



## Chapter 20

### Integrated Reasoning: Drills

## PRACTICE INTEGRATED REASONING: SECTION 1

12 Items

Time limit: 30 minutes

This section is a full practice Integrated Reasoning section. Please note that some questions are laid out slightly differently in this book versus what you'll see on the GMAT. Many of the new question formats are interactive. Hence, only approximations can be printed. Specifically,

- Table Analysis questions are shown with a main sort and several alternate sorts. You may not need every sort.
- Graphics Interpretation questions include drop down boxes. In this book, the box is shown as a fill-in blank and the answers printed below the blank.
- For Multi-Source Reasoning questions, we've printed what's on each tab consecutively on the page.
- For some questions, you'll see (A), (B), (C), etc. next to answer choices. These are included only to make it easier to check your work. These do not appear on the real GMAT.

We've included answers to this section starting on page 461.

At the time this book was printed, GMAC had not released the scoring scale for the Integrated Reasoning section. We'll make a scoring grid available in your online tools as soon as possible so that you can compute your score on the section.

## Item 1:

Subway Station	Riders	% Change	Connecting Subway Lines
Times Square/42nd St.	58,422,597	0.6%	11
Grand Central/42nd St.	41,903,210	-0.2%	5
34th St./Herald Square	37,769,752	2.2%	7
14th St./Union Square	34,730,692	1.4%	7
34th St./Penn Station (Red Lines)	26,892,243	-1.1%	3
34th St./Penn Station (Blue Lines)	24,265,016	0.3%	3
59th St./Columbus Cir.	20,711,058	1.4%	5
Lexington Ave/59th St	19,553,597	3.3%	6
86th St. (Green Lines)	19,147,021	1.4%	3

The table above gives information for the year 2010 on the ridership in 9 subway stations in New York City. The subway stations were chosen for inclusion in the table because they were the busiest stations in 2010, based on the number of passengers entering the station. In addition to annual ridership (number of passengers) for each station in 2010, the table also gives the percent increase or decrease in ridership from 2009 to 2010 and the number of subway lines that connect to the station.

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.

Alternate Sort 1: *% Change*

Subway Station	Riders	% Change	Connecting Subway Lines
34th St./Penn Station (Red Lines)	26,892,243	-1.1%	3
Grand Central/42nd St.	41,903,210	-0.2%	5
34th St./Penn Station (Blue Lines)	24,265,016	0.3%	3
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34th St./Herald Square	37,769,752	2.2%	7
Lexington Ave/59th St	19,553,597	3.3%	6

Alternate Sort 2: *Connecting Subway Lines*

Subway Station	Riders	% Change	Connecting Subway Lines
34th St./Penn Station (Red Lines)	26,892,243	-1.1%	3
34th St./Penn Station (Blue Lines)	24,265,016	0.3%	3
86th St. (Green Lines)	19,147,021	1.4%	3
Grand Central/42nd St.	41,903,210	-0.2%	3
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34th St./Herald Square	37,769,752	2.2%	7
Times Square/42nd St	58,422,597	0.6%	11

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

- |              | True                  | False                 |  |
|--------------|-----------------------|-----------------------|--|
| Question 1-1 | <input type="radio"/> | <input type="radio"/> | The station with the median rank based on annual ridership is also the station with the greatest decrease in annual ridership from 2009 to 2010.   |
| Question 1-2 | <input type="radio"/> | <input type="radio"/> | The annual ridership in 2009 for the station with the greatest percentage increase.  |
| Question 1-3 | <input type="radio"/> | <input type="radio"/> | The ratio of the average 2010 ridership of those stations having Connecting Subway Lines equal to the mode and of those stations having Connecting Subway Lines equal to the median is approximately 4 to 3. |
| Question 1-4 | <input type="radio"/> | <input type="radio"/> | The station with the highest percent increase in riders from 2009 to 2010 had the lowest annual ridership in 2010.   |



## Item 2:

Frank researched 45 doctors in his local area and found that 8 of them graduated from medical school with honors, but that the services of only 3 of those 8 doctors are covered by his medical plan. On the other hand, he found that 27 doctors whose services are covered by his medical plan graduated from medical school without honors.

In the table below, identify the total number of doctors whose services are not covered by Frank's medical plan, and identify the number of doctors who both graduated from medical school without honors and whose services are not covered by Frank's health plan.

Services Not Covered by Medical Plan	Graduated Without Honors and Services Not Covered by Medical Plan	Total Number
(A) <input type="radio"/>	<input type="radio"/>	10
(B) <input type="radio"/>	<input type="radio"/>	15
(C) <input type="radio"/>	<input type="radio"/>	18
(D) <input type="radio"/>	<input type="radio"/>	30
(E) <input type="radio"/>	<input type="radio"/>	37
(F) <input type="radio"/>	<input type="radio"/>	40

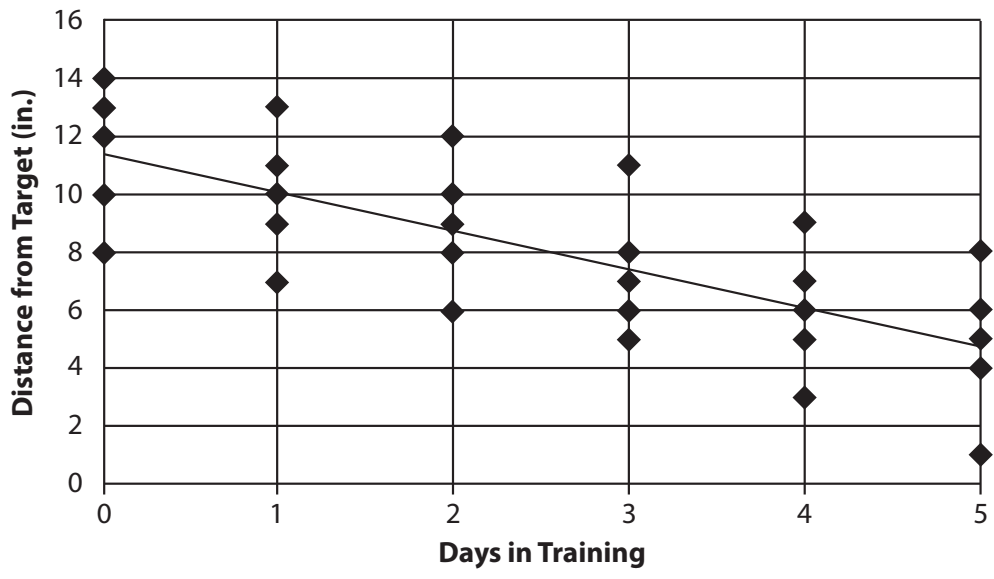
### Item 3:

A flower market sells orchids for \$1.35 and dahlias for \$1.80. Faustino spends \$18.00 on orchids and dahlias.

In the table below, choose the number of orchids and the number of dahlias that are consistent with the amount spent by Faustino. Make only one selection in each column.

	Orchids	Dahlias	Number Purchased
(A)	<input type="radio"/>	<input type="radio"/>	0
(B)	<input type="radio"/>	<input type="radio"/>	2
(C)	<input type="radio"/>	<input type="radio"/>	4
(D)	<input type="radio"/>	<input type="radio"/>	5
(E)	<input type="radio"/>	<input type="radio"/>	6
(F)	<input type="radio"/>	<input type="radio"/>	8

**Item 4:**



At a certain archery school, each of five students fired a single shot at the end of each day of training, as well as one shot before the first day of training. The graph above is a scatterplot, in which each of the 30 points represents the distance from the target that each student hit and the number of days the student had been in training at the time the shot was fired. The solid line is the regression line. Use the drop-down menus to fill in the blanks in each of the following statements based on the information given by the graph.

**Question 4-1:**

The slope of the regression line is closest to \_\_\_\_\_.

- (A) -2.6
- (B) -1.4
- (C) -0.8
- (D) 1.2
- (E) 2.9

**Question 4-2:**

The number of students within 11 in. of the target was \_\_\_\_\_ after day 2 of training than before any training.

- (A) 50% less
- (B) 25% less
- (C) 50% greater
- (D) 100% greater
- (E) 200% greater

**Question 4-3:**

The relationship between the number of days in training and the distance from the target is \_\_\_\_\_.

- (A) positive
- (B) negative
- (C) zero

## Item 5:

The earliest known evidence of seafaring by human ancestors dates to approximately 130,000 years in the past. However, in 2010, archaeologists discovered stone tools on the coast of a Mediterranean island that date to the Paleolithic age (about 2.6 million years in the past). Because more than 40 miles of open sea separate the island from Greece, the archaeologists theorized that some human ancestors developed nautical skills millions of years earlier than previously discovered.

### Question 5-1:

In the table below, identify which statement, if true, most strengthens the argument above, and which statement, if true, most seriously weakens the argument above.

	Strengthen	Weaken	Statement
(A)	<input type="radio"/>	<input type="radio"/>	In the same area of the island, archaeologists discovered pieces of ancient harpoons and spears used for fishing.
(B)	<input type="radio"/>	<input type="radio"/>	The stone tools resemble those made and used by <i>Homo erectus</i> and <i>Homo heidelbergensis</i> , human ancestors in the Paleolithic era who lived on the mainland of Greece.
(C)	<input type="radio"/>	<input type="radio"/>	The stone tools were probably used primarily for skinning animals.
(D)	<input type="radio"/>	<input type="radio"/>	It would be impossible to construct a seaworthy boat solely from the tools discovered by the archaeologists.
(E)	<input type="radio"/>	<input type="radio"/>	Approximately 5 million years ago, during the Messinian Salinity Crisis of the late Miocene era, the Mediterranean Sea dried up.
(F)	<input type="radio"/>	<input type="radio"/>	The stone tools were likely used for purposes other than construction of boats or rafts.

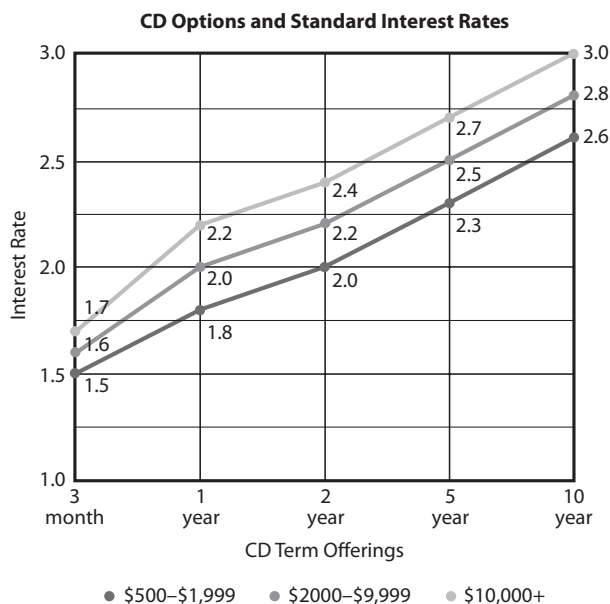
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## Data for Items 6, 7, and 8:

CD Offerings

Memo

This table provides the standard interest rates offered by Central Bank for CDs, listed according to term offering and purchase amount. The interest rates listed are annual rates, compounded yearly, to be paid when the CD comes to term. No bonuses or other adjustments are included.



CD Offerings

Memo

General memo to employees of Central Bank:

January 15th

In order to improve and stabilize our bank's investment opportunities, we are seeking to shift the balance of our customers' CD accounts towards those with longer maturity terms. We have begun testing two incentive programs. All CDs purchased with terms of at least 5 years now receive, as a bonus, an additional 0.1% interest during the first year to be added to the standard rate. Preferred customers (those who have previously bought CDs of any term length in amounts of \$10,000 or more) will, when they purchase a 5-year or 10-year CD of \$10,000 or more, instead receive a bonus of 0.2% during the first year. Other CDs continue at the standard rates.

We have also instituted a new system of early withdrawal penalties, applicable to all new CDs. The penalties are as follows: For any CD, early withdrawal less than a year after the CD is purchased results in a loss of all interest. For 2-year CDs, early withdrawal after the first year results in the loss of one year of interest. For 5-year and 10-year CDs, withdrawal after the first year results in the loss of two years of interest and of any accrued bonus interest.

**Item 6:**

Determine whether each of the following investments will earn at least \$250 of interest in its first year.

- |     | Yes                   | No                    |  |
|-----|-----------------------|-----------------------|--|
| (A) | <input type="radio"/> | <input type="radio"/> | \$11,000 invested by a new customer in a 1-year CD       |
| (B) | <input type="radio"/> | <input type="radio"/> | \$9,500 invested by a preferred customer in a 5-year CD  |
| (C) | <input type="radio"/> | <input type="radio"/> | \$9,500 invested by a new customer in a 10-year CD       |
| (D) | <input type="radio"/> | <input type="radio"/> | \$10,000 invested by a preferred customer in a 2-year CD |

**Item 7:**

Determine whether each of these transactions will, according to the new rules and rates described, yield a total interest payment of between \$500 and \$600?

- |     | Yes                   | No                    |  |
|-----|-----------------------|-----------------------|--|
| (A) | <input type="radio"/> | <input type="radio"/> | A new customer's \$20,000 1-year CD comes to term.                                 |
| (B) | <input type="radio"/> | <input type="radio"/> | A new customer's \$4,000 5-year CD comes to term.                                  |
| (C) | <input type="radio"/> | <input type="radio"/> | A preferred customer's \$10,000 2-year CD comes to term.                           |
| (D) | <input type="radio"/> | <input type="radio"/> | A preferred customer's 5-year \$20,000 CD is withdrawn at the end of the 3rd year. |

**Item 8:**

Consider each of the following statements. Does the information in the memo and the table support the inference as stated?

- |     | Yes                   | No                    |   |
|-----|-----------------------|-----------------------|---|
| (A) | <input type="radio"/> | <input type="radio"/> | Prior to the policy changes described, there were no penalties for early CD withdrawals.  |
| (B) | <input type="radio"/> | <input type="radio"/> | Certain bank policies are designed to reward preferred customers for their loyalty.   |
| (C) | <input type="radio"/> | <input type="radio"/> | If the bank accomplishes its stated intentions, it will likely pay a higher average interest rate to customers than if it does not. |
| (D) | <input type="radio"/> | <input type="radio"/> | Part of the purpose of the policy changes is to increase the proportion of CD investments that result in early withdrawal.          |



## Item 9:

Year of Election	President	Political Party	Popular Vote (millions)	% of Popular Vote	Electoral Vote	% of Electoral Vote
1960	John Kennedy	Democratic	34.2	49.72%	303	56.40%
1964	Lyndon Johnson	Democratic	43.1	61.05%	486	90.30%
1968	Richard Nixon	Republican	31.8	43.42%	301	55.90%
1972	Richard Nixon	Republican	47.2	60.67%	520	96.70%
1976	James Carter	Democratic	40.8	50.08%	297	55.20%
1980	Ronald Reagan	Republican	43.9	50.75%	489	90.90%
1984	Ronald Reagan	Republican	54.5	58.77%	525	97.60%
1988	George Bush	Republican	48.9	53.37%	426	79.20%
1992	William Clinton	Democratic	44.9	43.01%	370	68.80%
1996	William Clinton	Democratic	47.4	49.23%	379	70.40%
2000	George W. Bush	Republican	50.5	47.87%	271	50.40%
2004	George W. Bush	Republican	62.0	50.73%	286	53.20%
2008	Barack Obama	Democratic	69.5	52.87%	365	67.80%

The table above gives information about the voting patterns in United States presidential elections from 1960 to 2008. In addition to giving the name and the political party of the President elected in each year, the table provides the total popular vote and electoral vote that the winner received in that election, as well as the percentage of the total vote that each figure represents.

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.

Alternate Sort 1: *Electoral Vote*

Year of Election	President	Political Party	Popular Vote (millions)	% of Popular Vote	Electoral Vote	% of Electoral Vote
2000	George W. Bush	Republican	50.5	47.87%	271	50.40%
2004	George W. Bush	Republican	62.0	50.73%	286	53.20%
1976	James Carter	Democratic	40.8	50.08%	297	55.20%
1968	Richard Nixon	Republican	31.8	43.42%	301	55.90%
1960	John Kennedy	Democratic	34.2	49.72%	303	56.40%
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1972	Richard Nixon	Republican	47.2	60.67%	520	96.70%
1984	Ronald Reagan	Republican	54.4	58.77%	525	97.60%

Alternate Sort 2: *Percent of Popular Vote*

Year of Election	President	Political Party	Popular Vote (millions)	% of Popular Vote	Electoral Vote	% of Electoral Vote
1992	William Clinton	Democratic	44.9	43.01%	370	68.80%
1968	Richard Nixon	Republican	31.8	43.42%	301	55.90%
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1972	Richard Nixon	Republican	47.2	60.67%	520	96.70%
1964	Lyndon Johnson	Democratic	43.1	61.05%	486	90.30%

Consider each of the following statements about this Presidential election data. For each statement indicate whether the statement is true or false, based on the information provided in the table.

- |              | True                  | False                 |   |
|--------------|-----------------------|-----------------------|---|
| Question 9-1 | <input type="radio"/> | <input type="radio"/> | The President who received the median number of electoral votes also received the median number of popular votes.   |
| Question 9-2 | <input type="radio"/> | <input type="radio"/> | Of those Presidents elected for two terms, William Clinton had the smallest percent increase in popular vote between the two years.   |
| Question 9-3 | <input type="radio"/> | <input type="radio"/> | The average (arithmetic mean) number of electoral votes received by Democratic presidents was greater than the average number of electoral votes received by Republican presidents. |
| Question 9-4 | <input type="radio"/> | <input type="radio"/> | The same President was elected in the two election years in which the winner's percentage of the popular vote and percentage of the electoral vote were most nearly equal.          |

## Data for Items 10, 11, and 12:

Memo #1

Memo #2

Email #1

### MEMORANDUM

To: Regional Office Managers

From: Chief Operations Officer

RE: Travel planning

Once again, our annual management retreat will be held in Bloomsbury. In preparation for this year's retreat, all Regional Office Managers (ROMs) will be responsible for arranging the travel reservations for all Level 2 managers within his or her Region. You may delegate that task should you wish.

ROMs will receive a research memorandum from the Logistics Division providing the average airfare from the 6 Regions to Bloomsbury. While ROMs should use that average airfare as a guide, we anticipate that there may be some variation in ticket prices based upon the specifics of travel arrangements. As such, Regional offices will be reimbursed for the full cost of any plane ticket priced within 1 (one) standard deviation of the average airfare from its region to Bloomsbury, inclusive. For any ticket priced more than 1 (one) standard deviation above the mean, regional offices will be reimbursed up to the average airfare from your region to Bloomsbury. For any ticket priced more than 1 (one) standard deviation below the average, in addition to full reimbursement of the ticket cost, regional offices will receive a "Budget Bonus" of 50% of the difference between the ticket price and the average airfare from your region to Bloomsbury.

Memo #1

Memo #2

Email #1

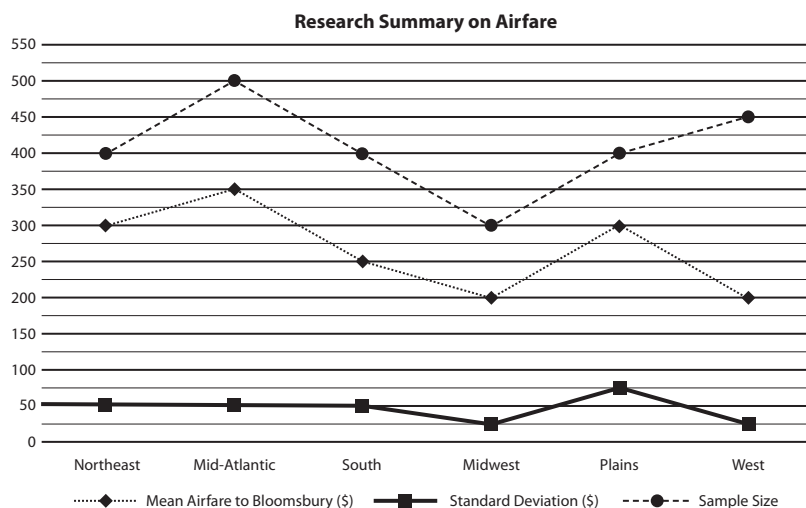
### MEMORANDUM

To: Regional Office Managers

From: Logistics Division

RE: Airfare Research

The attached chart lists the average (arithmetic mean) airfare from the listed Regions to Bloomsbury. The mean airfare was calculated based upon taking a normally distributed sample of airfares. The standard deviation and size of each sample is also listed in the chart.



*(See the next page for additional information)*

Email from Marco Roland, Human Resources Manager, West Region to Marisa Cortland, Regional Office Manager, West Region

Dear Marisa,

Tickets have been purchased for all of the Level 2 Managers in the West Region. Below is a summary:

Airfare	Number of Tickets Purchased
\$150	18
\$210	4
\$230	8

Best,  
Marco

### Item 10:

Consider each of the following statements. Does the information contained in the two memoranda and the email support the stated inference?

- |     | Yes                   | No                    |   |
|-----|-----------------------|-----------------------|---|
| (A) | <input type="radio"/> | <input type="radio"/> | The management retreat is held at Bloomsbury most years.                                |
| (B) | <input type="radio"/> | <input type="radio"/> | No region had a lower average (arithmetic mean) airfare to Bloomsbury than the Midwest. |
| (C) | <input type="radio"/> | <input type="radio"/> | Only Level 2 managers will attend the management retreat.                               |
| (D) | <input type="radio"/> | <input type="radio"/> | The Regional Office Manager need not make the reservations personally.                  |

### Item 11:

Consider each of the following statements. Based upon the information contained in the two memoranda and the email, determine whether each statement is true or false as stated.

- |     | True                  | False                 |   |
|-----|-----------------------|-----------------------|---|
| (A) | <input type="radio"/> | <input type="radio"/> | The West Region will receive a "Budget Bonus" of \$450.   |
| (B) | <input type="radio"/> | <input type="radio"/> | In the Mid-Atlantic sample, more than 20 tickets were priced over \$450.  |
| (C) | <input type="radio"/> | <input type="radio"/> | In the Northeast sample, more than 50 tickets were priced under \$250.  |
| (D) | <input type="radio"/> | <input type="radio"/> | In the sample, the ticket price two standard deviations below the mean for the Midwest was less than that for Plains. |

### Item 12:

If one of the tickets purchased by the West Region's Level 2 managers were selected at random, what is the probability that it will be fully reimbursed?

- (A)  $\frac{4}{15}$
- (B)  $\frac{9}{15}$
- (C)  $\frac{11}{15}$
- (D)  $\frac{12}{15}$
- (E)  $\frac{14}{15}$

## PRACTICE INTEGRATED REASONING: SECTION 2

12 Items

Time limit: 30 minutes

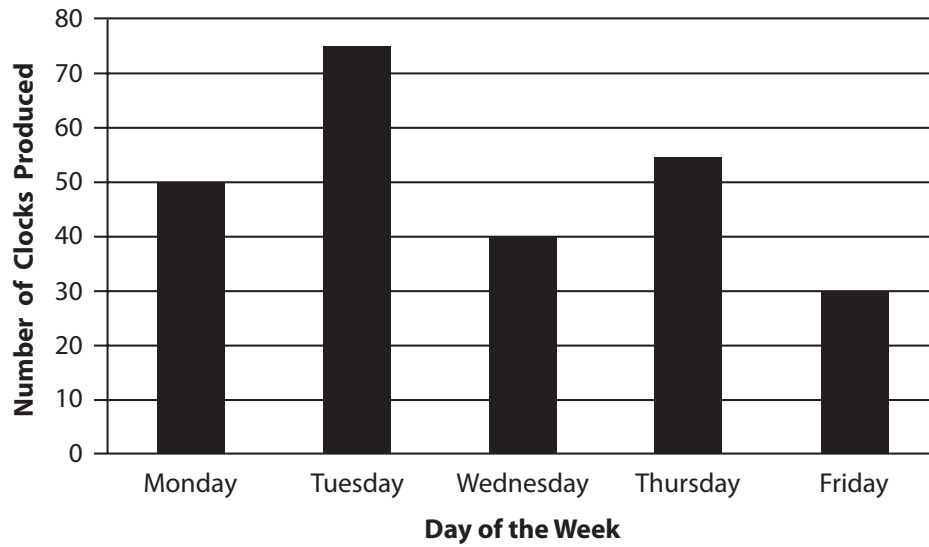
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We've included answers to this section starting on page 461.

At the time this book was printed, GMAC had not released the scoring scale for the Integrated Reasoning section. We'll make a scoring grid available in your online tools as soon as possible so that you can compute your score on the section.

### Item 1:



The graph above gives the daily output in a particular five day work week at a certain clock factory. Use the drop-down menus to fill in the blanks in each of the following statements based on the information given by the graph.

**Question 1-1:**

The ratio of the number of clocks produced on Tuesday to that on Wednesday is approximately \_\_\_\_\_.

- (A) 15 to 8
- (B) 12 to 7
- (C) 10 to 9
- (D) 8 to 11
- (E) 5 to 13

**Question 1-2:**

The number of clocks produced on Monday and Wednesday combined is approximately \_\_\_\_\_ of the number of clocks produced over the entire week.

- (A) 16%
- (B) 20%
- (C) 28%
- (D) 36%
- (E) 45%

**Question 1-3:**

The number of clocks produced on Monday is \_\_\_\_\_ more than the number produced on Friday.

- (A) 5
- (B) 10
- (C) 15
- (D) 20
- (E) 25

## Item 2:

Company X: Our company's computer technology is out of date. We will be unable to compete effectively in the modern economy if we are not using current computer technology. We have decided to purchase throughout the company new computers that run Portals 8, the newest version of the world's best-selling operating system.

Technology Consultant: We agree that Company X needs to purchase new computers, but instead of installing Portals 8, Company X should purchase GreenCap, our consulting firm's proprietary operating system. The initial purchase of a GreenCap operating system costs substantially less than does Portals 8, and it provides the same functionality with current computer technology. With the money it would save, Company X would be better able to compete effectively in the modern economy.

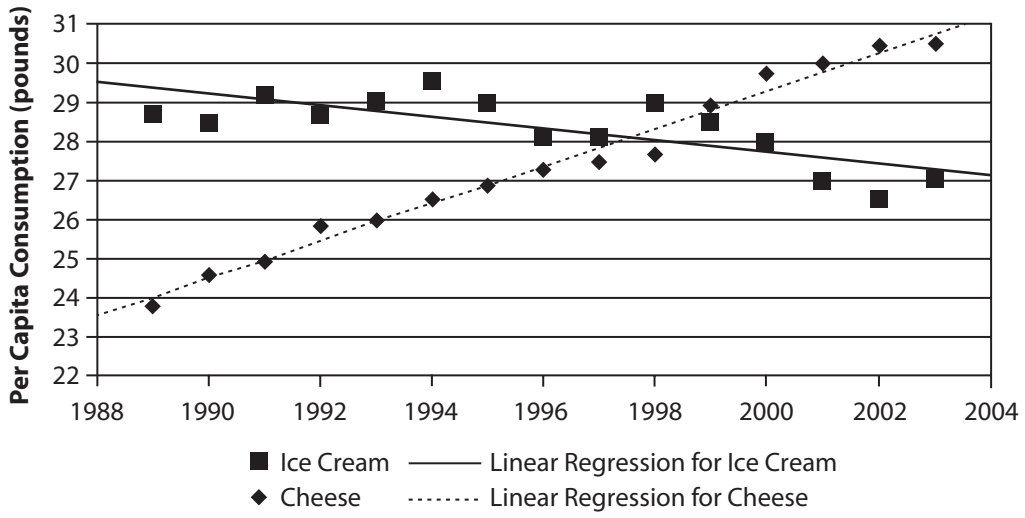
In the table below, identify which statement, if true, most weakens A's argument, and which statement, if true, most weakens B's argument.

Company X	Technology Consultant	Statement
(A) <input type="radio"/>	<input type="radio"/>	GreenCap makes more efficient use of computer resources than does Portals 8.
(B) <input type="radio"/>	<input type="radio"/>	GreenCap is not the most cutting-edge software available on the market.
(C) <input type="radio"/>	<input type="radio"/>	Although Portals 8 was released this year, GreenCap has been available for three years.
(D) <input type="radio"/>	<input type="radio"/>	GreenCap requires purchase of an annual maintenance agreement, making it more expensive overall than Portals 8.
(E) <input type="radio"/>	<input type="radio"/>	Portals 8 is available in several different versions with different price levels, depending on the proposed use of the operating system.
(F) <input type="radio"/>	<input type="radio"/>	Portals 8, which was newly released, contains bugs and design flaws that would impair Company X's ability to compete in the modern economy.



There is no testing material on this page.

**Item 3:**



The graph above is a scatter plot with 30 points, each representing the per capita consumption, in pounds, in the United States of a particular dairy product during the years 1989 through 2003. The solid line is a regression line for the points representing the per capita consumption of ice cream (and other frozen dairy products). The dashed line is a regression line for the points representing the per capita consumption of cheese. Use the drop-down menus to fill in the blanks in each of the following statements based on the information given by the graph.

**Question 3-1:**

Based on the line of regression, the expected per capita consumption of ice cream in 2015 would be approximately \_\_\_\_\_ pounds.

- (A) 21
- (B) 26
- (C) 31
- (D) 36
- (E) 41

**Question 3-2:**

For the year with the lowest total per capita consumption of both ice cream and cheese combined, the ratio of per capita ice cream consumption to per capita cheese consumption was approximately \_\_\_\_\_ .

- (A) 2 to 3
- (B) 3 to 2
- (C) 6 to 5
- (D) 5 to 6

**Question 3-3:**

The slope of the regression line for ice cream is \_\_\_\_\_ the slope of the regression line for cheese.

- (A) greater than
- (B) less than
- (C) equal to

## Item 4:

XM Representative: The federal committee thoroughly reviews all of the geo-engineering industry's planned projects and approves only those that meet your guidelines for safety and environmental impact. Since less than two percent of XM projects have ever been rejected, the costly and time-consuming review should be waived so that our latest project can be quickly passed and implemented.

Committee Member: Your request fails to consider that the decisions of our board affect not only the corporation involved, but also the entire field. If we fail to review your project, we also fail to observe innovations in geo-engineering that may need guidelines drafted for the safety of subsequent projects throughout the industry.

In the table below, please identify the additional evidence that most strengthens and the additional evidence that most weakens the committee member's response to the XM representative.

Most Strengthens	Most Weakens	Additional Evidence
(A) <input type="radio"/>	<input type="radio"/>	XM's latest project is nearly identical to a previous project by XM that had successfully passed the committee review process
(B) <input type="radio"/>	<input type="radio"/>	The geo-engineering corporation CL, which is XM's biggest competitor, has had less than one percent of its projects rejected by the committee
(C) <input type="radio"/>	<input type="radio"/>	Once a geo-engineering innovation has been passed by the committee, the same innovation is automatically approved in all subsequent projects, without further review.
(D) <input type="radio"/>	<input type="radio"/>	Many of XM's geo-engineering projects are peer-reviewed within the industry before they are submitted to the federal committee.
(E) <input type="radio"/>	<input type="radio"/>	Geo-engineering is a hazardous field that deserves careful monitoring.
(F) <input type="radio"/>	<input type="radio"/>	The federal committee has had to reverse some of its decisions on past projects.

### Item 5:

A group of entomologists estimates that the population of Insect Species X is decreasing at a constant rate of 10% per year, while the population of Insect Species Y is decreasing at a constant rate of 15% per year. Based on these estimates, in four years, the two species will have equal populations, rounded to the nearest million.

In the table below, identify a number for the current population of Insect Species X, in millions, and a number for the current population of Insect Species Y, in millions, that could be consistent with the entomologists' estimates.

Insect Species X	Insect Species Y	Current Populations (in millions)
(A) <input type="radio"/>	<input type="radio"/>	450
(B) <input type="radio"/>	<input type="radio"/>	525
(C) <input type="radio"/>	<input type="radio"/>	565
(D) <input type="radio"/>	<input type="radio"/>	600
(E) <input type="radio"/>	<input type="radio"/>	625
(F) <input type="radio"/>	<input type="radio"/>	770

## Data for Items 6, 7 and 8:

Email #1

Email #2

Memo #1

*Email from Marketing Director to Marketing Researcher on October 4, 2011.*

As you know, our revenue growth rate has declined for the past three quarters. To address this, I suggest that we initiate a massive advertising buy. On three separate occasions, in 1978, 1987, and 1993, we have responded to falling revenues by increasing our advertising expenditures by 30%. On all three occasions, within one quarter, our revenues began to increase again. Therefore, if we increase the number of advertisements targeted at our top consumers by 30%, we will once again increase our revenues.

Since our top consumers are females aged 15 – 25, compile a list of the top two television programs watched by that group. Also research the prices for a 30-second commercial for each television program.

Email #1

Email #2

Memo #1

*Email from Marketing Researcher to Marketing Director on October 10, 2011.*

We've hit a slight complication in our research. While we've had no problem determining the top two programs and advertising prices for each, we've realized that there is a fair amount of overlap between the viewers of the two programs. We've found that 80% of the audience for *Hart Attack* also watches *Blonde Fury*.

I'll send you the chart summarizing the audience size and advertising prices tomorrow.

Email #1

Email #2

Memo #1

### MEMORANDUM

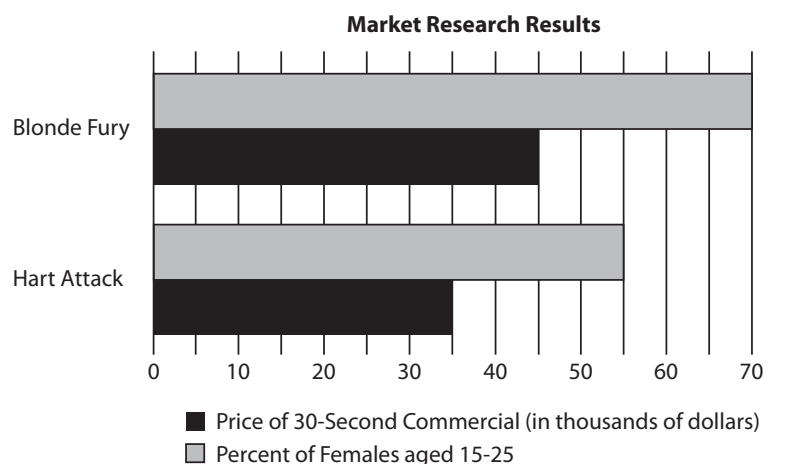
TO: Marketing Director

FROM: Marketing Researcher

DATE: October 11, 2011

RE: Market Research Results

The attached chart presents the results from our research on the top 2 television programs for Females aged 15-25.



**Item 6:**

Consider each of the following statements. Does the information contained in the two emails and the memorandum support the inference as stated?

- |     | Yes                   | No                    |  |
|-----|-----------------------|-----------------------|--|
| (A) | <input type="radio"/> | <input type="radio"/> | More females aged 15-25 watch <i>Blonde Fury</i> than do any other group.                                  |
| (B) | <input type="radio"/> | <input type="radio"/> | Advertisements are more expensive during higher rated programs.  |
| (C) | <input type="radio"/> | <input type="radio"/> | <i>Hart Attack</i> has a higher ratio of viewers per dollar spent on advertising than <i>Blonde Fury</i> . |
| (D) | <input type="radio"/> | <input type="radio"/> | Females aged 15-25 make up the majority of the company's customers.  |

**Item 7:**

If there are 20,000,000 females aged 15-25, then how many females aged 15-25 (in millions) watch neither *Blonde Fury* nor *Hart Attack*?

- (A) 1.4
- (B) 4.0
- (C) 5.6
- (D) 9.6
- (E) 11.2

**Item 8:**

Consider each of the following statements. Based upon the information contained in the two emails and the memoranda, determine whether each statement is an assumption made by the Marketing Director.

- |     | Yes                   | No                    |   |
|-----|-----------------------|-----------------------|---|
| (A) | <input type="radio"/> | <input type="radio"/> | It is possible for a strategy that succeeded in the past to succeed again.  |
| (B) | <input type="radio"/> | <input type="radio"/> | The previous increases in revenues were attributable at least in part to the effect of increased advertising                                  |
| (C) | <input type="radio"/> | <input type="radio"/> | Increasing the number of advertisements has a similar effect on revenues as increasing the amount of money spent on advertising expenditures. |
| (D) | <input type="radio"/> | <input type="radio"/> | Television advertisements remain as effective at reaching a targeted audience as they were in the past.                                       |

## Item 9:

Name	Population 2010	Population 2050	% of Population Foreign-Born
Andorra	84,000	75,000	77.25
Australia	22,729,000	29,013,000	19.93
Barbados	273,000	282,000	9.31
Brazil	190,733,000	260,692,000	0.34
Canada	34,611,000	41,136,000	18.76
China	1,399,725,000	1,303,723,000	0.29
Egypt	80,942,000	137,873,000	0.22
France	65,822,000	69,768,000	10.18
India	1,210,193,000	1,656,554,000	0.52
Indonesia	237,556,000	313,021,000	0.07
Kazakhstan	16,518,000	15,100,000	16.88
Laos	6,230,000	10,069,000	0.42
Nauru	10,000	12,000	38.45
Portugal	10,637,000	9,933,000	7.2
Republic of the Congo	4,043,000	9,599,000	7.2
Russia	142,914,000	109,187,000	8.48
Suriname	525,000	617,000	1.11
United Kingdom	62,436,000	71,154,000	8.98
United States	312,399,000	439,010,000	21.81

The table above gives 2010 population based on UN estimates and 2050 populations based on UN projections for 19 selected countries. The table also gives the UN estimates of the percentage of the population that is foreign-born for each country in 2010.

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.



Alternate Sort 1: *Population 2010*

Name	Population 2010	Population 2050	% of Population
Nauru	10,000	12,000	38.45
Andorra	84,000	75,000	77.25
Barbados	273,000	282,000	9.31
Suriname	525,000	617,000	1.11
Republinc of the Congo	4,043,000	9,599,000	7.2
Laos	6,230,000	10,069,000	0.42
Portugal	10,637,000	9,993,000	7.2
Kazakhstan	16,518,000	15,100,000	16.88
Australia	22,729,000	29,013,000	19.93
Canada	34,611,000	41,136,000	18.76
United Kingdom	62,436,000	71,154,000	8.98
France	65,822,000	69,768,000	10.18
Egypt	80,942,000	137,873,000	0.22
Russia	142,914,000	109,187,000	8.48
Brazil	190,733,000	260,692,000	0.34
Indonesia	237,556,000	313,021,000	0.07
United States	312,399,000	439,010,000	21.81
India	1,210,193,000	1,656,554,000	0.52
China	1,399,725,000	1,303,723,000	0.29

Consider each of the following statements about these countries. For each statement indicate whether the statement is supported based on the information provided in the table.

- |              | Supported             | Unsupported           |  |
|--------------|-----------------------|-----------------------|--|
| Question 9-1 | <input type="radio"/> | <input type="radio"/> | Of the countries with a population of greater than 150 million in 2010, the one with the median number of foreign-born inhabitants is China. |
| Question 9-2 | <input type="radio"/> | <input type="radio"/> | The total population of Laos is projected to be about 8 million in 2030.   |
| Question 9-2 | <input type="radio"/> | <input type="radio"/> | Andorra has the highest rank in terms of number of foreign-born inhabitants.   |
| Question 9-4 | <input type="radio"/> | <input type="radio"/> | Russia is projected to have the highest percent decrease in population from 2010 to 2050.  |

## Data for Items 10, 11 and 12:

The following emails come from the Public Relations division of a large non-profit organization.

Email #1

Email #2

Email #3

Hello Gloria!

We have to choose a caterer for the upcoming gala. Two under consideration are DoxySource and BrightRight. Although DoxySource has delivered satisfactory service in the past, our First Annual Sponsors Gala promises to be the largest event we have ever hosted, and BrightRight is known for large event planning and production. However, I'd like more information before switching from a tried and true contractor. Also, I'd like to consider how to justify any over-budget costs from using BrightRight, if that comes up. I am committed to using only one provider. Please work up a comparison of costs of services and rentals for BrightRight and DoxySource. We require: tables, audio, food, and a punch fountain or fountains (a dessert fountain would be a lovely addition). Our budget is \$6,000.00, and we plan for a maximum of 400 people.

Thanks!

Evelyn Schott  
Gala Coordinator

Email #1

Email #2

Email #3

Hello Evelyn,

I've broken out the data in the following chart:

	DoxySource		BrightRight	
	Description	Price	Description	Price
AUDIO	200 Watt P.A. System (up to 40 people)	\$65.00	Party Sound System	\$650.00
	500 Watt P.A. System (up to 120 people)	\$90.00	Marquee Sound System	\$850.00
CATERING	Choice of appetizers (shrimp or spring roll)	\$2.00 per piece	The Classic Western BBQ	\$14.00 per person
	Choice of entree (chicken or beef w/ rice)	\$6.25 per piece	The Greek Feast	\$17.50 per person
	Choice of dessert (cupcakes or lemon bars)	\$3.40 per piece	The Far East Extravaganza	\$19.50 per person
TABLES	Trestle Table (seats 8)	\$15.50	Classroom (seats 8)	\$20.00
	Circular Table (seats 7)	\$17.00	Bistro/Hightop (seats 6)	\$22.00
FOUNTAINS	Chocolate Fountain (supplies not included)	\$105.00	Chocolate Fountain (supplies included)	\$500.00
	Punch Fountain (7 gallons, provided, serves approx. 70)	\$47.00	Punch Fountain, waterfall tier (40 gallons, provided)	\$350.00

BrightRight offers packages that are generally more elegant and comprehensive, and more expensive. For instance, we can choose a single full meal set, such as "The Greek Feast," for the entire gala. Using Doxy Source, while more economical and flexible in the catering, does mean more hands-on involvement on our end.

The biggest price difference comes in the audio systems. BrightRight, which consistently hosts events with attendance of several hundreds, offers complex systems that include lights and sound effects, in addition to high-definition audio reproduction. DoxySource offers two standard, large public address systems. I am not sure whether the Gala will need all the flash and sizzle of the high-end sound system; but the projected attendance is above the recommended usage for DoxySource's P.A. systems. Due to electrical concerns, we can only have one P.A. system at the gala.

Gloria Welch

Administrative Assistant, Public Relations

**Item 10:**

Based on the information in the communications above, and assuming the maximum number of guests, which of the following must be true?

- |     | True                  | False                 |   |
|-----|-----------------------|-----------------------|---|
| (A) | <input type="radio"/> | <input type="radio"/> | If the coordinator uses DoxySource and orders one appetizer, one entrée and one dessert per person, then the table costs will be approximately 16.6% of the food costs.                             |
| (B) | <input type="radio"/> | <input type="radio"/> | If the large punch fountain from BrightRight is sufficient for 400 guests, then using smaller fountains from DoxySource to serve the same number of guests would cost at least 20% less per gallon. |
| (C) | <input type="radio"/> | <input type="radio"/> | If BrightRight is used, the project will go over its present budget by at least 15%.  |
| (D) | <input type="radio"/> | <input type="radio"/> | If the coordinator uses DoxySource, she can add the chocolate fountain without a budget increase assuming chocolate fountains supplies cost \$0.50 per guest.                                       |

**Item 11:**

Suppose the Gala Coordinator uses DoxySource, for the maximum number of guests. If she wants to use at least one of each type of table, then the lowest total cost for tables would be:

- (A) \$775.00
- (B) \$778.44
- (C) \$792.00
- (D) \$873.21
- (E) \$971.43

**Item 12:**

Which of the following statements can be most reasonably inferred from the messages between the Gala Coordinator and the Administrative Assistant?

- |     | True                  | False                 |  |
|-----|-----------------------|-----------------------|--|
| (A) | <input type="radio"/> | <input type="radio"/> | The Gala Coordinator is willing to ask for a budgetary increase, if necessary.   |
| (B) | <input type="radio"/> | <input type="radio"/> | If the Gala Coordinator wants to ensure that the Gala has audio equipment appropriate to the size of the Gala, she must contract with BrightRight. |
| (C) | <input type="radio"/> | <input type="radio"/> | According to the Administrative Assistant, audio costs are not the only determining factor in choosing one event planning service over another.    |
| (D) | <input type="radio"/> | <input type="radio"/> | Fountains are an optional element of the gala.   |