

**Test Item Analysis and Statistics**  
**Lawrence Preston, Committee on Accreditation**  
**Handout**

**An overview of the Item Statistics Report**

**Fire Officer II Exam**

5.2.1 HR POL & PROC 19

6	25	0	2	6	<b>15</b>	2
MCS	0.60	0.00	0.08	0.24	<b>0.60</b>	0.08
1.00	83.17	0.00	71.46	78.24	<b>83.17</b>	73.76
	+0.156	-	-0.281	+0.071	<b>+0.156</b>	-0.112

The first line tells that this question is for JPR 5.2.1 for Human Resources Policies and Procedures. This is the 19<sup>th</sup> question in that test bank.

5.2.1 HR POL & PROC 19

6	25	0	2	6	<b>15</b>	2
MCS	0.60	0.00	0.08	0.24	<b>0.60</b>	0.08
1.00	83.17	0.00	71.46	78.24	<b>83.17</b>	73.76
	+0.156	-	-0.281	+0.071	<b>+0.156</b>	-0.112

The second line tells us that this is the 6<sup>th</sup> question on the exam, 25 students answered the question, there were 0 students who did not answer, 2 students selected answer A, 6 students answered answer B, 15 students selected answer C which was the correct answer (**note it is bolded**), and 2 students selected answer D.

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1.00	83.17	0.00	71.46	78.24	<b>83.17</b>	73.76
	+0.156	-	-0.281	+0.071	<b>+0.156</b>	-0.112

The third line tells us that this was a multiple-choice question. It also lists the percentage of students who selected each answer. Note, the correct answer had 60% of the responses which is the difficulty level.

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1.00	83.17	0.00	71.46	78.24	<b>83.17</b>	73.76
	+0.156	-	-0.281	+0.071	<b>+0.156</b>	-0.112

The fourth line tells us that this question was worth 1 point and the average score that students had for each of the answers. In this case students who answered correctly had an average score on the test of 83.17%.

#### 5.2.1 HR POL & PROC 19

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MCS	0.60	0.00	0.08	0.24	<b>0.60</b>	0.08
1.00	83.17	0.00	71.46	78.24	<b>83.17</b>	73.76
	+0.156	-	-0.281	+0.071	<b>+0.156</b>	-0.112

The fifth line tells us the rpb for each of the responses. Answer A had a rpb of -0.281 meaning lower scoring students selected this distractor. Answer B had a rpb of +0.071 meaning some of the higher scoring students selected this incorrect answer. Answer C had a rpb of +0.156 meaning overall higher scoring students selected the correct answer. Answer D had a rpb of negative 0.112 meaning lower scoring students selected this answer.

Armed with this knowledge examine the following test item statistics and determine if further examination is needed. Take into consideration difficulty and discrimination (p and prb).

#1

#### 5.7.2 PURCHASING POL & PROC 195

49	25	0	<b>14</b>	2	8	1
MCS	0.56	0.00	<b>0.56</b>	0.08	0.32	0.04
1.00	90.11	0	<b>90.11</b>	82.15	73.78	80.32
	+0.397	-	<b>+0.399</b>	+0.056	-0.458	+0.000

#2

5.2.3 JOB DESCRIPTIONS 84

36	25	0	0	<b>11</b>	14	0
MCS	0.44	0.00	0.00	<b>0.44</b>	0.56	0.00
1.00	77.86	0	00.00	<b>77.76</b>	82.32	00.00
	-0.215	-	-	<b>-0.215</b>	+0.215	+0.000

#3

5.5.1 INTERPERSONAL DYNAMICS 64

36	25	0	<b>14</b>	2	8	1
MCS	0.56	0.00	<b>0.56</b>	0.08	0.32	0.04
100	77.86	0	<b>84.43</b>	76.44	79.76	77.78
	+0.399	-	<b>+0.399</b>	+0.056	-0.458	+0.000

#4

5.6.2 OPERATIONAL PLANS 225

70	25	0	0	17	<b>7</b>	1
MCS	0.28	0.00	0.00	0.68	<b>0.28</b>	0.04
100	78.42	0	0.00	79.65	<b>78.21</b>	77.78
	+0.399	-	-	+0.082	<b>-0.051</b>	-0.078

#5

5.10.1 REVENUE 164

89	25	0	2	<b>19</b>	1	3
MCS	0.76	0.00	0.08	<b>0.76</b>	0.04	0.12
100	77.86	0	82.10	<b>90.02</b>	75.43	77.65
	+0.714	-	+0.365	<b>+0.714</b>	-0.428	-0.375

## **The Next Step**

Now we have identified potential problems with some of the questions what could be the cause of these problems?

1.

2.

3.

4.