifying the level of reading and mathematics skills students need to be ready for entry-level jobs that require less than a bachelor's degree, pay a wage sufficient to support a family, and offer the potential for
- · Comparing student performance on ACT tests that measure workforce readiness with those that measure college readiness
- Determining if the levels of performance needed for college and workforce readiness are the same or different

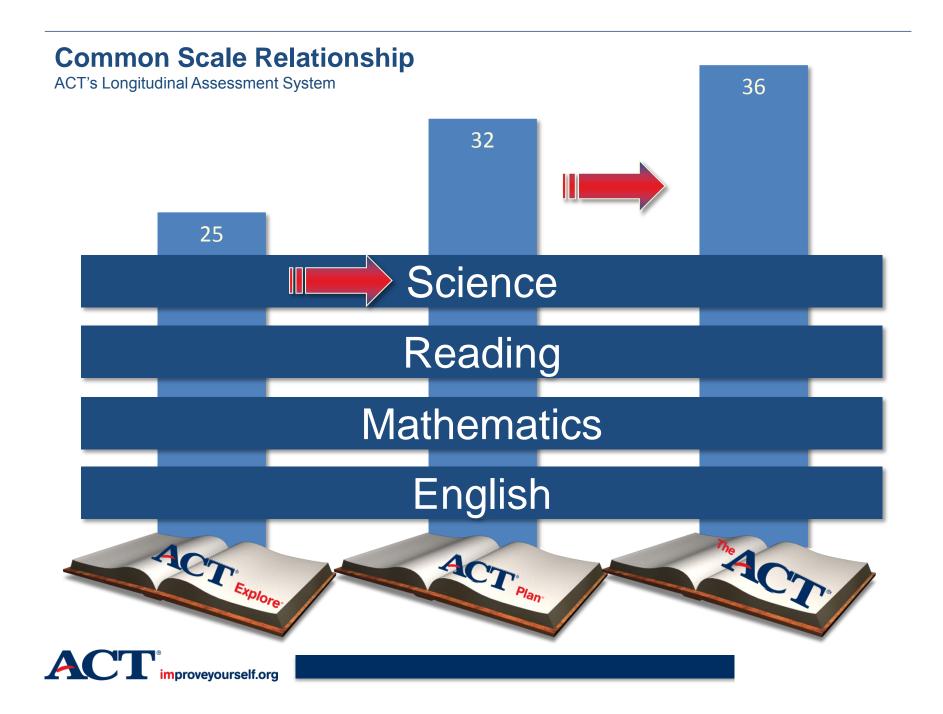
The study results convey an important message to U.S. high school educators and high school students: We should be educating all high school students according to a common academic expectation, one that prepares them for both postsecondary education and the workforce. Only then-whether they are among the two-thirds who enter college directly after graduation or those who enter workforce training programs-will they be ready for life after high school.

Although the contexts within which these expectations are taught and assessed may differ, the level of expectation for all students must be the same. Anything less will not give high school graduates the foundation of academic skills they will need to learn additional skills as their jobs change or as they change jobs throughout their careers. The results of this study provide ample evidence that we must move the agenda for high school redesign in a direction that will prepare all students for success no matter which path they choose after



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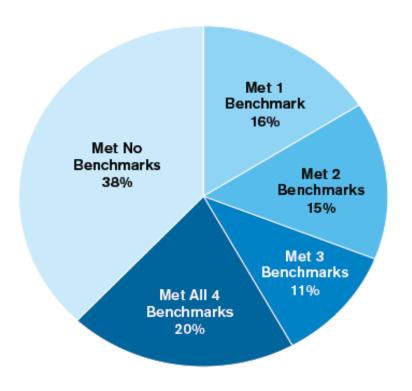
#### **ACT's College Readiness Benchmarks**

		<b>ACT</b> ° Explore			
Test	College Course	8 <sup>th</sup> Grade	9 <sup>th</sup> Grade	<b>ACT</b> Plan	The ACT°
English	English Composition	13	(14)	(15)	(18)
Math	College Algebra	17	18	19	22
Reading	Social Sciences	16	17	18	22
Science	Biology	18	19	20	23

- Empirically derived
- 50% likelihood of achieving a B or higher or about a 75% likelihood of achieving a C or higher in the corresponding credit-bearing college course



## Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained



**Wyoming** 

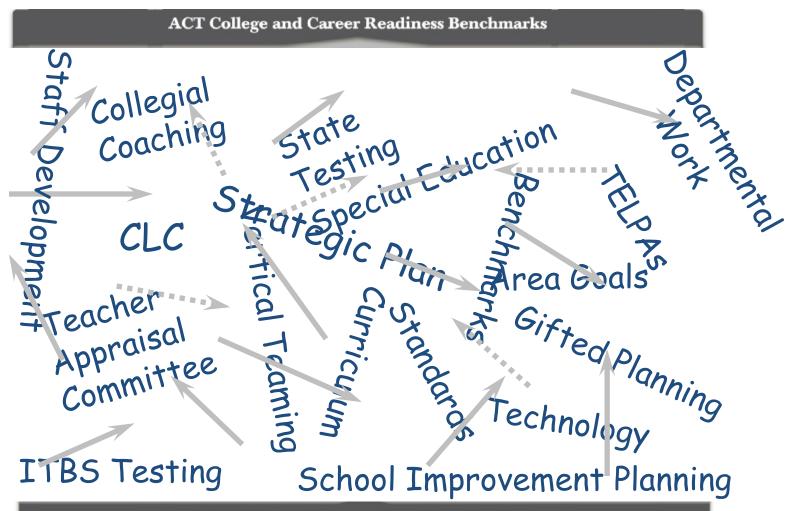
www.act.org/newsroom/data/2013



## ACT's Core Practice Framework

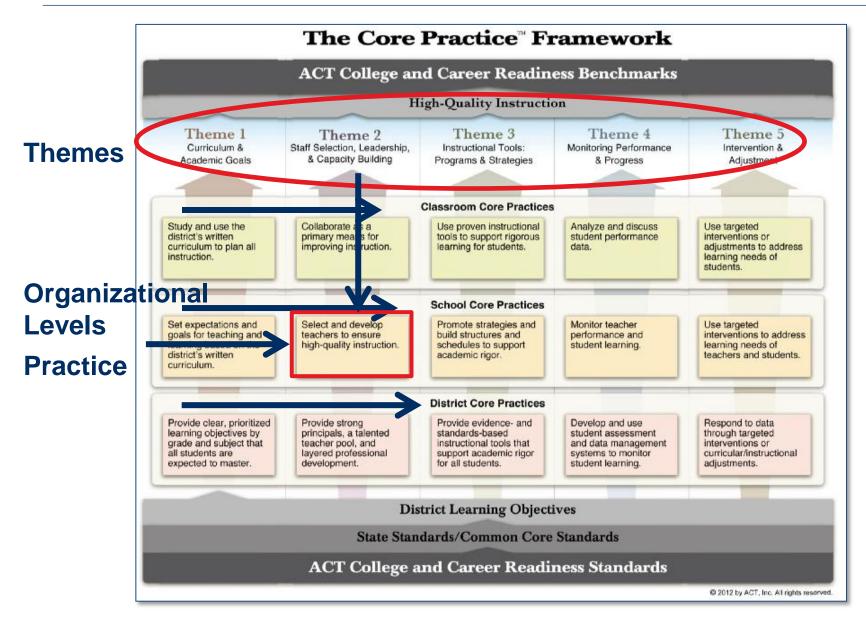


## **Traditional Approach to Standards-based Education**





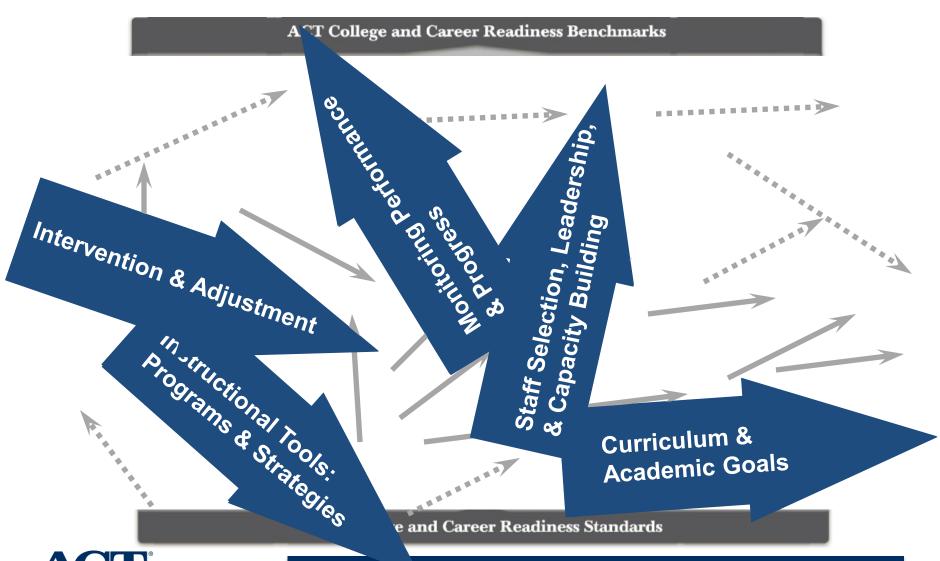




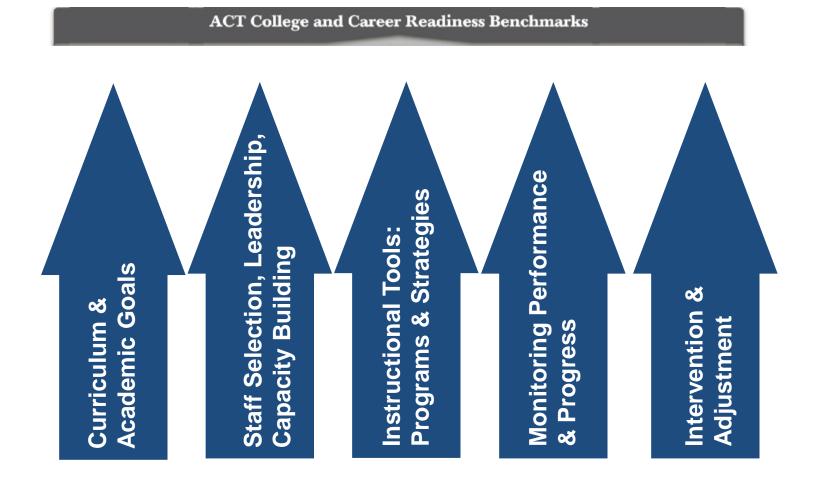


#### **Giving Structure and Direction to Your Efforts**

improvevourself.org



#### **Giving Structure and Direction to Your Efforts**



**ACT College and Career Readiness Standards** 



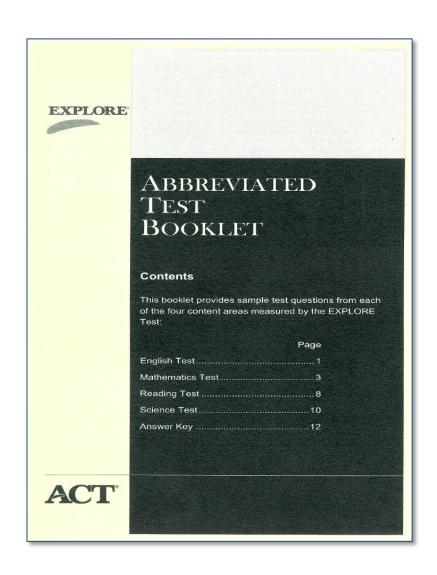
# **Assessment Literacy**



#### **Activity**

Abbreviated ACT Explore Test

- Do your favorite subject
- Circle the correct answer in your test booklet
- Move on to another subject if you finish before time is called
- About 15 minutes
- Do your own work!





# Nothing!...

# until it is interpreted and used.



#### **ACT National Curriculum Survey**®

The Foundation of ACT's College Readiness System

- Conducted every three to five years
- Nationwide survey of educational practices and expectations
  - College instructors
  - High school teachers
  - Middle school teachers
  - Elementary teachers



**ACT National Curriculum Survey**® 2012

Policy Implications on Preparing for Higher Standards

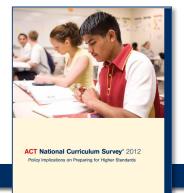
http://www.act.org/research-policy/national-curriculum-survey



#### **ACT National Curriculum Survey**®

The Foundation of ACT's College Readiness System

- Identifies the skills and knowledge postsecondary institutions expect of students
- Guides the development of ACT's assessments that measure college-ready skills
- Informs efforts to develop, refine, and update academic standards
- Inform policymakers and educators



#### **ACT's K-Career Continuum**

**Longitudinal Assessment Components** 

**Curriculum-Based Assessments** 

#### Behavioral Assessment

#### **EXPLORE**

8th and 9th grade educational and career planning program

#### **PLAN**

10th grade educational and career planning program

#### The ACT

11th or 12th grade assessment for learning outcomes

#### **ENGAGE**

Measures behavioral factors of academic success

Jiassioom Rigo

<del>School improvement</del>

#### **QualityCore**

Research-driven solutions for strengthening high school curriculum

#### Core Practice Audit

Framework for evaluating current practices

#### CoreWork Diagnostics

Online service to diagnose and improve content and practice areas



# **Guiding Principles of ACT's Longitudinal Assessment System**

- Achievement: assess acquired or developed abilities
- Alignment: correspond to recognized middle and high school learning experiences
- Rigor and complexity: consist of complex, heterogeneous tasks that require students to use skills and knowledge <u>developed over time</u> to solve them
- Appropriateness: developed specifically for each grade level



#### **ACT's College and Career Readiness System**

Content Areas Tested Across All Assessments

Writing

Science

Reading

**Mathematics** 

**English** 





#### **English Test**

**Test Focus** 

Designed to measure students' ability to effectively communicate meaning by:

- Critiquing
- Revising
- Editing

#### **English Test**

#### All Programs: 2 sub-scores

	<b>ACT</b> ° Explore		ACT <sup>®</sup> Plan <sup>®</sup>		TheACT®	
Usage/Mechanics	25	63%	30	60%	40	<b>53%</b>
Punctuation Grammar and Usage Sentence Structure	6 8 11	(15%) (20%) (28%)	7 9 14	(14%) (18%) (28%)	10 12 18	(13%) (16%) (24%)
Rhetorical Skills	15	37%	20	40%	35	47%
Strategy Organization Style	5 5 5	(12%) (12%) (12%)	6 7 7	(12%) (14%) (14%)	12 11 12	(16%) (15%) (16%)
Total Items	40		50		75	

Passages
Passage Length

300 Words

300 Words

325 Words

5



#### **Mathematics Test**

**Test Focus** 

## Requires students to

- Analyze problems in both real world and purely mathematical settings
- Plan and carry out strategies
- Verify appropriateness of solutions

#### Mathematics Test ACT Plan: 2 sub-scores; ACT: 3 sub-scores

	AC	Explore Explore	A(	Plan Plan	The	CT
Basic Statistical/ Probability Concepts	4	(13%)				
Pre-Algebra	10	(33%)	14	(35%)	14	(23%)
Elementary Algebra	9	(30%)	8	(20%)	10	(17%)
Pre-Geometry	7	(23%)				
Plane Geometry			11	(27%)	14	(23%)
Coordinate Geometry			7	(18%)	9	(15%)
Intermediate Algebra					9	(15%)
Trigonometry					4	( 7%)
<b>Total Items</b>	30		40		60	



#### **Reading Test**

**Test Focus** 

## Requires students to

- Understand and derive meaning from texts ranging from fiction narratives to informational passages
- Determine the meaning of unfamiliar or multiple-meaning words from context
- Read and understand published materials

#### **Reading Test**

	<b>ACT</b> Explore		<b>ACT</b> ° Plan°		The ACT°	
Prose Fiction	10	(33%)	8	(32%)	10	(25%)
Social Sciences	10	(33%)	8	(32%)	10	(25%)
Humanities	10	(33%)	9	(36%)	10	(25%)
Natural Sciences					10	(25%)
<b>Total Items</b>	30		25		40	

Passages
Passage Length

500 Words

500 Words

750 Words



#### **Science Test**

- Measures student proficiencies in using and reasoning with science information, skills, and knowledge typically acquired in high school science courses
- Asks students to:
  - Communicate information and use scientific research strategies
  - Make comparisons between, and draw conclusions from scientific findings, studies, and viewpoints.
  - Extrapolate and extend scientific understandings consistent with sound scientific reasoning.



#### **Science Test**

Format	<b>ACT</b> ° Explore		<b>ACT</b> ° Plan°		The ACT °	
Data Representation	12	(43%)	10	(33%)	15	(38%)
Research Summaries	10	(36%)	14	(47%)	18	(45%)
Conflicting Viewpoints	6	(21%)	6	(20%)	7	(18%)
Total Items	28		30		40	



#### **Science Test**

Relationship Between Content Areas and Item Format

#### **Content Areas**

- Life Science
- Physical Science
- Biology
- Earth/Space Science
- Chemistry
- Physics

Content areas are distributed across all formats.

#### **Format**

- Data Representation
- Research Summaries
- Conflicting Viewpoints



#### **Science Test Passages**

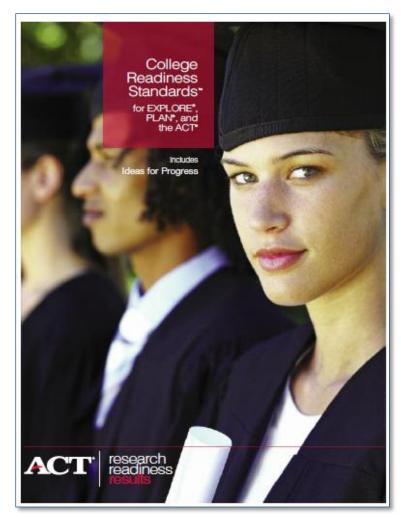
Content Area	<b>ACT</b> Explore	ACT <sup>®</sup> Plan <sup>®</sup>	The ACT°	
Life Science	3			
Physical Science	2			
Earth/Space Science	1	1-2*	1-2*	
Biology		1-2*	1-2*	
Chemistry		1-2*	1-2*	
Physics		1-2*	1-2*	
<b>Total Passages</b>	6	5	7	

<sup>\*</sup>At least one topic is required in this content area, and some test forms may have two topics. No more than two topics in a particular content area are allowed.



#### **ACT's College Readiness Standards**

- Identify the knowledge and skills students are likely to demonstrate at various score levels on each academic test.
- Help interpret what the scores earned in ACT Explore, ACT Plan and The ACT mean.
- Direct link between what students have learned and what they are ready to learn next.



http://act.org/standard/



MATHEMATICS (continued)  Score Range	COLLEGE READING	Probabilit	ANDARDS atistics,	Numbers: Concepts & Prop	perties
16–19 Standards	Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent     Solve some routine two-step arithmetic problems	Calcy num  Calcy num  Culcy num  Use probab		what students to know and	of a
ideas for progress	<ul> <li>solve routine arithmetic problems that involve rates, proportions, and percents</li> <li>model and solve problems that contain verbal and symbolic representations of money</li> <li>do multistep computations with rational numbers</li> </ul>	Principle, org	ability of riety of property o	apply elementary number concents including identificity and statements to vide suggestion gress to a higher of achievements.	hat ns to r leve



# College Readiness Standard Score Ranges

2012-2013 EXPLORE Profile Summary Report State Report - Grade 9 WYOMING EXPLORE

National Norm Group: Fall 9

Page: 4

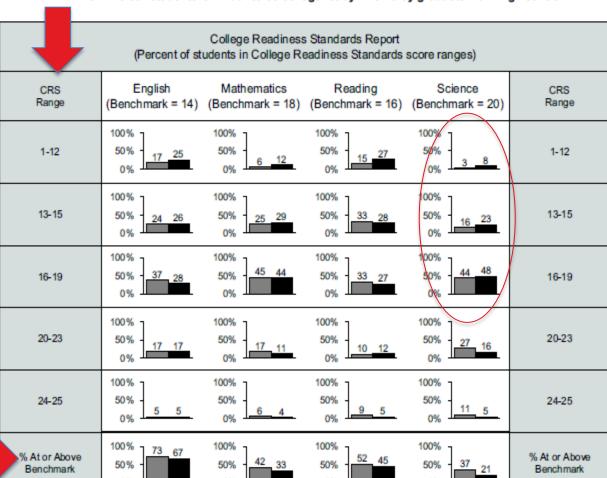
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WYOMING DEPT OF EDUC

CHEYENNE, WY

Total Students In Report: 6209

TABLE 1c: Are our students On Track to be college ready when they graduate from high school?





### **Benchmarks**

English – 14

Math - 18

Reading – 17

Science - 19



# College Readiness Standard Score Ranges

WYOMING PLAN

National Norm Group: Spring 10

WYOMING DEPT OF EDUC CHEYENNE, WY Total Students In Report: 5830

TABLE 1c: Are our students On Track to be college ready when they graduate from high school?

				., 9	
College Readiness Standards Report (Percent of students in College Readiness Standards score ranges)					
CRS Range	English (Benchmark =15)	Mathematics (Benchmark =19)	Reading (Benchmark = 17)	Science (Benchmark = 21)	CRS Range
1-12	100% 50% 0%	100% 50% 0%	100% 50% 0%	100% 50% 0%	1-12
13-15	100% 50% 0%	100% 50% 0%	100% 50% 25 23	100% 50% 0%	13-15
16-19	100% 50% - 43 33 0%	100% 50% 0%	100% 50% 0%	100% 50% - 43 44	16-19
20-23	100% 50% 0%	100% 50% 0%	100% 50% 0%	100% 50% 0%	20-23
24-27	100% 50% 0%	100% 50% 0%	100% 50% 0%	100% 50% 0%	24-27
28-32	100% 50% 0%	100% 50% 0%	100% 50% 0%	100% 50% 0%	28-32
% At or Above Benchmark	100% - 80 66	100% - 40 39	100%	100% - 33 22	% At or Above Benchmark



### **Benchmarks**

English – 15

Math - 19

Reading – 17

Science - 21



# **ACT**

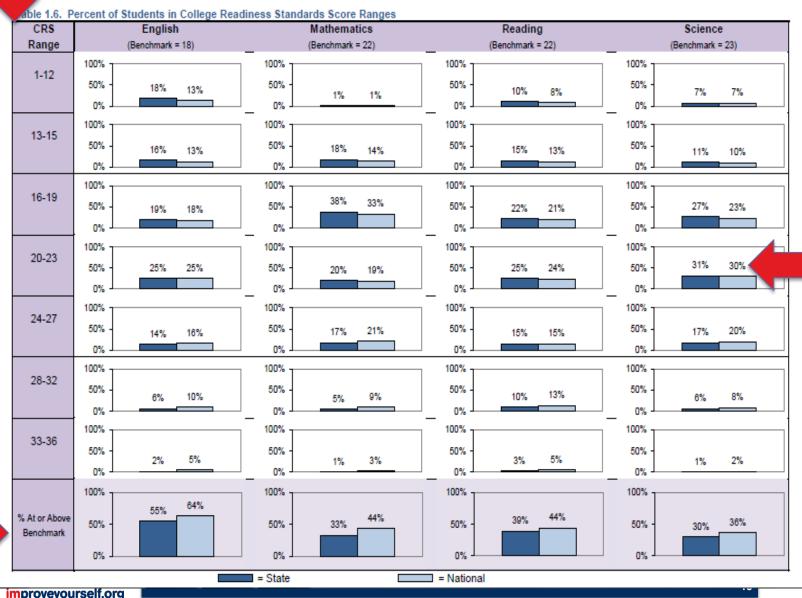
### **Benchmarks**

English – 18 Math - 22Reading – 22 Science - 23

ACT PROFILE REPORT - State: SECTION I, EXECUTIVE SUMMARY

Graduating Class 2013

al Students in Report: 5,896



PAGE 9

Code 519999 Wyoming



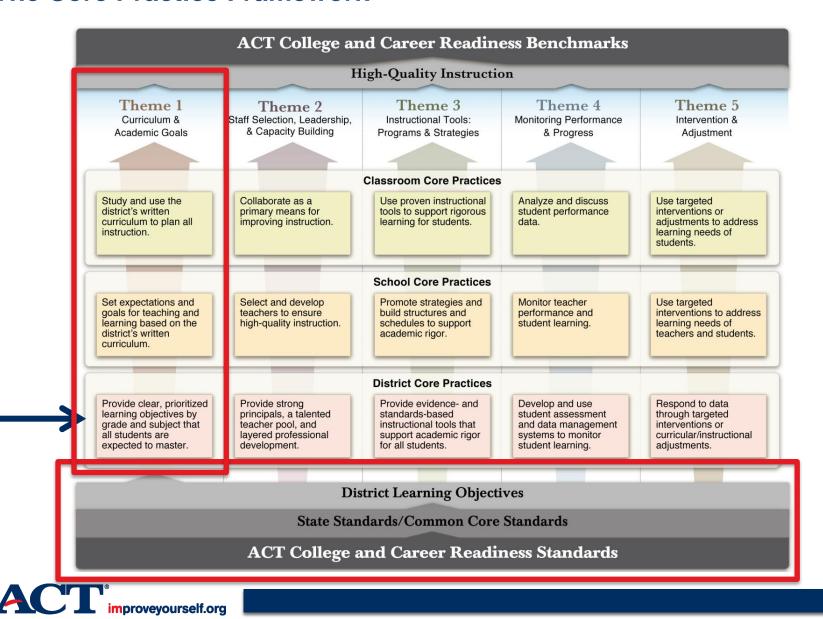
# Break (15 minutes)



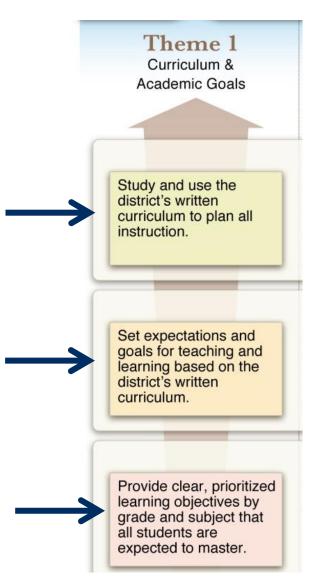
# **Curriculum Connections**



### The Core Practice Framework



### **Curriculum and Academic Goals: Core Practices**



# District Role:

Provide clear, prioritized learning objectives by grade and subject that all students are expected to master.

# School Role:

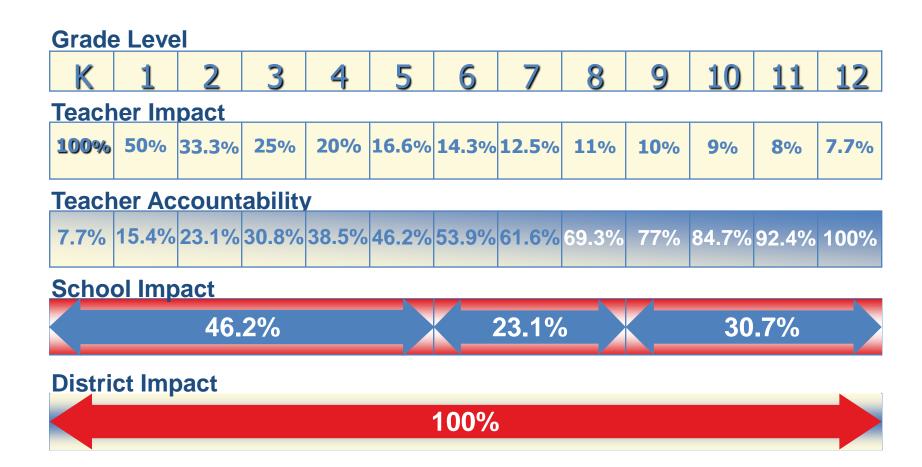
Set expectations and goals for teaching and learning based on the district's written curriculum.

# Classroom Role:

Study and use the district's written curriculum to plan all instruction.

# Why District Leadership is Essential for Curriculum

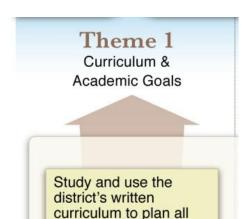
Theme: Curriculum and Academic Goals



The curriculum must be clearly aligned and articulated to eliminate curricular gaps, which can be devastating for students from less advantaged backgrounds.



### District Leaders' Role in Curriculum and Academic Goals



instruction.

Set expectations and goals for teaching and learning based on the district's written curriculum.

Provide clear, prioritized learning objectives by grade and subject that all students are expected to master.

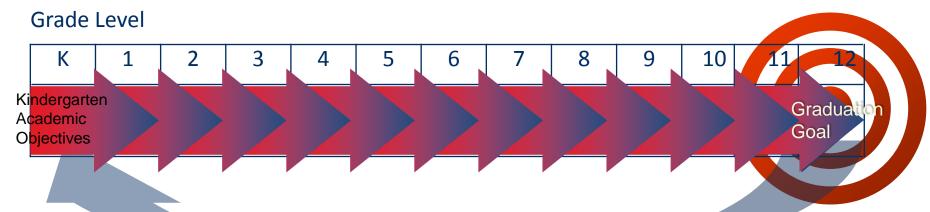
Core Practice: Provide clear, prioritized learning objectives by grade and subject that all students are expected to master.

# **Critical Actions**

- Curriculum in place
- Vertical alignment, anchored to meaningful endpoint
- Documentation
- Expectations



District leaders must determine what high school graduates need to know, then map backward to establish objectives for each grade.



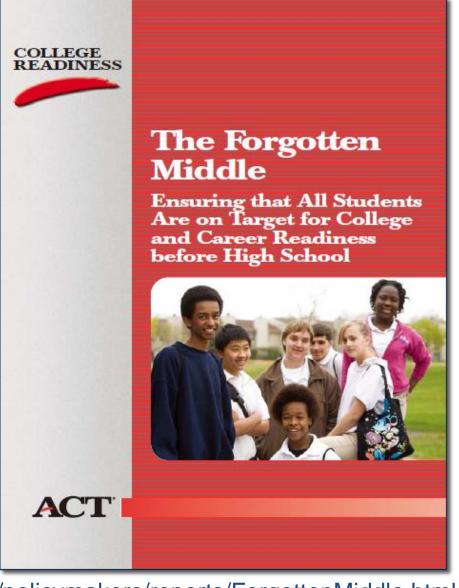
Kindergarten objectives are based on 12th grade graduation goals.



# **The Forgotten Middle**

**Key Finding** 

Eighth-grade academic achievement is the best predictor of college and career readiness by high school graduation.



http://www.act.org/research/policymakers/reports/ForgottenMiddle.html



# **The Forgotten Middle**

**Key Findings** 

- Improvement in eighth-grade academic achievement and being on target for college and career readiness in eighth grade are more beneficial than any high school-level academic enhancement.
- Being on target for college and career readiness in eighth grade puts students on a trajectory for success.

# **ACT's College Readiness Benchmarks**

		<b>ACT</b> ° Explore			
Test	College Course	8 <sup>th</sup> Grade	9 <sup>th</sup> Grade	<b>ACT</b> Plan	TheACT®
English	English Composition	13	14	15	18
Math	College Algebra	17	(18)	19	22
Reading	Social Sciences	16	17	18	22
Science	Biology	18	19	20	23

- Empirically derived
- 50% likelihood of achieving a B or higher or about a 75% likelihood of achieving a C or higher in the corresponding credit-bearing college course



MATHEMATICS (continued)  Score Range	COLLEGE READING	Probabilit	ANDARDS atistics,	Numbers: Concepts & Prop	perties
16–19 Standards	Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent     Solve some routine two-step arithmetic problems	Calcy num  Calcy num  Culcy num  Use probab		what students to know and	of a
ideas for progress	<ul> <li>solve routine arithmetic problems that involve rates, proportions, and percents</li> <li>model and solve problems that contain verbal and symbolic representations of money</li> <li>do multistep computations with rational numbers</li> </ul>	Principle, org	ability of riety of property o	apply elementary number concents including identificity and statements to vide suggestion gress to a higher of achievements.	hat ns to r leve



# **College Readiness Standards Activity**

Using the ACT Benchmark Score for your content area find the score range in the College Readiness Standards booklet where the Benchmark score falls

Test	Pages	ACT <sup>®</sup> Explore <sup>®</sup> 8 <sup>th</sup> Grade	ACT <sup>°</sup> Plan	TheACT°
English	p. 4-5	13	15	18
Math	p. 12-13	17	19	22
Reading	p. 20-21	16	18	22
Science	p. 28	18	20	23

- 2. Read the standards associated with that score range.
- 3. What grade level do you think students should have mastered the skills associated with the standards?



# Your District's Curriculum Compared to the College Readiness Standards

TABLE 1: English College Readiness	Standards for	Score Range 13–15	
English Standards	For each skill, knowledge, or process:		
	Is it included in your English curriculum?	At what grade level (or in which course) are students first introduced to it?	At what grade level (or in which course) are students expected to demonstrate proficiency?
Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., then, this time)			
Revise sentences to correct awkward and			
http://www.ac create obvious logic problems Use conjunctions or punctuation to join	L.O. g/C		Statematem
simple clauses			
Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences			
Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives			
Delete commas that create basic sense problems (e.g., between verb and direct object)			

http://act.org/standard/instruct/pdf/CurriculumReviewWorksheets.pdf



### Classroom Teachers' Role in Curriculum and Academic Goals



Study and use the district's written curriculum to plan all instruction.

Set expectations and goals for teaching and learning based on the district's written curriculum.

Provide clear, prioritized learning objectives by grade and subject that all students are expected to master.

Core Practice: Study and use the district's written curriculum to plan all instruction.

## **Classroom Critical Actions**

- Know objectives and level of mastery
- Know objectives in relation to continuum of learning
- Align instruction with curriculum and assessment

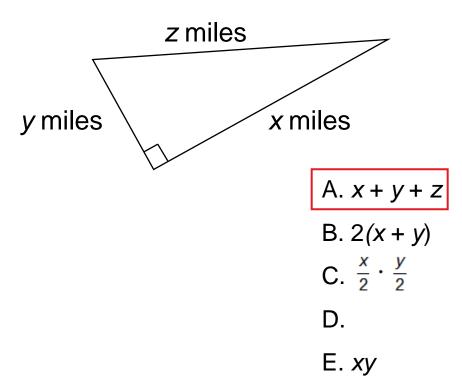


# Math: Score Range 16-19, Measurement Strand:

Standard: Compute the perimeter of polygons when all side lengths are given.



Which of the following is a general expression for the perimeter of the right triangle below, in miles?



# Math: Score Range 16-19, Measurement Strand:

**Standard:** Compute the perimeter of polygons when all side lengths are given.



What is the perimeter, in inches, of a square whose sides each measure  $5\frac{5}{8}$  inches?

A. 
$$11\frac{1}{4}$$

B. 
$$20\frac{5}{8}$$

C. 
$$22\frac{1}{2}$$

D. 
$$25\frac{25}{64}$$

E. 
$$31\frac{41}{64}$$

# Math: Score Range 16-19, Measurement Strand:

**Standard:** Compute the perimeter of polygons when all side lengths are given.



The out-of-bounds lines around a basketball court in Central Park need to be repainted. The court is a rectangle 90 feet long and 50 feet wide. What is its perimeter, in feet?

A. 140

B. 190

C. 230

D. 280

E. 4,500

# **Test Question Analysis Activity**

	College Readiness Standards —	English			
	Topic Development in Terms of Purpose and Focus (TOD)	Organization, Unity, and Coherence (OUC)	Word Choice in Terms of Style, Tone, Clarity, and Economy (WCH)	Sentence Structure and Formation (SST)	Conventions of Usage (COU)
13–15		201. Use conjunctive adverts or phrases to show time relationships in simple narrative essays (e.g., then, this time)	201. Revise sentences to correct awkward and confusing arrangements of sentence elements 202. Revise vague nouns and pronouns that create obvious logic problems	201. Use conjunctions or punctuation to join aimple clauses 202. Revise shifts in verb tense between simple clauses in a sentance or between aimple adjoining sentences	201. Solve such basic grammatica problems as how to form the past- participle of imegular but commonly verbs and how to form comparative superlative adjectives
16-19	301. Identify the basic purpose or role of a apacified phrase or sentence 302. Dalwie a clause or sentence because it is obviously irrelevant to the assay	301. Select the most logical place to add a sentence in a peragraph	301. Delete obviously synonymous and wordy material in a sentence 302. Revise operassions that daviate from the style of an essay	301. Determine the need for punchusion and conjunctions to avoid antiward- sounding serfection languaritis and flued sentences. 302. Ducide the appropriate web tense and voice by considering the meaning of the entire serfection.	301. Solve such grammetical prob whether to use an adverb or asjec- how to ensure straightforward sub- and pronoun-entecedent agreeme which preposition to use in simple 302. Recognize and use the appro- ward in frequently confused pairs in there and their, past and passed, it and lead
20-23	401, identify the central date or main topic of a straightforward piece of writing of a 202. Determine relevancy when presented with a variety of sentence-level datable	401. Use conjunctive advertis or phrases to opmass straightforward logical relationships (e.g., find., atteward, in response). 402. Decide the most logical place to add a sentence in an essay. 403. Add a sentence that introduces a aimple paragraph.	401. Delete redundant material when information is reposited in different parts of speach (e.g., "plasmingly startled") 402. Use the word or phrase most consistent with the style and time of a fairly straightforward essay 400. Determine the cleanest and most legical conjunction to link disuses	401. Recognize and correct marked disturbances of sentence flow and shucture (e.g., participal phrase flagments, missing or incorrect relative pronouns, dangling or misplaced modifiers)	401. Use idiomatically appropriate prepositions, especially in combina verbs (e.g., long for, appear to) 402. Ensure that a verb agrees witl subject when there is some text be the two.
24-27	901. Identify the focus of a strople essay, applying that invokedge to add a santemon that sharpens that focus or to determine if an essay flow are a specified goal on essay flow are a specified goal 502. Determined primarily bocause it distants the flow and development of the prangards.  503. Add a sentence to accomplish a fairly shallpirthorad purpose such as their string a given statement.	501. Delaminis the need for conjunctive adverbed or prinses to create subtile logical connections between sentences (e.g., therefore, between sentences (e.g., therefore, between, addition) 502. Rearrange for extremose in a fairly uncomplicated paragraph for the sake of logic. S03. Add a sentence to introduce or conclude the existy or to provide a transition between the existy of the provided a transition between the existy of the provided at the existy of the	501. Revise a phrase that is redundent in issues of the meaning and logic of the entire scritorios.  502. Identify and correct ambiguous pronoun referencies.  503. Use the word or phrase most appropriate in terms of the content of the sarrance and tone of the essay.	So. Review to sweld faulty blooment of phrases and faulty contribution and subordination of classes in sentences with subtle structural problems.     Soc. Maintain consistent verb tense and prenoun person on the basis of the preceding clause or sentence.	591, Ensure that a pronoun agrees anneadedni when the two coops in clauses or sentences. 502, Identify the correct past and participar forms of irregular and infused verbs and form present-perfe by using have rather than of
28-32*	601. Aprily an awareness of the Sous and purpose of a first involved except of determine the metacical effect and substitution of the second o	601. Mote experienciated distinctions concerning the legical use of conjunctive advertis or phrases, porticularly when anyuniting a sith beheven paragraphy and the phrase properties of the phrase paragraphy and a complete properties of a complete properties of a complete properties of a complete properties proper	881. Correct industrational that involves opinishized vocabulary and sounds acceptable as convenient stored fundable as convenient sounds acceptable as convenient sounds acceptable as convenient sounds of an admitted viseoporify of the sounds of an admitted viseoporify of the sounds of an admitted viseoporify of the sounds	691. Use sertimon-correlative tuchniques deficiency availage problemate comman efficatively availage problemate comman splores, un on o sertimone, and sertimone comparente, sepositively in animanosis.  602. Marinalis a comisible serio biografic serio del biografic serio del biografic serio del velo bioses and approxim person on the basis of information in the paragraph or easily as a whole	481. Correctly use reflexive process processive procurs its and year, relative pronouns who and whom 692. Ensure that a verb agrees with subject in unexus elustrons (e.g. adject in section of the subject is an indefinite pronoun)
33–36†	701. Determine whether a complex essay has accomplethed a specific purpose 702. Add a phrase or sentence to accomplish a complex purpose, often expressed in terms of the main focus of the essay.	701, Consider the need for introductory sentimense or transitions, basing decisions on a through understanding of both the logic and thatorical effect of the paragraph and essay	701. Delete redundant material that involves subtle concepts or that is redundant in terms of the paragraph as a whole	701. Wark comfortably with long sentences and complex clausar relationships within sentences, avoiding weak conjunctions between independent clauses and maintaining parallel shucture between clauses	701. Provide idiomatically and con appropriate prepositions following situations involving sophisticated it or ideas 702. Ensure that a verb agrees wit subject when a phrase or clause is the two suggests a different number

### **EXPLORE®**

### TEST QUESTION ANALYSIS ACTIVITY BOOKLET

EXPLORE COLLEGE READINESS STANDARDS

#### Contents

This booklet contains information to help you complete the workshop activity for each of the four content areas EXPLORE measures:

Page

Description of the Workshop Activity (all four content areas) .....1

English (essay, selected test questions, guiding questions, and worksheet)......2

Mathematics (selected test questions, guiding questions, and worksheet)......4

Reading (passage, selected test questions, guiding questions, and worksheet)......6

Science (passage, selected test questions, guiding questions, and worksheet) ......9



IC 0402WK060



# **Test Question Analysis Activity**

Find and briefly review the College Readiness Standards table for your respective content area.

**Note:** The CRS are organized both by score range (along the left-hand side) and by strand (across the top).





# **Test Question Analysis Activity**

	College Readiness Standards	— Mathematics	
	Basic Operations & Applications (BOA)	Probability, Statistics, & Data Analysis (PSD)	Numbers: Concepts & Properties (NCP)
13–15	<ul> <li>201. Perform one-operation computation with whole numbers and decimals</li> <li>202. Solve problems in one or two steps using whole numbers</li> <li>203. Perform common conversions</li> <li>(e.g., inches to feet or hours to minutes)</li> </ul>	<ul><li>201. Calculate the average of a list of positive whole numbers</li><li>202. Perform a single computation using information from a table or chart</li></ul>	201. Recognize equivalent fractions and fractions in lowest terms
16–19	301. Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent 302. Solve some routine two-step arithmetic problems	<ul> <li>301. Calculate the average of a list of numbers</li> <li>302. Calculate the average, given the number of data values and the sum of the data values</li> <li>303. Read tables and graphs</li> <li>304. Perform computations on data from tables and graphs</li> <li>305. Use the relationship between the probability of an event and the probability of its complement</li> </ul>	301. Recognize one-digit factors of a number 302. dentify a digit's place value
20–23	Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average	401. Calculate the missing data value, given the average and all data values but one 402. Translate from one representation of data to another (e.g., a bar graph to a circle graph)	401. Exhibit knowledge of elementary number concepts including rounding, property of the concepts of the conce

# **Guiding Questions for the Test Question Analysis Activity**

### **Guiding Questions for English Workshop Activity**

- What judgment or editing decision (e.g., choosing transition words, correcting verb tense, determining the purpose of the essay) is the student asked to make in the test question?
- Which strand most directly addresses that judgment or editing decision?

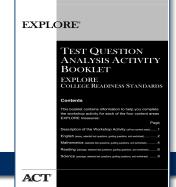
- 3. Which standard within that strand (and score range) do you think best describes the test question?
- 4. Think of one classroom activity that you've used successfully that either requires students to use the skill you've identified or that helps students learn the skill you've identified. Please informally describe that activity to your fellow educators.

English: p. 3

Math: p. 5

Reading: p. 7

Science: p. 9





# **Guiding Questions for the Activity**

### Sample Test Question

### Score Range 24-27

**8.** Which of the following lists the fractions  $\frac{4}{7}$ ,  $\frac{5}{9}$ , and  $\frac{2}{3}$  in order from least to greatest?

F. 
$$\frac{2}{3} < \frac{4}{7} < \frac{5}{9}$$

**G.** 
$$\frac{4}{7} < \frac{5}{9} < \frac{2}{3}$$

**H.** 
$$\frac{4}{7} < \frac{2}{3} < \frac{5}{9}$$

**J.** 
$$\frac{5}{9} < \frac{2}{3} < \frac{4}{7}$$

\*K. 
$$\frac{5}{9} < \frac{4}{7} < \frac{2}{3}$$

### Knowledge and Skills:

Knowledge of fractions and relationships of numbers

- Read the sample test questions

   (and their corresponding passage, if applicable).
- Determine and record the knowledge and skill required by each test question.

# **Guiding Questions for the Activity**

Sample Test Question	Strand(s) College Readiness Standards
<b>Score Range 24–27 8.</b> Which of the following lists the fractions $\frac{4}{7}$ , $\frac{5}{9}$ , and $\frac{2}{3}$ in order from least to greatest? <b>F.</b> $\frac{2}{3} < \frac{4}{7} < \frac{5}{9}$ <b>G.</b> $\frac{4}{7} < \frac{5}{9} < \frac{2}{3}$ <b>H.</b> $\frac{4}{7} < \frac{2}{3} < \frac{5}{9}$ <b>J.</b> $\frac{5}{9} < \frac{2}{3} < \frac{4}{7}$ <b>*K.</b> $\frac{5}{9} < \frac{4}{7} < \frac{2}{3}$	3 CPetarmine which strand(s) and Standards link to Standards link to 502 (Order Fractions) question.
Knowledge and Skills:  Knowledge of fractions and	4. Write the College Readiness
relationships of numbers	Standard Number

ACT improveyourself.org

and the Strand

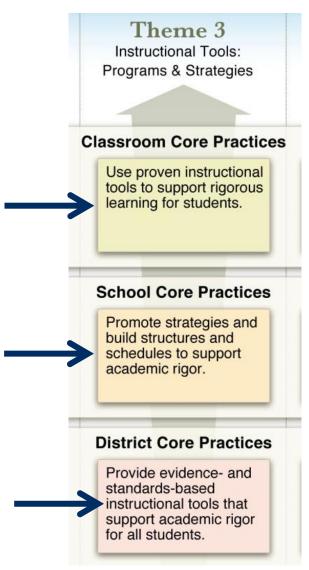
abbreviation.

# **Instructional Connections**





# **Instructional Tools: Program & Strategies**



# District Role:

Provide evidence- and standardsbased instructional tools that support academic rigor for all students.

# School Role:

Promote strategies and build structures and schedules to support academic rigor.

# Classroom Role:

Use proven instructional tools to support rigorous learning for students.

# School Leaders' Role in Instructional Tools: Programs & Strategies

### Theme 3

Instructional Tools: Programs & Strategies

### **Classroom Core Practices**

Use proven instructional tools to support rigorous learning for students.

#### **School Core Practices**

Promote strategies and build structures and schedules to support academic rigor.

### **District Core Practices**

Provide evidence- and standards-based instructional tools that support academic rigor for all students.

Core Practice: Promote strategies and build structures and schedules to support academic rigor.

# **School Critical Actions**

- Support for rigorous coursework
- High-yield instructional strategies
- Master schedule



# **Excel High School**

Boston Public Schools, MA

School leaders and teachers worked together to increase rigor in the curriculum and course offerings. The math department is always working to get more students to take and succeed in advanced coursework. Students get confidence from taking AP classes, because they understand what college-level work looks like. Students who opt to take AP Calculus must first complete a summer class at nearby Northeastern University to strengthen and review the skills and content they learned in pre-calculus.



# **Los Amigos High School**

Garden Grove Unified School District, CA

Throughout the day, teachers across the campus reinforce school-wide practices such as use of interactive notebooks and Cornell Notes that strengthen organizational skills and participation.



# **Lawndale High School**

Centinela Valley Union High School District, CA

By embedding intervention opportunities in the schedule, educators in Centinela Valley further ensure student access to needed support and minimize disruption to regular instruction. At Lawndale, educators create a common period each week for each grade level, called the 4SR, which allows educators to conduct additional math instruction without interrupting regular instructional time.



# **El Monte High School**

El Monte Union High School District, CA

For leaders, the core question has become: Are the most qualified teachers also teaching the students most in need? When creating the school's master schedule, El Monte leadership specifically considers and ensures that:

- all teachers are teaching both struggling and higher level students
- 2. conference periods are spread throughout the school day
- all subgroups have the opportunity to combine general studies with higher level classes
- programs are available to students through AVID, honors, and AP courses.



### Classroom Teachers' Role in Instructional Tools: Programs & Strategies

### Theme 3

Instructional Tools: Programs & Strategies

### **Classroom Core Practices**

Use proven instructional tools to support rigorous learning for students.

#### **School Core Practices**

Promote strategies and build structures and schedules to support academic rigor.

### **District Core Practices**

Provide evidence- and standards-based instructional tools that support academic rigor for all students.

Core Practice: Use proven instructional tools to support rigorous learning for students.

# **Critical Actions**

- High-yield instructional strategies
- Instructional programs as tools
- Instructional time as a tool

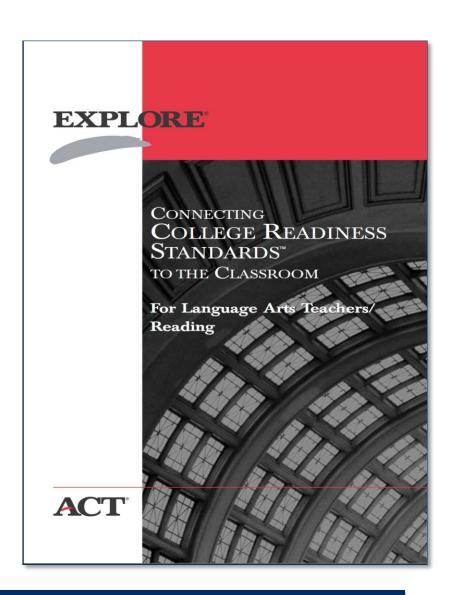
# **Instructional Support Resources at ACT**





#### **Instructional Support Resources**

- Examples of test items by Strand by Score Range
- Suggestions for strategies and assessments by Strands
- Special Section: Using assessment information to help support low-scoring students





# **Examples of Test Items by Score Range**

Table 3: <b>EXPLORE Sample Test Questions by Score Range</b> Basic Operations & Applications Strand										
Score Range	Basic Operations & Applications	Sample Test Questions								
13–15	Perform one-operation computation with whole numbers and decimals	Central High's musical event must make \$780 in order to break even. If each ticket costs \$6, how many tickets must be sold to break even?								
	Solve problems in one or two steps using whole numbers	<b>A.</b> 125 * <b>B.</b> 130								
	Perform common conversions (e.g., inches to feet or hours to minutes)	C. 138 D. 180 E. 774								
16–19	Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent	What is 12% of 60 ?  A. 6 *B. 7.2								
	Solve some routine two-step arithmetic problems	C. 12 D. 48 E. 72								
20-23	Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average	A student on the local softball team has batted 40 times and has 24 hits. At this rate, how many hits will she have if she bats 100 times?  A. 48								
		*B. 60 C. 68 D. 72 E. 84								



#### Suggestions for Instruction and Assessment by CRS Strand

#### **Linking Instruction and Assessment**

Strands: Basic Operations & Applications; Graphical Representations; Measurement

#### **Guiding Principles**

- "[Students should] understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs." (NCTM, 1989, p. 81)
- "In order to develop mathematical power in all students, assessment needs to support the continued mathematics learning of each student." (NCTM, 1995, p. 6)

#### COMPARING VALUES

#### College Readiness Standards

- Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average
- Estimate or calculate the length of a line segment based on other lengths given on a geometric figure
- Locate points in the coordinate plane

#### **Description of the Instructional Activity**

The teacher could have the class brainstorm about different types of comparisons of two numbers or values (e.g., distance per a length of time, ratio of boys to girls in the class) and discuss when and why the numbers are compared. The class could also explore how the rate or ratio of one set of numbers could be used to find an equivalent rate or ratio.

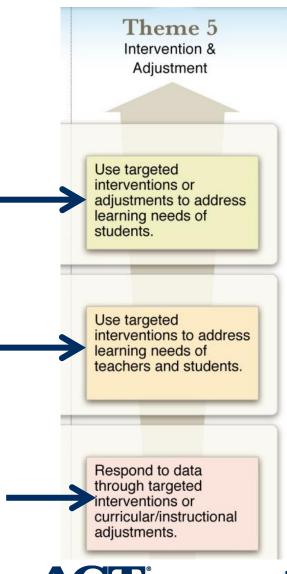
Pairs of students could use manipulatives to explore several relationships to find the constant of proportionality (e.g., comparing the diameter of a circular object to its circumference or comparing lengths of corresponding sides of similar figures, using a figure and its image on an overhead screen or on scaled photocopies). Students could use these constants or proportions to determine an unknown value given one of the values (e.g., estimate the size of something unknown in the picture such as Godzilla's toe based on the size of something familiar in the picture).

The class could discuss different methods used to solve proportions and then conjecture when one method would be preferable to the other(s) (e.g., using cross-products, computing the constant of proportionality). Students could practice using the various methods.

# **Intervention Connections**



#### **Intervention & Adjustment**



### District Role:

Respond to data through targeted interventions or curricular/instructional adjustments.

### School Role:

Use targeted interventions to address learning needs of teachers and students.

## Classroom Role:

Use targeted interventions or adjustments to address learning needs of students.

#### **Two Ways to Think About Intervention**

# **Above-the-line Thinking and Problem Solving**

 "What can I use in my classroom tomorrow to motivate my students?"

"Our students struggled with dividing fractions. What interventions can we plan to help them?"



# Below-the-line Thinking and Problem Solving

- "What are the primary causes for students to lack motivation in a classroom? And which of these causes can be dealt with systemically?"
- "What pre-requisite skills to fractions are not being introduced and mastered early enough?"



### District Leaders' Role in Intervention & Adjustment



Use targeted interventions or adjustments to address learning needs of students.

Use targeted interventions to address learning needs of teachers and students.

Respond to data through targeted interventions or curricular/instructional adjustments. Core Practice: Respond to data through targeted interventions or curricular/instructional adjustments.

#### **Critical Actions**

- Interventions for schools
- Interventions for students
- Adjustments to curriculum and instructional resources



#### Tampa Bay Technical High School

School District of Hillsborough County, FL

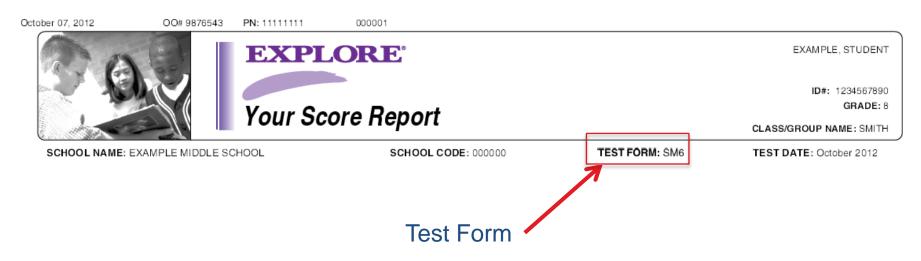
With teacher involvement, educators review curriculum materials to determine the need for revision and focus on alignment. During curriculum reviews for strengths and weaknesses, "if we see something consistent at a grade level, then it drives us to go and look at the curriculum at that grade level and the one before." Every summer during district-wide planning, educators, for instance, ensure vertical articulation or rewrite district assessment items.



#### **Item Response Summary Report**

Introduction

- Provides data on the item-by-item performance of your students.
- Is a very useful tool for curriculum review when used along with the test booklet.





### **Item Response Summary Report**

2012-2013 PLAN Item Response Summary Report - Test Form: SM2
School Report - Grade 10
Code: 44444444

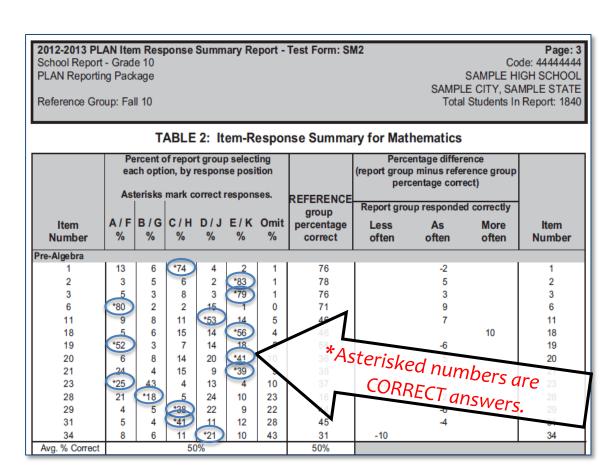
**TABLE 2: Item-Response Summary for Mathematics** 

	P	ricent of report group selecting					Percentage difference				
		ch option, by response position						(report group minus reference group			
		terisks mark correct responses.						percentage correct)			
	As	terisks	mark c	orrect	respon	ses.	REFERENCE				
							group	Report group responded		correctly	
Item	A/F	ll .				Omit	percentage	Less	As	More	Item
Number	%	%	%	%	%	%	correct	often	often	often	Number
Pre-Algebra											
1	13	6	*74	4	2	1	76		-2		1
2	3	5	6	2	*83	1	78		5		2
3	5	3	8	3	*79	1	76		3		3
6	*80	2	2	15	1	0	71		9		6
11	9	8	11	*53	14	5	46		7		11
18	5	6	15	14	*56	4	46			10	18
19	*52	3	7	14	18	5	58		-6		19
20	6	8	14	20	*41	10	30		5		20
21	24	4	15	9	*39	9	38		1		21
23	*25	43	4	13	4	10	37	-12			23
28	21	*18	5	24	10	23	16		2		28
29	4	5	*38	22	9	22	44		-6		29
31	5	4	*41	11	12	28	45		-4		31
34	8	6	11	*21	10	43	31	-10			34
Avg. % Correct		1 11	50	)%		V , ,	50%				
		25	12	*44	8 12	6 19	41	3	25		
		36 37	9	9 1	3 13	9 46 5 51	20 20	-7 -7	36 37		
		39 Avg. % Co	*9	14	9 9 41%	7 51	14 41%	-5	39		

#### **Application Exercise**

Item Response Summary Report

- Pick one content area.
- Circle the asterisked numbers (correct answers) for each question.





#### **Application Exercise**

**Analysis** 

# Look for the following patterns:

- Dramatic differences from the reference group
- High percentages clustered around a wrong answer
- High percentages of omitted questions

Do any of these situations occur more frequently for some domains than others?



2012-2013 PLAN Item Response Summary Report - Test Form: SM2 Page: 3 School Report - Grade 10 Code: 44444444 PLAN Reporting Package SAMPLE HIGH SCHOOL SAMPLE CITY, SAMPLE STATE Reference Group: Fall 10 Total Students In Report: 1840 TABLE 2: Item-Response Summary for Mathematics ent of report group selecting Percentage difference (report group minus reference tion, by response position Dramatic Difference from percentage correct High Percentage Omitted REFERENCE group A/F Item percentage Item % often Number correct Number Pre-Algebra 13 \*80 11 11 18 15 10 18 Cluste 19 \*52 19 20 20 6 21 24 21 43 18 \*25 10 -12 23 23 24 10 23 28 21 28 29 \*38 22 9 22 29 45 31 \*41 11 12 28 31 \*21 43 34 11 10 31 -10 34 Avg. % Correct 50% 50%

#### Classroom Teachers' Role in Intervention & Adjustment



Use targeted interventions or adjustments to address learning needs of students.

Use targeted interventions to address learning needs of teachers and students.

Respond to data through targeted interventions or curricular/instructional adjustments. Core Practice: Use targeted interventions or adjustments to address learning needs of students.

#### **Critical Actions**

- Classroom-level interventions
- School-level interventions
- Enrichment for early mastery



#### **Long Beach Unified School District**

**Broad Prize for Urban Education Winner** 

- Three-week Kinder Camps: support students not fully prepared for kindergarten
- Better Learning After School Today (BLAST): support high school students
- Transitional Ninth Grade (T9) Program: supports any student with two F's as an eighth grader
  - attends summer school
  - content-intensive T-9 program in 9th grade
  - summer school following 9<sup>th</sup> grade.



#### Wayne-Westland Community Schools, MI

 Student grouping for additional support classes provides individual and small-group instruction possibilities. High schools in the district offer Algebraic Foundations, a class offered in conjunction with Algebra I for ninth-grade students identified in middle school as needing additional help. The class sizes are small, so students get the help and attention they need during the additional hour of math instruction.



#### **Westside Middle School**

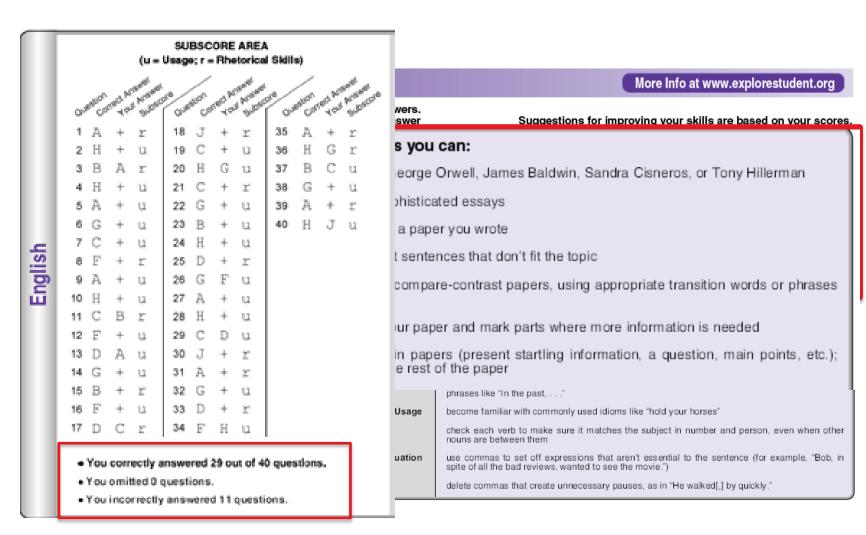
Westside Consolidated School District, AR

"There's one really big thing that helps me and that's the Title I math [program]. I give them my lesson plans a few days ahead of time, and then they make lessons that go along with what I'm doing. They actually **teach the skills before I teach them** and those students come in there able to answer questions and feel good about themselves. It has really helped a lot. I love that."



#### **Intervention Planning**

Item Response Summary and Suggestions for Improvement





### **Roster 1: Early Intervention Roster**

- School-level reports that identify students who fall into three categories:
  - Roster 1: Students indicating they do not plan to finish high school or have no post-high school educational plans



#### **Roster 2: Coursework Intervention**

#### - Roster 2:

**ACT Explore:** Students scoring below the national 10<sup>th</sup> percentile

#### **ACT Plan:** students with

- 2a) composite score of **16 or higher** who reported they **have no plans** to go to college
- 2b) reported that they plan to attend college but earned a composite score of 15 or less, or reported that they do not plan to take college core coursework.



#### **Roster 3: Need for Assistance**

- Roster 3: Students who expressed a need for help in a particular area
  - Educational/career planning
  - Improving writing skills
  - Improving reading speed and comprehension
  - Improving study skills
  - Improving mathematical skills
  - Improving computer skills
  - · Improving public speaking

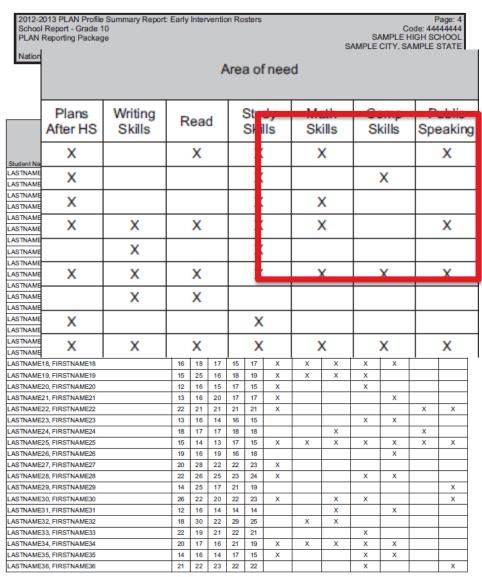
This roster can help you identify instructional needs, design intervention strategies, and assist students with reaching their academic and career goals.



#### **ACT Plan Early Intervention Rosters**

Roster 3: Need for Assistance

Are we providing programs or services to meet our students' needs?



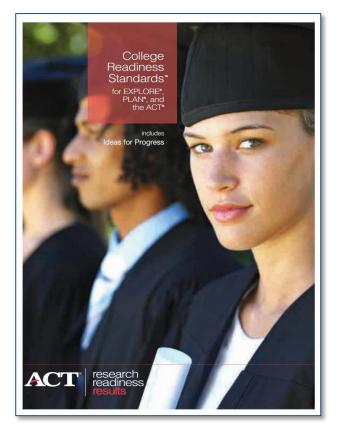


# Supporting Resources





#### **Long-Term Test Prep**





#### ISSUES IN COLLEGE READINESS

#### What Kind of Test Preparation Is Best?

#### Introduction

The ACT is an achievement test—it indicates whats students are ready to learn next by measuring what they currently know and can do. Given the content and philosophy of the ACT, the approach that is most likely to increase ACT scores is high school coursework, because much of the knowledge and skills that are taught in high school are being measured on the ACT. The ACT was designed to reflect high school course taking, and as such it is a good measure of overall high school preparation by subject area and of student readiness for college or work after high school.

It would stand to reason that long-term learning in school, rather than cramming and coaching, would be the obvious best form of test preparation for the ACT. Earning high scores on the ACT is not simply a matter of innate ability or short-term preparation, but reflects a level of achievement resulting from planning, hard work, and dedication. To test this assumption, we can compare the score increases achieved by students who participated in various short-term test preparation activities to those associated with the longer-term preparation that students receive in planning for and taking college preparatory courses in high school

#### **Effects of Short-Term Test Preparation**

Several studies conducted between the early 1990s and 2003 examined ACT score increases attributable solely to short-term test preparation activities using repeat test takers and cross-sectional samples of students who took the test at given time points. The typical student reported spending fewer than 10 hours preparing for the ACT. The greatest short-term benefits were associated with participation in commercial test preparation courses and test preparation workshops offered by local schools and with use of test preparation computer software. The next highest benefits of short-term preparation were those gained from use of selected commercial workbooks. (Other research shows that the effects of activities such as commercial test preparation classes and test preparation tutoring on ACT subject test scores were even smaller: score increases associated with these activities did not exceed one point for ACT English, Mathematics, or Reading [Briggs, 2001].)

#### **Effects of Longer-Term Test Preparation**

ACT research has continually demonstrated the benefits of taking longer-term, college preparatory coursework for increasing ACT scores, regardless of students' prior achievement in high school. As long as students enter these courses ready to learn, all of them can benefit. Increases in ACT Composite score associated with high school coursework are substantially larger than those associated with these short-term test preparation activities, regardless of the type of activity.







ACT improveyourself.org

www.explorestudent.org www.planstudent.org www.actstudent.org



#### **ACT Resources for Parents**

**ACT Parent Website** 



www.actparent.org



#### **ACT Resources for Educators**

**ACT Learning Events** 

#### You can download:

- Workshop workbooks
- Why Take ACT Explore/ACT Plan/The ACT?
- Opening Your Data File
- Essay View
- Sample Parent Letters
- Technical Manuals
- Interpretation presentations and videos
- Live and on-demand webinars

# http://www.act.org/learningevents/resources



# **Building the system...**







to support College and Career Readiness



#### **Additional Resources**

Future events: <a href="https://www.act.org/learningevents">www.act.org/learningevents</a>

Call Customer Service Explore/Plan

877 789 2925

**Customer Service for ACT** 

800 553 6244 ext. 2800

Jessica Steinbrenner

Jessica.steinbrenner@wyo.gov

307-777-8568



# Thank you

for all you do to assist educators and students to improve student achievement.

# Have a great school year!

