



Update on Math/Calculator Needs and Requirements Assessment

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Purpose

- Conduct a needs and requirements assessment to determine *whether a test assessing math content with a calculator is warranted* and, if so, use findings to inform what the taxonomy/blueprint would be.

Bottom Line Up Front (BLUF)

- Based on the sample of training courses and occupations in the needs assessment, there are no types of math where calculator use is a *prerequisite* for successful performance in training or on the job *across all types of occupations*.
 - The relatively *few* types of math where calculator use is a *prerequisite* for successful performance are primarily limited to three clusters of occupations:
 - Logistics and Administration
 - Science and Engineering
 - Medical
- The target sample was selected purposefully to include a range of occupations, including some with intensive math requirements. Due to limited participation in specific occupational areas and in some Services, the sample is not as robust as planned. We are working with the Services to augment the sample.

Procedures

- Administered Needs Assessment on HumRRO platform from June 2024 – October 2024
 - Types of math needed in training and role of calculators
 - Types of math needed on-the-job and role of calculators
- Met with MAPWG technical and policy reps to identify training staff and occupational managers across Services to receive the online Needs Assessment
 - Based on the 2022 Training Relevance Survey sample, the Needs Assessment sample includes training courses and occupations covering a variety of content, including some with intensive math requirements (e.g., Air Force Precision Measurement Equipment Laboratory 2POX1)
 - In September, additional training courses and occupations were added for more representation in some job clusters

Procedures (cont.)

- Averaged responses from same training course or occupation to equally weight each training course/occupation represented
- Clustered responses into eight areas to summarize data:
 - Electrical
 - Infantry and Combat
 - Information Technology
 - Intelligence
 - Logistics and Administration
 - Mechanical
 - Medical
 - Science and Engineering

Results: Training Needs Assessment Responses

Service	Electrical	Infantry and Combat	Information Technology	Intelligence	Logistics and Administration	Mechanical	Medical	Science and Engineering	Overall
Air Force & Space Force	3 (3)			3 (4)	4 (4)	2 (10)	4 (4)	3 (4)	19 (29)
Army	7 (8)			1 (4)		11 (21)	2 (5)	2 (2)	23 (40)
Marine Corps	1 (3)	3 (3)				1 (1)			5 (7)
Navy	3 (5)		1 (2)	3 (5)		4 (6)		2 (9)	13 (27)
Overall	14 (19)	3 (3)	1 (2)	7 (13)	4 (4)	18 (38)	6 (9)	7 (15)	60 (103)

Response data include the number of training courses represented; number of respondents are in parentheses.

Results: On-The-Job Needs Assessment Responses

Service	Electrical	Infantry and Combat	Information Technology	Intelligence	Logistics and Administration	Mechanical	Medical	Science and Engineering	Overall
Air Force				9 (11)	3 (3)		3 (3)	2 (2)	17 (19)
Army	2 (2)			1 (1)		5 (5)	2 (4)	2 (2)	12 (14)
Marine Corps	1 (2)	1 (1)				1 (1)			3 (4)
Navy	10 (11)		2 (2)	2 (2)		14 (14)		3 (3)	31 (32)
Space Force									0
Overall	13 (15)	1 (1)	2 (2)	12 (14)	3 (3)	20 (20)	5 (7)	7 (7)	63 (69)

Response data include the number of training courses represented; number of respondents are in parentheses.

Rating Scale

- Scaled responses for **with a calculator**
 - 0 = No, they do not do this type of math or yes, they **only** do this type of math **without** a calculator
 - 1 = Yes, they must be able to do this type of math **with a calculator**, but those who enter training (their first job) knowing how to do this type of math **do not perform better** than those who do not
 - 2 = Yes, they must be able to do this type of math **with a calculator**, and those who enter training (their first job) knowing how to do this type of math **do perform better** than those who do not

Results Interpretation

- Participants rated this type of math as $0 \leq$ and ≤ 1 , on average. In general, this type of math is not needed in training (on the job).
- Participants rated this type of math as $1 <$ and < 1.5 , on average. Being able to do this type of math with a calculator is, in general, not a *prerequisite* for successful performance in training (on the job).
- Participants rated this type of math ≥ 1.5 , on average. Doing this type of math with a calculator is, in general, a *prerequisite* for successful performance in training (on the job).

Results for Math with a Calculator: Training (Arithmetic Reasoning)

Clusters circled in green highlight types of jobs where doing some types of math with a calculator is a prerequisite for successful performance in training.

	ELECTRICAL	INFANTRY AND COMBAT	INFORMATION TECHNOLOGY	INTELLIGENCE	LOGISTICS AND ADMINISTRATION	MECHANICAL	MEDICAL	SCIENCE AND ENGINEERING	OVERALL	Overall (without N < 5)
<i>N survey participants:</i>	19	3	2	13	4	38	9	15	103	94
<i>N survey courses:</i>	14	3	1	7	4	18	6	7	60	52
AR-1	0.69	0.33	0.00	0.43	1.00	1.19	1.00	1.17	0.73	0.90
AR-2	0.71	0.33	0.00	0.43	1.50	1.42	1.17	1.77	0.92	1.10
AR-3	0.62	0.33	0.00	0.43	1.25	1.31	1.00	1.79	0.84	1.03
AR-4	0.67	0.33	0.00	0.50	0.75	1.23	1.00	1.93	0.80	1.07
AR-5	0.64	0.00	0.00	0.50	0.75	1.44	0.83	1.24	0.68	0.93
AR-6	0.54	0.00	0.00	0.50	1.00	1.35	0.83	1.71	0.74	0.99
AR-7	0.21	0.00	0.00	0.32	1.75	1.07	0.67	1.45	0.68	0.74
AR-8	0.21	0.00	0.00	0.75	1.50	0.71	0.40	1.21	0.60	0.66
AR-9	0.21	0.00	0.00	0.75	0.50	1.17	0.17	1.31	0.51	0.72
AR-10	0.07	0.67	0.00	0.75	0.25	1.01	0.17	1.38	0.54	0.68
AR-11	0.21	0.00	0.00	0.29	0.00	0.81	0.83	1.57	0.46	0.74
AR-12	0.36	0.00	0.00	0.43	0.50	0.99	0.83	0.74	0.48	0.67

Legend:

<= 1
1 < and < 1.5
>=1.5

Results for Math with a Calculator: Training (Mathematical Knowledge)

	ELECTRICAL	INFANTRY AND COMBAT	INFORMATION TECHNOLOGY	INTELLIGENCE	LOGISTICS AND ADMINISTRATION	MECHANICAL	MEDICAL	SCIENCE AND ENGINEERING	OVERALL	Overall (without N < 5)
<i>N survey participants:</i>	19	3	2	13	4	38	9	15	103	94
<i>N survey courses:</i>	14	3	1	7	4	18	6	7	60	52
MK-1	0.33	0.00	0.00	0.29	1.00	0.79	0.67	0.79	0.48	0.57
MK-2	0.36	0.00	0.00	0.29	1.25	0.73	0.83	0.86	0.54	0.61
MK-3	0.67	0.33	0.00	0.14	0.50	0.52	0.67	0.64	0.43	0.53
MK-4	0.14	0.33	0.00	0.17	0.50	0.58	0.33	0.64	0.34	0.37
MK-5	0.14	0.00	0.00	0.21	1.00	0.55	0.00	0.36	0.28	0.25
MK-6	0.21	0.33	0.00	0.17	0.50	0.64	0.33	0.50	0.34	0.37
MK-7	0.14	0.00	0.00	0.25	1.00	0.49	0.33	0.43	0.33	0.33
MK-8	0.21	0.00	0.00	0.50	1.50	0.86	0.95	1.07	0.64	0.72
MK-9	0.19	0.00	0.00	0.42	0.50	0.90	0.95	1.71	0.58	0.83
MK-10	0.57	0.33	0.00	0.33	1.00	0.91	0.83	1.36	0.67	0.80
MK-11	0.83	0.00	0.00	0.50	0.50	0.75	0.50	1.21	0.54	0.76
MK-12	0.50	0.33	0.00	0.25	0.50	0.93	0.67	0.93	0.51	0.66
MK-13	0.19	0.33	0.00	0.42	1.00	0.77	0.67	1.21	0.57	0.65
MK-14	0.14	0.00	0.00	0.00	0.50	0.59	0.00	1.07	0.29	0.36
MK-15	0.29	0.00	0.00	0.17	0.50	0.55	0.00	0.07	0.20	0.22
MK-16	0.57	0.50	0.00	0.33	1.50	1.06	0.50	1.50	0.74	0.79
MK-17	0.14	0.00	0.00	0.17	0.50	0.38	0.00	0.07	0.16	0.15
MK-18	0.71	0.50	0.00	0.42	1.00	0.63	0.78	1.14	0.65	0.74
MK-19	0.85	0.50	0.00	0.58	1.50	0.70	0.83	1.86	0.85	0.96
MK-20	0.69	0.50	0.00	0.58	1.50	0.59	0.83	1.79	0.81	0.90
MK-21	0.23	0.50	0.00	0.33	0.50	0.60	0.33	1.07	0.44	0.51
MK-22	0.36	0.50	0.00	0.25	1.00	0.55	0.83	1.07	0.57	0.61
MK-23	0.23	0.50	0.00	0.25	0.50	0.60	0.95	0.93	0.50	0.59
MK-24	0.00	0.50	0.00	0.33	0.50	0.39	0.00	0.29	0.25	0.20
MK-25	0.27	0.50	0.00	0.50	0.50	0.40	0.00	0.64	0.35	0.36
MK-26	0.38	0.50	0.00	0.17	0.00	0.44	0.17	1.00	0.33	0.43
MK-27	0.31	0.50	0.00	0.25	0.00	0.97	0.00	0.93	0.37	0.49
MK-28	0.54	0.00	0.00	0.08	0.00	1.05	0.17	1.14	0.37	0.60
MK-29	0.00	0.00	0.00	0.08	0.00	0.36	0.00	0.21	0.08	0.13
MK-30	0.31	0.50	0.00	0.08	0.00	0.56	0.00	0.64	0.26	0.32
MK-31	0.08	0.00	0.00	0.33	0.00	0.77	0.17	0.68	0.25	0.41
MK-32	0.08	0.00	0.00	0.50	0.00	0.94	0.17	1.07	0.35	0.55
MK-33	0.23	0.00	0.00	0.25	0.00	0.75	0.60	1.14	0.37	0.59
MK-34	0.62	0.00	0.00	0.50	1.00	0.95	0.60	1.50	0.65	0.83

Legend:

≤ 1
1 < and < 1.5
≥ 1.5

Results for Math with a Calculator: Training (Additional Types of Math)

	ELECTRICAL	INFANTRY AND COMBAT	INFORMATION TECHNOLOGY	INTELLIGENCE	LOGISTICS AND ADMINISTRATION	MECHANICAL	MEDICAL	SCIENCE AND ENGINEERING	OVERALL	Overall (without N < 5)
<i>N survey participants:</i>	19	3	2	13	4	38	9	15	103	94
<i>N survey courses:</i>	14	3	1	7	4	18	6	7	60	52
AM-1	0.23	0.00	0.00	0.50	1.00	0.93	0.40	0.50	0.44	0.51
AM-2	0.54	0.00	0.00	0.17	0.50	0.35	0.33	0.86	0.34	0.45
AM-3	0.08	0.50	0.00	0.42	0.00	0.31	0.17	0.29	0.22	0.25
AM-4	0.46	0.50	0.00	0.58	0.50	0.85	0.95	1.21	0.63	0.81
AM-5	0.31	0.00	0.00	0.25	1.00	0.50	0.33	0.14	0.32	0.31
AM-6	0.08	0.00	0.00	0.00	0.00	0.17	0.00	0.07	0.04	0.06
AM-7	0.08	0.00	0.00	0.33	0.00	0.06	0.17	0.07	0.09	0.14
AM-8	0.38	0.00	0.00	0.42	0.50	0.34	0.00	0.36	0.25	0.30
AM-9	0.39	0.00	0.00	0.17	0.50	0.63	0.67	0.43	0.35	0.46
AM-10	0.15	0.50	0.00	0.00	0.00	0.36	0.50	0.43	0.24	0.29
AM-11	0.08	0.00	0.00	0.33	0.50	0.11	0.33	0.14	0.19	0.20
AM-12	0.08	0.00	0.00	0.42	1.50	0.64	0.50	0.21	0.42	0.37
AM-13	0.08	0.00	0.00	0.08	0.50	0.53	0.33	0.50	0.25	0.30
AM-14	0.00	0.00	0.00	0.17	0.50	0.22	0.00	0.36	0.16	0.15
AM-15	0.31	0.00	0.00	0.42	1.00	0.57	0.83	0.67	0.48	0.56
AM-16	0.23	0.00	0.00	0.00	0.50	0.44	0.50	0.42	0.26	0.32
AM-17	0.08	0.50	0.00	0.00	0.00	0.32	0.50	0.08	0.18	0.20
AM-18	0.08	0.00	0.00	0.17	0.50	0.15	0.00	0.42	0.16	0.16
AM-19	0.15	0.00	0.00	0.25	0.00	0.25	0.17	0.67	0.19	0.30
AM-20	0.15	0.00	0.00	0.17	1.00	0.28	0.33	0.00	0.24	0.19
AM-21	0.00	0.00	0.00	0.33	1.00	0.12	0.33	0.00	0.22	0.16
AM-22	0.00	0.00	0.00	0.33	1.50	0.15	0.33	0.00	0.29	0.16
AM-23	0.00	0.00	0.00	0.42	1.00	0.26	0.33	0.00	0.25	0.20
AM-24	0.00	0.00	0.00	0.42	1.00	0.00	0.33	0.00	0.22	0.15
AM-25	0.00	0.00	0.00	0.17	1.00	0.00	0.33	0.08	0.20	0.12
AM-26	0.00	0.00	0.00	0.17	1.50	0.11	0.33	0.08	0.27	0.14
AM-27	0.00	0.00	0.00	0.17	1.50	0.00	0.33	0.42	0.30	0.18
AM-28	0.00	0.00	0.00	0.58	1.00	0.11	0.33	0.00	0.25	0.20
AM-29	0.00	0.00	0.00	0.58	1.50	0.17	0.33	0.00	0.32	0.22
AM-30	0.00	0.00	0.00	0.25	0.00	0.33	0.00	0.62	0.15	0.24
AM-31	0.15	0.00	0.00	0.25	0.00	0.14	0.00	1.00	0.19	0.31
AM-32	0.08	0.00	0.00	0.58	0.50	0.11	0.50	0.25	0.25	0.30
AM-33	0.23	0.00	0.00	0.17	0.00	0.11	0.00	0.58	0.14	0.22
AM-34	0.08	0.00	0.00	0.58	0.50	0.12	0.00	0.54	0.23	0.26
AM-35	0.31	0.00	0.00	0.25	0.00	0.58	0.17	1.08	0.30	0.48
AM-36	0.00	0.00	0.00	0.42	0.00	0.17	0.00	0.67	0.16	0.25
AM-37	0.00	0.00	0.00	0.25	0.00	0.17	0.17	0.42	0.13	0.20
AM-38	0.00	0.00	0.00	0.08	0.00	0.17	0.17	0.42	0.10	0.17
AM-39	0.00	0.00	0.00	0.17	0.00	0.29	0.17	0.42	0.13	0.21
AM-40	0.00	0.00	0.00	0.25	0.00	0.31	0.00	0.42	0.12	0.20
AM-41	0.28	0.00	0.00	0.25	0.00	0.64	0.17	0.67	0.25	0.40

Additional types of math are from a taxonomy of math generated by Waugh et al. (2015). The additional types of math are those that experts rated as not included in the AR and MK blueprints.

Legend:

<= 1

1 < and < 1.5

>=1.5

Results for Math with a Calculator: On-the-Job (Arithmetic Reasoning)

Infantry and Combat results were based on 1 job as of November 12. This sample size is not suitable for decision making.

Clusters circled in green highlight types of jobs where doing some types of math with a calculator is a *prerequisite* for successful performance on the job.

	ELECTRICAL	INFANTRY AND COMBAT	INFORMATION TECHNOLOGY	INTELLIGENCE	LOGISTICS AND ADMINISTRATION	MECHANICAL	MEDICAL	SCIENCE AND ENGINEERING	OVERALL	Overall (without N < 5)
<i>N survey participants:</i>	15	1	2	14	3	20	7	7	69	63
<i>N survey occupations:</i>	13	1	2	12	3	20	5	7	63	57
AR-1	0.77	2.00	0.50	0.58	2.00	0.90	1.20	1.00	1.12	0.89
AR-2	0.92	2.00	0.50	1.17	1.33	1.00	1.00	1.29	1.15	1.08
AR-3	0.92	2.00	1.00	0.96	2.00	0.70	1.00	0.71	1.16	0.86
AR-4	0.77	2.00	1.00	1.17	1.33	0.80	1.20	0.86	1.14	0.96
AR-5	0.92	0.00	1.00	1.00	1.33	0.85	1.80	0.86	0.97	1.09
AR-6	0.77	0.00	1.00	1.00	1.33	0.65	1.00	0.86	0.83	0.86
AR-7	0.69	0.00	0.50	0.83	1.33	1.00	1.00	0.83	0.77	0.87
AR-8	0.38	0.00	0.50	1.08	0.67	1.10	1.40	0.67	0.72	0.93
AR-9	0.46	0.00	0.00	0.58	0.00	0.70	0.60	1.00	0.42	0.67
AR-10	0.77	0.00	0.50	0.58	0.00	0.75	0.60	1.50	0.59	0.84
AR-11	0.23	0.00	0.00	0.50	0.00	0.80	1.00	1.17	0.46	0.74
AR-12	0.85	0.00	0.50	0.83	0.67	0.90	1.40	0.33	0.68	0.86

Legend:

≤ 1
1 < and < 1.5
≥ 1.5

Results for Math with a Calculator: On-the-Job (Mathematical Knowledge)

	ELECTRICAL	INFANTRY AND COMBAT	INFORMATION TECHNOLOGY	INTELLIGENCE	LOGISTICS AND ADMINISTRATION	MECHANICAL	MEDICAL	SCIENCE AND ENGINEERING	OVERALL	Overall (without N < 5)
<i>N survey participants:</i>	15	1	2	14	3	20	7	7	69	63
<i>N survey occupations:</i>	13	1	2	12	3	20	5	7	63	57
MK-1	0.46	0.00	1.00	0.67	0.00	0.68	0.20	0.67	0.46	0.54
MK-2	0.46	0.00	1.00	0.75	0.00	0.55	0.60	1.00	0.54	0.67
MK-3	0.31	0.00	0.00	0.58	0.67	0.55	1.20	0.33	0.46	0.59
MK-4	0.31	0.00	0.00	0.50	0.67	0.60	0.40	0.33	0.35	0.43
MK-5	0.38	0.00	0.00	0.25	0.67	0.55	0.00	0.33	0.27	0.30
MK-6	0.38	0.00	1.00	1.00	0.67	0.55	1.00	0.67	0.66	0.72
MK-7	0.00	0.00	0.00	0.21	0.67	0.60	0.80	0.33	0.33	0.39
MK-8	0.85	0.00	1.00	1.25	0.67	0.90	1.20	0.33	0.78	0.91
MK-9	0.62	1.00	0.00	1.00	0.67	0.70	0.60	1.17	0.72	0.82
MK-10	0.69	0.00	0.00	0.92	1.33	0.80	1.20	1.67	0.83	1.06
MK-11	0.15	0.00	0.00	0.71	1.33	0.70	1.00	0.67	0.57	0.65
MK-12	0.38	0.00	0.50	0.75	1.33	0.75	0.90	0.67	0.66	0.69
MK-13	0.15	2.00	0.00	0.50	0.67	0.53	0.60	1.00	0.68	0.56
MK-14	0.15	0.00	0.50	0.33	1.33	0.53	1.00	0.67	0.56	0.54
MK-15	0.23	0.00	0.00	0.42	0.67	0.42	0.40	0.33	0.31	0.36
MK-16	0.54	0.00	0.00	1.29	1.00	0.85	1.60	1.17	0.81	1.09
MK-17	0.08	0.00	0.00	0.67	0.67	0.30	0.40	0.33	0.31	0.36
MK-18	0.92	0.00	0.00	0.88	0.67	0.90	1.20	1.33	0.74	1.05
MK-19	0.62	1.00	0.00	1.00	0.67	0.95	1.20	1.33	0.85	1.02
MK-20	0.92	2.00	0.00	1.08	0.67	0.85	0.80	1.00	0.92	0.93
MK-21	0.23	0.00	0.00	0.96	0.67	0.65	0.40	0.67	0.45	0.58
MK-22	0.46	0.00	0.00	0.33	0.67	0.65	1.00	0.67	0.47	0.62
MK-23	0.08	0.00	0.00	0.33	0.00	0.65	1.00	1.33	0.42	0.68
MK-24	0.15	0.00	0.00	0.42	0.67	0.40	0.20	0.50	0.29	0.33
MK-25	0.54	0.00	0.50	0.67	0.00	0.84	0.40	1.17	0.52	0.72
MK-26	0.15	0.00	0.50	0.42	0.00	0.60	0.00	0.83	0.31	0.40
MK-27	0.38	2.00	0.00	0.58	0.00	0.95	0.40	0.83	0.64	0.63
MK-28	0.69	2.00	0.00	0.50	0.67	0.80	0.80	0.83	0.79	0.72
MK-29	0.38	0.00	0.00	0.08	0.00	0.50	0.40	0.67	0.25	0.41
MK-30	0.46	0.00	0.50	0.42	0.00	0.65	0.40	1.00	0.43	0.59
MK-31	0.38	0.00	0.00	0.67	0.00	0.75	0.40	1.67	0.48	0.77
MK-32	0.54	0.00	0.00	0.50	0.00	0.85	0.60	1.20	0.46	0.74
MK-33	0.23	0.00	0.00	0.25	0.00	0.85	0.60	1.67	0.45	0.72
MK-34	0.77	2.00	0.00	1.00	0.67	0.90	1.00	1.17	0.94	0.97

Legend:

≤ 1
1 < and < 1.5
≥ 1.5

Results for Math with a Calculator: On-the-Job (Additional Types of Math)

Additional types of math are from a taxonomy of math generated by Waugh et al. (2015). The additional types of math are those that experts rated as not included in the AR and MK blueprints.

	ELECTRICAL	INFANTRY AND COMBAT	INFORMATION TECHNOLOGY	INTELLIGENCE	LOGISTICS AND ADMINISTRATION	MECHANICAL	MEDICAL	SCIENCE AND ENGINEERING	Overall (without N OVERALL < 5)	Overall (without N < 5)
<i>N survey participants:</i>	15	1	2	14	3	20	7	7	69	63
<i>N survey occupations:</i>	13	1	2	12	3	20	5	7	63	57
AM-1	0.38	2.00	0.50	0.79	0.67	0.65	0.60	0.67	0.78	0.62
AM-2	0.62	0.00	0.00	0.58	0.00	0.30	0.80	0.33	0.33	0.53
AM-3	0.38	0.00	0.00	0.46	0.00	0.30	0.50	0.17	0.23	0.36
AM-4	0.62	2.00	0.50	0.67	0.67	0.60	1.00	1.00	0.88	0.78
AM-5	0.15	0.00	0.50	0.58	0.67	0.30	0.80	0.67	0.46	0.50
AM-6	0.15	2.00	0.00	0.25	0.67	0.20	0.40	0.00	0.46	0.20
AM-7	0.00	0.00	0.00	0.58	0.00	0.25	0.40	0.33	0.20	0.31
AM-8	0.23	0.00	0.00	0.50	0.67	0.25	1.00	0.83	0.44	0.56
AM-9	0.42	0.00	0.00	0.33	0.67	0.40	0.40	0.33	0.32	0.38
AM-10	0.17	0.00	0.00	0.17	0.67	0.30	0.80	0.67	0.35	0.42
AM-11	0.17	0.00	0.00	0.17	0.67	0.40	0.80	0.67	0.36	0.44
AM-12	0.50	0.00	0.00	0.58	0.67	0.55	1.00	0.67	0.50	0.66
AM-13	0.17	0.00	0.50	0.25	0.67	0.30	0.40	1.00	0.41	0.42
AM-14	0.00	0.00	0.00	0.17	0.67	0.20	0.00	0.67	0.21	0.21
AM-15	0.50	0.00	0.00	0.42	0.67	0.60	0.80	1.17	0.52	0.70
AM-16	0.33	0.00	0.50	0.33	0.67	0.30	0.80	0.33	0.41	0.42
AM-17	0.42	0.00	0.00	0.67	0.67	0.20	0.80	0.33	0.39	0.48
AM-18	0.17	0.00	0.00	0.17	0.00	0.20	0.00	0.33	0.11	0.17
AM-19	0.25	0.00	0.50	0.42	0.00	0.50	0.40	0.50	0.32	0.41
AM-20	0.00	0.00	0.00	0.42	0.67	0.40	0.40	0.17	0.26	0.28
AM-21	0.17	0.00	0.00	0.58	0.67	0.40	0.40	0.33	0.32	0.38
AM-22	0.00	0.00	0.50	0.25	0.67	0.30	0.40	0.00	0.26	0.19
AM-23	0.25	0.00	0.50	1.08	0.67	0.40	0.20	0.67	0.47	0.52
AM-24	0.08	2.00	0.00	0.83	0.67	0.30	0.80	0.67	0.67	0.54
AM-25	0.08	0.00	0.00	0.25	0.67	0.30	0.60	0.33	0.28	0.31
AM-26	0.25	0.00	0.00	0.83	0.67	0.50	0.80	0.67	0.47	0.61
AM-27	0.17	0.00	0.00	0.75	0.67	0.30	0.40	0.33	0.33	0.39
AM-28	0.17	0.00	0.00	0.83	1.00	0.40	0.60	0.00	0.38	0.40
AM-29	0.25	2.00	0.50	0.83	1.00	0.50	0.40	0.67	0.77	0.53
AM-30	0.33	2.00	0.00	0.50	0.00	0.40	0.00	0.17	0.42	0.28
AM-31	0.25	0.00	0.00	0.42	0.00	0.40	0.00	0.17	0.16	0.25
AM-32	0.08	0.00	0.00	0.42	0.00	0.20	0.40	0.17	0.16	0.25
AM-33	0.42	0.00	0.00	0.27	0.00	0.30	0.00	0.67	0.21	0.33
AM-34	0.50	0.00	0.00	0.17	0.00	0.30	0.60	0.17	0.22	0.35
AM-35	0.42	0.00	0.50	0.42	0.00	0.55	0.00	1.33	0.40	0.54
AM-36	0.25	0.00	0.00	0.08	0.00	0.20	0.00	0.67	0.15	0.24
AM-37	0.08	0.00	0.00	0.42	0.00	0.20	0.00	0.50	0.15	0.24
AM-38	0.00	0.00	0.00	0.25	0.00	0.20	0.00	0.33	0.10	0.16
AM-39	0.42	0.00	0.00	0.25	0.00	0.40	0.40	0.50	0.25	0.39
AM-40	0.08	0.00	0.00	0.25	0.00	0.53	0.40	0.17	0.18	0.29
AM-41	0.33	0.00	0.00	0.42	0.00	0.95	1.40	1.17	0.53	0.85

Legend:

<= 1

1 < and < 1.5

>=1.5

Conclusion

- Based on the sample of training courses and occupations in the needs assessment, there are relatively *few* types of math where calculator use is a *prerequisite* for successful performance in training or on the job (green-shaded cells).
 - Furthermore, the relatively *few* types of math where calculator use is a *prerequisite* for successful performance are primarily limited to three clusters:
 - Logistics and Administration
 - Science and Engineering
 - Medical
- There are some other types of math where calculators are used in training or on the job, but calculator use is generally *not a prerequisite* for success (yellow-shaded cells).
- The target sample was selected purposefully to include a range of occupations and math requirements. Due to limited participation in specific occupational areas and in some Services, the sample is not as robust as planned. We are working with the Services to augment the sample.

Questions for the DAC

Questions for the DAC

- Does the DAC have recommendations to address any of the implications identified in the calculator impact study?
- Are there other complications resulting from calculator error that could affect CAT tests, specifically, that were not addressed in the simulation study?
- Based on the results of the Needs Assessment, does the DAC believe the results support the need for a special purpose test that assesses math with a calculator for use in classification?

Thank you!

For more information
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