



ACT® WORKKEYS® NCRC® CROSSWALK_{to}

BETA

CONNECTING CREDENTIAL
FRAMEWORK

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SYNOPSIS

In early 2017 ACT® and the Corporation for a Skilled Workforce developed a joint project to explore the possibility of a connection between ACT WorkKeys® competencies and the beta Connecting Credentials Framework. This paper is the summary of the findings, including a major product of the project: a crosswalk between WorkKeys and the beta Connecting Credentials Framework. The crosswalk can be used in conjunction with the Framework to (1) determine entry-level WorkKeys scores required for developed programs of study whose learning outcomes have been profiled using the Framework, and (2) connecting the ACT® WorkKeys® National Career Readiness Certificate® [NCRC®] to other credentials that have been profiled using Framework.

BACKGROUND ON THE ACT® WORKKEYS® NATIONAL CAREER READINESS CERTIFICATE® (WorkKeys NCRC®)

The ACT WorkKeys NCRC is the most widely adopted foundational workplace skills credential with over 4 million individuals earning the ACT WorkKeys NCRC over the past 10 years.¹ The ACT WorkKeys NCRC is based on an individual's performance on three WorkKeys skills assessments: Applied Math, Graphic Literacy, and Workplace Documents. WorkKeys assessments measure the workplace skills that impact job performance and measure a range of cognitive skills relevant to various occupations across multiple industries. Successful completion of the WorkKeys assessments can lead to earning an ACT WorkKeys NCRC—a credential that verifies foundational workplace skills. To date, over 15,000 employers recognize the value of the ACT WorkKeys NCRC, and many recommend the credential to candidates.

A minimum level score of 3 on all three assessments is the threshold to qualify for an ACT WorkKeys NCRC. The certificates are awarded in four levels: Bronze [minimum score of 3 on each WorkKeys assessment], Silver [minimum score of 4 on each WorkKeys assessment], Gold [minimum score of 5 on each WorkKeys assessment], and Platinum [minimum score of 6 on each WorkKeys assessment]. The ACT WorkKeys NCRC provides documentation that an individual demonstrates their skill mastery through assessment scores with the specific skills listed on the back of the certificate. When individual skills are aligned to the skills needed for a job, workers tend to learn job-related tasks more quickly, benefit from on-the-job training, and obtain new knowledge and skills. Conferral of this certificate improves career outcomes for everyone, from new entrants to the workforce to longtime employees—and it enhances employers' hiring, training, and promotion decisions.²

BACKGROUND FROM A GUIDE TO USING THE BETA CREDENTIALS FRAMEWORK³

The beta Connecting Credentials Framework uses competencies as common reference points to help understand and compare the levels and categories of knowledge and skills that underlie degrees, certificates, industry certifications, licenses, apprenticeships, badges, and other credentials. The Framework is intended to connect competencies among diverse credentials, instructional and training programs and courses, job descriptions, and much more by using a common proficiency language to help describe what recipients of each credential should know and be able to do, and at what level.

The beta Connecting Credentials Framework was developed with support from Lumina Foundation and is being used in a variety of applications from aligning job descriptions with educational programs/courses, creating stackable credentials and pathways, to aligning credentials, and helping assess skills and competencies.

The beta Connecting Credentials Framework has eight levels that indicate relative complexity, breadth and depth of a competency and is structured into two domains: knowledge and skills. The skills domain has three sub-domains, specialized, personal and social skills. By illustrating the connection between and across multiple credentials, use of the Framework is intended to help make it easier to understand the competencies associated with any credential and the credential's relationship to education, training and work to help stakeholders compare and align various credentials.

DEFINING PROFILING

The beta Connecting Credentials Framework and ACT WorkKeys use the word “profile” in different ways. The Framework defines a profile as a delineation of proficiency levels across knowledge and skill domains for the competencies within a credential. Profiles are the foundation for all Framework applications. ACT WorkKeys profiling⁴ analyzes the tasks and skill levels for specific occupations, jobs, and curriculum and links them to the skills measured by WorkKeys assessments. **For the purposes of this crosswalk project, the beta Connecting Credentials Framework definition of a profile will be used.**

CONNECTING CREDENTIALS FRAMEWORK APPLIED TO WORKKEYS

The Corporation for a Skilled Workforce, supported by Lumina Foundation, is coordinating a Connecting Credentials Campaign. In partnerships with 117 co-sponsors, the campaign is calling for ways to transform our nation's highly diverse and fragmented credentialing system into one that is student-centered and learning-based. Change is needed for several reasons: to ensure educational quality; increase access; better align the work of industry, education and certification/licensure agencies; multiply the benefits of increased attainment; reduce social inequity; and foster individual progress that results in

market-valued credentials. The beta Connecting Credentials Framework is one tool being used to address issues surrounding credentialing.

This project is one of many field tests launched to assess the efficacy of the beta Credentials Framework in practice. A small team of researchers from ACT and CSW conducted the field test.⁵ The field testing consisted of profiling the ACT WorkKeys National Career Readiness Certificate (ACT WorkKeys NCRC) using the beta Connecting Credentials Framework to illustrate the levels of knowledge and skills inherent in the ACT WorkKeys NCRC competency statements. It was designed to determine if the resulting “crosswalk” would allow end users to easily make connections/linkages between the two tools.

For example, an individual who had profiled a course and determined that the learning outcomes all profiled at a Level 4 on the beta Connecting Credentials Framework could use the crosswalk to determine the related level of the ACT WorkKeys NCRC that would indicate readiness of Applied Math, Graphic Literacy and Workplace Documents to be successful in that same course. **The outcome was a remarkably successful crosswalk that cleanly matched WorkKeys assessments to the proficiency levels of the Framework.** The WorkKeys to the beta Connecting Credentials Framework crosswalk is included in this paper.

One of the findings from the analysis was a great deal of congruence between the ACT WorkKeys NCRC and the Framework in terms of the progression of levels for various competency statements. For example, in Workplace Documents the Level 3 ACT WorkKeys NCRC competency statements profiled as a Level 1 on the Framework. Level 4 Workplace Documents statements profiled as a Level 2 on the Framework. Level 5 Workplace Documents statements profiled as Levels 2 and 3 on the Framework. Level 6 Workplace Documents statements profiled as Levels 3 and 4 on the Framework, and Level 7 Workplace Documents statements profiled as Levels 5 and 6 on the Framework. Similar patterns were found for Applied Math and Graphic Literacy. **This result suggests that there is a direct relationship between the WorkKeys leveling model and the proficiency levels of the beta Connecting Credentials Framework.** This relationship provides a basis for being able to make comparisons.

Different levels of the Framework were required for different competencies within some WorkKeys skill levels, usually occurring at the higher-skill levels. This suggests that at the higher WorkKeys skill levels there are more complex activities, processes, or functions that required multiple skills across a broader range of proficiency.

This field testing is a reminder that credentials and their underlying competencies, which are the basis for the analysis and profiling, are often at different levels of specificity. This typically occurs because the intended purposes of different credentials vary. While this variance can make comparing credentials more difficult, it was possible to do a crosswalk with confidence in this field test.

FINDINGS

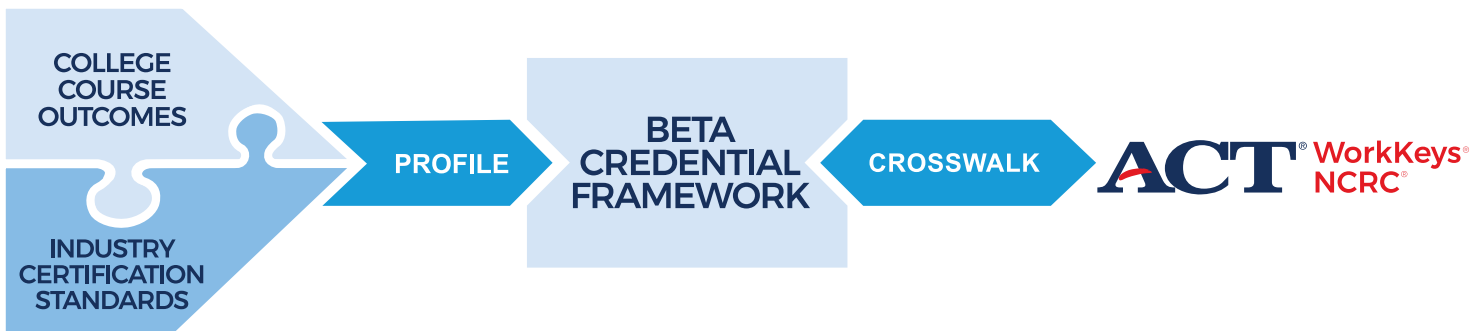
The findings suggest that the “crosswalk” developed between the ACT WorkKeys NCRC and the Beta Credentials Framework will, in fact, allow end users to easily make

connections/linkages between the two tools. The fact that there was a great deal of alignment between the ACT WorkKeys NCRC and the Framework in terms of the progression of levels for various competency statements is encouraging. It suggests a potentially inherent parallel structure between the two tools and provides face validity for the notion of a crosswalk.

In addition, the findings, though limited, suggest validation of the premise of the beta Connecting Credentials Framework as a “connector” or “translator” tool between various types of credentials. By creating the crosswalk between the ACT WorkKeys NCRC and Framework, individuals should be able to navigate between the two without having to conduct profiles on both.



For example, this preliminary field test suggests that an individual who has profiled learning outcomes for a college course or the standards for an industry certification using the beta Connecting Credentials Framework may be able to use the crosswalk to determine the ACT WorkKeys NCRC levels for entry into the program of study.



NEXT LEVEL

The ability to connect WorkKeys as an entry-level assessment for programs of study using the beta Connecting Credentials Framework has potential value to educators, especially those that seek to develop programs where stackable industry credentials are a strategy for achieving the desired outcome. However, ACT has engaged in focus group studies with educators and learned that there is more interest than just using the ACT WorkKeys NCRC as an entry level for various programs of study. The ability to connect the ACT WorkKeys NCRC to employment success is also important. Therefore, aside from using WorkKeys as an entry-level assessment in tandem with the beta Connecting Credentials Framework, educators may want to further leverage ACT Job and Curriculum Profiling to create an even stronger alignment to skills required by employers.

In the hiring process, employers can require specific WorkKeys skills if they have completed a job profile by an ACT-authorized job profiler. During this process, individuals who are proficient at the job participate in the job profile methodology. The profiling participants identify skills and skill levels current and prospective employees need to be successful on the job. Individuals can compare their skill levels to those needed to successfully train for the position. Trainers and trainees can make appropriate decisions about jobs, identify strengths, and set training goals.

More recently, ACT has leveraged its job profiling process to be applicable for profiling curriculum to identify the skill levels required for entrance into a program of study and for program completion. Curriculum alignments facilitate objective discussions between employers and educators to identify courses of action to be taken to update curriculum to meet employer needs. The results from a curriculum profile and a job or occupational profile are the foundation of curriculum alignment. ACT has completed curriculum profiles for the Manufacturing Skills Standards Council's [MSSC] Production Technician and Logistics Technician curriculum programs designed to ensure completers are prepared to earn the respective MSSC credential.⁶

RECOMMENDATIONS

This field study has led to ACT offering additional recommendations regarding future field study work to help improve the operationalization of the beta Connecting Credentials Framework:

1. Connect the beta Connecting Credentials Framework to ACT WorkKeys through independent subject matter experts, compare and discuss their findings, and document recommendations for improvement.
2. Evaluate whether the beta Connecting Credentials system can be used to develop/validate curriculum based upon standard industry credentials that lead to an industry-recognized credential.

REFERENCES

- 1 *Making a Market for Competency-based Credentials*, Corporation for a Skilled Workforce, Retrieved from <http://skilledwork.org/publications/making-a-market/>.
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- 3 *Connecting Credentials: A Beta Credentials Framework*. (2015, May). Lumina Foundation.
- 4 ACT Job Profiling, Retrieved from <http://www.act.org/content/act/en/products-and-services/workkeys-for-educators/job-profiling.html>. ACT, Inc.
- 5 The ACT-CSW Field Study Advisory Committee members:
Cindy Hill, Ph.D., Principal Industrial/Organizational Psychologist, lead researcher, ACT.
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Susan Lupo, Senior Policy Associate, Corporation for a Skilled Workforce.
Audrey Theis, Ph.D., Owner, Key Links.
Dave Wilcox, Ph.D., President and CEO, Global Skills Exchange Corporation.
- 6 ACT & MSSC. (2016, January). *ACT WorkKeys® Curriculum Analysis Report, Manufacturing Skill Standards Council's Certified Logistics Associate (CLA) & Certified Logistics Technician (CLT) Curriculum*. ACT, Inc. Iowa City, IA.

ACT WORKKEYS NCRC TO BETA CONNECTING CREDENTIALS FRAMEWORK CROSSWALK

| ACT WORKKEYS COMPETENCIES | BETA CONNECTING CREDENTIAL FRAMEWORK | | RATIONALE/DISCOVERIES |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------|
| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Applied Math | | | |
| Level 3 Applied Math problems can easily be translated from a word problem to a math equation requiring a single type of math operation. All the needed information is presented in a logical order and there is no extra information given. | | | |
| Solve problems that require a single type of mathematical operation. They add or subtract either positive or negative numbers (such as 10 or -2). They multiply or divide using only positive numbers (such as 10). | 1 | 1 | Fundamental competency of adding, subtracting, multiplying or dividing easy numbers. |
| Convert a familiar fraction (such as $\frac{1}{2}$ or $\frac{1}{4}$ to a decimal) and; OR | 1 | 1 | Practical skill to know .50 is $\frac{1}{2}$ —narrow and limited task. |
| Convert from a decimal to a common fraction. | 1 | 1 | Narrow and limited task. |
| Convert between decimals to percentages (such as 0.75 to 75%). | 1 | 1 | Practical skill to know .75 is 75% is practical skill—limited task. |
| Convert between familiar units of money and time (for example, one hour equals 60 minutes or $\frac{1}{2}$ of a dollar equals \$0.50). | 1 | 1 | Practical skill—need to know there are 60 minutes in an hour. |
| Add the prices of several products to reach a total; able to make the correct change for a customer. | 1 | 1 | Practical skill—fundamental competency—narrow and limited task. |
| Level 4 Applied Math problems may present information out of order and may include extra, unnecessary information; a simple chart, diagram, or graph may be included. | | | |
| Add, subtract, or multiply using positive or negative numbers (such as 10, -2). | 1 | 1 | General knowledge—Practical skill—narrow and limited task. |
| Divide positive numbers (such as 10). | 1 | 1 | General knowledge—Practical skill—narrow and limited task. |
| Figure out the average or mean of a set of numbers (such as $\frac{10+11+12}{3}$). For this they use whole numbers and decimals. | 2 | 2 | Basic knowledge and skill—correlations among different things—individual numbers and average of them. |
| Figure out simple ratios (such as $\frac{3}{4}$). | 2 | 2 | Basic knowledge and skill—correlations among different things. |
| Figure out simple proportions (such as $\frac{10}{100}$ cases). | 2 | 2 | Basic knowledge and skill—correlations among different things. |

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| ACT WORKKEYS COMPETENCIES | BETA CONNECTING CREDENTIAL FRAMEWORK | | RATIONALE/DISCOVERIES |
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| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Applied Math | | | |
| Figure out rates (such as 10 mph). | 2 | 2 | Basic knowledge and skill— correlations among different things. |
| Add commonly known fractions, decimals, or percentages (such as $\frac{1}{2}$, .75, or 25%). | 2 | 2 | Basic knowledge and skill— correlations among different things. |
| Add and subtract fractions that share a common denominator (such as $\frac{1}{8} + \frac{3}{8} + \frac{7}{8}$). | 2 | 2 | Basic knowledge and skill— correlations among different things. |
| Multiply a mixed number (such as $12\frac{1}{8}$) by a whole number or decimal. | 2 | 2 | Basic knowledge and skill— correlations among different things. |
| Put the information in the right order before performing calculations. For example, figure out sales tax or a sales commission on a previously calculated total, then find out rates of use or business flow. | 2 | 2 | Basic and practical skill to carry out routine tasks. |
| In Level 5 Applied Math problems, the information may not be presented in logical order; the item may contain extraneous information; it may contain a chart, graph, or diagram; and the mathematical set-up may be complicated. In solving, the test taker may need to perform multiple operations. For example, at this level employees may complete an order form by totaling an order and then computing tax. | | | |
| Decide what information, calculations, or unit conversions to use to find the answer to a problem. | 3 | 3 | Tasks become less structured with some degree of complexity and subject to conditions or changes—problem solving required—identifying and using relevant methods to solve problems. |
| As part of a multiple-step problem, the employee may have to find one value and use it to find another value that answers the question. | 3 | 3 | Tasks become less structured with some degree of complexity and are subject to conditions or changes—problem solving required—identifying and using relevant methods to solve problems. |
| Add and subtract fractions with unlike denominators (such as $\frac{1}{2} - \frac{1}{4}$). | 2 | 3 | Knowledge is still fairly basic, but the application (skill) is higher/more complex. |

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| ACT WORKKEYS COMPETENCIES | BETA CONNECTING CREDENTIAL FRAMEWORK | | RATIONALE/DISCOVERIES |
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| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Applied Math | | | |
| Convert units within or between systems of measurement (e.g., time, measurement, and quantity) where the formula is provided, such as converting from ounces to pounds or from centimeters to inches. | 3 | 3 | Less structured—Must identify the correct formula (relevant method) to arrive at the pre-stipulated answer. |
| Solve problems that require mathematical operations—using mixed units, such as adding 3.50 hours and 4 hours 30 minutes or subtracting 3 feet and 10 inches from 6 feet and 4 inches. | 3 | 3 | Tasks become less structured with some degree of complexity and subject to conditions or changes—problem solving required—identifying and using relevant methods to solve problems. |
| Identify the best deal by doing one- and two-step calculations and then comparing the results to determine the solution that meets the stated conditions. | 3 | 4 | Tasks become less structured with some degree of complexity and subject to conditions or changes—problem solving required—evaluating results in accordance with pre-stipulated criteria—selecting alternative actions. |
| Calculate perimeters, circumference, and areas of basic shapes like rectangles and circles. | 3 | 3 | Less structured—Must identify the correct formula (relevant method) to arrive at the pre-stipulated answer. |
| Calculate a given percentage of a given number, then use that percentage to determine the solution (e.g., find the total cost of a product after calculating discount, markup, or tax). | 2 | 3 | Knowledge is basic—Tasks become less structured with some degree of complexity and subject to conditions or changes—problem solving required—must identify and use relevant methods to solve problems. |
| Identify where a mistake occurred in a calculation (such as identifying the row in a spreadsheet where a problem occurred). | 2 | 3 | Knowledge is basic—evaluate results in accordance with pre-stipulated criteria—problem solving required—must identify and use relevant methods to solve problems. |
| Level 6 Applied Math problems may require considerable translation from verbal form to mathematical expression. They generally require considerable setup and involve multiple-step calculations. | | | |
| Use fractions with unlike denominators and calculate reverse percentages. | 3 | 4 | Knowledge is still fairly basic, but the application (skill) is higher/more complex. |

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| ACT WORKKEYS COMPETENCIES | BETA CONNECTING CREDENTIAL FRAMEWORK | | RATIONALE/DISCOVERIES |
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| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Applied Math | | | |
| Convert units within or between systems of measurement (e.g., time, measurement, and quantity) where multiple-step conversions are required and the formulas are provided; such as converting from kilometers to meters to feet. | 4 | 4 | Must process complex tasks which are subject to change depending on problem—can be unfamiliar conversions. |
| Identify why a mistake occurred in a solution. | 4 | 4 | Evaluate work—selects alternative actions. |
| Find the best deal and use the result for another calculation. | 3 | 4 | Tasks become less structured with some degree of complexity and subject to conditions or changes—problem solving is required, along with evaluation of results in accordance with pre-stipulated criteria—able to select alternative actions. |
| Find the area of basic shapes (rectangles and circles) when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations. | 4 | 4 | Tasks become less structured with some degree of complexity and subject to conditions or changes—problem solving is required, along with evaluation of results in accordance with pre-stipulated criteria—able to select alternative actions. |
| Find the volume of rectangular solids. | 3 | 4 | Must select correct formula and use more advanced math skills. |
| Calculate rates, productions rates, or rate by time (such as, production rate is 59 cups produced per hour, how many will be produced in an 8-hour shift). | 4 | 4 | Is often specialized depending on occupation/industry—often looking for patterns to identify problems. |
| Identify the correct equation for solving a problem. | 4 | 4 | Can require processing of a complex task to identify and apply the correct equation. |
| At Level 7 Applied Math problems may be presented in an unusual format and the information presented may be incomplete or require the employee to make an assumption. Tasks often involve multiple steps of logic and calculation, and multiple operations. | | | |
| Solve problems that include ratios, rates, or proportions with at least one of the quantities related to a fraction. | 4 | 5 | If presented with incomplete information, one has to select and apply core theories and practices to even figure out what to do. |

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| ACT WORKKEYS COMPETENCIES | BETA CONNECTING CREDENTIAL FRAMEWORK | | RATIONALE/DISCOVERIES |
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| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Applied Math | | | |
| Identify the reason for the mistake. | 5 | 5 | Have to identify the mistake and then figure out why it was made and how to correct it—deeper understanding. |
| Convert between units of measurement that involve fractions, mixed numbers, decimals, or percentages. | 4 | 4 | Can require processing of complex tasks and subject to change depending on problem—can be unfamiliar conversions. |
| Find the area of multiple shapes or find the area of a composite shape. | 5 | 5 | Tasks have little structure and are complex—problem solving is required—evaluating results in accordance with pre-stipulated criteria—selecting alternative actions. |
| Calculate volumes of spheres, cylinders, or cones. | 4 | 4 | Must select correct formula and use more advanced math skills. |
| Calculate the volume when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations. | 5 | 5 | Advance competency required because of the need for integration and deeper knowledge in order to set up the problems and identify missing information; determine which calculations to perform to get missing information to solve the problem. |
| Set up and manipulate ratios, rates, or proportions where at least one of the quantities is a fraction. | 4 | 5 | Math isn't that much more difficult than at a lower level, but the problem will require an integration of knowledge and experience and then apply it to a complex task. |
| Determine the better economic value of several alternatives by using graphics or by finding a percentage difference or a unit cost. | 5 | 5 | Comprehensive task—select and apply appropriate theoretical and practical skills—problem solving is required along with identifying and framing complex problems to evaluate. |
| Apply basic statistical concepts; for example, calculate the weighted mean, interpret measures of central tendency, or interpret measure of spread and tolerance. | 5 | 6 | High degree of complexity is required and there are frequent changes—integration of scientific principles and practical application needed—use of a range of methods—situations will be very complex. |

ACT WORKKEYS NCRC TO BETA CONNECTING CREDENTIALS FRAMEWORK CROSSWALK

| ACT WORKKEYS COMPETENCIES | BETA CONNECTING CREDENTIAL FRAMEWORK | | RATIONALE/DISCOVERIES |
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| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Graphic Literacy | | | |
| Level 3 Workplace Graphics are common with familiar content, and are of simple, or low moderate difficulty. Characteristics of simple graphics include a limited amount of data, one level of data, one or two variables, and if there are axes, there will be one or two. Characteristics of low moderate graphics include a moderate amount of data, usually more than one level of data with nesting unlikely, several variables, and if there are axes, there will be one or two. If two simple graphics are required to solve a problem, they should be considered a low moderate graphic. | | | |
| Locate information using simple graphics or graphics of low moderate difficulty. | 1 | 1 | Basic knowledge—repetitive and routine tasks. |
| Identify the next or missing step in a process using simple graphics or graphics of low moderate difficulty. | 1 | 1 | Basic knowledge—repetitive and routine tasks. |
| Level 4 Workplace Graphics may be basic order forms, diagrams, line graphs, tables, flowcharts, instrument gauges, or maps of low or high moderate difficulty. See previous description of low moderate graphics. High moderate graphics may be less common, the content may be less familiar, and have the following characteristics: a moderate amount of data, more than one level of data; nesting allowed, and many variables. If there are axes, there will be one or two. If a low moderate graphic and a simple graphic or another low moderate graphic are required to solve a problem, the combination should be considered a high moderate graphic. | | | |
| Locate information using graphics of high moderate difficulty. | 1 | 2 | Routine task, but the graphic includes content that is less familiar and is presented in an uncommon graphic format. |

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| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Graphic Literacy | | | |
| Identify the next or missing step in a process using graphics of high moderate difficulty. | 1 | 2 | Routine task, but the graphic includes content that is less familiar and is presented in an uncommon graphic format. |
| Locate information in a graphic using information found in another graphic (graphics of low moderate difficulty). | 2 | 2 | Basic knowledge, but have to understand how two different graphics relate to each other. |
| Make an inference or decision using a graphic of low moderate difficulty. | 2 | 2 | Establishes correlations among functions and tasks—pre-stipulated criteria. |
| Identify a trend/pattern/relationship using a graphic of low moderate difficulty. | 2 | 2 | Establishes correlations among functions and tasks—pre-stipulated criteria. |
| Compare two or more pieces of information using a graphic of low moderate difficulty. | 2 | 2 | Establishes correlations among functions and tasks—pre-stipulated criteria. |
| Identify the graphic that accurately represents the data using graphics of low moderate difficulty. | 2 | 2 | Establishes correlations among functions and tasks—pre-stipulated criteria, but have to understand how different graphics relate to each other. |
| Level 5 Workplace Graphics may be of low moderate, high moderate, or difficult complexity. See previous description of low and high moderate graphics. Difficult graphics are likely to be less common or a composite of graphics with less familiar content, and have the following characteristics: data presented is dense, more than one level of data with nesting likely, and many variables. If there are axes, there may be two or more. If a high moderate graphic is used with either a simple, a low moderate, or a high moderate graphic to solve a problem, the combination of graphics should be considered a difficult graphic. | | | |
| Locate information using difficult graphics. | 3 | 3 | Routine task, but the graphic type is uncommon and includes content that is less familiar. |
| Identify the next or missing step in a process using difficult graphics. | 3 | 3 | Routine task, but the graphic type is uncommon and includes content that is less familiar. |

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| ACT WORKKEYS COMPETENCIES | BETA CONNECTING CREDENTIAL FRAMEWORK | | RATIONALE/DISCOVERIES |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Graphic Literacy | | | |
| Locate information in a graphic using information found in another graphic (graphics of high moderate difficulty). | 3 | 3 | Presented with unfamiliar types of graphics and have to identify how to complete the task, and understand how two different graphics relate to each other. |
| Make an inference or decision using a graphic of high moderate difficulty. | 3 | 3 | Presented with unfamiliar types of graphics and have to establish correlations among functions and tasks—pre-stipulated criteria. |
| Identify a trend/pattern/relationship using a graphic of high moderate difficulty. | 3 | 3 | Presented with unfamiliar types of graphics and have to establish correlations among functions and tasks—pre-stipulated criteria. |
| Compare two or more pieces of information using a graphic of high moderate difficulty. | 3 | 3 | Presented with unfamiliar types of graphics and have to establish correlations among functions and tasks—pre-stipulated criteria. |
| Identify the graphic that accurately represents the data using graphics of high moderate difficulty. | 3 | 3 | Presented with unfamiliar types of graphics and have to establish correlations among functions and tasks—pre-stipulated criteria. |
| Compare two or more trends/patterns/relationships using a low moderate graphic. | 2 | 3 | Evaluate results in accordance with criteria that are pre-stipulated—problem solving and identification of relevant methods—well-defined problems with a measure of complexity using common graphics. |
| Interpret a trend/pattern/relationship using a low moderate graphic. | 2 | 3 | Evaluate results in accordance with criteria that are pre-stipulated—problem solving and identification of relevant methods—well-defined problems with a measure of complexity using common graphics. |
| Justify an inference or decision based on information using a low moderate graphic. | 2 | 3 | Presented with common graphics and have to establish correlations among functions and tasks—pre-stipulated criteria. |
| Make a reasonable inference or decision based on one graphic after finding information in another graphic using a low moderate graphic. | 2 | 3 | Evaluate results in accordance with criteria that are pre-stipulated—problem solving and identification of relevant methods—well-defined problems with a measure of complexity using common graphics. |

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|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Graphic Literacy | | | |
| Identify and/or justify the most effective graphic for a task using a low moderate graphic. | 2 | 3 | Presented with common graphics and have to establish correlations among functions and tasks—pre-stipulated criteria. |
| Level 6 Workplace Graphics will be difficult or of high moderate difficulty. See previous description of difficult graphics. | | | |
| Compare two or more trends/patterns/relationships using a high moderate graphic. | 4 | 4 | Evaluate results in accordance with criteria that are pre-stipulated—problem solving and identification of relevant methods—well-defined problems with a measure of complexity using uncommon graphics. |
| Interpret a trend/pattern/relationship using a high moderate graphic. | 4 | 4 | Evaluate results in accordance with criteria that are pre-stipulated—problem solving and identification of relevant methods—well-defined problems with a measure of complexity using uncommon graphics. |
| Justify an inference or decision based on information using a high moderate graphic. | 4 | 4 | Autonomous—identifying and using relevant methods and skills—evaluates results against pre-stipulated criteria. |
| Make a reasonable inference or decision based on one graphic after finding information in another graphic using a high moderate graphic. | 4 | 4 | Autonomous—identifying and using relevant methods and skills—evaluates results against pre-stipulated criteria. |
| Identify and/or justify the most effective graphic for a task using a high moderate graphic. | 4 | 4 | Presented with uncommon graphics and have to establish correlations among functions and tasks—pre-stipulated criteria. |
| Locate information in a graphic using information found in another graphic (graphics are difficult). | 3 | 4 | Presented with uncommon types of graphics with unfamiliar content and have to identify how to complete the task, and understand how two different graphics relate to each other. |
| Make an inference or decision using a difficult graphic. | 3 | 4 | Presented with unfamiliar types of graphics and have to establish correlations among functions and tasks—pre-stipulated criteria. |
| Identify a trend/pattern/relationship using a difficult graphic. | 4 | 4 | Presented with unfamiliar types of graphics and have to establish correlations among functions and tasks—pre-stipulated criteria. |

ACT WORKKEYS NCRC TO BETA CONNECTING CREDENTIALS FRAMEWORK CROSSWALK

| ACT WORKKEYS COMPETENCIES | BETA CONNECTING CREDENTIAL FRAMEWORK | | RATIONALE/DISCOVERIES |
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| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Graphic Literacy | | | |
| Compare two or more pieces of information using a difficult graphic. | 4 | 4 | Plan and design appropriate approaches to then evaluate—select alternative actions based on observations of reciprocal effects on other areas or tasks. |
| Identify the graphic that accurately represents the data using difficult graphics. | 4 | 4 | Plan and design appropriate approaches to then evaluate—select alternative actions based on observations of reciprocal effects on other areas or tasks. |
| Level 7 Workplace Graphics will be difficult. See previous description of difficult graphics. | | | |
| Compare two or more trends/patterns/relationships using a difficult graphic. | 4 | 5 | Evaluate results in accordance with criteria that are pre-stipulated—problem solving and identification of relevant methods—well-defined problems with a measure of complexity using uncommon graphics and content that is unfamiliar. |
| Interpret a trend/pattern/relationship using a difficult graphic. | 4 | 5 | Evaluate results in accordance with criteria that are pre-stipulated—problem solving and identification of relevant methods—well-defined problems with a measure of complexity using uncommon graphics and content that is unfamiliar. |
| Justify an inference or decision based on information using a difficult graphic. | 5 | 5 | Autonomous—identify and use relevant methods and skills—evaluate results against pre-stipulated criteria using uncommon graphics and content that is unfamiliar. |
| Make a reasonable inference or decision based on one graphic after finding information in another graphic using a difficult graphic. | 5 | 5 | Autonomous—identify and use relevant methods and skills—evaluate results against pre-stipulated criteria using uncommon graphics and content that is unfamiliar. |
| Identify and/or justify the most effective graphic for a task using a difficult graphic. | 5 | 5 | Autonomous—identify and use relevant methods and skills—evaluate results against pre-stipulated criteria using uncommon graphics and content that is unfamiliar. |

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| | KNOWLEDGE | SPECIALIZED SKILLS | |
| WorkKeys Workplace Documents | | | |
| Using WorkKeys Level 3 Workplace Documents that are short, with no extra information, where all information is stated clearly and directly using short sentences and common, everyday, and workplace words; contain a small number of clearly stated details. | | | Fundamental competency to complete narrow and limited task/basic cognitive and practical skill required to carry out tasks with stipulated rules. |
| Find the main ideas and clearly stated details. | 1 | 1 | General knowledge; recognize elementary relationships between assignments and task. |
| Choose when to perform each step in a series of short steps. | 1 | 1 | Narrow limited task; basic—required to carry out tasks with stipulated rules. |
| Apply information/instructions to a situation that is the same as the one they are reading about (such as knowing what button to push first after reading instructions on how to run a copy machine). | 1 | 1 | Narrow limited task; following a routine, predictable set of skills with minimal unpredictability. |
| Using WorkKeys Level 4 Workplace Documents that are straightforward with some long sentences and contain a number of details; includes common words, but also some harder words; describes procedures with several steps, and includes conditionals that affect what should be done (e.g., if-then). | | | |
| Identify the main idea and details that may not be clearly stated. | 2 | 2 | This is at Framework Level 2 because the materials may also be more complex (not just that the main idea and details may not be clearly stated). |
| Use the reading material to figure out the meaning of words that are not defined for them (not jargon or technical terms). | 2 | 2 | An understanding of the field of work is required in order to figure out what the word means in that context. |
| Apply information/instructions to a situation that is the same as the situation in the reading materials. | 2 | 2 | This also appears at Workplace Documents Level 3, but a higher framework level is set because they are working with more complex documents. Conditionals can be considered pre-stipulated criteria. |
| Choose what to do when changing conditions call for a different action. | 2 | 2 | Evaluate the results of such tasks in accordance with pre-stipulated criteria and establish correlations among functions and tasks. |

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| WorkKeys Workplace Documents | | | |
| Using WorkKeys Level 5 Workplace Documents that have complex sentences and/or contain conditional situations; technical terms, jargon, acronyms, or words that have several meanings; the information is generally stated directly, but it is hard to find because there are so many details and some may be extraneous. | | | Because the materials have conditional situations they are subject to some change. They must have some extended knowledge in order to figure out the meaning of technical terms, jargon acronyms, or words with several meanings. |
| Figure out the appropriate meaning of a word based on how the word is used. | 2 | 2 | They have to understand the field of work in order to figure out what the word means in that context. |
| Identify the appropriate meaning of a technical term, jargon, or acronym that is defined in the document. | 2 | 2 | They have to understand the field of work in order to figure out what the word means in that context. |
| Apply technical terms and jargon to stated situations. | 2 | 2 | They have to understand the field of work in order to figure out what the word means in that context. |
| Apply information/instructions to a new situation that is similar to the one described in the material while considering changing conditions. | 3 | 3 | Well-defined technical tasks that are less structured and non-routine. Some degree of complexity and activity is subject to some change. They must have a broader range of skills because they are having to apply it to a new situation that is similar. |
| Apply complex information/instructions that include conditionals to situations described in the materials. | 3 | 3 | Well-defined technical tasks that are less structured and non-routine. Some degree of complexity and activity is subject to some change. They must have a broader range of skills because they are having to evaluate results in accordance with pre-stipulated conditions. |
| Make some inferences to accomplish their goals. | 3 | 3 | |
| Using WorkKeys Level 6 Workplace Documents that have mostly complicated sentences; some may be long and/or complex and/or contain conditional situations; has implied and/or extraneous details with difficult words, jargon, and technical terms where most of the information is not clearly stated, and the meanings may need to be determined from context. | | | |

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| WorkKeys Workplace Documents | | | |
| Infer implied details. | 3 | 3 | Requires extended knowledge—limited range, but enough to infer details when they are implied. |
| Infer the meaning of an acronym, jargon, or technical term from context. | 3 | 3 | They have to understand the field of work in order to figure out what the word means in that context. More complex context since documents are normally legal and regulatory in nature and are unique so there is a need to be able to infer the meaning based on this more complex document/context. |
| Apply information/instructions to a situation not directly described or to a completely new situation. | 4 | 4 | Completely new situation = comprehensive knowledge to determine a solution with unfamiliar patterns—problems are not well-defined. |
| Apply principles inferred in a passage to a situation not directly described or to a completely new situation. | 4 | 4 | Deeper understanding of principles not just in fixed context—and one they haven't been exposed to before. Requires theoretical knowledge and skills to select appropriate principles and procedures—apply principles inferred to a new situation. |
| Identify the rationale behind a procedure, policy, or communication. | 4 | 4 | Requires comprehensive theoretical knowledge and skills to select appropriate principles and procedures. |
| Using WorkKeys Level 7 Workplace Documents that have a lot of details; some may be implied or extraneous, and the concepts are complicated; may cover uncommon topics (concepts) and/or contain conditional situations with advanced, unfamiliar, and/or uncommon words, technical terms, and jargon; the meanings must be determined from context, not clearly stated; pieces of information may be spread throughout the document and may be extraneous. | | | |
| Infer the meaning of an acronym, jargon, or technical terms from context. | 4 | 4 | An understanding of the field of work is needed in order to figure out what the word means in that context. Have to select alternatives. |

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| WorkKeys Workplace Documents | | | |
| Apply principles inferred from the materials to a situation not directly described or to a completely new situation. | 5 | 5 | In order to apply principles, you must have theoretical knowledge and practical skills. |
| Identify the rationale behind an entire document or a section of a document. | 5 | 5 | Plans, designs, and evaluates—applies rationale when presented with problem and has to apply rationale because it doesn't tell you what to do. |
| Infer implied details. | 4 | 4 | Extended knowledge needed—have to understand the field of work in order to infer details when they are implied. |



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