GMAT Innovative Items Lessons Learned

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Consultant

Started with 9 item types

- Scalability
- Stable Calibrations
- Face Validity
- Tryout results

The Four New Question Types

- Graphics Interpretation
- Table Analysis
- Multi-Source Reasoning
- Two-Part Analysis

Table Analysis

Calculator

Sort By Select...

Airport			Passengers			Movements		
City	Country	Code	Number	% change	Rank	Number	% change	Rank
Atlanta	USA	ATL	90,039,280	0.7	1	978,824	-1.6	1
Chicago	USA	ORD	69,353,876	-9.0	2	881,566	-4.9	2
London	GBR	LHR	67,056,379	-1.5	3	478,518	-0.6	13
Paris	FRA	CDG	60,874,681	1.6	5	559,816	1.3	8
Los Angeles	USA	LAX	59,497,539	-4.7	6	622,506	-8.6	4
Dallas/Ft. Worth	USA	DFW	57,093,187	-4.5	7	656,310	-4.3	3
Beijing	CHN	PEK	55,937,289	4.4	8	431,670	8.0	21
Frankfurt	DEU	FRA	53,467,450	-1.3	9	485,783	-1.4	12
Denver	USA	DEN	51,245,334	2.8	10	619,503	0.9	5
Madrid	ESP	MAD	50,824,435	-2.4	11	469,740	-2.8	14
Amsterdam	NLD	AMS	47,430,019	-0.8	14	446,592	-1.7	17
Las Vegas	USA	LAS	43,208,724	-8.0	15	578,949	-5.0	6
Houston	USA	IAH	41,709,389	-3.0	16	576,062	-4.6	7
Phoenix	USA	PHX	39,891,193	-5.4	17	502,499	-6.8	10
San Francisco	USA	SFO	37,234,592	4.7	21	387,710	2.2	24
Newark	USA	EWR	35,360,848	-2.8	23	434,428	-0.4	19
Detroit	USA	DTW	35,135,828	-2.4	24	462,520	-1.0	15
Charlotte	USA	CLT	34,739,020	4.7	26	536,253	2.6	9
Munich	DEU	MUC	34,530,593	1.7	27	432,296	0.1	20
Miami	USA	MIA	34,063,531	1.0	29	371,519	-3.8	29
Minneapolis	USA	MSP	34,056,443	-3.0	30	450,044	-0.7	16

The table above gives information for 2008 on total passengers (total passengers enplaned and deplaned with passengers in transit counted once) and total movements (landing and takeoff of an aircraft) for 21 airports throughout the world. The 21 airports were chosen for inclusion in the table because, in 2008, each was among the busiest 30 airports in the world in terms of both total passengers and total movements. In addition to the numbers of total passengers and total movements for each airport, the table also gives the percent of increase or decrease over the numbers for 2007 and the rank of the airport for total passengers and total movements.

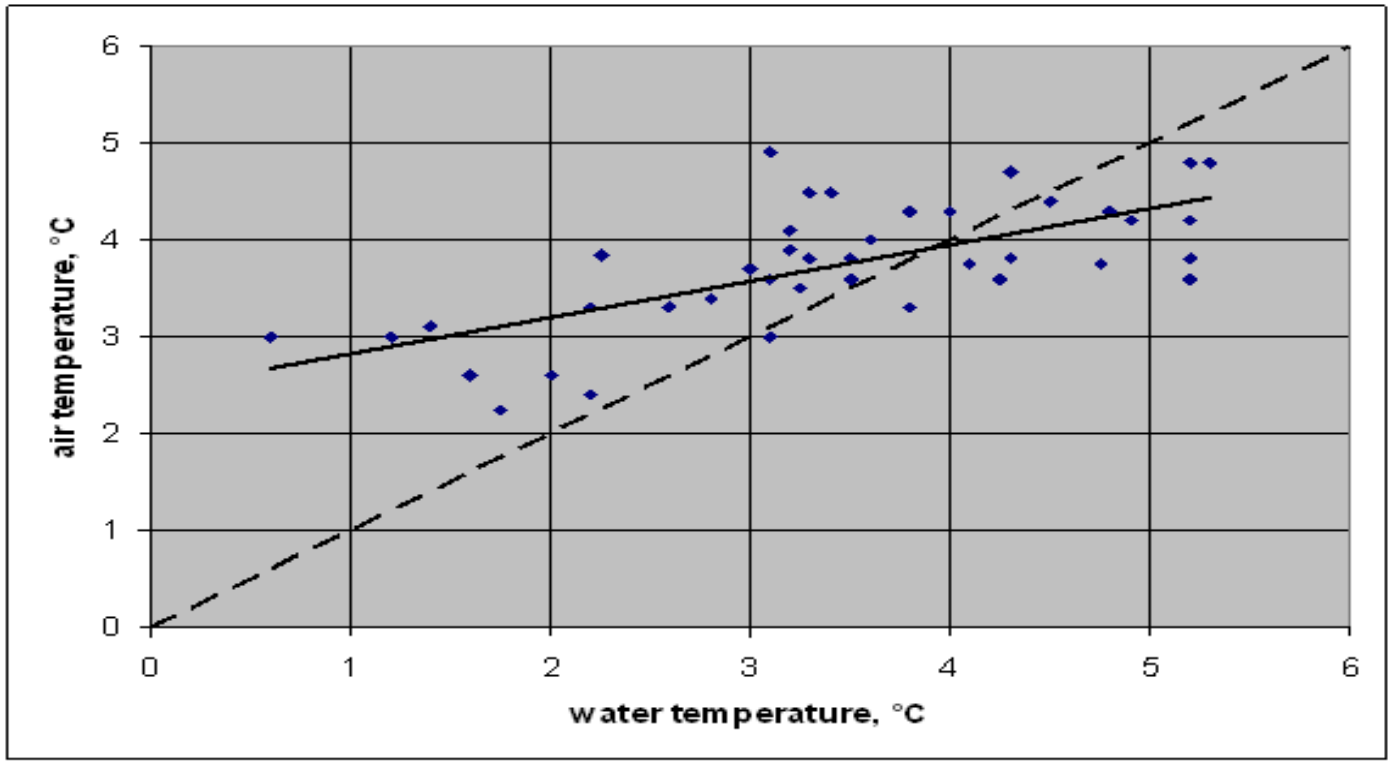
Each column of the table can be sorted in ascending order by clicking on the word "Select" above the table and choosing, from the drop-down menu, the heading of the column on which you want the table to be sorted.

Consider each of the following statements about these airports. For each statement indicate whether the statement is true or false, based on the information provided in the table.

True	False	
○	○	The airport experiencing the greatest percent decrease in total passengers from 2007 to 2008 also experienced the greatest decrease in the percent of movements.
○	○	The airport with the median rank based on total number of passengers is the same as the airport with the median rank based on total number of movements.
○	○	Exactly 50% of the airports that experienced an increase in both total number of passengers and in total number of movements are located in the United States (USA).
○	○	The total number of movements at the airport in Beijing in 2007 was approximately 400,000.

Graphics Interpretation

Calculator



The graph at the left is a scatter plot with 40 points, each representing the temperature of the ocean water, measured at a fixed location off the coast of West Iceland, and the air temperature, measured on land at a fixed location in West Iceland. Both the water temperature and the air temperature, in degrees Celsius, were measured at noon on Wednesday of each of 40 consecutive weeks last year. The solid line is the regression line and the dashed line is the line through the points (0,0) and (6,6). Use the drop-down menus to fill in the blanks in each of the following statements based on the information given by the graph.

The relationship between the water temperature and the air temperature is **Select...** .

The slope of the regression line is **Select...** the slope of the dashed line.

The number of Wednesdays on which the water temperature was greater than 5° C is closest to **Select...** % of 40.

Multi-Source Reasoning

Calculator

Email #1 | Email #2 | Email #3

*Email from **project coordinator** in response to the administrator's January 15, 10:46 a.m. message*

January 15, 11:12 a.m.

Altogether we got exactly 350 actual survey completions. We need at least 700 and were hoping for even more, so we plan to invite a second group to participate. Both the results from this first group and other research indicates that with this type of survey and this type of participants there is about a 40 percent probability that any given invitee will submit the completed survey in the time we'll allow. (Obviously that doesn't mean that if we invited 1,000 we'd necessarily get at least 400, so we need to think in terms of the risks of getting too few returns or exceeding the budget.) All of the participants who submitted their surveys by the deadline will get the $50 payment we promised. What is our total budget for compensation to participants?

Consider each of the following statements. Does the information in the three emails support the inference as stated?

Yes	No	
○	○	The administrator is unwilling to invite as many participants in the second group as were invited in the first group.
○	○	The project coordinator does not expect to be able to meet the goal for numbers of completed surveys received.
○	○	The administrator is willing to accept some risk of exceeding the budget for compensating participants.
○	○	The administrator and the project coordinator disagree about how many people should be invited to participate in the second group.

Two-Part Analysis

Calculator

Organization A currently has 1,050 members. Organization B currently has 1,550 members. The number of members of Organization A and the number of members of organization B are increasing annually, each at its own constant rate. Analysts project that if each of these organizations maintains its constant annual rate of membership increase, five years from now they will for the first time have the same number of members, and in subsequent years Organization A will have more members than Organization B.

In the table below, identify a rate of increase, in members per year, for Organization A and a rate of increase, in members per year, for Organization B that together are consistent with the analysts' projection. Make only one selection in each column.

Organization A	Organization B	Rate of increase (members per year)
○	○	10
○	○	30
○	○	40
○	○	120
○	○	130
○	○	150

Done Right

- Started with content survey
- Trials of various item types
  - Reactions
  - Item Analysis / Factor Analysis
- Lots of buy-in
- Scalable

Wish I could do over

- Partial Credit
- Separate score
- Multiple T/F items
- Assessment Engineering
- No real ROI/Analysis – Monopoly mindset