

Appendix B: O*NET KSAs with Importance Ratings of 50 or Above

Note: Importance ratings of KSAs are obtained by asking knowledgeable individuals to rate how important each KSA is to work performance. Ratings are converted to standardized scores such that a value of 50 indicates the KSA is important to the occupation being evaluated.

	KSA Definitions	Automotive master mechanics	Bookkeeping, auditing, accounting clerks	Civil engineering technicians	Computer support specialists	Customer service representatives	Dental hygienists	Electrical engineering technician	Electrician	Hairdressers, hairstylists, and cosmetologists	Licensed practical and licensed vocational nurses	Medical records and health information technician	Nursing aides, orderlies, and attendants	Paralegals and legal assistants	Pharmacy technicians	Plumber	Police patrol officers	Preschool teachers, except special education	Radiologic technologists	Real estate sales agents	Registered nurses
Most Relevant: Knowledge																					
Mathematics	Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.	48	68	72	40	33	25	62	70	34	59	29	36	40	68	67	38	30	57	53	58
English Language	Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.	54	67	50	69	65	64	67	57	55	75	63	60	91	66	56	82	63	75	69	75
Most Relevant: Skills																					
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	91	81	73	72	82	78	74	53	66	72	56	53	91	74	60	60	74	47	81	69
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	81	71	67	75	87	86	71	60	86	75	56	60	69	87	63	75	81	60	93	75
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	70	62	57	66	63	68	50		50	56			65	55		53	69		62	63
Speaking	Talking to others to convey information effectively.	76	60	70	75	74	83	67	53	72	75	53	50	64	82	56	63	75	66	85	72
Mathematics	Using mathematics to solve problems.	66	84	76	35	46	27	75	50	45	38	28	31	43	71	35	28	33	35	69	41
Science	Using scientific rules and methods to solve problems.						60														
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	90	69	71	69	60	72	74	60	59	72	50	56	56	53	66	69	62		53	69
Most Relevant: Abilities																					
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	56	69	69	78	78	69	66	63	72	78	63	60	81	72	63	69	66	69	75	75
Written Comprehension	The ability to read and understand information and ideas presented in writing.	53	69	63	72	63	56	63	56		66	56	53	81	69	60	60	60	50	66	72
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	53	66	69	78	75	69	60	60	66	75	63	63	81	66	60	75	75	66	75	72
Written Expression	The ability to communicate information and ideas in writing so others will understand.		69	63	69	66	60	56			60	50		75		50	56	56		60	69
Mathematical Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	28	66	63	38	38	28	38	53	38	47	31	38	35	56	35	28	25	38	50	47
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.		60	53											56						
Other: Knowledge																					
Administration and Management	Knowledge of business and management principles involved in strategic planning, resource allocation, human resources modeling, leadership technique, production methods, and				50				67		50					51					
Clerical	Knowledge of administrative and clerical procedures and systems such as word processing, managing files and records, stenography and transcription, designing forms, and other office procedures and terminology.		76		56	65						80		78	56		51		55	55	

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Economics and Accounting	Knowledge of economic and accounting principles and practices, the financial markets, banking and the analysis and reporting of financial data.		63																		
Sales and Marketing	Knowledge of principles and methods for showing, promoting, and selling products or services. This includes marketing strategy and tactics, product demonstration, sales techniques, and sales control systems.																			89	
Customer and Personal Service	Knowledge of principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.	62	62		88	77	75		66	63	83	63	64	52	88	60	71	73	87	88	83
Production and Processing	Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.							53													
Computers and Electronics	Knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.	64	51	52	95			84	53		50			59	59				63	55	
Engineering and Technology	Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.	65		72	50			80	62												
Design	Knowledge of design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models.			68				63	68						62						
Building and Construction	Knowledge of materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures such as highways and roads.			78					72						83						
Mechanical	Knowledge of machines and tools, including their designs, uses, repair, and maintenance.	90						63	79						82						
Physics	Knowledge and prediction of physical principles, laws, their interrelationships, and applications to understanding fluid, material, and atmospheric dynamics, and mechanical, electrical, atomic and sub-atomic structures and processes.								55						52			64			
Chemistry	Knowledge of the chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.									52											50
Biology	Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.										51										66

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Psychology	Knowledge of human behavior and performance; individual differences in ability, personality, and interests; learning and motivation; psychological research methods; and the assessment and treatment of behavioral and affective disorders.						64				82		58				75	69		53	80	
Sociology and Anthropology	Knowledge of group behavior and dynamics, societal trends and influences, human migrations, ethnicity, cultures and their history and origins.																58					58
Medicine and Dentistry	Knowledge of the information and techniques needed to diagnose and treat human injuries, diseases, and deformities. This includes symptoms, treatment alternatives, drug properties and interactions, and preventive health-care measures.						91				90		57		56				80			91
Therapy and Counseling	Knowledge of principles, methods, and procedures for diagnosis, treatment, and rehabilitation of physical and mental dysfunctions, and for career counseling and guidance.										67											67
Education and Training	Knowledge of principles and methods for curriculum and training design, teaching and instruction for individuals and groups, and the measurement of training effects.						59		54		60						57	68	52			71
Public Safety and Security	Knowledge of relevant equipment, policies, procedures, and strategies to promote effective local, state, or national security operations for the protection of people, data, property, and institutions.			55					52								91	50				56
Law and Government	Knowledge of laws, legal codes, court procedures, precedents, government regulations, executive orders, agency rules, and the democratic political process.													88			88			63		
Telecommunications	Knowledge of transmission, broadcasting, switching, control, and operation of telecommunications systems.				61				55								60					
Other Skills																						
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	93	68	73	56	71	78	71	56	63	60		53	62	80	50	56	57		57	60	
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	76	65	55		66	60	68		65	53				56			70		52	50	
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	62			56	74	52	67	53	56	66	50	60	51	54	56	66	62	56	59	66	
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.		63		53	60	72			70	66		66		51	50	66	68	56	63	81	
Coordination	Adjusting actions in relation to others' actions.	70		65	53	57	70	63	50	70	69		56	59	54	50	60	56	56	73	72	
Persuasion	Persuading others to change their minds or behavior.						60										60				50	
Negotiation	Bringing others together and trying to reconcile differences.																60	56		85		

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Instructing	Teaching others how to do something.	70	53	57	56	51	69	62	53		56				77	50					56
Service Orientation	Actively looking for ways to help people.				53	73	59	62		57	69		63		80	50	60	60	60	67	69
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	87		66	63			63	56		60					60	50			51	56
Operations Analysis	Analyzing needs and product requirements to create a design.							58		55											
Technology Design	Generating or adapting equipment and technology to serve user needs.	58						56													
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	94					62	68	50	61						50					
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	87						66	53												
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	64							60							56				56	50
Operation and Control	Controlling operations of equipment or systems.	62						65	50							53				60	
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	76						54	56												
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	98						79	66							53					
Repairing	Repairing machines or systems using the needed tools.	95						68	63							53					
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	58							60							56					50
Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	65		59	56		57	62	56	53	66		50	50		56	56	53	50	59	63
Systems Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.				50			56													50
Time Management	Managing one's own time and the time of others.	73	73	70	60	74	75	65	50	72	66	50	50	70	60	53		65	50	87	50
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.		58																	51	
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.									50											
Management of Personnel Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.								50												
Other Abilities																					
Fluency of Ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).								50	60								63		50	
Originality	The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.			50						66								66			
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	72	63	63	63	63	69	69	75	56	78	50	63	60	66	69	78	69	60	56	81
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	63	53	63	63	60	53	66	66	50	66	50	53	60	60	66	72	60	56	56	72

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Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	63	53	53	60	56	56	60	63	50	63		50	56	50	63	69	53		53	78
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	63	56	56	66	56	50	50	63		60	56	53	63	63	56	60	53	60	63	72
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	50	53	53	56				53		53	53		60	63		50	53	53	53	63
Memorization	The ability to remember information such as words, numbers, pictures, and procedures.	50																			
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.																53				53
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	63							53		50			53	50	53	66		53		60
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	60			50				56				50		53	53	63		53		56
Visualization	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	60		63				50	63	63						60			50		
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	53	53	53	56	50	50		53	56	56				50	50	69	50	50		60
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).										50						60				53
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	72					63	50	66	78	60		56		50	72	53		60		56
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	69					60		69	78			53			63	50		53		53
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	72			50		66	53	66	75	50	50	56		50	72	50		56		56
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	72					50		50							69	53		56		
Multilimb Coordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	69							63	56	50		53			69	56		56		

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Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.	50															53				
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	60							50								66				
Speed of Limb Movement	The ability to quickly move the arms and legs.																50				
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.								50		56		60			53					
Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	56							53	60	56		56			50					53
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.												50								50
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	63							53				53			66					
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.								50												
Near Vision	The ability to see details at close range (within a few feet of the observer).	69	66	72	66	63	66	69	66	66	63	63	63	66	75	66	66	53	63	53	66
Far Vision	The ability to see details at a distance.	50		53					56				50		50		66			56	56
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	56							69	56			50		50						50
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.								50							56	50				
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	66															50				
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	50									50										
Sound Localization	The ability to tell the direction from which a sound originated.	50																			
Speech Recognition	The ability to identify and understand the speech of another person.	50	56	56	63	72	60		53	66	72	60	60	63	66	53	63	69	56	66	69
Speech Clarity	The ability to speak clearly so others can understand you.	50	53	60	63	75	60		53	60	78	53	56	66	60	56	66	72	56	69	69