GMAT

Integrated Reasoning

Integrated Reasoning

(50 新题)

Article

The expenses related to sponsoring a conference can be immense. An organization sponsoring a conference can recoup these expenses through registration fees and partnership with the host hotel. As part of the partnership, the host hotel sets aside a block of rooms for conference attendees, with rooms available at a slightly higher-than-normal rate.

While most conference attendees prefer to stay in the host hotel, they often follow an alternate strategy to avoid the extra cost of reserving a room within the block at the host hotel. Some attendees reserve rooms outside the host hotel—the ROHH strategy. Others reserve rooms outside the block—the ROB strategy.

Conference sponsors have succeeded in countering these strategies by increasing the conference registration fee by a fixed amount and then offering an equivalent registration fee discount to attendees who book rooms in the block. A study has shown that if this registration discount is equal to at least half the potential savings of an attendee's particular cost-saving strategy, the attendee is much more likely to reserve a room within the block.

Weekend Conferences

Ten conferences are scheduled for the same weekend in City X. For each conference, the table lists the conference sponsor, the registration fee, the discounted registration fee (if any), the host hotel, the rate for rooms in the block at the host hotel, and the lowest rate for an available room in the host hotel during that same weekend. Conference attendees will require two nights lodging, and all room rates are per guest, per night, assuming two guests per room. The lowest rate for an available room in City X on this same weekend is $65.

Sponsor	Registration fee	Discounted registration fee	Host hotel	Block rate	Lowest rate in host hotel
AMG	$225	$150	Garden Inn	$120	$65
CC	$720	$620	Hilton	$110	$70
CDA	$450	$400	Asiawest Center	$190	$185
FFNA	$325	$275	Hilton	$140	$70
HMHPA	$600	$575	Holiday Inn	$104	$79
PPOA	$550	$400	Hilton	$105	$70
PNDA	$425	$400	Bard Inn	$125	$125
QRTA	$325	no discount	Asiawest Center	$195	$185
RCD	$995	$895	Asiawest Center	$195	$185
WWLOP	$475	no discount	Perry Pavilion	$155	$155

1、

For each of the following sponsors, select *Yes* if an attendee of the sponsor's conference would spend less money by employing the ROB strategy—paying the lowest possible room rate in the host hotel and paying the nondiscounted registration fee—than by reserving a room in the block. Otherwise, select *No*.

	Yes	No	
1A.	○	○	CC
1B.	○	○	FFNA
1C.	○	○	HMHPA

2、

Assume that host hotels receive a reimbursement from the conference organizers for 25% of the block rate per night for each unoccupied room in the conference block. For each of the following hotels, select *Yes* if, for at least one conference on the weekend listed, the hotel would lose room revenue if a room in the block is vacant because an attendee employed the ROB strategy. Otherwise, select *No*.

	Yes	No	
2A.	○	○	Asiawest Center
2B.	○	○	Bard Inn
2C.	○	○	Hilton

3. Let X denote the block rate of the host hotel for a particular conference, and let Y denote the lowest room rate available in the host hotel outside of the conference block. For a conference that requires a two-night hotel stay, which one of the following expressions represents the least amount of discount on the conference registration fee that, according to the article, would be sufficient to deter conference attendees from employing the ROB strategy in choosing accommodations?

- A. $\frac{X+Y}{2}$
- B. $\frac{X-Y}{2}$
- C. $X-Y$
- D. $X+Y$
- E. $2(X-Y)$

4.

For each of the following sponsors, select *Yes* if an attendee of the sponsor's conference would spend less money by employing the ROHH strategy—paying the lowest possible room rate outside the host hotel and paying the nondiscounted registration fee—than by reserving a room in the block at the host hotel. Otherwise, select *No*.

	Yes	No	
4A.	○	○	CC
4B.	○	○	FFNA
4C.	○	○	PPOA

5、

Many individuals stand to benefit financially from attendees at conferences. For each of the following individuals, choose *Loss* if the individual would likely earn less money if rooms in the conference block are vacant because of attendees using ROHH strategies. Otherwise select *No loss*.

	Loss	No loss	
5A.	○	○	Speaker hired by a conference on education to speak about school reform
5B.	○	○	Room service waiter at the host hotel whose earnings are primarily from gratuities
5C.	○	○	Salaried front desk manager at the host hotel

6. Assume that all host hotels for the conferences in City X on the weekend indicated have conference block rooms available and that all hotels in City X have rooms available at their lowest rates for the conference weekend. Which one of the following conferences is most likely to have attendees favoring the ROB strategy over the ROHH strategy?

- A. AMG
- B. CDA
- C. QRTA
- D. RCD
- E. WWLOP

Researchers recently examined the initial public offering (IPO)—a private firm's first sale of stock shares to the public—of firms listed on Kenya's Nairobi Stock Exchange (NSE) between 1994 and 2008. During this time, the number of IPOs listed per year varied from zero to four. The researchers wanted to examine the extent to which four different variables—investor sentiment, firm size, board prestige, and firm age—affected the IPO stock share price, which is set by the firm. They hypothesized that all four variables would show a strong positive correlation with this IPO asking price. However, after examining the firms listed, they were surprised to find that none of the variables showed a strong positive correlation with IPO pricing, and in fact investor sentiment and board prestige both showed a strong negative correlation.

The researchers also discovered that nearly all of these IPOs were underpriced by an average of 50 percent, which is to say the IPO share prices were about half of what the share prices were at the close of that first day of trading. Such underpricing constitutes a loss to the listed firm because the firm could have immediately raised more money with a higher price. The researchers noted that firms should take care to set an IPO price low enough to capture investor interest but high enough to generate sufficient capital for the firm.

The table lists companies, examined by the researchers, that had their IPO on the NSE between 1994 and 2008, together with the IPO share price, first day closing price, and percent underpricing. Prices are in Kenyan shillings.

Company	IPO year	IPO share price (P_0)	First day closing price (P_1)	Percent underpricing*
Co-Operative Bank	2008	9.50	10.45	10.00
Safaricom	2008	5.00	7.35	47.00
Kenya Re	2007	9.50	16.00	68.42
Access Kenya	2007	10.00	13.45	34.50
Eveready	2006	9.50	11.00	15.79
Scangroup	2006	10.45	15.00	43.54
Kengen	2006	11.90	40.00	236.13
Mumias Sugar	2001	6.25	6.25	0.00
Athi River Mining	1997	12.25	12.60	2.86
Kenya Airways	1996	11.25	12.55	11.56
Rea Vipingo	1996	10.50	12.00	14.29
National Bank of Kenya	1994	10.00	26.00	160.00
Firestone East Africa	1994	35.50	35.00	-1.41

*The percent change from P_0 to P_1

7、

For each of the following statements, select *Inferable* if the statement is reasonably inferable from the information provided about the NSE IPOs. Otherwise select *Not inferable*.

	Inferable	Not inferable	
7A.	○	○	IPOs of firms with prestigious boards were more likely to be underpriced than those of other firms.
7B.	○	○	Firestone East Africa set its IPO price slightly lower than it should have.
7C.	○	○	At least one of the firms examined by the researchers did not have an underpriced IPO.

8、

For each of the following statements, select *Supported* if the statement is supported by the information provided about NSE IPOs. Otherwise select *Not supported*.

	Supported	Not supported	
8A.	○	○	The board of Safaricom was likely considered more prestigious than that of Co-Operative Bank at the time of their IPOs.
8B.	○	○	Kenya Re and Eveready were approximately the same size firms at the time of their IPOs.
8C.	○	○	When their IPO prices were set, investor sentiment was likely more favorable toward Kengen than toward Scangroup or Eveready.

9. The discussion of the researchers' study of Kenyan IPOs refers to "board prestige" primarily to

- A. help explain why investor sentiment toward some firms is sometimes very low
- B. caution that some variables should not be considered accurate predictors of IPO pricing
- C. introduce one of the variables whose relationship to IPO pricing surprised the researchers
- D. point to one of the attributes firms often use to generate investor interest in their IPO
- E. demonstrate that some attributes of a firm are often negatively correlated with the firm's IPO price

文章：

Statement by sports association spokesperson:

Our sports association issues contracts to television networks for the exclusive right to broadcast our sporting events. For this right, the networks pay the association substantial fees, which help finance our leagues. We also provide free media passes to our events for journalists so that they can effectively report on sports news, including final scores. Now, however, some news organizations are posting video clips, audio clips, digital photographs, and live score updates from our events on their websites. Conditions must be placed on these practices, which go beyond mere sports news reporting; they harm the value of our broadcasting contracts and violate our rights as the owners of the sports leagues. News organizations that wish to post such information on their websites should therefore sign contracts with the sports association that stipulate what postings will be allowed and how much they will cost. As we have in the past, we will deny media passes to journalists from news organizations that do not comply with our requirements.

Statement by news organizations spokesperson:

The news business has largely shifted from print media to the Internet, where readers expect text to be accompanied by audio and images. To charge news organizations for providing online sports coverage or to place unnecessary conditions on that coverage is to deny news organizations their right to cover the news. Online news sites are not asking to broadcast sporting events in their entirety, and their sports reporting does not detract from the value of the sports leagues or their events. On the contrary—free, engaging sports reporting generates interest in sports and thus benefits readers and the sports association alike. News organizations must be allowed to report freely about sports on their websites, in any time-frame, using any type of online medium they deem effective.

10.

For each of the following statements, select *Both accept* if, based on the information provided, it can be inferred that both the sports association and the news organizations would likely accept that the statement is true. If not, select *Otherwise.*

	Both accept	Otherwise	
10A.	○	○	There should be no restrictions on news organizations' sports reporting in broadcast media.
10B.	○	○	A sporting event can be adequately reported by a news organization without broadcasting the event in its entirety on the organization's website.
10C.	○	○	Any online activity that substantially increases many people's interest in the sports association's leagues benefits the association.

11、

For each of the following issues, select *Disagree* if, based on the information provided, it can be inferred that the sports association and the news organizations would hold opposing positions on the issue. Otherwise, select *Cannot infer disagreement.*

	Disagree	Cannot infer disagreement	
11A.	○	○	The degree to which online sports reporting generates interest in sports
11B.	○	○	How frequently a website should be able to update scores from a sporting event in progress
11C.	○	○	The conditions under which a news organization should be allowed access to report on the sports association's events

12. Based on the statements, which one of the following can most reasonably be inferred to be a view held by the news organizations?

- A. Online news consumers have the right to reproduce digital photographs and audio and video clips of sports association events posted on news organizations' websites.
- B. News organizations' ability to cover sports news effectively will be hampered if their use of online audio, video, and images is prohibited.
- C. News organizations have the exclusive right to report on sports news online.
- D. People are less likely to attend sports events if they have access to live score updates online.
- E. The sports association should restrict how audio and video clips of its sports events can be disseminated.

文章：

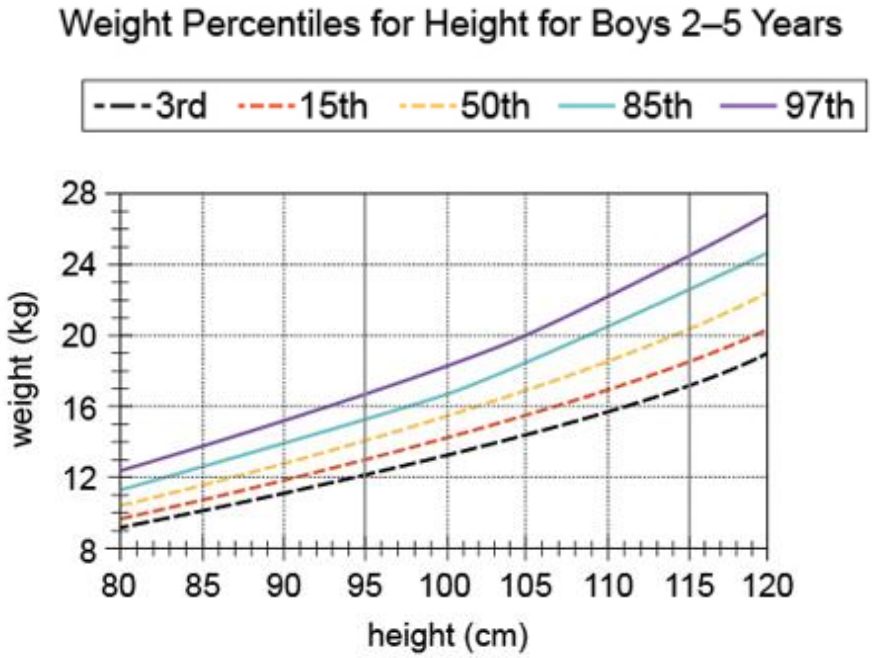
Height-for-age standards

The World Health Organization (WHO) has produced a comprehensive set of growth standards for children. These standards are based on studies of children living in 6 nations on 5 continents under optimal conditions with respect to health and nutrition. The table displays the percentile distribution of height, in centimeters, at 3-month intervals, for boys ages 2 through 5 according to the WHO model. In a *model population*—a large population of boys ages 2 through 5 that conforms to the WHO growth standards—for n = 3, 15, 50, 85, and 97, the nth percentile in height for a given age is the unique height among boys of that age that is greater than or equal to n percent, and less than or equal to (100 – n) percent, of heights of boys of that age.

Age (year: month)	Height in centimeters, by percentile				
	3rd	15th	50th	85th	97th
2:0	81.4	83.9	87.1	90.3	92.9
2:3	83.5	86.3	89.6	93.0	95.7
2:6	85.5	88.4	91.9	95.5	98.3
2:9	87.4	90.4	94.1	97.8	100.8
3:0	89.1	92.2	96.1	99.9	103.1
3:3	90.8	94.0	98.0	102.0	105.2
3:6	92.4	95.7	99.9	104.0	107.3
3:9	93.9	97.4	101.6	105.8	109.3
4:0	95.4	99.0	103.3	107.7	111.2
4:3	96.9	100.5	105.0	109.5	113.1
4:6	98.4	102.1	106.7	111.2	115.0
4:9	99.8	103.6	108.3	113.0	116.8
5:0	101.2	105.2	110.0	114.8	118.7

Weight-for-height standards

The graph shows the percentile distribution of weight, in kilograms, for heights from 80 cm to 120 cm, for boys ages 2 through 5, according to the WHO model. In a model population, for n = 3, 15, 50, 85, and 97, the nth percentile in weight for a given height is the unique weight among boys of that height that is greater than or equal to n percent, and less than or equal to (100 – n) percent, of weights of boys of that age.



13、

B is a boy aged 4 years 3 months whose height is 110 cm and whose weight is 19 kg. For each of the following statements, select *Yes* if, based on the given information, it must be true of B relative to a model population. Otherwise, select *No*.

	Yes	No	
13A.	○	○	Approximately 50% of boys at the same weight are shorter than B.
13B.	○	○	No more than 15% of boys at this age are taller than B.
13C.	○	○	B's height is greater than or equal to that of 50% of boys aged 5 years 0 months.

14、

For each of the following statements, select *Yes* if the statement must be true of a boy selected at random from a model population. Otherwise, select *No*.

	Yes	No	
14A.	○	○	If his age is greater than 3 years 3 months, the probability that his height is at least 98.0 cm is greater than 50%.
14B.	○	○	If he is at least 105 cm tall, the probability that his weight is 14.0 kg is no greater than 3%.
14C.	○	○	If he is 114 cm tall, he is taller than at least 85% of boys his age.

15. Consider an individual boy from a model population. Suppose that from age 2 through age 5, this boy's weight is at the 50th percentile for his height and his height is at the 50th percentile for his age. Which one of the following statements must be true of the boy at age 5 years 0 months?

○ A. His age is at the 50th percentile for his height.

○ B. His weight is at the 50th percentile for his age.

○ C. His height is at the 50th percentile for his weight.

○ D. His weight is approximately 150% of his weight at age 2 years 0 months.

○ E. His weight is approximately 200% of his weight at age 2 years 0 months.

16、

B is a boy aged 4 years 3 months whose height is 110 cm and whose weight is 19 kg. For each of the following statements, select *Yes* if, based on the given information, it must be true of B relative to a model population. Otherwise, select *No*.

	Yes	No	
16A.	○	○	At least 15% of boys at the same height have a weight that is less than or equal to that of B.
16B.	○	○	At least 80% of boys at this age have heights within 10% of B's height.
16C.	○	○	B's height is less than that of at most 3% of boys at age 4 years 0 months.

17、

For each of the following statements, select *Yes* if the statement must be true of a boy selected at random from a model population. Otherwise, select *No*.

	Yes	No	
17A.	○	○	If his age is exactly 4 years 0 months, the probability that his height is at exactly 99.0 cm is 15%.
17B.	○	○	If he is 81 cm tall, he is shorter than at least 95% of boys his age.
17C.	○	○	If he is 120 cm tall, he weighs more than 97% of boys age 2 years 6 months.

18. Consider an individual boy from a model population. Suppose that from age 2 through age 5, this boy's weight is at the 97th percentile for his height and his height is at the 97th percentile for his age. Which one of the following statements must be true of the boy at age 5 years 0 months?

- ○ A. His age is at the 97th percentile for his height.
- ○ B. His weight is at the 97th percentile for his age.
- ○ C. His height is at the 97th percentile for his weight.
- ○ D. His weight is approximately 166% of his weight at age 2 years 0 months.
- ○ E. His weight is approximately 197% of his weight at age 2 years 0 months.

19. 文章：

The table lists minimum temperature, maximum temperature, and weather conditions reported in 30 cities on 6 continents on February 19, 2011.

Sort By: City

City	Continent	Minimum temperature (°C)	Maximum temperature (°C)	Weather conditions
Atlanta	North America	11	21	cloudy
Auckland	Oceania	18	25	cloudy
Bangkok	Asia	26	34	cloudy
Beijing	Asia	–3	10	fine
Berlin	Europe	–4	–1	cloudy
Buenos Aires	South America	20	29	rain
Cairo	Africa	14	24	fine
Chicago	North America	–4	3	cloudy
Dublin	Europe	5	11	bright
Frankfurt	Europe	1	7	cloudy
Houston	North America	16	24	cloudy
Johannesburg	Africa	16	26	thunderstorms

Kuala Lumpur	Asia	24	33	rain
London	Europe	5	10	rain
Los Angeles	North America	10	15	showers
Madrid	Europe	5	12	rain
Manila	Asia	22	32	thunderstorms
Mexico City	North America	7	25	fine
Montréal	North America	–6	–4	bright
Mumbai	Asia	21	30	fine
New York	North America	2	3	snow
Paris	Europe	5	7	rain
Rio de Janeiro	South America	21	38	cloudy
Santiago	South America	11	29	fine
Seoul	Asia	–3	9	cloudy
Sydney	Oceania	25	29	showers
Tehran	Asia	3	11	haze
Tokyo	Asia	3	9	fine
Toronto	North America	–6	–2	cloudy
Vancouver	North America	–2	5	fine

For each of the following statements, select *Yes* if the statement is true based solely on the information reported for these cities on this day. Otherwise select *No*.

	Yes	No	
19A.	○	○	The mean maximum temperature for the cities in South America was greater than that for the cities in Oceania.
19B.	○	○	At least one city reporting *fine* weather had a maximum temperature less than 0°C.
19C.	○	○	For the Asian cities, the median minimum temperature was 12°C.

20、

During a recent semester at University X, 25 students enrolled in an economics class. Each student was enrolled in the university's 4-year business program and took the course either as a traditional student (attending class and sitting for exams in person) or as an online student (listening to lectures and taking exams via computer), but not both. For each student, the table indicates whether he or she took the course online, along with his or her year in the program and scores on Exam 1, Exam 2, and the final exam. The final score was computed as a weighted mean of the scores on Exam 1, Exam 2, and the final exam, using the same weights for each student.

Sort By: Student surname

Student surname	Online student? (Y/N)	Year in program	Exam 1 score	Exam 2 score	Final exam score	Final score
Abusuba	Y	2	89	87	85	86.50
Ardanin	N	1	85	83	84	84.00
Bar-Yaacov	Y	1	65	70	68	67.75
Benson	Y	1	77	80	75	76.75
Dedeoglu	N	2	90	96	95	94.00
Derezinski	Y	3	85	84	82	83.25
Garcia	Y	2	90	87	86	87.25
Hernandez	N	2	72	74	75	74.00
Jeyaretnam	Y	2	77	76	78	77.25
Lindt	Y	3	87	82	81	82.75
Mladek	N	4	64	75	76	72.75
Nguyen	N	3	70	74	72	72.00
Orlando	N	2	82	84	80	81.50
Pai	N	2	75	78	72	74.25
Parasarathy	N	2	88	91	95	92.25
Radzinsky	Y	3	91	95	100	96.50
Russell	N	4	51	69	72	66.00
Sweets	N	2	66	76	74	72.50
Sykes	N	3	51	69	73	66.50
Tachau	N	2	91	93	92	92.00
Tsosie	N	2	84	87	85	85.25
Underhill	N	1	77	75	71	73.50
Vladimirov	Y	3	69	75	74	73.00
Washburn	N	2	85	83	82	83.00
Zervos	N	2	95	97	98	97.00

For each of the following statements, select *Yes* if the statement is true based on the information provided; otherwise select *No*.

	Yes	No	
20A.	○	○	The score on the final exam had equal weight with the score on Exam 2 in computing the final score.
20B.	○	○	The median final score for all 25 students was 81.50.
20C.	○	○	For Exam 1 scores for students in year 3 of the program, the range was 40.

21、

Anthropologists collected data about cultural patterns and norms for several small indigenous populations in various countries. The table displays data collected about the economic base; residential patterns (residence); degree of market integration (mean MI)—defined as the percentage of calories obtained in the marketplace; percentage of population participating in world religions (mean WR); and average community size (mean CS).

Sort By: Population

Population	Location	Economic base	Residence	Mean MI	Mean WR	Mean CS
Au	Papua New Guinea	horticulture, foraging	sedentary	1	100	309
Dolgan/NG	Siberia	hunting, fishing, and wage work	semisedentary	63	59	612
Gusii	Kenya	farming and wage work	sedentary	28	100	4,063
Hadza	Tanzania	foraging	nomadic	0	0	43
Isanga Village	Tanzania	farming and wage work	sedentary	70	99	1,500
Maragoli	Kenya	farming and wage work	sedentary	43	100	3,843
Orma	Kenya	herding livestock	seminomadic	72	100	125
Samburu	Kenya	herding livestock	seminomadic	69	66	2,000
Sanquianga	Colombia	fisheries	sedentary	82	84	1,931
Shuar	Ecuador	horticulture	sedentary	22	76	498
Sursurunga	Papua New Guinea	horticulture	sedentary	24	100	186
Tsimane	Bolivia	horticulture, foraging	seminomadic	7	100	314
Yasawa	Fiji	horticulture, marine foraging	sedentary	21	100	109

For each of the following statements about these indigenous populations, select *Yes* if the statement accurately reflects the data provided in the table. Otherwise, select *No*.

	Yes	No	
21A.	○	○	The populations that forage have the lowest market integration ratings.
21B.	○	○	Each of the populations that depend on both farming and wage work is sedentary and has a mean community size among the five largest.
21C.	○	○	The range for market integration is less than the range for participation in world religions.

22、

The table displays nutrition data per 240 mL serving for selected cooked or uncooked vegetables: percent water, energy in kilocalories (kcal), protein, total fat, carbohydrate, and total fiber, in grams (g). Each serving consists of 240 mL of finely chopped, raw vegetables (uncooked) or 240 mL of thoroughly drained, steamed vegetables (cooked).

Sort By: Vegetable

Vegetable	Cooked (yes/no)	Percent water	Energy (kcal)	Protein (g)	Total fat (g)	Carbohydrate (g)	Total fiber (g)
Asparagus	yes	92	43	5	1	8	2.9
Beets	yes	87	75	3	trace	17	3.4
Broccoli	yes	91	44	5	1	8	4.5
Broccoli	no	91	25	3	trace	5	2.6
Carrots	yes	87	70	2	trace	16	5.1
Carrots	no	88	47	1	trace	11	3.3
Corn	yes	77	131	5	1	32	3.9
Green beans	yes	89	44	2	trace	10	4.0
Mustard greens	yes	94	21	3	trace	3	2.8
Pak choi	yes	96	20	3	trace	3	2.7
Spinach	yes	91	41	5	trace	7	4.3
Spinach	no	92	7	1	trace	1	0.8
Summer squash	yes	94	36	2	1	8	2.5
Summer squash	no	94	23	1	trace	5	2.1
Sweet green pepper	no	92	40	1	trace	10	2.7

For each of the following statements, select *Yes* if the statement is true based on the information provided; otherwise select *No*.

	Yes	No	
22A.	○	○	The median amount of protein for all uncooked vegetables listed is $\frac{1}{3}$ the median amount of protein for all cooked vegetables listed.
22B.	○	○	The amount of carbohydrate per serving of cooked corn is exactly 3 times the median amount of carbohydrate per serving for the other 14 vegetable options listed.
22C.	○	○	Each serving listed for which total fiber is less than 3.0 g also has at most 10 g of carbohydrate.

23、

The table shows the top 15 universities in a recent international ranking of programs in physics and astronomy. Each university was assigned a score on a 100-point scale in each of several categories, from which a total score on a 100-point scale was computed. For each university the table displays the total score, together with the scores in 3 categories: *academic*, based on evaluation by academics at other universities; *employer*, based on evaluation by companies that recruit university graduates; and *citations*, based on the frequency with which faculty research is cited.

Sort By: Rank

Rank	University	Country	Academic score	Employer score	Citations score	Total score
1	University of Cambridge	United Kingdom	100.0	100.0	41.3	82.4
2	Harvard University	United States	91.6	78.0	53.8	77.5
3	University of Oxford	United Kingdom	91.6	75.7	39.9	72.9
4	Massachusetts Institute of Technology (MIT)	United States	97.4	61.2	39.5	72.8
5	University of California, Berkley (UCB)	United States	90.8	48.5	45.2	68.7
6	Stanford University	United States	81.7	38.4	53.0	64.4
7	California Institute of Technology (Caltech)	United States	81.5	40.7	39.2	60.7
8	Imperial College London	United Kingdom	70.2	63.8	33.2	57.8
9	Princeton University	United States	76.4	30.3	44.1	57.5
10	ETH Zürich (Swiss Federal Institute of Technology)	Switzerland	69.6	42.2	46.9	57.3
11	University of Tokyo	Japan	79.7	34.6	22.7	53.6
12	University of Chicago	United States	57.1	34.4	53.3	51.4
13	University of California, Los Angeles (UCLA)	United States	55.9	51.3	43.0	51.1
14	University of Melbourne	Australia	46.6	41.5	64.4	50.9
15	Columbia University	United States	46.2	44.0	61.9	50.5

For each of the following statements, select *Yes* if the statement is true based on the information provided; otherwise select *No*.

	Yes	No	
23A.	○	○	For each of the United States universities listed, the employer score is less than the total score.
23B.	○	○	For only one university listed, the employer score and the citations score are both greater than 50.
23C.	○	○	University of Tokyo is the university for which the magnitude of the difference between the academic score and the total score is greatest.

24、

The table lists data on the 22 earthquakes of magnitude 7 or greater on the Richter Scale during a recent year. Times are given in hours, minutes, and seconds on the 24-hour Greenwich Mean Time (GMT) clock and correspond to standard time at Greenwich, United Kingdom (UK). Latitude, measured in degrees, is 0 at the equator, increases from 0 to 90 proceeding northward to the North Pole, and decreases from 0 to –90 proceeding southward to the South Pole. Longitude, also measured in degrees, is 0 at Greenwich, UK, increases from 0 to 180 from west to east in the Eastern Hemisphere, and decreases from 0 to –180 from east to west in the Western Hemisphere.

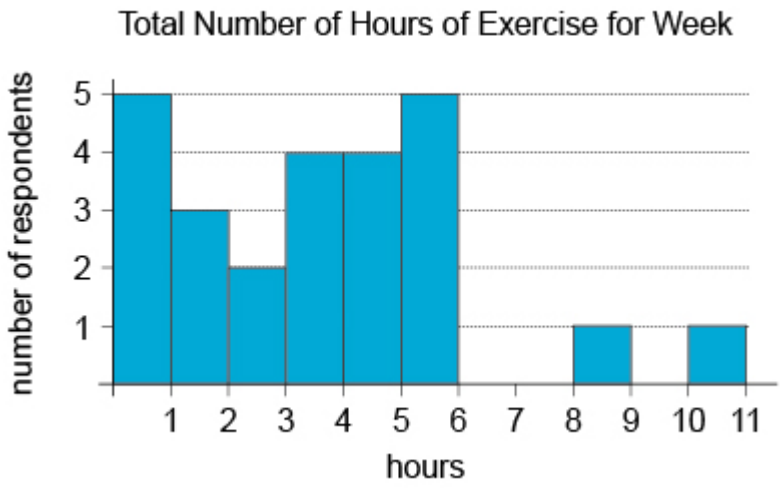
Sort By: Date

Date	Time (GMT)	Magnitude	Depth (km)	Latitude	Longitude
3 January	22:36:28	7.1	25	–8.799	157.346
12 January	21:53:10	7.0	13	18.443	–72.571
26 February	20:31:27	7.0	25	25.930	128.425
27 February	06:34:12	8.8	23	–36.122	–72.898
4 April	22:40:43	7.2	4	32.297	–115.278
6 April	22:15:02	7.8	31	2.383	97.048
9 May	05:59:42	7.2	38	3.748	96.018
27 May	17:14:47	7.1	31	–13.698	166.643
12 June	19:26:50	7.5	35	7.881	91.936
16 June	03:16:28	7.0	18	–2.174	136.543
18 July	13:34:59	7.3	35	–5.931	150.590
23 July	22:08:11	7.3	607	6.718	123.409
23 July	22:51:12	7.6	586	6.486	123.467
23 July	23:15:10	7.4	641	6.776	123.259
4 August	22:01:44	7.0	44	–5.746	150.765
10 August	05:23:45	7.3	25	–17.541	168.069
12 August	11:54:16	7.1	207	–1.266	–77.306
3 September	16:35:48	7.0	12	–43.522	171.830
29 September	17:11:26	7.0	26	–4.963	133.760
25 October	14:42:22	7.8	20	–3.487	100.082
21 December	17:19:41	7.4	14	26.901	143.698
25 December	13:16:37	7.3	16	–19.702	167.947

For each of the following statements, select *Yes* if the statement is true based on the information provided; otherwise select *No*.

	Yes	No	
24A.	○	○	For the 22 earthquakes, the arithmetic mean of the depths is greater than the median of the depths.
24B.	○	○	More than half of the 22 earthquakes occurred north of the equator.
24C.	○	○	Exactly half of the earthquakes listed occurred between 10:00:00 and 20:00:00 GMT.

25、



Twenty-five adults reported the amount of time each spent exercising during a particular week. The results are summarized in the graph as follows: 5 respondents reported exercising for less than 1 hour, 3 respondents reported exercising for at least 1 hour but less than 2, and so on.

Based on the given information, use the drop-down menus to most accurately complete the following statements.

25A. The least possible value for the mean of the numbers of hours of exerdse reported for the weeks is

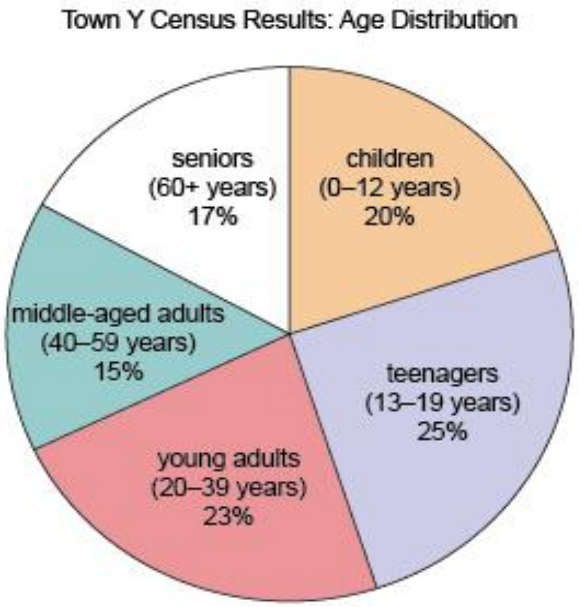
Select...
Select...
3
3.12
3.48
3.98

25 B. The number of respondents who exercised on average less than one-half hour per day during the wee is between

Select...
Select...
0 and 5
5 and 8
8 and 10
10 and 14
14 and 19

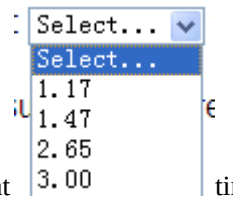
, inclusive.

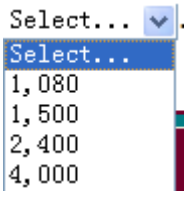
26、



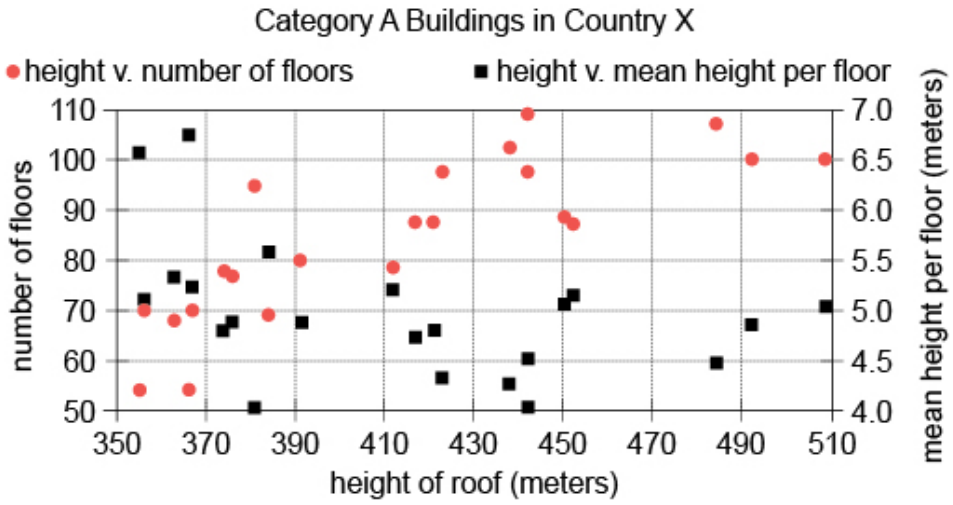
A recent census revealed the age distribution of the residents of Town Y, shown in the graph, Since the census was performed, no resident has moved into or away from Town Y and there have been no recorded births or deaths.

Based on the given information, use the drop-down menus to most accurately complete the following statements.

26A. The census indicates that  times as many residents were children or teenagers as were seniors.

26B. If at the time of the census ,there were 540 more people aged 0-39 than people aged 40 or greater , then the population of Town Y at the time of the census was  .

27、



In Country X, a building is in Category A if it has a roof height of at least 350 meters. In the graph, each of the 22 Category A buildings is represented by two points arranged vertically: one representing the comparison of the height of the building's roof to the number of floors (red circles), the other representing the comparison of the height of the building's roof to the mean height per floor (black squares).

Based on the given information, use the drop-down menus to most accurately complete the following statements about Category A buildings in Country X.

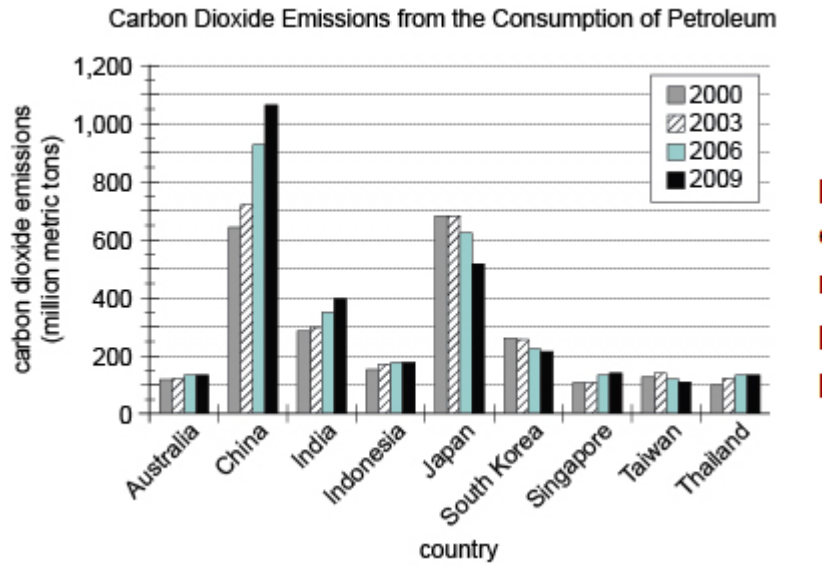
27A .The building with the greatest mean height per floor has a roof height between

Select...
Select...
350 and 370
430 and 450
470 and 490
490 and 510

meters.

27B. There is a Select...
Select...
strong positive
negligible
strong negative
correlation between the number of floors and the mean height per floor.

28、



For each of the years 2000, 2003, 2006, and 2009, the graph shows the carbon dioxide emissions produced by the consumption of petroleum for 9 countries. Emissions are measured in millions of metric tons of carbon dioxide, where 1 million = 10^6.

From each drop-down menu, select the option that creates the most accurate statement based on the information provided.

28A. Median carbon dioxide emissions for the 9 countries increased by

Select...
Select...
less than 50
at least 50 but less than 100
at least 100

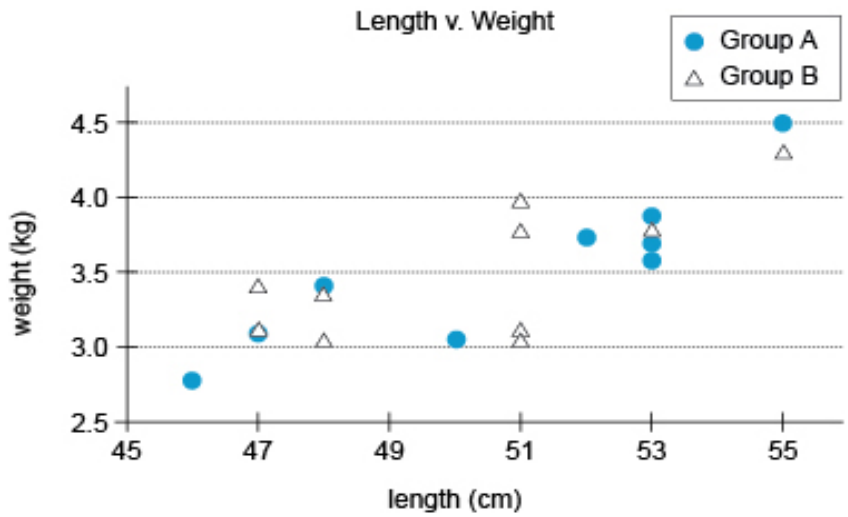
million metric tons 2000 to 2009.

28B. In 2006,the range of carbon dioxide emissions for the 9 countries was approximately

Select...
Select...
600
800
950
1,050

million metric tons.

29、



During a four-day period, a height measurement and a weight measurement were recorded sho rtly after delivery for each baby born in a particular hospital. The 19 babies in the study were d ivided into two groups, Group A and Group B. The chart shows the length, in centimeters (cm) , and weight, in kilograms (kg), for each of the 19 babies.
Based on the given information, use the drop-down menus to most accurately complete the foll owing statements.

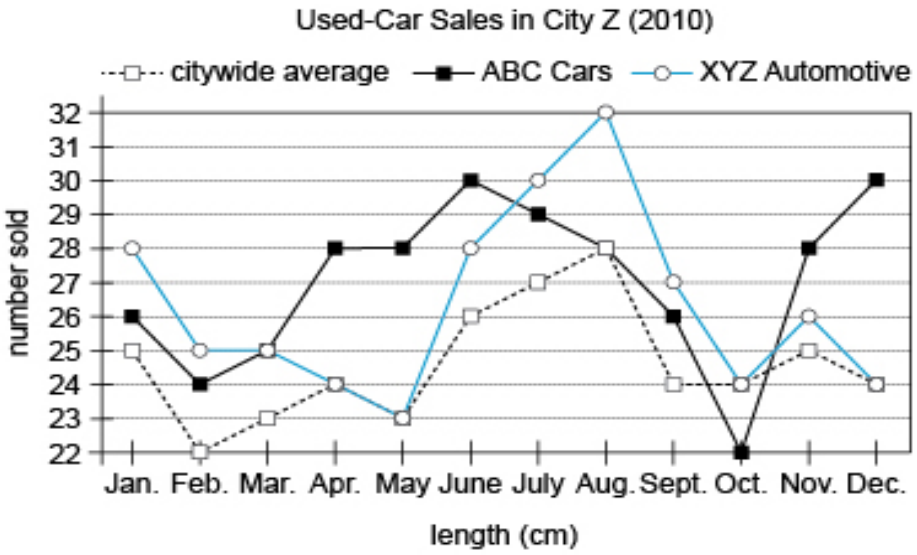
29A.The correlation between length and weight for babies in the study is

Select...
Select...
strongly positive
negligible
strongly negative

29B.If a baby with weight less than 3.5 kg were selected at random, the probability that the ba by would be a part of Group A is

Select...
Select...
0.33
0.40
0.44
0.60
0.67

30、



In 2010, there were four used-car dealers in City Z. The graphic shows the monthly sales data for 2010 for two of those dealers as well as the citywide average for used-car dealers for those months.

Based on the given information, use the drop-down menus to most accurately complete the following statements.

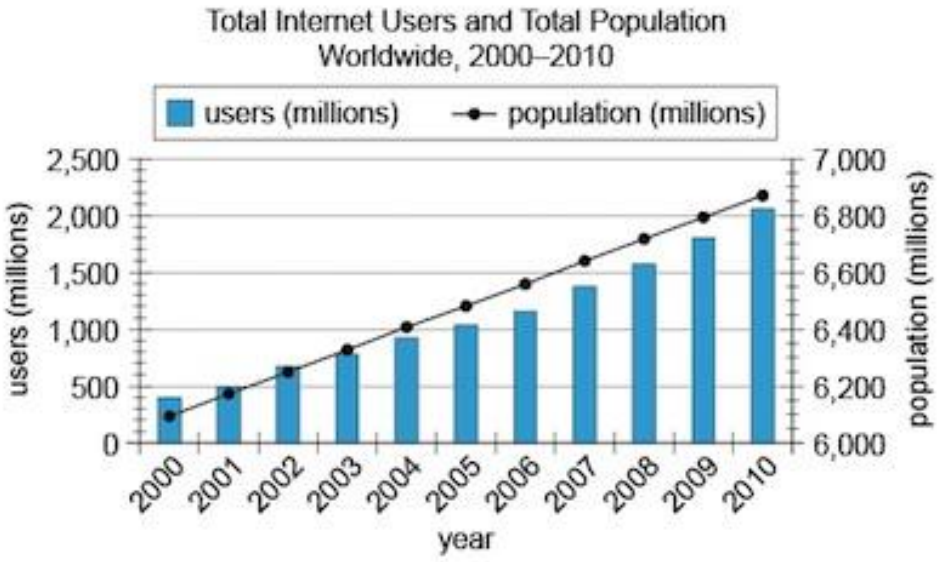
30A. ABC Cars and XYZ Automotive accounted for Select... half of all used-car sales in City Z for 2010.

Select...
less than
exactly
more than

30B In June 2010, the two used-car dealers that are not specified on the graph sold a total of exactly Select... cars.

Select...
23
46
52
58

31、



The graph shows the total number of Internet users and the total population worldwide for each of the years 2000-2010.

From each drop-down menu, select the option that creates the most accurate statement based on the information provided.

31 A . The percent increase in the total number of Internet users from 2002 to 2007 was approximately Select... % .

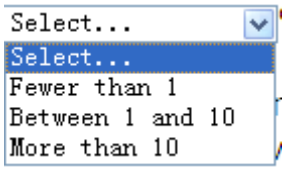
- Select...
- 50
- 100
- 200
- 300

31B. The number of Internet users per 100 people increased by approximately Select... from 2000 to 2010.

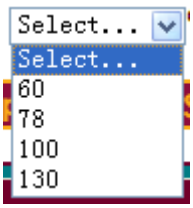
- Select...
- 6
- 12
- 24
- 30
- 36

32、

On Days 1 through 4 of a recent week, Product X was out of stock at Retailer R. Day 1 shoppers are those shoppers who came to Retailer R on Day 1 of that week seeking Product X. For each of the first 3 days of that week, the graph shows the subsequent behavior of all Day 1 shoppers who came to Retailer R seeking Product X on that day. Shoppers at Retailer R who purchased a different item in lieu of Product X paid an average of 30% more for the item.
From each drop-down menu, select the option that creates the most accurate statement based on information provided.

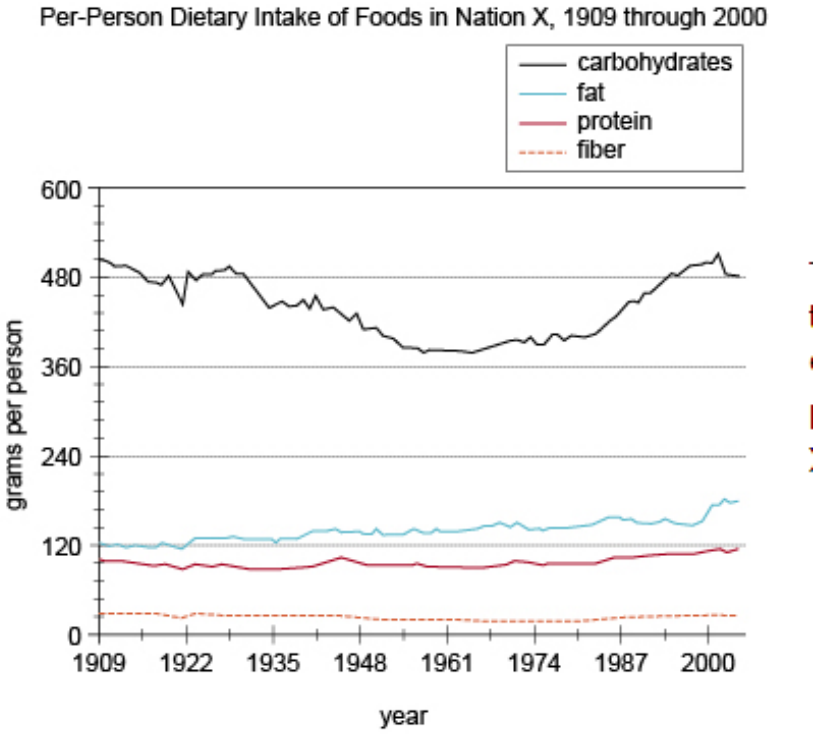
32A. 

% of Day 1 shoppers returned to the store on Day 3.

32B. Shoppers at Retailer R who purchased substitute items from other manufacturers on Day 1 paid a total amount that was approximately 

of the total all Day 1 shoppers would have paid had each of them been able to purchase Product X on Day 1.

33、



The graph depicts the per-person dietary intake of foods in 4 categories for the people of Nation X for the years 1909 through 2000. A decline in consumption in all 4 categories strongly suggests an overall food shortage rather than a simple change in dietary pattern.

From each drop-down menu, select the option that creates the most accurate statement about food consumption in Nation X based on the information provided.

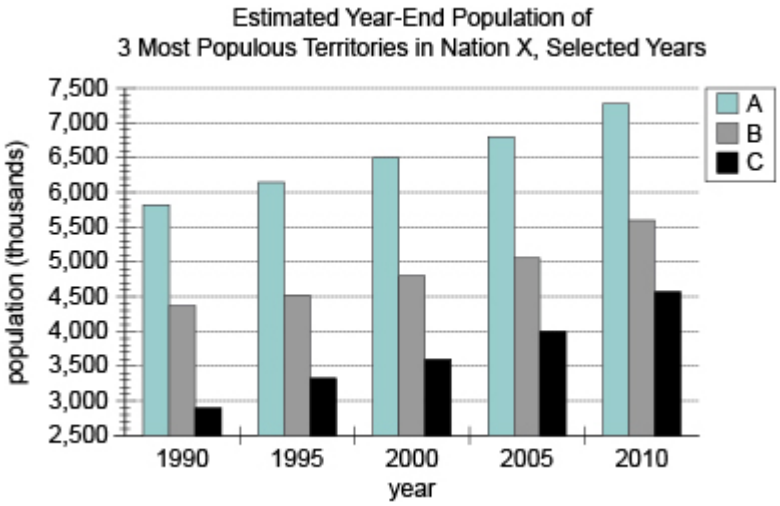
33A. The graph suggests that Nation X most likely experienced a food shortage shortly before the year Select... .

Select...
1922
1961
2000

33B. For the year that the total dietary intake of carbohydrates was lowest, the per-person intake of carbohydrates was approximately Select... times the per-person intake of dietary fiber.

Select...
3
9
18
27

34、



The graph shows the estimated year-end population for the 3 most populous territories in Nation X in 5 selected years. The estimated year-end population of Nation X was 17,000,000 in 1990 and 22,500,000 in 2010.

From each drop-down menu, select the option that creates the most accurate statement based on the information provided.

34A . The increase in the estimated year-end population of Territory C from 1990 to 2010 accounts for approximately Select... % of the increase in the estimated year-end population of Nation X over the same period.

Select...
20
30
40
60

34B. In 2010, the estimated total year-end population of the 3 territories was Select... of the estimated year-end population of Nation X.

Select...
between 70% and 80%
between 80% and 90%
over 90%

35. Rock varnish is typically rich in iron and manganese, with the presence of manganese due to bacteria on the surface of the rock. Because the bacteria would not survive on the surface of rocks in the colder, continuously frozen, reaches of Antarctica, scientists were not surprised to discover that rock varnish in the Thiel Mountains area of Antarctica consists only of limonite, a form of oxidized iron. This had penetrated from the surfaces of the rocks into the cracks. However, although moisture is essential to the movement of limonite, snow has not melted in

the Thiel Mountains in recent times.

Indicate which statement in the table the given information most strongly suggests is true, and the statement that the given information most strongly suggests is false. Make only two selections, one in each column.

	35A	35B	
	True	False	
A	○	○	Moisture is required for the presence of significant amounts of manganese in the environment.
B	○	○	Moisture is not required for the presence of significant amounts of manganese in the environment.
C	○	○	When temperatures in a continuously frozen location increase to above freezing, cracks in rocks there begin to take in rock varnish containing significant amounts of manganese.
D	○	○	Rock varnish that is especially rich in iron is mostly found in extreme cold.
E	○	○	Manganese is unable to penetrate into cracks in significant amounts.
F	○	○	Temperatures on rocks in the Thiel Mountains were above freezing at some point in the past.

36.

A city is hosting a table tennis tournament for its residents. Each team has exactly two players, and each player is on exactly one team. In each round, each team plays exactly one other team and either wins or loses. The winning team advances to the next round and the losing team is eliminated. No team or player drops out except by losing a game. The tournament is in progress, and exactly 512 players participated in the first round.

From the available options, select a number of tournament rounds and a number of teams such that after the specified number of rounds there will be the specified number of teams remaining in the tournament. Make only two selections, one in each column.

	36A.	36B.	
	Rounds completed	Teams remaining	
A	○	○	2
B	○	○	4
C	○	○	8
D	○	○	16
E	○	○	32

37、

Naturalist: The decline of coral reefs has various causes. One contributing factor is predation on coral by organisms such as the crown-of-thorns sea star, whose preferred food source is coral polyps. Human fishing practices have decreased the sea star's predators, such as the harlequin shrimp. It is also possible that runoff containing nutrients for phytoplankton has resulted in larger phytoplankton blooms: the crown-of-thorns sea star gladly eats phytoplankton. Indicate in the table which cause-and-effect sequence would most likely, according to the naturalist, result in coral reef decline. Make only two selections, one in each column.

	37A.	37B.	
	Cause	Effect	
A	○	○	An increase in phytoplankton
B	○	○	A decrease in phytoplankton
C	○	○	An increase in crown-of-thorns sea stars
D	○	○	A decrease in crown-of-thorns sea stars
E	○	○	An increase in harlequin shrimp

38、 For each value of y greater than $2\sqrt{3}$, the function $f(x)$ is such that the equation $f(x) = y$ has the form $x = \frac{y^2 + 12}{y}$.

Select one value for *a* and one value for *b* such that the given information implies *f(a)* = *b*. Make only two selections, one in each column.

	38A.	38B.	
	a	*b*	
A	○	○	1
B	○	○	2
C	○	○	4
D	○	○	6
E	○	○	8

39、

Archaeologist: There were several porcelain-production centers in 18th-century Britain, among them Bristol, Plymouth, and New Hall. Each center developed a unique recipe for its porcelain that might include flint glass, soapstone, bone ash, clay, quartz, and so on. We will therefore be able to determine, on the basis of compositional analysis, where the next cup we recover from this archaeological site was made.

Indicate two different statements as follows: one statement identifies an *assumption required* by the archaeologist's argument and the other identifies a *possible fact* that, if true, would, provide significant logical support for the required assumption.

	39A.	39B.	
	Assumption required	Possible fact	
A	○	○	Other cups have been recovered from the archaeological site, all of which were made of porcelain.
B	○	○	Some of the cups recovered from the archeological site were not made of porcelain.
C	○	○	The next cup to be recovered from the site will likely be made of porcelain.
D	○	○	Porcelain makers often traveled between centers, experimenting with one another's recipes.
E	○	○	There was considerable overlap of materials in the recipes used by the various centers.
F	○	○	Most porcelain in 18th-century Britain was made at one of the several centers.

40、

Adiliah, Bao, Davi, Laszlo, Saleema, and Yarah work in a firm's legal department. Adiliah supervises Bao and Davi, Davi supervises Laszlo, and Laszlo supervises Saleema and Yarah. These are the only supervisory relationships involving these 6 employees. Each document that the department processes must be initially reviewed by exactly 1 department member. Each document reviewed by a department member must then be reviewed by that person's supervisor. No other rules require anyone else to review any document. Anyone not required to review a given document will not review it.

Select *Laszlo among reviewers* for the maximum number of department members that could have reviewed a single document if Laszlo was among the reviewers. Select *Adiliah among reviewers* for the maximum number of department members that could have reviewed a single document if Adiliah was among the reviewers. Make only two selections, one in each column.

	40A.	40B.	
	Lazlo among reviewers	Adiliah among reviewers	
A	○	○	1
B	○	○	2
C	○	○	3
D	○	○	4
E	○	○	5
F	○	○	6

41、

Archaeologist: Although thin-walled pottery is better able to resist the damaging effects of thermal stress resulting from being placed over a fire, such pottery is more prone to breaking during transport. We can therefore make predictions about pottery use by a group of people on the basis of a certain lifestyle characteristic of the group.

The archaeologist suggests that a certain type of *prediction* about a group can be made on the basis of the group having a certain type of *characteristic*. Indicate in the table the possible *characteristic* and *prediction* that most strongly conform to the archaeologist's suggestion. Make only two selections, one in each column.

	41A.	41B.	
	Characteristic	Prediction	
A	○	○	The group is sedentary rather than nomadic.
B	○	○	The group has not discovered pottery.
C	○	○	The group uses thin-walled pots.
D	○	○	The group uses fire for warmth and protection.
E	○	○	The group uses thick-walled pots.

42、

Consider a right circular cylinder for which the following quantities are all numerically equal: the height, in meters; one-fourth of the volume, in cubic meters; the area of the circular base, in square meters.

In the table, select a value for the diameter of the circular base and a value for the height,

In the table, select a value for the diameter of the circular base and a value for the height,

information provided. Make only two selections, one in each column.

	42A.	42B.	
	Diameter	Height	
A	○	○	$\frac{2}{\sqrt{\pi}}$
B	○	○	$\frac{4}{\sqrt{\pi}}$
C	○	○	4
D	○	○	$\frac{16}{\pi}$
E	○	○	4π
F	○	○	16

43 . Professor A: The aid industry should begin to limit its efforts to spending on primary schools in the poorest areas, providing medicines and other basic supplies for health care such as mosquito nets, and to a few key agricultural initiatives.

Professor B: Much education work has been ineffective. A village or town with poor schooling may be better off getting a road than a teacher. Once local farmers can transport produce to market they will be willing to pay for schools-and to make sure the schools succeed.

Suppose that the professors' statements express their genuine opinions. Select statements (1) and (2) as follows: Professor A would likely disagree with (1) and Professor B would take (2) to present logical support for (1).Select only two statements, one per column.

	43 A	43B	
	(1)	(2)	
A	○	○	The aid industry should focus less on the areas of health and agriculture than it now does.
B	○	○	The aid industry should focus more on primary education than it now dose.
C	○	○	The aid industry should focus its spending less on primary education than it now dose.
D	○	○	Projects in health and agriculture are more likely to be successful if they not paid for by the aid industry.
E	○	○	Projects in education are more likely to be successful if they are paid by the aid industry.
F	○	○	Projects in education are more likely to be successful if they are paid by local people

44、 A car is traveling on a straight stretch of roadway, and the speed of the car is increasing at a constant rate. At time 0 seconds, the speed of the car is v_0 meters per second; 10 seconds

later, the front bumper of the car has traveled 125 meters and the speed of the car is v_{10} meters per second.

In the table, select the value of v_0 and v_{10} that are together consistent with the information provided. Make only two selections, one in each column.

	44A	44B	
	V_0	V_{10}	
A	○	○	5
B	○	○	18
C	○	○	20
D	○	○	36
E	○	○	72

45、

Journalist: The end of the Triassic, the geologic period that extended from about 250 to 200 million years ago, has traditionally been blamed on volcanic eruptions that went on for 600,000 years. However, a researcher has recently suggested that these eruptions were only an indirect cause. By analyzing the isotopic composition of hydrocarbon molecules from plant waxes from the period, he discovered what looks like a spike in the amount of nonbiological carbon in the atmosphere, lasting between 10,000 and 20,000 years. The researcher believes that the release of methane—a carbon-containing greenhouse gas much stronger than carbon dioxide—stored at the bottom of the ocean was the direct cause of the end of the Triassic.

The journalist suggests that a certain causal sequence may have brought about the end of the Triassic period. Identify in the table the sequence of *cause* and *effect* most strongly suggested by the journalist to have resulted in the end of the Triassic. Make only two selections, one per column.

	45A.	45B.	
	Cause	Effect	
A	○	○	The emissions of volcanoes into the atmosphere
B	○	○	The extinction of many oceanic biological species
C	○	○	The eruption of volcanoes
D	○	○	The release of carbon dioxide into the atmosphere
E	○	○	The release of methane from the bottom of the ocean

46、

For each positive integer n, the quantity s_n is defined such that $s_{n+2} = (s_n)^2 - s_{n+1}$. In addition, $s_2 = 1$.

In the table, select values for s_1 and s_4 that are jointly compatible with these conditions. Select only two values, one in each column.

	46A.	46B.	
	s_1	s_4	
A	○	○	−12
B	○	○	−7
C	○	○	−3
D	○	○	−1
E	○	○	0

47、

In an experiment, researchers posed simple questions in geometry to children from varied backgrounds. One group consisted of 7-to-13-year-old children of the Mundurucú, an isolated indigenous group in the Amazon basin. The Mundurucú children, who had no formal training in geometry, answered the questions just as quickly and accurately as did French children of the same ages who did have formal training in geometry. In contrast, 5-year-old North American children had much more trouble answering the questions. The researchers

concluded that some basic geometric knowledge is innate, but this innate knowledge typically develops only after age 5.

In the table, select the statement that would, if true, most strengthen the researchers' conclusion and most weaken it, respectively. Make only two selections, one in each column.

	47A	47B	
	Most strengthen	Most weaken	
A	○	○	North American children 7 to 13 years old had much trouble answering the questions than did the Munduruc úof the same ages.
B	○	○	None of the 5-year-old North American children had ever studied any geometry.
C	○	○	Munduruc úchildren who were 5 years old had just as much trouble answering the questions as did the 5-year-old North American children.
D	○	○	The researchers posed the same questions to 5-year-old French and Munduruc úchildren as they posed to the 7-to-13-year-old children.
E	○	○	Most of the children studied answered one or more of the questions incorrectly.

48、

At XYZ Inc., an employee receives a verbal warning upon accumulating at least 3 unexcused absences within any 365-day period and a written reprimand upon accumulating at least 4 such absences. For any single 8-hour workday, missing between 10 minutes and 2 hours of work counts as one-third of an absence, missing between 2 hours and 4 hours of work counts as half an absence, and missing more than 4 hours counts as a full absence. However, an employee may stay late to make up for up to 1 hour of an unexcused absence on the same day.

The table contains descriptions of the unexcused absences of 5 employees of XYZ Inc.

Assume that in each case the employee had no other unexcused absences and made up no other time. In the table, select a description of an employee who qualified for a verbal warning but not a written reprimand, and select a description of an employee who qualified for a written reprimand. Make only two selections, one in each column.

	48A	48B	
	Verbal warning	Written reprimand	
A	○	○	Absent all day on 5 April 2010,8 June 2010, 17 April 2011, and 14 June 2011
B	○	○	Absent 4.5 hours but stayed 1 hour late on 13 May 2010; absent all day on 2 June 2010, 1 May 2011,and 21 July 2011
C	○	○	Absent 4.5 hours on 19 March 2010; stayed 1 hour late on 20 March 2010;absent all day on 8 February 2011 and 9 February 2011; arrived 40 minutes late on 17 April 2011
D	○	○	Absent 3.5 hours on 13 September 2010; absent 1 hour on 15 September 2010;absent 6 hours on 16 September 2010;absent 2.5 hours on 18 September 2010;absent 1 hour on 19 September2010
E	○	○	Absent 3 hours on 7 July 2010; absent 2.5 hours on 13 September 2010; absent all day on 31 January 2011 and 4 July 2011; absent 5 hours on 12 March 2011.

49.

Metro Ballet Company presents high-quality productions of traditional, classical ballet. For the past several years, however, the company's overall profits have been declining, and ticket sales have been flat. Annual audience surveys indicate that a majority of those who attend Metro Ballet productions consistently enjoy the performances and prefer classical ballet to other forms of dance; almost all of them have been attending Metro Ballet for several years. General surveys of area residents indicate, however, that very few are aware of Metro Ballet productions, and most imagine that the performances are boring and the tickets too expensive. In an effort to appeal to a wider audience, over the past decade the company has spent increasing amounts of money on spectacular stage productions,

while lowering ticket prices.

In the first column of the table, select the strategy that, in the absence of the other alternatives listed, would lead most directly to decreasing Metro Ballet's expenses for its classical ballet productions. In the second column, select the strategy that, in the absence of the other alternatives listed, would constitute the most direct approach to solving the problem of increasing audience size for Metro Ballet's classical ballet productions.

Make only two selections, one in each column.

	49A.	49B.	
A	Decrease expenses	Increase audience size	Obtain public funding to double the spending on stage productions without increasing ticket prices
B	○	○	Return spending on productions to levels of several years ago
C	○	○	Expand productions to include modern, folk, and tap dance traditions
D	○	○	Offer special discounts to reward people who have attended the greatest number of performances
E	○	○	Mount a local advertising campaign emphasizing the affordability and excitement of Metro Ballet’s spectacular stage productions

50、

A mattress company has two stores, one in City X and the other in City Z. The company has advertised equally in newspapers in both cities, but has advertised twice as much on the radio in City Z as in City X. The two cities have similar populations and economies and the sales at each store have been roughly equal. A consultant claims this shows that the radio advertising has not improved mattress sales.

In the table, select changes that the company could make in City X and City Z, respectively, that together would probably be most helpful in testing the consultant's claim. Make only two selections, one in each column.

	50A.	50B.	
	City X	City Z	
A	○	○	Double newspaper advertising
B	○	○	Eliminate newspaper advertising
C	○	○	Eliminate radio advertising
D	○	○	Change the content of radio advertising
E	○	○	Add television advertising

Answer key

Apply

1A. Apply

An attendee of the conference sponsored by CC would pay, for registration and a room in the conference block, $620 + 2($110) = $840.

By employing the ROB strategy, an attendee would pay $720 + 2($70) = $860.

Therefore the attendee would not save money by employing the ROB strategy.

The correct answer is *No*.

1B. Apply

An attendee of the conference sponsored by FFNA would pay, for registration and a room in the conference block, $275 + 2($140) = $555.

By employing the ROB strategy, an attendee would pay $325 + 2($70) = $465.

Therefore the attendee would save money by employing the ROB strategy.

The correct answer is *Yes*.

1C. Apply

An attendee of the conference sponsored by HMHPA would pay, for registration and a room in the conference block, $575 + 2($104) = $783.

By employing the ROB strategy, an attendee would pay $600 + 2($79) = $758.

Therefore the attendee would save money by employing the ROB strategy.

The correct answer is *Yes*.

Apply

For a hotel to lose room revenue in this scenario, the lowest rate must be less than 75% of the block rate. This will occur when the ratio of the lowest rate to the block rate is less than 0.75.

2A. Apply

For the conferences hosted by the Asiawest Center, the ratios are $\frac{185}{190} \approx 0.97$ for the conference sponsored by CDA and $\frac{185}{195} \approx 0.95$ for the conferences sponsored by QRTA and RCD. Therefore the Asiawest Center would not lose room revenue.

The correct answer is *No*.

2B. Apply

For the one conference hosted by Bard Inn—sponsored by PNDA—the ratio is $\frac{125}{125} = 1$; thus the Bard Inn would not lose room revenue.

The correct answer is *No*.

2C. Apply

For the conference sponsored by CC, for example, the ratio is $\frac{70}{110} \approx 0.64$, which indicates that the host hotel, Hilton, would lose room revenue. Note that Hilton will also lose revenue with its other two sponsors.

The correct answer is *Yes*.

Strategize

3. For an attendee employing the ROB strategy, the savings on room fees is $\$X - \$Y$ per night. Over two nights, then, the attendee would save $2(\$X - \$Y)$. According to the study cited in the article, a registration discount equal to half of the savings of an attendee's cost-saving strategy would be sufficient to defer the use of that strategy. Therefore the registration discount should be set at $\frac{2(X-Y)}{2} = X - Y$.

The correct answer is *C*.

Apply

4A. Apply

For the conference sponsored by CC, an attendee applying the ROHH strategy would save 2($110 – $65) = $90 in room charges and pay an additional $720 – $620 = $100 on the registration fee. Therefore the attendee would spend an additional $10 by employing the ROHH strategy.

The correct answer is *No*.

4B. Apply

For the conference sponsored by FFNA, an attendee applying the ROHH strategy would save 2($140 – $65) = $150 in room charges and pay an additional $325 – $275 = $50 on the registration fee. Therefore the attendee would spend $100 less by employing the ROHH strategy.

The correct answer is *Yes*.

4C. Apply

For the conference sponsored by PPOA, an attendee applying the ROHH strategy would save 2($105 – $65) = $80 in room charges and pay an additional $550 – $400 = $150 on the registration fee. Therefore the attendee would spend an additional $70 by employing the ROHH strategy.

The correct answer is *No*.

Apply

5A. Apply

It is more likely that the speaker's compensation is a fixed cost for the sponsor of the conference. There is nothing in the information provided to suggest that the speaker would earn less as a result of attendees using ROHH strategies.

The correct answer is *No loss*.

5B. Apply

If attendees are employing ROHH strategies, then necessarily they would not be staying in the conference hotel. If this contributes to vacancies in the host hotel as is suggested, then it is likely that fewer people would be ordering room service. Therefore it is likely that a room service waiter at the host hotel would earn less.

The correct answer is *Loss*.

5C. Apply

Salaries are usually fixed amounts, thus the front desk manager's salary most likely represents a fixed cost for the host hotel. There is nothing in the information provided to suggest that the front desk manager would earn less.

The correct answer is *No loss.*

Evaluate

6. The conference sponsored by AMG is the only conference in which the cost of employing the ROHH strategy ($65 per night) is equal to the cost of employing the ROB strategy ($65 per night). According to the article, attendees prefer to stay in the host hotel. Therefore the ROB strategy would likely be favored over the ROHH strategy.

For each of the other conferences, however, there is a substantial cost-saving advantage in employing the ROHH strategy rather than the ROB strategy—CDA, $185 – $65 = $120; QRTA, $185 – $65 = $120; RCD, $185 – $65 = $120; and WWLOP, $155 – $65 = $90. For these conferences, it is much less likely that attendees will prefer the ROB strategy.

The correct answer is *A.*

Infer

7A. Infer

Board prestige is one of the four variables examined by the researchers for any correlation they may have with IPO pricing. The discussion of underpriced IPOs does not involve these variables, and while board prestige is found by the researchers to be negatively correlated with IPO price, it cannot therefore be inferred that a lower IPO price has any correlation with an IPO being underpriced.

The correct answer is *Not inferable.*

7B. Infer

Underpricing is defined by the passage as setting an IPO price that is lower than what that price ends up being at the end of that first day of trading, and lines 25–28 of the passage make it clear that firms should avoid underpricing their IPOs. Looking at the table of Kenyan IPOs, however, Firestone East Africa is the only firm listed whose IPO price was higher than its first day closing price; its IPO was therefore, by definition, not underpriced.

The correct answer is *Not inferable.*

7C. Infer

As noted in the discussion of 7B, there is one firm listed in the table of Kenyan IPOs, Firestone East Africa, whose IPO price was higher than its first day closing price and whose IPO price was therefore not underpriced. Mumias Sugar had 0.00% underpricing, so there are two firms that, by definition, did not have an underpriced IPO.

The correct answer is *Inferable.*

Infer

8A. Infer

The passage indicates that the researchers found a strong negative correlation between board prestige and IPO price (lines 14–19). In other words, the lower the IPO price of a firm, the more prestigious that firm's board is likely to be. Looking at the table of Kenyan IPOs for 2008, Safaricom had an IPO price of 5.00 Kenyan shillings and Co-Operative Bank had an IPO price of 9.50 shillings, suggesting that Safaricom's board was more prestigious than Co-Operative Bank's.

The correct answer is *Supported.*

8B. Infer

While Kenya Re and Eveready had identical IPO prices (9.50 Kenyan shillings), the passage indicates that the researchers found that of the four variables they examined, neither firm size nor firm age had any correlation with IPO price. Therefore, no conclusions about a firm's size can be properly drawn from that firm's IPO price.

The correct answer is *Not supported.*

8C. Infer

The passage indicates that the researchers found a strong negative correlation between investor sentiment and IPO price (lines 14–19). In other words, the higher the IPO price of a firm, the lower investor sentiment toward that firm is likely to be. Looking at the table of Kenyan IPOs for 2006, Kengen had an IPO price of 11.90 Kenyan shillings, whereas Scangroup (10.45) and Eveready (9.50) had lower IPO prices, suggesting that investor sentiment was likely less favorable toward Kengen than toward either Scangroup or Eveready.

The correct answer is *Not supported.*

Evaluate

9. The passage indicates that board prestige is one of the four variables examined by the researchers for any correlation they may have with IPO pricing and also that it was one of the two variables about which the findings surprised the researchers. Only one of the choices fully captures the reason board prestige is mentioned, C. Board prestige is not tied to investor sentiment in any causal way, eliminating both A and D. The author of the passage makes no recommendations about the variables examined by the researchers, eliminating B. While board prestige is negatively correlated with IPO price, it is not used in the passage as evidence that some variables are often negatively correlated with IPO price, eliminating E.

The correct answer is *C.*

Infer

10A. Infer

The sports association spokesperson asserts that "conditions must be placed on [the] practices" of "posting video clips, audio clips, digital photographs, and live score updates . . . on [news organizations'] websites" (lines 11–15). It is strongly suggested that the sports association would disagree with the assertion that there should be no restrictions.

The correct answer is *Otherwise.*

10B. Infer

The news organizations spokesperson states that "online news sites are not asking to broadcast sporting events in their entirety" (lines 10–11), which suggests that such organizations do not believe that doing so would be necessary for adequate reporting. This indicates that they would likely accept the statement.

The sports association spokesperson indicates that the association provides several amenities for reporters such as media passes so that they can "effectively report" (line 9) on the association's events. This indicates that they believe the events can be reported adequately without broadcasting the entire event.

10C. Infer

The sports association spokesperson claims that some activities such as "posting video clips, audio clips, digital photographs, and live score updates" (lines 11–13) harm the value of the broadcasting contracts. It is likely that the sports association would not consider this a benefit; therefore it is unlikely that the sports association would accept this statement.

The correct answer is *Otherwise*.

Infer

11A. Infer

Although the news organizations spokesperson says that "free, engaging sports reporting generates interest in sports" (lines 14–15), this statement only implies an increase in interest. The statement does not specify the extent of this increase.

The sports association spokesperson does not express an opinion on whether online reporting generates interest in the association's events.

The correct answer is *Cannot infer disagreement.*

11B. Infer

Among the practices specifically mentioned by the sports association spokesperson is the practice of live score updates. In suggesting that "conditions must be placed" (line 14) on this practice, the spokesperson implies that the frequency of score updates should not be unlimited.

The news organizations spokesperson states that the "news organizations must be allowed to report freely about sports on their websites, in any timeframe, using any type of online medium they deem effective" (lines 16–20), indicating that the organizations believe that no such limitations should be placed.

The correct answer is *Disagree.*

11C. Infer

The sports association spokesperson insists that "conditions must be placed on these practices" (lines 14–15) of a website updating scores from a sporting event. The news organizations spokesperson implies that they "must be allowed to report freely about sports on their websites . . . using any type of online medium they deem effective" (lines 17–20). From these two statements it can be inferred that the two groups disagree about the conditions under which a news organization should be allowed access to report on the sports association's events.

The correct answer is *Disagree.*

Infer

12. The news organizations spokesperson asserts that news organizations "must be allowed to report freely about sports on their websites . . . using any type of online medium they deem effective" (lines 17–20). From this it can be inferred that the news organizations believe that the restrictions proposed by the sports association spokesperson would hamper their efforts to cover sports news.

The correct answer is *B.*

Infer

13A. Infer

Neither *Height-for-age standards* nor *Weight-for-height standards* provide a distribution of height on the basis of weight, so it is impossible to determine the proportion of boys weighing 19 kg whose height is less than 110 cm.

The correct answer is *No.*

13B. Infer

Using the table in *Height-for-age standards*, the 85th percentile in height for boys aged 4 years 3 months is 109.5 cm, so 100% – 85%, or 15%, of boys aged 4 years 3 months are taller than 109.5 cm. Thus, at most, 15% of boys of this age are taller than B's height of 110 cm.

The correct answer is *Yes.*

13C. Infer

Using the table in *Height-for-age standards*, the 50th percentile in height for boys aged 5 years 0 months is 110.0 cm, which is the same height as B. Therefore, B's height is greater than or equal to that of 100% – 50%, or 50%, of boys aged 5 years 0 months.

The correct answer is *Yes.*

Infer

14A. Infer

Using the table in *Height-for-age standards*, the 50th percentile height for boys aged 3 years 3 months is 98.0 cm, so 50% of boys this age are taller than this. For boys aged 3 years 6 months and older, the 50th percentile height is greater than 98.0 cm, so at least 50% of boys this age are taller than this. Moreover, for boys 4 years 0 months and older, the 15th percentile height exceeds 98.0 cm, so at these ages, at least 85% of boys are taller than 98.0 cm. Thus for a boy selected at random from a model population whose age is greater than 3 years 3 months, the probability that his height is at least 98.0 cm is greater than 50%.

The correct answer is *Yes*.

14B. Infer

Using *Weight-for-height standards*, the 3rd percentile weight for height 105 cm is just over 14 kg, and for heights greater than 105 cm, the 3rd percentile weight is greater than 14 kg. Thus, at most, 3% of the population of boys at least 105 cm tall has a weight of 14.0 kg or less. In particular, at most, 3% of the population of boys at least 105 cm tall has a weight of exactly 14.0 kg.

The correct answer is *Yes*.

14C. Infer

Using *Height-for-age standards*, the 85th percentile in height for boys aged 5 years 0 months is 114.8 cm. This means that a boy 114.8 cm tall is as tall or taller than 85% of boys aged 5 years 0 months. It does not follow that a boy 114.8 cm tall is necessarily *taller* than 85% of boys aged 5 years 0 months, so it is not necessarily true of a boy 114 cm tall, either.

The correct answer is *No*.

Infer

15. Neither *Height-for-age standards* nor *Weight-for-height standards* provide a distribution of age on the basis of weight, height, or any other variable, so it is impossible to determine where the boy's age falls in the distribution of age for height (choice A). The boy's weight is less than that of 50% of boys his height, and his height is less than that of 50% of boys his age, but it is impossible to tell where his weight falls among the weights of boys his age (choice B). Likewise, knowing height-for-weight percentiles does not provide information about weight-for-height percentiles (choice C).

What can be approximated, however, is his height at each age and his weight at each height; thus it is possible to know his weight at each age. *Height-for-age standards* indicates that at age 2 years 0 months, the boy was 87.1 cm tall, and at age 5 years 0 months, he was 110.0 cm tall. *Weight-for-height standards* indicates that the 50th percentile weight for boys 87.1 cm tall is approximately 12 kg, while the 50th percentile weight for boys 110.0 cm tall is approximately 18 kg. Thus his weight at age 5 years 0 months is approximately $\frac{18}{12}(100)\%$, or 150%, of his weight at age 2 years 0 months.

The correct answer is *D*.

Infer; Apply

16A. Infer

According to the graph in *Weight-for-height standards*, the 15th percentile in weight for a boy of height 110 cm is approximately 17 kg. Therefore, 17 kg is greater than or equal to the weight of 15% of boys of that height. But 17 kg is less than B's weight of 19 kg, so the percentage of boys whose weight is less than or equal to B's weight may be somewhat larger than 15%. Consequently, at least 15% of boys at B's height have a weight that is less than or equal to that of B.

The correct answer is *Yes*.

16B. Apply

B's height is 110 cm, and 10% of 110 is equal to 11, so a boy is within 10% of B's height provided that he is between 99 cm and 121 cm tall. According to *Height-for-age standards*, for boys aged 4 years 3 months, 100.5 cm is the 15th percentile in height and 113.1 cm is the 97th percentile in height. Therefore, 97% – 15%, or 82% of boys B's age have heights between 100.5 cm and 113.1 cm. Since 99 < 100.5 and 113.1 < 121, the heights of all these boys are within 10% of B's height, so at least 82%—and hence at least 80%—of boys B's age have heights within 10% of B's height.

The correct answer is *Yes.*

16C. Apply

According to *Height-for-age standards*, for boys aged 4 years 0 months, the 97th percentile in height is 111.2 cm, so B's height of 110 cm is less than that of at *least* 3% of boys this age. If B's height were also less than that of at *most* 3% of boys this age, then 110 cm would have to be the 97th percentile in height for boys aged 4 years 0 months, which it is not.

The correct answer is *No.*

Infer

17A. Infer

Using *Height-for-age standards* for boys aged 4 years 0 months, the 15th percentile in height is 99.0 cm. Thus 15% of boys of this age are 99.0 cm tall or shorter. Note that the 3rd percentile in height for boys of this age is 95.4 cm, so 3% of boys of this age are at this height or shorter. Therefore, 15% – 3%, or 12% of boys aged 4 years 0 months have heights greater than 95.4 cm and less than or equal to 99.0 cm. The proportion of boys of this age whose height is exactly 99.0 cm must therefore be less than or equal to 12%, so the indicated probability is also less than or equal to 12%.

The correct answer is *No.*

17B. Infer

Using *Height-for-age standards*, the 3rd percentile in height for ages from 2 years 0 months through 5 years 0 months is at least 81.4 cm. This means that a boy from a model population whose height is 81.4 cm is shorter than at least 97% of boys his age. Thus a boy who is 81 cm tall is shorter than at least 97% of boys his age and thus shorter than at least 95% of boys his age.

The correct answer is *Yes.*

17C. Infer

Weight-for-height standards provide a weight distribution for boys 120 cm tall; in particular, 97% of boys at this height weigh more than 18 kg. But a randomly selected boy at this height could conceivably weigh much less than 18 kg. Moreover, even if the boy's weight were known, a percentile distribution of weight for boys aged 2 years 6 months is lacking, so it is impossible to answer the question based on the information provided.

The correct answer is *No.*

Infer

18. Neither *Height-for-age standards* nor *Weight-for-height standards* provide a distribution of age on the basis of weight, height, or any other variable, so it is impossible to determine where the boy's age falls in the distribution of age for height (choice A). The boy's weight is less than that of 97% of boys his height, and his height is less than that of 97% of boys his age, but it is impossible to tell where his weight falls among the weights of boys his age (choice B). Likewise, knowing height-for-weight percentiles does not provide information about weight-for-height percentiles (choice C).

However, it is possible to approximate his height at each age and his weight at each height; thus it is possible to determine his weight at each age. *Height-for-age standards* indicates that at age 2 years 0 months, the boy was 92.9 cm tall, and at age 5 years 0 months, he was 118.7 cm tall. *Weight-for-height standards* indicates that the 97th percentile weight for boys 92.9 cm tall is approximately 16 kg, while the 97th percentile weight for boys 118.7 cm tall is between 26 kg and 27 kg. Thus his weight at age 5 years 0 months is roughly between $\frac{26}{16}(100)\% = 162.5\%$ and $\frac{27}{16}(100)\% = 168.75\%$, or approximately 166%, of his weight at age 2 years 0 months.

The correct answer is *D.*

Infer; Recognize

19A. Infer

Sorting on *Continent* reveals that, when temperatures are measured in °C, the mean maximum temperature for the 3 cities listed in South America was $\frac{1}{3}(29 + 38 + 29)$, or 32, while the mean maximum temperature for the 2 cities listed in Oceania was $\frac{1}{2}(25 + 29)$, or 27. Since 32 > 27, the mean maximum temperature for the cities in South America was greater than that for the cities in Oceania.

The correct answer is *Yes.*

19B. Recognize

Sorting on *Weather conditions* reveals 7 cities reporting *fine* weather, for which the least maximum temperature reported was 5°C. Thus none of the 7 cities reported a maximum temperature less than 0°C.

The correct answer is *No.*

19C. Infer

Sorting on *Continent* (as in 19A) reveals that there are 8 Asian cities listed. When the minimum temperatures for the 8 cities are ordered from least to greatest, the median minimum temperature is equal to the arithmetic mean of the fourth and fifth temperatures in the list. Using the *Continent* sort, the first five temperatures in the list (in °C) are –3, –3, 3, 3, and 21, so the median minimum temperature is therefore $\frac{1}{2}(3 + 21)$, or 12.

The correct answer is *Yes.*

Infer

20A. Infer

Let E_1, E_2, F, and S denote a student's Exam 1 score, Exam 2 score, final exam score, and final score, respectively. If F and E_2 are equally weighted in computing the final score, then there must be constants x and y such that $y + x + x = 1$ and for each student, $S = yE_1 + xE_2 + xF$. Since $y = 1 - 2x$, it follows that $S = (1 - 2x)E_1 + xE_2 + xF$. Solving this last equation for x in terms of E_1, E_2, F, and S, $x = \frac{S - E_1}{E_2 + F - 2E_1}$. In particular, it follows that this fractional expression must be constant.

For Abusuba—the first student listed in the table—$E_1 = 89$, $E_2 = 87$, $F = 85$, and $S = 86.50$, so $\frac{S - E_1}{E_2 + F - 2E_1} = \frac{86.50 - 89}{87 + 85 - 2(89)}$, which is equal to $\frac{5}{12}$. For Ardanin—the second student listed in the table—$E_1 = 85$, $E_2 = 83$, $F = 84$, and $S = 84.00$, so $\frac{S - E_1}{E_2 + F - 2E_1} = \frac{84.00 - 85}{83 + 84 - 2(85)}$, which is equal to $\frac{1}{3}$. Since $\frac{5}{12} \neq \frac{1}{3}$, the fractional expression is not constant. Therefore F and E_2 are not equally weighted in computing the final score.

The correct answer is *No.*

20B. Infer

There are 25 students in the class, so when the table is sorted on *Final score*, the median final score is equal to the score in the 13th position (from either top or bottom) in the table. This is the score of the student whose surname is Orlando, and it is equal to 81.50.

The correct answer is *Yes.*

20C. Infer

Sorting on *Year in program* reveals that there are 6 students in year 3—Derezinski, Lindt, Nguyen, Radzinsky, Sykes, and Vladimirov—with Exam 1 scores of 85, 87, 70, 91, 51, and 69, respectively. The lowest of these scores is 51 (Sykes) and the highest is 91 (Radzinsky), so the range of the scores is 91 – 51, or 40.

The correct answer is *Yes.*

Recognize; Infer

21A. Recognize

Sorting the table on *Mean MI* reveals that the four populations with the lowest market integration (Hadza, Au, Tsimane, and Yasawa) are exactly the four populations that forage.

The correct answer is *Yes.*

21B. Recognize

Sorting the table on *Mean CS* reveals that the three populations that depend on both farming and wage work (Isanga Village, Maragoli, and Gusii) rank 5th, 2nd, and 1st in the group in terms of mean community size.

The correct answer is *Yes.*

21C. Infer

To determine the range for market integration, sort the table on *Mean MI*. The maximum market integration is 82 (by the Sanquianga) and the minimum market integration is 0 (by the Hadza). Therefore the range for market integration is 82 – 0 = 82.

To determine the range for participation in world religions, examine the table sort for *Mean WR*. The maximum participation in world religions is 100 (by several populations) and the minimum participation in world religions is 0 (by the Hadza). Therefore the range for participation in world religions is 100 – 0 = 100.

The range for market integration is less than the range for participation in world religions.

The correct answer is *Yes.*

Infer; Recognize

22A. Infer

Sorting the table on *Cooked (yes/no)* reveals that there are 5 uncooked vegetables listed, 4 of which provide 1 g of protein and 1 of which provides 3 g of protein; furthermore, there are 10 cooked vegetables, 3 of which provide 2 g, 3 of which provide 3 g, and 4 of which provide 5 g of protein. When the numbers of grams of protein provided by the 5 uncooked vegetables are listed in order from least to greatest—1, 1, 1, 1, 3—the median number of grams of protein is given by the 3rd value in the list, 1. When the numbers of grams of protein provided by the 10 cooked vegetables are listed in order from least to greatest—2, 2, 2, 3, 3, 3, 5, 5, 5, 5—the median number of grams of protein is given by the arithmetic mean of the 5th and 6th values in the list, $\frac{1}{2}(3 + 3)$, or 3. Therefore the median amount of protein provided by the uncooked vegetables, 1 g, is equal to $\frac{1}{3}(3\text{ g})$, or $\frac{1}{3}$ the median amount of protein provided by the cooked vegetables.

The correct answer is *Yes.*

22B. Infer

Sorting on *Carbohydrate (g)* reveals that cooked corn provides the largest amount of carbohydrate of the vegetables listed, at 32 g. The median amount of carbohydrate for the other 14 vegetables listed is given by taking the arithmetic mean of the 7th and 8th values listed—that is, the arithmetic mean of the values for cooked asparagus and cooked broccoli, $\frac{1}{2}(8 + 8)$ g, or 8 g. Since 32 = 4(8), the amount of carbohydrate per serving of cooked corn is exactly 4—not 3—times the median for the other 14 vegetable options listed.

The correct answer is *No.*

22C. Recognize

When the table is sorted on *Total fiber (g)*, the first 8 vegetables listed are those having total fiber less than 3.0 g. Among these 8, uncooked sweet green pepper has the greatest amount of carbohydrate per serving, at 10 g. Hence, none of these 8 vegetables has more than 10 g of carbohydrate per serving.

The correct answer is *Yes.*

Recognize; Infer

23A. Recognize

Sorting on *Country* brings the 9 United States universities to the bottom of the table. Starting from the top of this list and working downward, the employer score is greater than the total score for both Harvard University (78.0 employer, 77.5 total) and UCLA (51.3 employer, 51.1 total).

The correct answer is *No.*

23B. Recognize

Sorting on *Employer score* reveals that there are 6 universities—from UCLA through University of Cambridge in order from least to greatest—for which the employer score is greater than 50. Among these, only Harvard University has a citations score (53.8) that is also greater than 50.

The correct answer is *Yes.*

23C. Infer

University of Tokyo's academic score is 79.7 and total score is 53.6, so the magnitude of the difference between these values is 79.7 – 53.6, or 26.1. By scanning the original table—already sorted on *Total score*—from top to bottom, it is relatively straightforward to eliminate all other universities for which the magnitude of the difference is less than 20. This process of elimination leaves only 3 other universities to check: MIT (97.4 academic, 72.8 total: difference 24.6), UCB (90.8 academic, 68.7 total: difference 22.1), Caltech (81.5 academic, 60.7 total: difference 20.8). Since 26.1 is greater than 24.6, 22.1, and 20.8, University of Tokyo is the school for which the magnitude of the difference is greatest.

The correct answer is *Yes.*

Infer; Apply; Recognize

24A. Infer

Sorting on *Depth (km)* produces a list of earthquakes in increasing order of depth. The median depth (in km) of the 22 earthquakes is the arithmetic mean of the 11th and 12th earthquakes appearing in the list, that is, $\frac{1}{2}(25 + 26) = 25.5$. The arithmetic mean of the depths is $\frac{1}{22}$ times the sum of all 22 depths; therefore, it must be greater than $\frac{1}{22}$ times the greatest depth listed. But this last value—that is, $\frac{1}{22}(641)$ km, or $29\frac{3}{22}$ km—is already greater than the median depth, so the arithmetic mean of the depths must be greater than the median of the depths.

The correct answer is *Yes.*

24B. Apply

A given location is north of the equator provided that its latitude is positive, so it is helpful to sort on *Latitude*. Only 10 of the 22 earthquakes listed occurred at positive latitude, so fewer than half of the earthquakes occurred north of the equator.

The correct answer is *No.*

24C. Recognize

To determine the number of earthquakes occurring between 10:00:00 and 20:00:00 GMT, it suffices to sort on *Time (GMT)* and then count. The 9 earthquakes appearing in positions 5 through 13 of the sorted list meet the criterion, but $\frac{9}{22} \neq \frac{1}{2}$.

The correct answer is *No*.

Infer

25A. Infer

The least possible mean corresponds to the case where each individual reported the minimum amount of time for their category (i.e., 5 people exercised 0 hours, 3 people exercised 1 hour, and so on). The mean in this case would be $\frac{5(0)+3(1)+2(2)+4(3)+4(4)+5(5)+1(8)+1(10)}{5+3+2+4+4+5+1+1} = \frac{78}{25} = 3.12$

The correct answer is *3.12*.

25B. Infer

A respondent who averaged less than one-half hour of exercise per day would have reported less than 3.5 hours of exercise for the week. There were 10 respondents who reported exercising less than 3 hours per week: those respondents necessarily averaged less than one-half hour of exercise per day. There were 11 respondents who reported exercising more than 4 hours for the week: those respondents necessarily averaged more than one-half hour of exercise per day.

There were 4 respondents who reported exercising at least 3 hours but no more than 4 hours for the week. It is possible that all 4 of these respondents reported more than 3.5 hours of exercise, in which case only 10 respondents would have averaged less than one-half hour of exercise per day. It is also possible, however, that 1 or more of these 4 respondents reported fewer than 3.5 hours, in which case, up to 14 respondents would have averaged less than one-half hour of exercise per day.

The correct answer is *10 and 14*.

Infer

26A. Infer

According to the graph, 45% of the residents were children or teenagers and 17% were seniors. Therefore there were $\frac{45}{17} \approx 2.65$ times as many residents who were children or teenagers than were seniors.

The correct answer is *2.65*.

26B. Infer

According to the graph, at the time of the census, 68% of residents were aged 0–39 and 32% were aged 40 or greater. If P represents the total population of Town Y, then $540 = (0.68)P - (0.32)P$. Therefore, $540 = 0.36P$, so $P = \frac{540}{0.36} = 1{,}500$.

The correct answer is *1,500*.

Recognize

27A. Recognize

The building with the greatest mean height per floor is represented by the uppermost black square on the graph. The horizontal coordinate of this square indicates that the roof height of the building is between 350 and 370 meters.

The correct answer is *350 and 370.*

27B. Recognize

Where the red dots are in the upper portions of the graph, the corresponding black squares are generally in the lower regions. Similarly, where the red dots are in the lower portions of the graph, the corresponding black squares are generally in the upper regions. This demonstrates a strong negative correlation between the variable represented by the vertical coordinates of the red squares and the variable represented by the vertical coordinates of the black squares. Thus there is a strong negative correlation between the number of floors and the mean height per floor.

The correct answer is *strong negative.*

Infer

28A. Infer

When the carbon dioxide emissions of the 9 countries are ordered from least to greatest, the median is the 5th (middle) value in the list. Indonesia ranks 5th in both 2000 and 2009. Thus, the median in 2000 was approximately 150 million metric tons, and in 2009 it was approximately 175 million metric tons. This represents an increase of approximately 25 million metric tons.

The correct answer is *less than 50.*

28B. Infer

Among the 9 countries, in 2006, China emitted the most carbon dioxide at approximately 925 million metric tons, and Taiwan emitted the least at approximately 110 million metric tons. Thus the range of emission for 2006 was approximately 925 – 110 = 815 million metric tons.

The correct answer is *800.*

Infer

29A. Infer

Among all of the babies in the study, the graph shows that greater lengths tend to correspond to greater weights. This indicates a strongly positive correlation between length and weight.

The correct answer is *strongly positive.*

29B. Infer

In the graph there are 4 blue circles and 6 triangles below the horizontal line at 3.5 kg. This indicates that 10 babies in the study weighed less than 3.5 kg, and that of these 10, 4 were in Group A. Thus the probability that the randomly selected baby was a part of Group A is $\frac{4}{10}$ = 0.40.

The correct answer is *0.40.*

Infer

30A. Infer

Since the white circles (connected by blue lines) and the filled squares (connected by black lines) in the graph are consistently at or above the empty squares (connected by dotted lines), it follows that both ABC Cars and XYZ Automotive were at or above the citywide average for every single month in 2010. Thus their combined sales must have been greater than the combined sales of the two dealers not included in the graph. Therefore ABC Cars and XYZ Automotive must have accounted for more than half of all used-car sales in City Z in 2010.

The correct answer is *more than*.

30B. Infer

In June 2010, the citywide average was 26 cars. This means that the four dealers sold a combined 4(26) = 104 cars. Of those 104 cars, ABC Cars sold 30 and XYZ Automotive sold 28. This implies that the other two dealers sold 104 – 30 – 28 = 46 cars.

The correct answer is *46*.

Infer

31A. Infer

The graph indicates that there were approximately 700 million Internet users in 2002 and approximately 1,400 million in 2007. Thus, between 2002 and 2007, the percent increase in the number of Internet users was approximately $\left(\frac{1{,}400 - 700}{700}\right)(100)\% = 100\%$.

The correct answer is *100*.

31B. Infer

The graph indicates that in 2000 the population was approximately 6,100 million, of whom approximately 400 million were Internet users, and in 2010 the population was approximately 6,875 million, of whom approximately 2,100 million were Internet users. Thus, in 2000 there were $100\left(\frac{400}{6{,}100}\right) \approx 6.6$ Internet users per 100 people, and in 2010 there were $100\left(\frac{2{,}100}{6{,}875}\right) \approx 30.5$ Internet users per 100 people. Therefore, from 2000 to 2010, the number of Internet users per 100 people increased by approximately 30.5 – 6.6 = 23.9 ≈ 24.

The correct answer is *24*.

Infer

32A. Infer

According to the graph and the accompanying text, 25% of the Day 1 shoppers returned on Day 2, and 19% of those shoppers subsequently returned on Day 3. Thus, on Day 3, 100(.25)(.19) = 4.75% of Day 1 shoppers returned to the store.

The correct answer is *Between 1 and 10*.

32B. Infer

Day 1 shoppers who purchased an item in place of Product X paid, on average, 130% of the amount that they would have paid for Product X. According to the graph, 60% of Day 1 shoppers chose to buy an alternative product on Day 1. The total spent by these shoppers, as a fraction of the total all Day 1 shoppers would have spent had each instead bought Product X, is $\frac{(60)(130)}{(100)(100)} = \frac{7,800}{10,000}$, or 78%.

The correct answer is *78*.

Infer

33A. Infer

There is a noticeable decrease in consumption for all four categories immediately prior to 1922, most markedly for carbohydrates and fat, and more subtly for protein and fiber, thereby strongly suggesting that there was an overall food shortage at that time.

The other options can be ruled out: for several years prior to 1961, consumption of fat and fiber appears unchanged, whereas, prior to 2000, there appears to be a steady increase in the consumption of protein and fiber.

The correct answer is *1922*.

33B. Infer

Consumption of carbohydrates appears to have been lowest between 1961 and 1967. At that time the average consumption of carbohydrates was approximately 384 g, and that of fiber, approximately 21 g. Thus, at that time, carbohydrate consumption was approximately $\frac{384}{21} \approx 18.29$ times that of fiber.

The correct answer is *18*.

Infer

34A. Infer

Measured in thousands, the estimated year-end population of Territory C was approximately 2,900 in 1990 and 4,600 in 2010, for an increase of approximately 4,600 – 2,900, or 1,700, over that period. The total estimated year-end population of Nation X, in thousands, was 17,000 in 1990 and 22,500 in 2010, an increase of 22,500 – 17,000, or 5,500. Thus, Territory C's population increase represents $100(\frac{1,700}{5,500}) \approx 30.91$ percent of the total increase.

The correct answer is *30*.

34B. Infer

Measured in thousands, the 2010 estimated year-end population was approximately 7,250 for Territory A, approximately 5,600 for Territory B, and approximately 4,600 for Territory C, for a combined total of approximately 17,450. The estimated total year-end population, in thousands, of Nation X for 2010 was 22,500. Thus the estimated total of the three territories represents $100(\frac{17,450}{22,500}) \approx 77.56$ percent of the estimated year-end total population of Nation X in 2010.

The correct answer is *between 70% and 80%*.

Infer

The passage strongly suggests that liquid water is necessary for the formation of rock varnish containing manganese, and for the movement of limonite (and rock varnish consisting only of limonite). The frozenness of the Thiel Mountains is suggested as an explanation of the absence of manganese in the rock varnish there, suggesting that temperatures on the rocks are also below freezing.

35A. Infer

The passage states that limonite had penetrated the cracks. This suggests that the limonite had moved from the surface of the rock, which in turn very strongly suggests (with the above) that temperatures on the rocks were above freezing at some point. Because the rocks are continuously frozen at present, it can be inferred that temperatures on the rocks must have been above freezing at some point in the past (statement F).

Although the passage as a whole rather strongly suggests that rock varnish in continuously frozen areas tends to be especially rich in iron, any suggestion that rock varnish especially rich in iron tends not to exist outside of extremely cold areas is at best very weak. It would therefore be a mistake to choose D as the True statement (over F).

Because statement B is the negation of statement A, it may seem likely that one or the other is true. And indeed, the passage cites an absence of moisture as an explanation for an absence of manganese in certain places. However, not enough information is given to infer whether or not moisture is required for the presence of significant amounts of manganese in the environment.

The correct answer is F, *Temperatures on rocks in the Thiel Mountains were above freezing at some point in the past.*

35B. Infer

Given the strong suggestion, with the correct answer in 35A, that temperatures on rocks in the Thiel Mountains were above freezing at some point in the past, together with the statement that rock varnish in the Thiel Mountains (including rock varnish in the cracks of rocks) consists only of limonite, we find a suggestion that manganese need not begin to penetrate cracks in rocks in every case in which temperatures in a continuously frozen location increase to above freezing. This suggests that statement C may be false. This suggestion is much stronger than any such suggestion with respect to the other given statements in the table.

The correct answer is *C, When temperatures in a continuously frozen location increase to above freezing, cracks in rocks there begin to take in rock varnish containing significant amounts of manganese.*

Apply

Before any rounds are completed, there are 512 players, each on exactly one team of two players. Therefore there are 256 teams in the competition. After each round, half of the teams are eliminated. The following table summarizes the results after each round of the tournament.

The only available combination of rounds completed and number of teams remaining is 4 rounds completed and 16 teams remaining.

36A. Apply

The correct answer is B, *4.*

36B. Apply

The correct answer is D, *16.*

Infer

We are asked to provide a sequence of cause and effect that would (according to the naturalist) result in coral reef decline. The question suggests that the answers will be dependent on one another, in that the correct answer in 37A will depend on the correct answer in 37B, and vice versa.

The passage states that one factor contributing to coral reef decline is predation on coral by organisms such as the crown-of-thorns sea star. The preferred food source for this organism is coral polyps, and so a causal sequence that has as its effect an increase in crown-of-thorns sea stars may be likely to produce a decline in coral reefs. This suggests that C may be the correct response in 37B. However, this depends on whether one of the other statements in the table describes a cause suggested by the naturalist to produce this effect.

The last sentence of the naturalist's statement indeed suggests, in the context of the passage, that an increase in phytoplankton blooms would result in greater numbers of crown-of-thorns sea stars. This suggests that A may be the correct response for 37A. And indeed, according to the naturalist, the crown-of-thorns sea star's preferred food source is coral polyps. All of the naturalist's statement is about possible explanations of the decline of coral reefs. The passage therefore indicates that the naturalist would take an increase in phytoplankton (A, cause) to produce an increase in crown-of-thorns sea stars (C, effect), and that this causal sequence would result in coral reef decline.

37A. Infer

The correct answer is A, *An increase in phytoplankton.*

37B. Infer

The correct answer is C, *An increase in crown-of-thorns sea stars.*

Apply

The formula may only be applied for y greater than $2\sqrt{3}$, therefore the only options available for b are 4, 6, and 8.

If $f(a) = b$ and $b = 4$, then, according to the formula, $a = \frac{4^2 + 12}{4} = \frac{28}{4} = 7$.

Since 7 is not an option, $b = 4$ is not part of the correct response.

If $f(a) = b$ and $b = 6$, then, according to the formula, $a = \frac{6^2 + 12}{6} = \frac{48}{6} = 8$.

Since 8 is an option, $a = 8$ and $b = 6$ must be the correct response.

38A. Apply

The correct answer is E, *8.*

38B. Apply

The correct answer is D, *6.*

Infer

This item asks for a possible fact and an assumption of the argument such that the possible fact supports the assumption. This suggests that the correctness of the answer for one response opportunity could depend on the correctness of the answer for the other.

39A. Infer

Only one of the statements in the table is an assumption required by the archaeologist's argument. If the next cup recovered from the archaeological site is not made of porcelain, then the evidence provided by the archaeologist has no relevance regarding where the next cup recovered from the site was made. This indicates that C may be the correct response for 39A.

In contrast, A, although a strengthener of the argument, is not a required assumption: we could, for example, have other reasons for believing that the next cup will be made of porcelain. Statement F would also be an important strengthener, but it is not required for the reasoning of the argument to be sound.

The correct answer is C, *The next cup to be recovered from the site will likely be made of porcelain.*

39B. Infer

Given that C is the required assumption within the list in the table, the possible fact asked for in the question must be a possible fact that provides significant logical support for this statement. (Because the question specifies that two *different* statements must be selected, the *possible fact* cannot be C.)

The correct answer is A, *Other cups have been recovered from the archaeological site, all of which were made of porcelain.*

Apply

40A. Apply

If Laszlo reviews a document, so must his supervisor, Davi, and Davi's supervisor, Adiliah. If Laszlo is the initial reviewer, then exactly 3 department members would review the document. However, if Laszlo reviews a document but is not the initial reviewer, the initial reviewer must be either Saleema or Yarah for a maximum total of 4 reviewers of the document.

The correct answer is D, *4.*

40B. Apply

If Adiliah reviews a document, no department members will review the document after her. If Adiliah is the initial reviewer, then, exactly 1 department member will review the document. If Bao or Davi is the initial reviewer, then the document will be reviewed by exactly 2 department members. If Laszlo is the initial reviewer, then the document will be reviewed by exactly 3 department members. Finally, if Saleema or Yarah is the initial reviewer, then exactly 4 department members will review the document. Since no one else can be the initial reviewer, 4 must be the maximum number of reviewers of a single document for which Adiliah is among the reviewers.

The correct answer is D, *4.*

Infer

The question asks for a possible characteristic of a group and a prediction about the group such that knowledge that the group has the characteristic would support the prediction. The question suggests that the answers for the two response opportunities may be dependent, such that the correctness of the answer for one response opportunity depends on the correctness of the answer for the other.

The evidence from the archeologist might support a prediction that the group uses thin-walled pots, on the basis of the group's being sedentary rather than nomadic. The evidence might also support the prediction that the group is nomadic rather than sedentary, on the basis of its using thin-walled pots. However, the archaeologist states that a prediction can be made about pottery use. The archaeologist thus most strongly suggests that usage of thin-walled pots by a group can be predicted on the basis of the group's being sedentary rather than nomadic.

41A. Infer

The correct answer is A, *The group is sedentary rather than nomadic.*

41B. Infer

The correct answer is C, *The group uses thin-walled pots.*

Infer

For the given right circular cylinder, let V denote the volume (in cubic meters); let h denote the height (in meters); and let r, d, and A denote the radius (in meters), diameter (in meters), and area (in square meters), respectively, of the circular base. According to the given conditions, h, $\frac{1}{4}V$, and A are all equal.

42A. Infer

The volume of a right circular cylinder is equal to the area of its base times its height, so $V = Ah$. Substituting Ah for V in the right-hand side of the equality $h = \frac{1}{4}V$ yields $h = \frac{1}{4}Ah$, from which it follows that $A = 4$. Since $A = \pi r^2$, it follows that $\pi r^2 = 4$ and hence $r = \sqrt{\frac{4}{\pi}} = \frac{2}{\sqrt{\pi}}$. Since the diameter of a circle is equal to twice the radius, it follows that $d = 2r = \frac{4}{\sqrt{\pi}}$.

The correct answer is B, $\frac{4}{\sqrt{\pi}}$.

42B. Infer

Substituting Ah for V, this time in the left-hand side of the equality $\frac{1}{4}V = A$, yields the equation $\frac{1}{4}Ah = A$. A cannot be zero, so dividing both sides of this last equation by A yields $\frac{1}{4}h = 1$, from which it follows that $h = 4$.

The correct answer is C, *4*.

Infer

The wording of the question suggests that the correctness of an answer for one of the response opportunities will depend on the correctness of the answer to the other. We are to find a statement in the table such that the information indicates Professor A would likely disagree with the first statement and Professor B would take the second statement to present evidence against the first.

43A. Infer

The only statement in the table that the dialogue strongly suggests Professor A would disagree with is C. For example, if the relative distribution of spending by the *aid industry* between *primary schools in the poorest areas, medicines and other basic supplies for health care such as mosquito nets,* and the *few key agricultural initiatives* is maintained, while spending in other areas is drastically reduced, then the aid industry will thereby focus its spending more on primary education than it now does.

The correct answer is C, *The aid industry should focus its spending less on primary education than it now does.*

43B. Infer

Given the answer for 43A, the question requires identification of the statement within the table that Professor B would take to be evidence for the statement that the aid industry should focus its spending less on primary education than it now does. The claims attributed to Professor B, in the context of the dialogue with Professor A, strongly suggest that she would take such evidence to be provided by statement F.

The correct answer is F, *Projects in education are more likely to be successful if they are paid for by local people.*

Infer

Since the speed of the car increases at a constant rate, the car's average speed, in meters per second, over the 10-second period is equal to $\frac{1}{2}(v_0 + v_{10})$. Thus the distance the car traveled, in meters, over that period is equal to $\frac{1}{2}(v_0 + v_{10})(10)$, or $5(v_0 + v_{10})$. But this value is given to be 125, so it must be true that $v_0 + v_{10} = \frac{125}{5}$, or 25. Because speed must be positive, both v_0 and v_{10} must be less than 25, ruling out 36 and 72 as possible values.

44A. Infer

Among the available alternatives—5, 18, and 20—the only pair that sum to 25 are 5 and 20. Since the speed is increasing, it must also be true that $v_0 \leq v_{10}$. Therefore $v_0 = 5$.

The correct answer is A, *5.*

44B. Infer

Following the analysis for 44A, the value of v_{10} must correspond to $v_0 = 5$: $5 + v_{10} = 25$, so $v_{10} = 20$.

The correct answer is C, *20.*

Infer

The wording of the passage suggests that the answers for 45A and 45B may depend on one another, in that the correctness of one response may depend on the correctness of the other.

Although volcanoes emit various gases, such emissions are not claimed by the journalist to have brought about the end of the Triassic. The journalist indicates that volcanic eruptions were an indirect cause of the end of the Triassic. The eruptions might thus have been a cause of the end of the Triassic, but only because of certain effects that they had. The journalist then indicates that the release of methane from the bottom of the ocean was the direct cause of the end of the Triassic. This very strongly suggests that, according to the journalist, the eruption of volcanoes (C)—an indirect cause of the end of the Triassic—resulted in a release of methane from the bottom of the ocean (E), which in turn resulted in the end of the Triassic.

45A. Infer

The correct answer is C, *The eruption of volcanoes.*

45B. Infer

The correct answer is E, *The release of methane from the bottom of the ocean.*

Infer

For $n = 1$, the equation $s_{n+2} = (s_n)^2 - s_{n+1}$ is equivalent to $s_3 = (s_1)^2 - s_2$. For $n = 2$, the equation $s_{n+2} = (s_n)^2 - s_{n+1}$ is equivalent to $s_4 = (s_2)^2 - s_3$, and substituting $(s_1)^2 - s_2$ for s_3 yields $s_4 = (s_2)^2 - (s_1)^2 + s_2$. (Continuing in this fashion, it is possible to produce, for each positive integer n, an expression for s_n in terms of s_1 and s_2.) Substituting 1 for s_2 in the equation for s_4, it follows that the values of s_1 and s_4 are related by the equation $s_4 = 2 - (s_1)^2$. One strategy is to substitute each value in the table for s_1 to see if the corresponding value of s_4 is present.

46A. Infer

Because the value of $(s_1)^2$ is nonnegative and increases rapidly as the absolute value of s_1 increases, it makes sense to begin testing possible values for s_1 at the bottom of the table. When s_1 is equal to 0 or –1, the quantity $2 - (s_1)^2$ is positive, so the corresponding value of s_4 does not appear. When $s_1 = -3$, the corresponding value of s_4 is $2 - (-3)^2 = -7$, which is present in the table. Note that when $s_1 \leq -7$, it follows that $2 - (s_1)^2 \leq 2 - 49$, so the corresponding value of s_4 is less than or equal to –47 and hence cannot appear in the table. So the value of s_1 must be –3.

The correct answer is C, *–3.*

46B. Infer

Following the analysis for 46A, the value of s_4 must correspond to $s_1 = -3$, and it is given by $s_4 = -7$.

The correct answer is B, *–7.*

Evaluate

47A. Evaluate

If the researchers had posed the same questions to 5-year-old French and Mundurucú children as they posed the 7-to-13-year-old children, the results may or may not have corroborated the researchers' conclusion.

If, however, the Mundurucú children who were 5 years old had the same difficulty in answering the questions as their North American counterparts, then the researchers would have further evidence that the ability is not present in children under the age of 5 but appears to develop thereafter.

The correct answer is C, *Mundurucú children who were 5 years old had just as much trouble answering the questions as did the 5-year-old North American children.*

47B. Evaluate

If it were true that North American children 7 to 13 years old had much more trouble answering the questions than did the Mundurucú children of the same ages, then this would provide some evidence that the ability is not innate.

The correct answer is A, *North American children 7 to 13 years old had much more trouble answering the questions than did the Mundurucú of the same ages.*

Apply

48A. Apply

Each employee description must be checked to see if it meets the criteria for verbal warning, but not for written reprimand: accumulating at least 3, but fewer than 4, unexcused absences within a 365-day period. The employee described in option A had 4 unexcused absences, but no more than 2 of these occurred within a single 365-day period, so the employee did not qualify for a verbal warning.

Likewise, the employee in option B did not qualify for a verbal warning: the employee reduced the absence on 13 May 2010 from a full day to half a day by staying late and working an extra hour, and thus had only $2\frac{1}{2}$ absences during the 365-day period beginning 13 May, and no more than 2 absences within any other 365-day period.

In option C, the 4.5-hour absence on 19 March 2010 counts as a full day's absence and is not offset by the extra hour because it was not worked on the same day. Therefore, the employee in option C had exactly 3 unexcused absences in the 365 -day period beginning on 19 March 2010—enough for a verbal warning, though not a written reprimand.

In option D, the employee was absent between 10 minutes and 2 hours on 15 and 19 September, between 2 hours and 4 hours on 13 and 18 September, and more than 4 hours on 16 September. Thus, in that single 365-day period, the employee accumulated $(2)\left(\frac{1}{3}\right) + (2)\left(\frac{1}{2}\right) + 1$, or $2\frac{2}{3}$ total absences, which falls just short of 3 absences and thus does not qualify for a verbal warning.

In option E, during the 365-day period beginning on 7 July 2010, the employee had a 3-hour (half-day) absence, a 2.5-hour (half-day) absence, two all-day (full-day) absences, and a 5-hour (full-day) absence, for a total of $(2)\left(\frac{1}{2}\right) + (2)(1) + 1$, or 4 absences. This employee meets the criteria for a verbal warning, but also for a written reprimand, and hence option E is not correct here.

The correct answer is C, *Absent 4.5 hours on 19 March 2010; stayed 1 hour late on 20 March 2010; absent all day on 8 February 2011 and 9 February 2011; arrived 40 minutes late on 17 April 2011.*

48B. Apply

As noted in the analysis for 48A, the employee in option E meets the criteria for both a verbal warning and a written reprimand, and hence option E is the answer. Also by the previous analysis, the employees in options A, B, and D do not meet the criteria for verbal warning, and hence cannot meet the criteria for written reprimand. While a verbal warning is warranted in option C, the employee has fewer than 4 absences in a 365-day period and thus does not merit a written reprimand.

The correct answer is E, *Absent 3 hours on 7 July 2010; absent 2.5 hours on 13 September 2010; absent all day on 31 January 2011 and 4 July 2011; absent 5 hours on 12 March 2011.*

Strategize

49A. Strategize

This requires consideration of all the strategy options, A through E, to determine which one would lead most directly to decreasing expenses for Metro Ballet's classical ballet productions. Obtaining public funding to double the spending on stage productions without increasing ticket prices (option A) would lead to an *increase* in expenses for ballet productions, although those expenses should be offset by public funding. If expanding productions to include modern, folk, and tap dance traditions (option C) had the effect of decreasing expenses associated with ballet, that effect would be indirect. Offering discounts to reward people who have attended the greatest number of performances (option D) would likely reduce revenue and therefore increase expenses associated with ballet productions. Mounting an advertising campaign emphasizing the affordability and excitement of the ballet's spectacular productions (option E) should increase expenses in the short term, although it may lead to increased revenue in the long term. Only the strategy of returning spending on productions to the level of several years ago (option B) has the immediate effect of decreasing expenses associated with classical ballet productions.

The correct answer is B, *Return spending on productions to levels of several years ago.*

49B. Strategize

It is again necessary to consider all the options. It is unclear how the strategy of doubling spending on stage productions without raising ticket prices (option A) would address the problem of attracting a larger audience, unless the process of obtaining public funding entailed an advertising campaign. Since the current audience has become accustomed to lavish productions, a reduction in spending on ballet productions (option B) might actually *reduce* that audience. Expanding productions to include different dance traditions (option C) might attract a larger audience, but only if these traditions appeal to people not currently attending Metro Ballet, and only if they are made aware of the new productions. Since most people in the current audience have already been attending Metro Ballet productions for a number of years, offering discounts to those who have already attended a great number of performances (option D) may reinforce their loyalty, but is unlikely to attract people who haven't previously attended. An advertising campaign aimed at addressing the reasons why area residents surveyed don't currently attend (option E), however, would constitute the most direct attempt to increase audience size among the options listed.

The correct answer is E, *Mount a local advertising campaign emphasizing the affordability and excitement of Metro Ballet's spectacular stage productions.*

Strategize

While changes to the newspaper or television advertising strategy may affect mattress sales, those changes would not necessarily clarify the effect radio advertising has had on mattress sales.

Even if changing the content of the radio advertising in either city were to bring about an increase in mattress sales, it may not be possible to determine if the consultant's claim were correct. If the previous content had a negligible or a positive effect on sales, then an increase in sales coinciding with the change of content would be evidence that the consultant's claim was incorrect. On the other hand, if the previous content had a negative effect on sales, then the new content may simply have had less of a negative effect.

The best way to determine if radio advertising does not improve mattress sales is to eliminate radio advertising in both cities. Any change in sales may be attributed to the radio advertising, indicating whether the consultant's claim was correct. If there was no change, the consultant's claim would be strongly supported.

50A. Strategize

The correct answer is C, *Eliminate radio advertising.*

50B. Strategize

The correct answer is C, *Eliminate radio advertising.*