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

Instructional Support Workshop
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Learning Insights Team
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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

Insights from Professional Practice

LIT-designed Professional Learning Experiences

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.
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.

www.act.org/commoncore
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.

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Common Scale Relationship
ACT's Longitudinal Assessment System

Science
Reading
Mathematics
English

ACT® improveyourself.org
### ACT’s College Readiness Benchmarks

<table>
<thead>
<tr>
<th>Test</th>
<th>College Course</th>
<th>8th Grade</th>
<th>9th Grade</th>
<th>ACT® Plan</th>
<th>The ACT®</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>English Composition</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Math</td>
<td>College Algebra</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>Reading</td>
<td>Social Sciences</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>Science</td>
<td>Biology</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>23</td>
</tr>
</tbody>
</table>

- 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

- Met No Benchmarks: 38%
- Met 1 Benchmark: 16%
- Met 2 Benchmarks: 15%
- Met 3 Benchmarks: 11%
- Met All 4 Benchmarks: 20%

www.act.org/newsroom/data/2013
ACT’s Core Practice Framework
Traditional Approach to Standards-based Education
Giving Structure and Direction to Your Efforts

ACT College and Career Readiness Benchmarks

- Curriculum & Academic Goals
- Staff Selection, Leadership, & Capacity Building
- In-structional Tools: Programs & Strategies
- Intervention & Adjustment
- Monitoring Performance & Progress
Giving Structure and Direction to Your Efforts

ACT College and Career Readiness Benchmarks

1. Curriculum & Academic Goals
2. Staff Selection, Leadership, Capacity Building
3. Instructional Tools: Programs & Strategies
4. Monitoring Performance & Progress
5. Intervention & Adjustment

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!
What does a score mean?

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®
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

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

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 developed over time 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
Designed to measure students’ ability to effectively communicate meaning by:

– Critiquing
– Revising
– Editing
English Test
All Programs: 2 sub-scores

<table>
<thead>
<tr>
<th>Category</th>
<th>ACT Explore</th>
<th>ACT Plan</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage/Mechanics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Punctuation</td>
<td>6 (15%)</td>
<td>7 (14%)</td>
<td>10 (13%)</td>
</tr>
<tr>
<td>Grammar and Usage</td>
<td>8 (20%)</td>
<td>9 (18%)</td>
<td>12 (16%)</td>
</tr>
<tr>
<td>Sentence Structure</td>
<td>11 (28%)</td>
<td>14 (28%)</td>
<td>18 (24%)</td>
</tr>
<tr>
<td>Rhetorical Skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy</td>
<td>5 (12%)</td>
<td>6 (12%)</td>
<td>12 (16%)</td>
</tr>
<tr>
<td>Organization</td>
<td>5 (12%)</td>
<td>7 (14%)</td>
<td>11 (15%)</td>
</tr>
<tr>
<td>Style</td>
<td>5 (12%)</td>
<td>7 (14%)</td>
<td>12 (16%)</td>
</tr>
<tr>
<td>Total Items</td>
<td>40</td>
<td>50</td>
<td>75</td>
</tr>
</tbody>
</table>

Passages
- 4
- 4
- 5

Passage Length
- 300 Words
- 300 Words
- 325 Words
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

<table>
<thead>
<tr>
<th>Category</th>
<th>ACT® Explore</th>
<th>ACT® Plan</th>
<th>The ACT®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Statistical/Probability Concepts</td>
<td>4 (13%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Algebra</td>
<td>10 (33%)</td>
<td>14 (35%)</td>
<td>14 (23%)</td>
</tr>
<tr>
<td>Elementary Algebra</td>
<td>9 (30%)</td>
<td>8 (20%)</td>
<td>10 (17%)</td>
</tr>
<tr>
<td>Pre-Geometry</td>
<td>7 (23%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plane Geometry</td>
<td>11 (27%)</td>
<td>14 (23%)</td>
<td></td>
</tr>
<tr>
<td>Coordinate Geometry</td>
<td>7 (18%)</td>
<td>9 (15%)</td>
<td></td>
</tr>
<tr>
<td>Intermediate Algebra</td>
<td></td>
<td>9 (15%)</td>
<td></td>
</tr>
<tr>
<td>Trigonometry</td>
<td></td>
<td>4 (7%)</td>
<td></td>
</tr>
<tr>
<td>Total Items</td>
<td>30</td>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Category</th>
<th>ACT® Explore</th>
<th>ACT® Plan</th>
<th>The ACT®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prose Fiction</td>
<td>10 (33%)</td>
<td>8 (32%)</td>
<td>10 (25%)</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>10 (33%)</td>
<td>8 (32%)</td>
<td>10 (25%)</td>
</tr>
<tr>
<td>Humanities</td>
<td>10 (33%)</td>
<td>9 (36%)</td>
<td>10 (25%)</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td></td>
<td></td>
<td>10 (25%)</td>
</tr>
<tr>
<td>Total Items</td>
<td>30</td>
<td>25</td>
<td>40</td>
</tr>
</tbody>
</table>

| Passages          | 3            | 3         | 4         |
| 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

<table>
<thead>
<tr>
<th>Format</th>
<th>ACT® Explore</th>
<th>ACT® Plan</th>
<th>The ACT®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Representation</td>
<td>12 (43%)</td>
<td>10 (33%)</td>
<td>15 (38%)</td>
</tr>
<tr>
<td>Research Summaries</td>
<td>10 (36%)</td>
<td>14 (47%)</td>
<td>18 (45%)</td>
</tr>
<tr>
<td>Conflicting Viewpoints</td>
<td>6 (21%)</td>
<td>6 (20%)</td>
<td>7 (18%)</td>
</tr>
<tr>
<td><strong>Total Items</strong></td>
<td><strong>28</strong></td>
<td><strong>30</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>
Content Areas

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

Format

- Data Representation
- Research Summaries
- Conflicting Viewpoints

Content areas are distributed across all formats.
## Science Test Passages

<table>
<thead>
<tr>
<th>Content Area</th>
<th>ACT® Explore</th>
<th>ACT® Plan</th>
<th>The ACT®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Science</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Science</td>
<td>2</td>
<td>1-2*</td>
<td>1-2*</td>
</tr>
<tr>
<td>Earth/Space Science</td>
<td>1</td>
<td>1-2*</td>
<td>1-2*</td>
</tr>
<tr>
<td>Biology</td>
<td>1-2*</td>
<td>1-2*</td>
<td>1-2*</td>
</tr>
<tr>
<td>Chemistry</td>
<td>1-2*</td>
<td>1-2*</td>
<td>1-2*</td>
</tr>
<tr>
<td>Physics</td>
<td>1-2*</td>
<td>1-2*</td>
<td>1-2*</td>
</tr>
<tr>
<td><strong>Total Passages</strong></td>
<td><strong>6</strong></td>
<td><strong>5</strong></td>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>

*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/
Statements that describe what students are likely to know and be able to do...

And statements that provide suggestions to progress to a higher level of achievement.
### College Readiness Standard Score Ranges

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

<table>
<thead>
<tr>
<th>CRS Range</th>
<th>English (Benchmark = 14)</th>
<th>Mathematics (Benchmark = 18)</th>
<th>Reading (Benchmark = 16)</th>
<th>Science (Benchmark = 20)</th>
<th>CRS Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-12</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>1-12</td>
</tr>
<tr>
<td>13-15</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>13-15</td>
</tr>
<tr>
<td>16-19</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>16-19</td>
</tr>
<tr>
<td>20-23</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>20-23</td>
</tr>
<tr>
<td>24-25</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>24-25</td>
</tr>
</tbody>
</table>

**Benchmarks**
- English – 14
- Math – 18
- Reading – 17
- Science - 19
### College Readiness Standard Score Ranges

**ACT Plan**

**Benchmarks**
- English – 15
- Math – 19
- Reading – 17
- Science - 21

---

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

<table>
<thead>
<tr>
<th>CRS Range</th>
<th>English (Benchmark = 15)</th>
<th>Mathematics (Benchmark = 19)</th>
<th>Reading (Benchmark = 17)</th>
<th>Science (Benchmark = 21)</th>
<th>CRS Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-12</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>1-12</td>
</tr>
<tr>
<td>13-15</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>13-15</td>
</tr>
<tr>
<td>16-19</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>16-19</td>
</tr>
<tr>
<td>20-23</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>20-23</td>
</tr>
<tr>
<td>24-27</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>24-27</td>
</tr>
<tr>
<td>28-32</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>28-32</td>
</tr>
</tbody>
</table>

---

% At or Above Benchmark

- English: 80, 66
- Mathematics: 40, 39
- Reading: 56, 50
- Science: 33, 22

---

**ACT**
improveyourself.org
### Table 1.6. Percent of Students in College Readiness Standards Score Ranges

<table>
<thead>
<tr>
<th>CRS Range</th>
<th>English (Benchmark = 18)</th>
<th>Mathematics (Benchmark = 22)</th>
<th>Reading (Benchmark = 22)</th>
<th>Science (Benchmark = 23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-12</td>
<td>18% 13%</td>
<td>1% 1%</td>
<td>10% 8%</td>
<td>7% 7%</td>
</tr>
<tr>
<td>13-15</td>
<td>18% 13%</td>
<td>18% 14%</td>
<td>15% 13%</td>
<td>11% 10%</td>
</tr>
<tr>
<td>16-19</td>
<td>19% 16%</td>
<td>38% 33%</td>
<td>22% 21%</td>
<td>27% 23%</td>
</tr>
<tr>
<td>20-23</td>
<td>25% 25%</td>
<td>20% 19%</td>
<td>25% 24%</td>
<td>31% 30%</td>
</tr>
<tr>
<td>24-27</td>
<td>14% 16%</td>
<td>17% 21%</td>
<td>15% 15%</td>
<td>17% 20%</td>
</tr>
<tr>
<td>28-32</td>
<td>6% 10%</td>
<td>5% 9%</td>
<td>10% 13%</td>
<td>6% 8%</td>
</tr>
<tr>
<td>33-36</td>
<td>2% 5%</td>
<td>1% 3%</td>
<td>3% 5%</td>
<td>1% 2%</td>
</tr>
<tr>
<td>% At or Above Benchmark</td>
<td>55% 64%</td>
<td>33% 44%</td>
<td>39% 44%</td>
<td>30% 36%</td>
</tr>
</tbody>
</table>

### Benchmarks
- English – 18
- Math – 22
- Reading – 22
- Science - 23
Break
(15 minutes)
The Core Practice Framework

ACT College and Career Readiness Benchmarks

High-Quality Instruction

**Theme 1**
Curriculum & 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.

**Theme 2**
Staff Selection, Leadership, & Capacity Building

- Collaborate as a primary means for improving instruction.
- Select and develop teachers to ensure high-quality instruction.
- Provide strong principals, a talented teacher pool, and layered professional development.

**Theme 3**
Instructional Tools: Programs & Strategies

- Use proven instructional tools to support rigorous learning for students.
- Promote strategies and build structures and schedules to support academic rigor.
- Provide evidence- and standards-based instructional tools that support academic rigor for all students.

**Theme 4**
Monitoring Performance & Progress

- Analyze and discuss student performance data.
- Monitor teacher performance and student learning.
- Develop and use student assessment and data management systems to monitor student learning.

**Theme 5**
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.

District Learning Objectives

State Standards/Common Core Standards

ACT College and Career Readiness Standards
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

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher Impact</strong></td>
<td><strong>100%</strong></td>
<td>50%</td>
<td>33.3%</td>
<td>25%</td>
<td>20%</td>
<td>16.6%</td>
<td>14.3%</td>
<td>12.5%</td>
<td>11%</td>
<td>10%</td>
<td>9%</td>
<td>8%</td>
<td>7.7%</td>
</tr>
<tr>
<td><strong>Teacher Accountability</strong></td>
<td>7.7%</td>
<td>15.4%</td>
<td>23.1%</td>
<td>30.8%</td>
<td>38.5%</td>
<td>46.2%</td>
<td>53.9%</td>
<td>61.6%</td>
<td>69.3%</td>
<td>77%</td>
<td>84.7%</td>
<td>92.4%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>School Impact</strong></td>
<td>46.2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td><strong>District Impact</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>100%</strong></td>
<td></td>
</tr>
</tbody>
</table>
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

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.
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

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<td>17</td>
<td>18</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>Reading</td>
<td>Social Sciences</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>22</td>
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<tr>
<td>Science</td>
<td>Biology</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>23</td>
</tr>
</tbody>
</table>

- 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
## College Readiness Standards (continued)

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Mathematics Standards</th>
<th>Probability, Statistics, &amp; Data Analysis</th>
<th>Numbers: Concepts &amp; Properties</th>
</tr>
</thead>
</table>
| 16–19       | ■ Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent  
■ Solve some routine two-step arithmetic problems | ■ Calculate the probability of an event  
■ Compute and interpret measures of central tendency  
■ Find unknown values  
■ Find the probability of an event in a variety of contexts  
■ Gather, organize, and analyze data in a variety of ways  
■ Conduct and interpret experiments, use a variety of counting techniques (e.g., use of diagrams, fundamental counting principle, organized lists), and represent results from data using different formats | ■ Apply elementary number concepts, including identifying and using properties of numbers  
■ Apply elementary number concepts, including understanding properties of numbers |

### Statements that describe what students are likely to know and be able to do...

### And statements that provide suggestions to progress to a higher level of achievement...
College Readiness Standards Activity

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

<table>
<thead>
<tr>
<th>Test</th>
<th>Pages</th>
<th>ACT® Explore®</th>
<th>ACT® Plan®</th>
<th>The ACT®</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>p. 4-5</td>
<td>13</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Math</td>
<td>p. 12-13</td>
<td>17</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>Reading</td>
<td>p. 20-21</td>
<td>16</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>Science</td>
<td>p. 28</td>
<td>18</td>
<td>20</td>
<td>23</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>English Standards</th>
<th>Is it included in your English curriculum?</th>
<th>At what grade level (or in which course) are students first introduced to it?</th>
<th>At what grade level (or in which course) are students expected to demonstrate proficiency?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., then, this time)</td>
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<tr>
<td>Revise sentences to correct awkward and</td>
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<tr>
<td>create obvious logic problems</td>
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<tr>
<td>Use conjunctions or punctuation to join simple clauses</td>
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<tr>
<td>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</td>
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</tr>
<tr>
<td>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</td>
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<tr>
<td>Delete commas that create basic sense problems (e.g., between verb and direct object)</td>
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</tr>
</tbody>
</table>

http://www.act.org/education/statematch/

Classroom Teachers’ Role in Curriculum and Academic Goals

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

A. \( x + y + z \)
B. \( 2(x + y) \)
C. \( \frac{x}{2} \cdot \frac{y}{2} \)
D. 
E. \( xy \)
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. $31 \frac{41}{64}$
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

Exploring the Test Question Analysis Activity Booklet

EXPLORE

TEST QUESTION
ANALYSIS ACTIVITY
BOOKLET

EXPLORE COLLEGE READINESS STANDARDS

Contents

- Description of the Workshop Activity (all four content areas)
- English (essay, selected test questions, and reading, and writing, and mathematics)
- Mathematics (selected test questions, general knowledge, and writing, and reading, and science)
- Reading (selected test questions, general knowledge, and writing, and mathematics)
- Science (selected test questions, general knowledge, and writing, and mathematics)

Page 1

English (essay, selected test questions, and reading, and writing, and mathematics)

Mathematics (selected test questions, general knowledge, and writing, and reading, and science)

Reading (selected test questions, general knowledge, and writing, and mathematics)

Science (selected test questions, general knowledge, and writing, and mathematics)
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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>13–15</strong></td>
<td><strong>16–19</strong></td>
<td><strong>20–23</strong></td>
</tr>
<tr>
<td>201. Perform one-operation computation with whole numbers and decimals</td>
<td>201. Calculate the average of a list of positive whole numbers</td>
<td>201. Recognize equivalent fractions and fractions in lowest terms</td>
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<tr>
<td>202. Solve problems in one or two steps using whole numbers</td>
<td>202. Perform a single computation using information from a table or chart</td>
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<tr>
<td>203. Perform common conversions (e.g., inches to feet or hours to minutes)</td>
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<tr>
<td>301. Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</td>
<td>301. Calculate the average of a list of numbers</td>
<td>301. Recognize one-digit factors of a number</td>
</tr>
<tr>
<td>302. Solve some routine two-step arithmetic problems</td>
<td>302. Calculate the average, given the number of data values and the sum of the data values</td>
<td>302. Identify a digit’s place value</td>
</tr>
<tr>
<td></td>
<td>303. Read tables and graphs</td>
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</tr>
<tr>
<td></td>
<td>304. Perform computations on data from tables and graphs</td>
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<td></td>
<td>305. Use the relationship between the probability of an event and the probability of its complement</td>
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<tr>
<td></td>
<td>401. 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</td>
<td>401. Exhibit knowledge of elementary number concepts including rounding, factors, primes,</td>
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<td></td>
<td>401. Calculate the missing data value, given the average and all data values but one</td>
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<td></td>
<td>402. Translate from one representation of data to another (e.g., a bar graph to a circle graph)</td>
<td></td>
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</tbody>
</table>

ACT improveyourself.org
Guiding Questions for the Test Question Analysis Activity

Guiding Questions for English Workshop Activity

1. 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?

2. 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

1. Read the sample test questions (and their corresponding passage, if applicable).

2. Determine and record the knowledge and skill required by each test question.

### 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
Guiding Questions for the Activity

<table>
<thead>
<tr>
<th>Sample Test Question</th>
<th>Strand(s) College Readiness Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Score Range 24–27</strong></td>
<td></td>
</tr>
<tr>
<td>8. Which of the following lists the fractions $\frac{4}{7}$, $\frac{5}{9}$, and $\frac{2}{3}$ in order from least to greatest?</td>
<td></td>
</tr>
<tr>
<td>F. $\frac{2}{3} &lt; \frac{4}{7} &lt; \frac{5}{9}$</td>
<td></td>
</tr>
<tr>
<td>G. $\frac{4}{7} &lt; \frac{5}{9} &lt; \frac{2}{3}$</td>
<td></td>
</tr>
<tr>
<td>H. $\frac{4}{7} &lt; \frac{2}{3} &lt; \frac{5}{9}$</td>
<td></td>
</tr>
<tr>
<td>J. $\frac{5}{9} &lt; \frac{2}{3} &lt; \frac{4}{7}$</td>
<td></td>
</tr>
<tr>
<td>*K. $\frac{5}{9} &lt; \frac{4}{7} &lt; \frac{2}{3}$</td>
<td></td>
</tr>
</tbody>
</table>

- **Knowledge and Skills:** Knowledge of fractions and relationships of numbers

| 3. Determine which NCP (Numbers: Concepts & Properties) strand(s) and Standards link to each test question. |
| 4. Write the College Readiness Standard Number and the Strand abbreviation. |
Instructional Connections
Instructional Tools: Program & Strategies

- **District Role:**
  Provide evidence- and standards-based 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.
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
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.
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.
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.
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:

1. all teachers are teaching both struggling and higher level students
2. conference periods are spread throughout the school day
3. all subgroups have the opportunity to combine general studies with higher level classes
4. programs are available to students through AVID, honors, and AP courses.
Classroom Teachers’ Role in Instructional Tools: Programs & Strategies

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

- 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: EXPLORE Sample Test Questions by Score Range

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Basic Operations &amp; Applications</th>
<th>Sample Test Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>13–15</strong></td>
<td>Perform one-operation computation with whole numbers and decimals</td>
<td>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?</td>
</tr>
<tr>
<td></td>
<td>Solve problems in one or two steps using whole numbers</td>
<td>A. 125</td>
</tr>
<tr>
<td></td>
<td>Perform common conversions (e.g., inches to feet or hours to minutes)</td>
<td>*B. 130</td>
</tr>
<tr>
<td></td>
<td><strong>16–19</strong> Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</td>
<td>C. 138</td>
</tr>
<tr>
<td></td>
<td>Solve some routine two-step arithmetic problems</td>
<td>D. 180</td>
</tr>
<tr>
<td></td>
<td><strong>20–23</strong> 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</td>
<td>E. 774</td>
</tr>
<tr>
<td></td>
<td>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?</td>
<td>A. 48, 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*B. 60</td>
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<td></td>
<td></td>
<td>C. 68</td>
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<td></td>
<td></td>
<td>D. 72</td>
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<td></td>
<td></td>
<td>E. 84</td>
</tr>
</tbody>
</table>
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

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
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.
### TABLE 2: Item-Response Summary for Mathematics

<table>
<thead>
<tr>
<th>Item Number</th>
<th>A / F</th>
<th>B / G</th>
<th>C / H</th>
<th>D / J</th>
<th>E / K</th>
<th>Omit</th>
<th>Percent of report group selecting each option, by response position</th>
<th>Asterisks mark correct responses.</th>
<th>Percentage difference (report group minus reference group percentage correct)</th>
<th>Report group responded correctly</th>
<th>Item Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Algebra</td>
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<td>31</td>
<td>31</td>
</tr>
<tr>
<td>34</td>
<td>34</td>
</tr>
</tbody>
</table>

Note: Asterisks mark correct responses.
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?
# TABLE 2: Item-Response Summary for Mathematics

<table>
<thead>
<tr>
<th>Item Number</th>
<th>A/F %</th>
<th>B/K %</th>
<th>C/L %</th>
<th>D/E/K %</th>
<th>Omit %</th>
<th>Percentage group correct</th>
<th>Percentage difference (report group minus reference group, percentage correct)</th>
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<tbody>
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<td>Pre-Algebra</td>
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<td>*15</td>
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<tr>
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<td>*12</td>
<td>12</td>
<td>10</td>
<td></td>
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<tr>
<td>23</td>
<td>*25</td>
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<td>10</td>
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<td>10</td>
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</tr>
</tbody>
</table>

**Dramatic Difference from Reference Group Cluster**

**High Percentage Omitted**

**Avg. % Correct**

50%
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 9th grade.
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.
"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

- You correctly answered 29 out of 40 questions.
- You omitted 0 questions.
- You incorrectly answered 11 questions.

Suggestions for improving your skills are based on your scores.

You can:
- George Orwell, James Baldwin, Sandra Cisneros, or Tony Hillerman
- sophisticated essays
- a paper you wrote
- sentences that don’t fit the topic
- compare-contrast papers, using appropriate transition words or phrases
- your paper and mark parts where more information is needed
- in papers (present startling information, a question, main points, etc.); the rest of the paper

Usage
- become familiar with commonly used idioms like "hold your horses"
- check each verb to make sure it matches the subject in number and person, even when other nouns are between them

Correption
- use commas to set off expressions that aren't essential to the sentence (for example, "Bob, in spite of all the bad reviews, wanted to see the movie.")
- delete commas that create unnecessary pauses, as in "He walked[] by quickly."
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 10th 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?

<table>
<thead>
<tr>
<th>Plans After HS</th>
<th>Writing Skills</th>
<th>Read</th>
<th>Study Skills</th>
<th>Math Skills</th>
<th>Speaking</th>
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</table>

<table>
<thead>
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<th>Read</th>
<th>Study Skills</th>
<th>Math Skills</th>
<th>Speaking</th>
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<td>LASTNAME5, FIRSTNAME5</td>
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</table>

Sample data for students' needs.
What Kind of Test Preparation Is Best?

Introduction

The ACT is an achievement test—it indicates what 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 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
Future events: [www.act.org/learningevents](http://www.act.org/learningevents)

Call Customer Service Explore/Plan
877 789 2925
Customer Service for ACT
800 553 6244 ext. 2800

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307-777-8568
Thank you
for all you do to assist educators and students to improve student achievement.

Have a great school year!