



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 are 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), (D), and (E) next to the 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 445.

## 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 Circle	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 on the ridership in 9 subway stations in New York City for the year 2010. 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
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Times Square/42nd St	58,422,597	0.6%	11
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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%	5
59th St./Columbus Circle	20,711,058	1.4%	5
Lexington Ave/59th St	19,553,597	3.3%	6
14th St./Union Square	34,730,692	1.4%	7
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 ratio of the average (arithmetic mean) number of riders in 2010 for those subway stations having 5 connecting lines to those having 3 connecting lines is approximately 4:3. |
| Question 1-3 | <input type="radio"/> | <input type="radio"/> | The station with the greatest percent increase in riders from 2009 to 2010 had the least annual ridership in 2010.   |

## Item 2:

Frank researched the 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. He also found that 27 doctors whose services are covered by his medical plan graduated from medical school without honors.

In the table below, for the doctors in Frank's local area, 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. Make only one selection in each column.

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

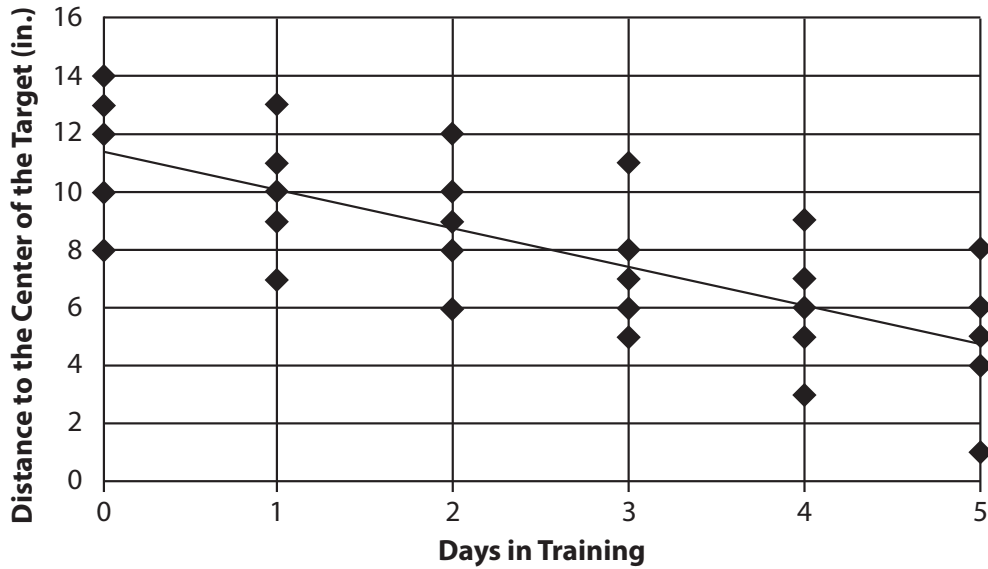
### Item 3:

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 shot a single arrow at the end of each day of training, as well as one arrow before the first day of training. The graph above is a scatterplot, in which each of the 30 points represents the distance from the center of the target to each student's arrow and the number of days the student had been in training at the time the arrow was shot. 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) -1.3
- (C) -0.8
- (D) 1.2
- (E) 2.9

**Question 4-2:**

The number of students within 11 inches of the center of the target is \_\_\_\_\_ after day 2 of training than before any training.

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

## Item 5:

The earliest known evidence of seafaring by human ancestors dates to approximately 130,000 years ago. 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 ago). 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.

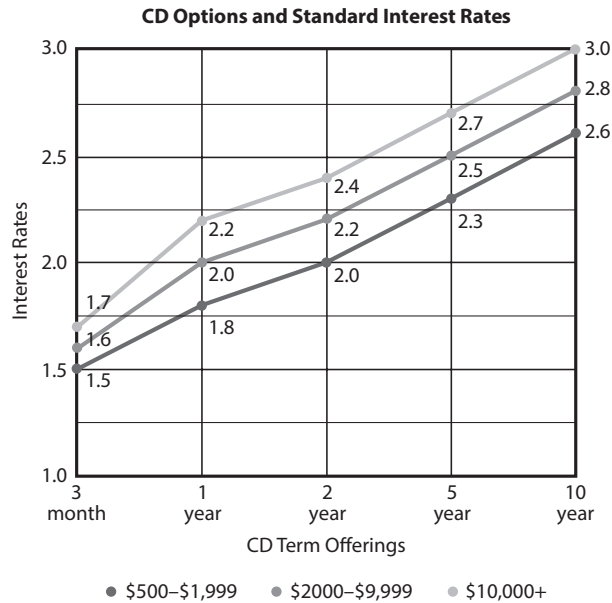
	Strengthen	Weaken	Statement
(A)	<input type="radio"/>	<input type="radio"/>	In the same area of the island, archaeologists discovered pieces of ancient harpoons and spears used for fishing.
(B)	<input type="radio"/>	<input type="radio"/>	The stone tools resemble those made and used by <i>Homo erectus</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.

There is no testing material on this page.

## 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 annually, 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. Moreover, preferred customers (those who have previously bought CDs of any term length in amounts of \$10,000 or more) will receive a bonus of 0.2% during the first year when they purchase a CD with a term of 5 or 10 years in the amount of at least \$10,000. Other CDs continue at the standard rates.

We have also revised the schedule of penalties for early withdrawal and made these 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                    |   |
|--------------|-----------------------|-----------------------|---|
| Question 6-1 | <input type="radio"/> | <input type="radio"/> | \$11,000 invested by a new customer in a 1-year CD      |
| Question 6-2 | <input type="radio"/> | <input type="radio"/> | \$9,500 invested by a preferred customer in a 5-year CD |
| Question 6-3 | <input type="radio"/> | <input type="radio"/> | \$9,500 invested by a new customer in a 10-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                    |  |
|--------------|-----------------------|-----------------------|--|
| Question 7-1 | <input type="radio"/> | <input type="radio"/> | A new customer's \$20,000 1-year CD held for the complete term       |
| Question 7-2 | <input type="radio"/> | <input type="radio"/> | A new customer's \$4,000 5-year CD held for the complete term        |
| Question 7-3 | <input type="radio"/> | <input type="radio"/> | A preferred customer's \$10,000 2-year CD held for the complete term |

**Item 8:**

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

- |              | Yes                   | No                    |   |
|--------------|-----------------------|-----------------------|---|
| Question 8-1 | <input type="radio"/> | <input type="radio"/> | Prior to the policy changes described, there were no penalties for early CD withdrawals.  |
| Question 8-2 | <input type="radio"/> | <input type="radio"/> | Certain bank policies are designed to reward preferred customers for their loyalty.   |
| Question 8-3 | <input type="radio"/> | <input type="radio"/> | If the bank accomplishes its stated intentions, it will likely pay a higher average (arithmetic mean) interest rate to customers than if it does not. |

## 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%
2000	George W. Bush	Republican	50.5	47.87%	271	50.40%
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1988	George Bush	Republican	48.9	53.37%	426	79.20%
1984	Ronald Reagan	Republican	54.4	58.77%	525	97.60%
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 the 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"/> | Of those Presidents elected for two terms, William Clinton had the smallest percent increase in popular vote between the two years.   |
| Question 9-2 | <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 9-3 | <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 (arithmetic mean) 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 1 (one) standard deviation or more below 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

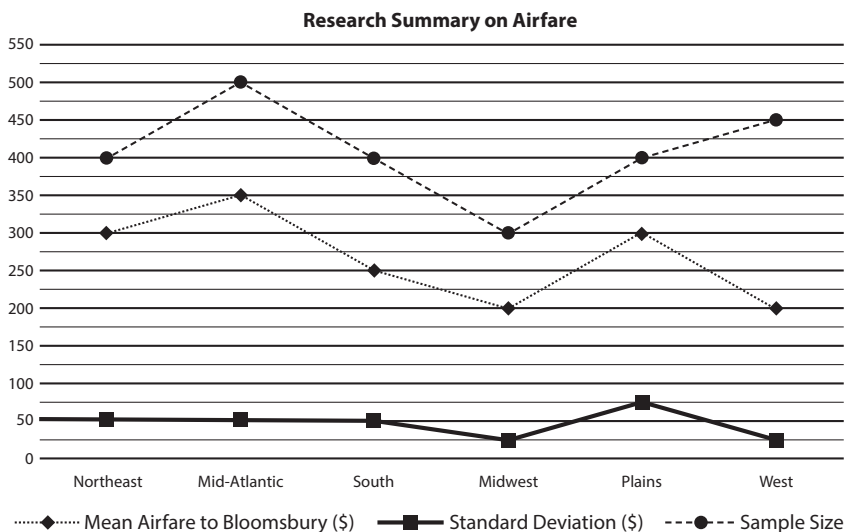
Memo #2

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. Select *Yes* if the information contained in the two memoranda and the email support the inference as stated. Otherwise, select *No*.

- |               | Yes                   | No                    |   |
|---------------|-----------------------|-----------------------|---|
| Question 10-1 | <input type="radio"/> | <input type="radio"/> | No region had a lower average (arithmetic mean) airfare to Bloomsbury than the Midwest. |
| Question 10-2 | <input type="radio"/> | <input type="radio"/> | Only Level 2 managers will attend the management retreat.                               |
| Question 10-3 | <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                 |  |
|---------------|-----------------------|-----------------------|--|
| Question 11-1 | <input type="radio"/> | <input type="radio"/> | The West Region will receive a "Budget Bonus" of \$450.  |
| Question 11-2 | <input type="radio"/> | <input type="radio"/> | The two regions with the least sample size also had the least difference between the most and least expensive airfare found during research. |
| Question 11-3 | <input type="radio"/> | <input type="radio"/> | The combined mean airfare of all the researched regions is less than the mean airfare for three of the regions individually.                 |

### 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 is eligible to 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

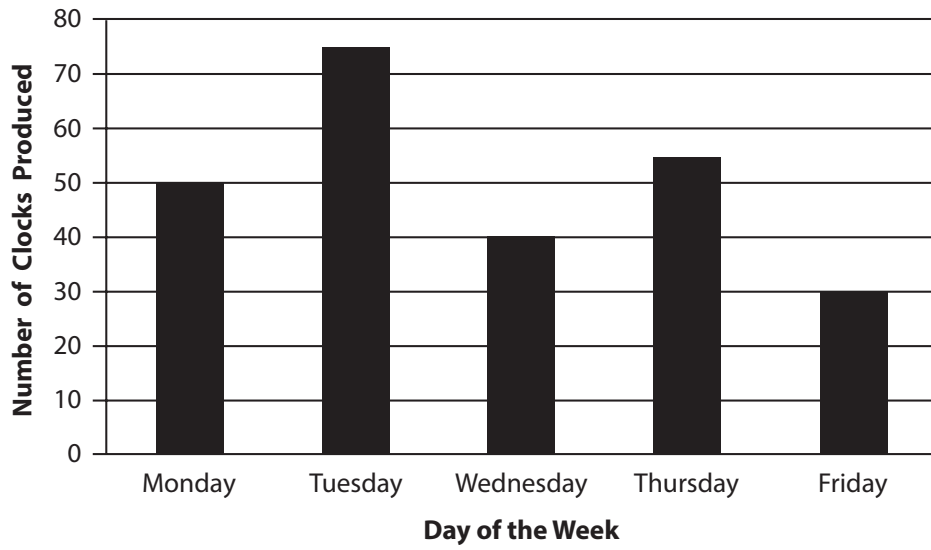
Time limit: 30 minutes

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We've included answers to this section starting on page 452.

**Item 1:**



The graph above gives the daily output for five days 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 those produced 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 total number of clocks produced on Monday and Wednesday is approximately \_\_\_\_\_ of the number of clocks produced for all five days.

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

## 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 new computers that run Portals 8, the newest version of the world's best-selling operating system, throughout the entire company.

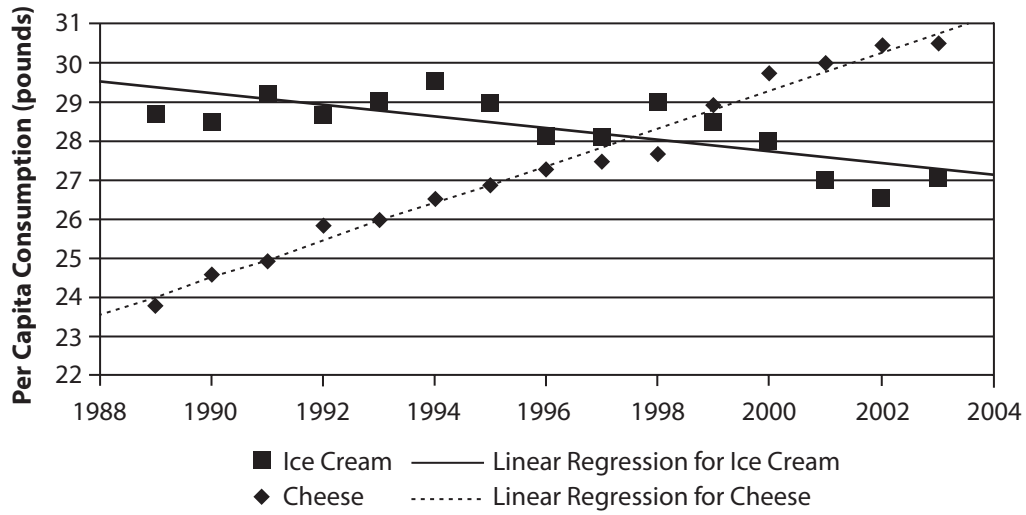
Technology Consultant: We agree that Company X needs to purchase new computers, but instead of installing Portals 8, Company X should purchase GreenCap, our consulting firm's proprietary operating system. The initial purchase of a GreenCap operating system costs substantially less than does Portals 8,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

In the table below, identify which statement, if true, most weakens Company X's argument, and which statement, if true, most weakens the Technology Consultant's argument.

Weakens Company X	Weakens 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 will 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 scatterplot with 30 points, each representing the per capita consumption, in pounds, of ice cream and cheese for the years 1989 through 2003 in the United States. The solid line is a regression line for the points representing the per capita consumption of ice cream. 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:**

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 is approximately \_\_\_\_\_ .

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

**Question 3-2:**

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: Your 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 passed and implemented quickly.

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.

Strengthens Committee Member's Response	Weakens Committee Member's Response	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 is 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 revenues have declined for each of the past three quarters. To address this issue, I suggest that we initiate a massive advertising buy. On three separate occasions, in 1978, 1987, and 1993, we responded to revenue decreases by increasing our advertising expenditures by 30%. On all three occasions, our revenues began to increase again within one quarter. 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, determine 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 viewers who are females aged 15–25 for *Hart Attack* also watch *Blonde Fury*.

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

Email #1

Email #2

Memo #1

### MEMORANDUM

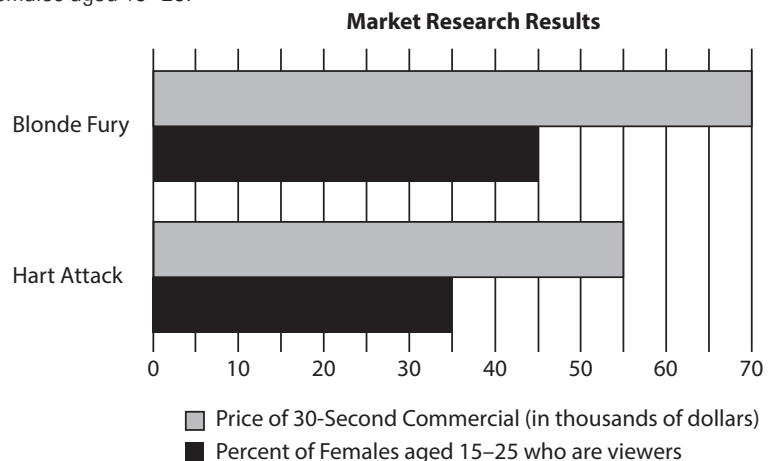
TO: Marketing Director

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 watched by females aged 15–25.





**Item 6:**

Consider each of the following statements. Select *Yes* if the information contained in the two emails and the memorandum support the inference as stated. Otherwise, select *No*.

- |              | Yes                   | No                    |  |
|--------------|-----------------------|-----------------------|--|
| Question 6-1 | <input type="radio"/> | <input type="radio"/> | No age and gender group watches <i>Blonde Fury</i> more frequently than do females aged 15–25.   |
| Question 6-2 | <input type="radio"/> | <input type="radio"/> | Thirty second advertisements are more expensive for programs with larger audiences.  |
| Question 6-3 | <input type="radio"/> | <input type="radio"/> | The ratio of female viewers aged 15 to 25 to dollars spent on advertising for <i>Hart Attack</i> is greater than that for <i>Blonde Fury</i> . |

**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 on the information contained in the two emails and the memoranda, select *Yes* if the statement is an assumption made by the Marketing Director. Otherwise, select *No*.

- |              | Yes                   | No                    |  |
|--------------|-----------------------|-----------------------|--|
| Question 8-1 | <input type="radio"/> | <input type="radio"/> | It is possible for a strategy that succeeded in the past to succeed again.   |
| Question 8-2 | <input type="radio"/> | <input type="radio"/> | The previous increases in revenues were attributable at least in part to the effect of increased advertising.                                  |
| Question 8-3 | <input type="radio"/> | <input type="radio"/> | Increasing the number of advertisements has a similar effect on revenues, to increasing the amount of money spent on advertising expenditures. |

## 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 populations 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	Projected Population 2050	% of Population Foreign-Born
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
Republic 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 greater than 150 million in 2010, the country 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 9-3 | <input type="radio"/> | <input type="radio"/> | Andorra's rank for the number of foreign-born inhabitants is greater than that for all other countries listed.                                |

## 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

Hello Gloria!

We have to choose a caterer for our upcoming gala. Two caterers 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

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 each	Classroom (seats 8)	\$20.00 each
	Circular Table (seats 7)	\$17.00 each	Bistro/Hightop (seats 6)	\$22.00 each
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 hundred people, 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:**

If the maximum number of guests attend the gala, determine if each of the statements is true or false based on the information in the two emails.

- |               | True                  | False                 |   |
|---------------|-----------------------|-----------------------|---|
| Question 10-1 | <input type="radio"/> | <input type="radio"/> | If the coordinator uses DoxySource and orders one appetizer, one entrée, and one dessert per person, then the least amount that can be spent on tables to seat all guests is approximately 16.6% of the cost of food. |
| Question 10-2 | <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.                   |
| Question 10-3 | <input type="radio"/> | <input type="radio"/> | If BrightRight is used, the project will go over its present budget by at least 15%.  |

**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, what is the least possible cost for the tables?

- (A) \$775.00
- (B) \$787.00
- (C) \$792.00
- (D) \$873.21
- (E) \$971.43

**Item 12:**

Based on the information in the messages between the Gala Coordinator and the Administrative Assistant, select *Yes* if the statement can be inferred. Otherwise, select *No*.

- |               | Yes                   | No                    |   |
|---------------|-----------------------|-----------------------|---|
| Question 12-1 | <input type="radio"/> | <input type="radio"/> | The Gala Coordinator is willing to ask for a budgetary increase, if necessary.  |
| Question 12-2 | <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. |
| Question 12-3 | <input type="radio"/> | <input type="radio"/> | Fountains are an optional element of the gala.  |

