

Agro Enterprises currently uses an antiquated database system. Upgrading to a standard contemporary system would cost a moderate amount, whereas upgrading to an innovative, cutting-edge system would cost much more. A standard contemporary system is sufficiently energy-efficient that it would pay for itself in 10 years, but no sooner, as compared to the cost of keeping the current system. The annual savings in operational costs offered by the innovative system would cause such a system to pay for its purchase and installation in 5 years, but it would be no more energy-efficient than the current system. Or the company could just keep the current system. Any of the three systems would be able to function for the next 20 years.

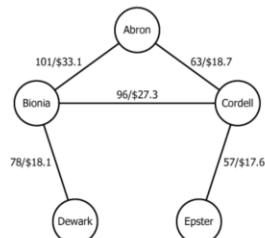
Standard contemporary system for the option that the passage most strongly suggests is true of the standard contemporary system, and select Innovative, cutting-edge system for the option that the passage most strongly suggests is true of the innovative cutting-edge system. Make only two selections, one in each column.

Standard contemporary system	Innovative, cutting-edge system	
<input type="radio"/>	<input type="radio"/>	Costs Agro the greatest total amount of money during 11 years of operation
<input type="radio"/>	<input checked="" type="radio"/>	Less energy-efficient than either of the other two database systems
<input checked="" type="radio"/>	<input type="radio"/>	The most energy-efficient of the three database systems
<input type="radio"/>	<input checked="" type="radio"/>	Costs Agro, on average, less per year to operate than either of the other systems
<input type="radio"/>	<input type="radio"/>	Costs Agro, on average, more per year to operate than either of the other systems

Current Flights **New Flight Lines**

SkySoarer Airlines currently offers flights with service to a total of five cities: Abron, Bionia, Cordell, Deward, and Epster. In the diagram, circles represent the five cities. Each line connecting two circles is a *flight line* that represents all the direct flights currently offered between the two corresponding cities, each of which is called a *terminus* for all flights represented by the line. Flights are offered in both directions for each flight line in the diagram, and all flights currently offered by SkySoarer are represented in the diagram. The label for each flight line shows the duration, in minutes, of each of the flights between the two cities the line connects, followed by the average annual revenue, in millions of dollars, generated by all SkySoarer flights between the two cities.

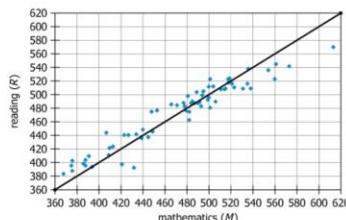
If a direct flight is not available between a passenger's departure city and destination city, SkySoarer passengers may take a sequence of flights to arrive at their destination. The *total flight time* for such a trip is the sum of the durations of all flights on the trip.



SkySoarer has decided its new flight line should have a projected annual revenue of more than \$20 million. The implementation of the line should also make it possible to travel between any two of the currently serviced cities by taking at most two flights. For each of the following proposed new lines, if, based on the information provided, the line satisfies these requirements, select Yes. Otherwise, select No.

Yes	No
<input type="radio"/>	<input checked="" type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>

Line AD
Line BE
Line DE



Students in 65 education systems worldwide took a global exam in reading, science, and mathematics. On the scatterplot, each of the 65 data points displays the average mathematics score (M) and the average reading score (R), both rounded to the nearest integer, for one of the education systems. The line represents all points where M and R are equal.

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

The percent of the 65 education systems for which the value of M exceeds the value of R is between 25 and 50 percent.

The value of R exceeds the value of M by the greatest amount for the education system for which the value of R is in the interval from 500 to 520.

Correct Answer:

Dropdown 1: 25 and 50
Dropdown 2: 440 to 460

Farmer's Pension Program **Statistical Table** **Trends**

In an economic context, *crowding out* refers to the replacement of private sources of money with public funding. A researcher measured the extent to which the introduction of the Farmer's Pension Program (FPP) in Taiwan in 1995 induced crowding out of private funds given to pension-aged farmers, mainly by their adult children. The study compared data from 1990 to 2001 for two groups: farmers ages 66 and older who received FPP benefits beginning in 1995, and nonfarmers of the same age group who did not receive FPP benefits. A table and graph from the study are provided.

The key question is this: When a pensioner receives a dollar of benefit from the government program, to what extent does his or her income rise? Results from the study indicate significant but incomplete crowding out in that one FPP dollar replaced 30 to 39 cents of private funds. The results also suggest a significant, positive effect of the FPP on recipients' household consumption spending.

For each study described, select Yes if the study would likely corroborate one or more findings indicated in the last paragraph of the Farmer's Pension Program discussion. Otherwise select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>

A study showing that the household consumption spending of farmers receiving FPP benefits increased after the introduction of the FPP
A study indicating that private funds induce more household consumption among pension-aged people than FPP payments do
A study about the effectiveness of public pensions in reducing poverty in parts of Asia other than Taiwan

Farmer's Pension Program | **Statistical Table** | **Trends**

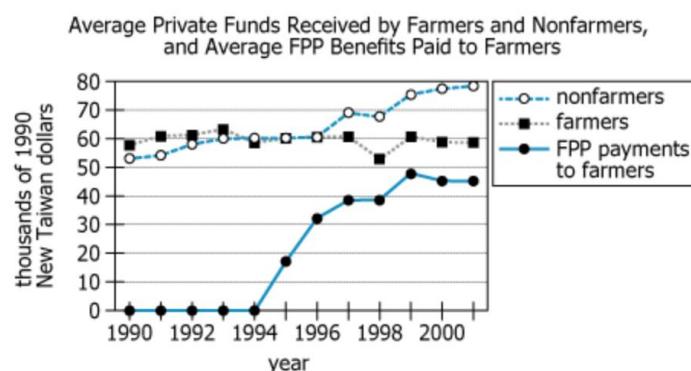
The table presents data for farmers and nonfarmers ages 66 and older. All money values are in 1990 New Taiwan dollars (NT\$).

	1990–1994		1999–2001	
	Farmers 66+	Nonfarmers 66+	Farmers 66+	Nonfarmers 66+
Per capita income*	109,733	147,716	109,868	161,250
Mean private funds received	60,926	58,427	60,510	76,619
Percent receiving private funds	91.7	88.3	89.3	83.8
Per capita consumption	91,931	126,435	132,716	179,490

**Per capita income* excludes FPP payments and private funds received.

Farmer's Pension Program | **Statistical Table** | **Trends**

The graph shows mean private funds received by farmers and nonfarmers ages 66 and older, along with mean Farmer's Pension Program benefits.



Farmer's Pension Program | **Statistical Table** | **Trends**

In an economic context, *crowding out* refers to the replacement of private sources of money with public funding. A researcher measured the extent to which the introduction of the Farmer's Pension Program (FPP) in Taiwan in 1995 induced crowding out of private funds given to pension-aged farmers, mainly by their adult children. The study compared data from 1990 to 2001 for two groups: farmers ages 66 and older who received FPP benefits beginning in 1995, and nonfarmers of the same age group who did not receive FPP benefits. A table and graph from the study are provided.

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For each of the following statements about the effects of the FPP, select Yes if the statement accurately reflects the information provided. Otherwise select No.

Yes	No	
<input type="radio"/>	<input checked="" type="radio"/>	Average private funds received by nonfarmers did not change during the first three years of the program (1995–1997).
<input checked="" type="radio"/>	<input type="radio"/>	The greatest change in average private funds received by farmers in a single year occurred during the first three years of the program (1995–1997).
<input checked="" type="radio"/>	<input type="radio"/>	Per capita income among farmers ages 66 and up, not including FPP payments or private funds received, was little affected by the introduction of the FPP.

Administrator P: Government-funded research should always be accessible to the public. A certain government fund is designed to support research in the humanities and natural sciences. Therefore, the fund should have a requirement that all published work that it supports be open access (i.e., provided free of charge, with no restrictions, to people with Internet access).

Administrator Q: There are many high-quality, open-access venues for published works in the natural sciences, but very few in the humanities. The requirement would most likely have bad results. That is, most of the fund would be directed toward research in natural science and it would prevent a significant amount of fund-supported, humanities research from being published in high-quality venues.

From among the options below, select for *Response to Administrator Q* and for *Reply to that response* two statements such that the first, if true, most strongly undermines Administrator Q's argument and the second, if true, is Administrator Q's strongest reply to that response. Make only two selections, one in each column.

Response to Administrator Q	Reply to that response	
<input type="radio"/>	<input type="radio"/>	Although it may result in decreased support for research in certain disciplines, government-funded research should not be accessible to the public.
<input type="radio"/>	<input checked="" type="radio"/>	The humanities are unlikely to develop high-quality open-access journals, even if resources are dedicated to supporting them.
<input type="radio"/>	<input type="radio"/>	If research were open access, more individuals would read the research than would read it otherwise.
<input checked="" type="radio"/>	<input checked="" type="radio"/>	In general, requiring that research be published in open-access journals will likely result in new open-access journals in the field.
<input type="radio"/>	<input type="radio"/>	For some disciplines, open-access journals tend to be of lower quality than other journals.

3 In four years, Ramona's age in years will be twice Charlie's age in years.

In the table, select values that, according to the given information, could be Ramona's and Charlie's present ages in years. Make only two selections, one in each column.

Ramona	Charlie	
<input type="radio"/>	<input type="radio"/>	2
<input type="radio"/>	<input checked="" type="radio"/>	12
<input type="radio"/>	<input type="radio"/>	14
<input checked="" type="radio"/>	<input type="radio"/>	20
<input type="radio"/>	<input type="radio"/>	24
<input checked="" type="radio"/>	<input type="radio"/>	28

4 Art historian: Unlike many artistic traditions that sought to depict plants native to the local area in a seasonally appropriate way (for example, depicting scenes of spring with the plants in the appropriate stages of development for that season), seventeenth-century Dutch artists specializing in flower paintings almost exclusively chose to depict exotic species of flowers from outside the local area. Painting such species was worthwhile primarily because the art-buying public had developed a strong preference for images of the exotic. The great botanical centers of the time gave the artists direct access to such flowers, which the artists would freely combine in a single painting, regardless of whether the combined species occurred together in the wild, and depicted each in full bloom, regardless of whether those species bloomed at the same time in nature.

Statement: The art historian makes the point that the species of flowers these Dutch artists chose to paint were 1 largely because the species were 2.

Select for 1 and for 2 the options that complete the statement so that it is most strongly supported by the information provided. Make only two selections, one in each column.

1	2	
<input type="radio"/>	<input type="radio"/>	native to the local area
<input type="radio"/>	<input type="radio"/>	seasonally appropriate
<input checked="" type="radio"/>	<input checked="" type="radio"/>	exotic
<input type="radio"/>	<input checked="" type="radio"/>	accessible
<input checked="" type="radio"/>	<input type="radio"/>	worth painting

The table shows four organizational challenges that a business consultant claims occur in various organizational capability dimensions. The table indicates with an "x" which challenges the consultant claims occur in each organizational capability dimension.

Sort by: FEEDBACK

Organizational capability dimension	Mobilizing resources	Knowledge acquisition	Aligning practices	Operational control
Business model readiness		X	X	
Collaboration readiness			X	X
Information policies	X	X	X	
Procedures for governance	X			X
Stakeholder engagement	X	X		
Strategic planning	X	X		X

5 For each of the following statements about the challenges and dimensions in the table, select Yes if the statement accurately reflects the consultant's claims as indicated by the information provided. Otherwise, select No.

Yes	No	
<input checked="" type="radio"/>	<input type="radio"/>	Aligning practices is not a challenge in any of the organizational capability dimensions in which mobilizing resources is a challenge.
<input checked="" type="radio"/>	<input checked="" type="radio"/>	Knowledge acquisition is a challenge in most of the organizational capability dimensions in which aligning practices is a challenge.
<input type="radio"/>	<input checked="" type="radio"/>	Mobilizing resources is a challenge in each of the organizational capability dimensions in which operational control is a challenge.

6 Juana mailed at least one letter on each day last week. Was the total number of letters that Juana mailed on the 7 days greater than 27?

(1) Juana mailed fewer than 8 letters on each of the 7 days.

(2) Juana mailed a different number of letters on any two of the 7 days.

Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.

Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.

BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.

EACH statement ALONE is sufficient.

Statements (1) and (2) TOGETHER are NOT sufficient.

[Discussion](#) [Signal Times](#) [Traffic Flow](#)

In recent years traffic congestion has become increasingly severe at the intersection of two busy roads, Province Highway and Central Highway. This intersection lies between Weston and Eastburg on Province Highway and between South City and Northville on Central Highway. A stoplight at the intersection controls traffic flow. The stoplight's signals operate on a fixed cycle, always directing traffic to flow according to the following order (there are brief gaps in time between each of the following to ensure that traffic has cleared the intersection):

1. First, all and only the traffic traveling straight along Province Highway, from both directions
2. Second, all and only the traffic turning left off of Province Highway, from both directions
3. Third, all and only the traffic traveling straight along Central Highway, from both directions
4. Fourth, all and only the traffic turning left off of Central Highway, from both directions
5. Fifth, all and only the traffic turning right off of either highway, in all directions

Highway planners intend to change the timing of the signals for weekdays so that the length of each signal during the cycle is proportional to the number of vehicles passing through the intersection on a typical weekday morning in the directions controlled by that signal.

For each of the following quantities, select Yes if it can be deduced from the information provided. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>

The number of vehicles passing straight through the intersection on Central Highway on a typical weekday morning

The current duration in seconds, including gaps, of one full cycle on the stoplight's signals

The percent of the vehicles passing through the intersection on a typical weekday morning that turn left off of Province Highway, from both directions

[Discussion](#) [Signal Times](#) [Traffic Flow](#)

The table below shows how long the stoplight's signals currently allow traffic flowing along either road to proceed straight along, turn left off of, and turn right off of, the road at the intersection during any one cycle. The gaps in time between each step in the pattern are not included in the times given below.

Direction	Province Highway	Central Highway
Left turn	20 seconds	30 seconds
Right turn	40 seconds	40 seconds
Straight	60 seconds	80 seconds

For each of the following quantities, select Yes if it can be deduced from the information provided. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>

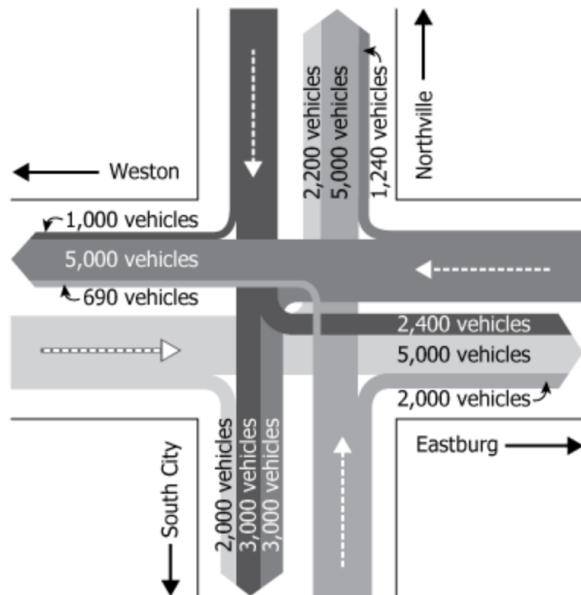
The number of vehicles passing straight through the intersection on Central Highway on a typical weekday morning

The current duration in seconds, including gaps, of one full cycle on the stoplight's signals

The percent of the vehicles passing through the intersection on a typical weekday morning that turn left off of Province Highway, from both directions

[Discussion](#) [Signal Times](#) [Traffic Flow](#)

The diagram below shows the numbers of vehicles traveling in various directions through the intersection on a typical weekday morning. White arrows indicate the directions of traffic flow through the intersection on a typical weekday morning. Black arrows next to the names of towns indicate the direction from the intersection to the towns named. The number of vehicles traveling from a given direction to the intersection is represented by a gray bar, which splits to show how many vehicles turn left, turn right, or continue straight at the intersection.



☒ What was the median of the daily numbers of phone calls received at a certain radio station for the last 5 days?

- (1) 50 phone calls were received at the radio station on each of the last 3 days.
 - (2) The total number of phone calls received at the radio station during the last 5 days was 230.
- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
 - Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
 - BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
 - EACH statement ALONE is sufficient.
 - Statements (1) and (2) TOGETHER are NOT sufficient.

› A certain company has a policy for reimbursing an employee's expenses incurred during business travel. The employee must submit an electronic request for reimbursement before the date that travel begins. To be reimbursed, the expenses must be incurred within the date(s) of travel and indicated on receipts dated during this time, and the receipts must be submitted within 30 days from the date that travel ended.

One of the company employees, Employee X, was reimbursed for expenses incurred during business travel in accord with the policy described.

Assuming that the policy was followed and the information provided is true, select for *Must be true* the statement that must be true, and select for *Must be false* the statement that must be false. Make only two selections, one in each column.

Must be true	Must be false	
<input type="radio"/>	<input checked="" type="radio"/>	Employee X submitted receipts exactly 30 days after submitting the electronic request for reimbursement.
<input type="radio"/>	<input checked="" type="radio"/>	Employee X was reimbursed for a receipt dated before the date that travel began.
<input type="radio"/>	<input type="radio"/>	Employee X began travel on a different date than his or her travel ended.
<input type="radio"/>	<input type="radio"/>	Employee X submitted receipts exactly 35 days after the date that travel began.
<input checked="" type="radio"/>	<input type="radio"/>	Employee X's electronic request for reimbursement was submitted before the reimbursed expenses were incurred.

› The velocity, V feet per second, of a model rocket t seconds after launch is given by $V = -32t + C$, where C is a positive constant. What is the velocity of the rocket 2 seconds after it was launched?

- (1) The rocket reaches its maximum height and begins descending 1.5 seconds after it was launched.
 - (2) The rocket's initial velocity was 48 feet per second.
- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
 - Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
 - BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
 - EACH statement ALONE is sufficient.
 - Statements (1) and (2) TOGETHER are NOT sufficient.

The table shows the population growth rate (in percent per year), the total population, and the total land area of the eleven provinces of Nation X.

Sort by:

Province	Population growth rate	Population	Land area (sq. km)
Agae	1.55	156,118	144
Bai	1.17	201,103	8,515
Cia	0.49	1,330,141	9,597
Ida	1.38	1,173,108	3,287
Idni	1.1	242,968	1,905
Jan	-0.24	126,804	378
Mio	1.12	112,469	1,964
Ngi	1.97	152,217	924
Pitan	1.59	184,405	796
Ri	-0.47	139,590	17,098
Utestan	0.97	310,233	9,826

☒ For each of the following statements, select Yes if the statement is true based on the information presented in the table. Otherwise, select No.

Yes	No	
<input type="radio"/>	<input checked="" type="radio"/>	The three smallest provinces by area are each below the median in population.
<input checked="" type="radio"/>	<input type="radio"/>	The province with the median population growth rate is also the province with the median area.
<input type="radio"/>	<input checked="" type="radio"/>	No province is above the median in growth rate, population, and land area.

Felipe is organizing a meeting that several staff will attend at the office and several others will attend remotely via teleconference. He would prefer to schedule the meeting earlier in the week, but needs to consider other factors as well. The table lists all of the available rooms and all of the features Felipe needs to consider in choosing a room. All of the available rooms at the office are equipped for voice-only teleconferencing, but only some are equipped for video conferencing. Based on the available information, Felipe has concluded that:

- his first preference is Room 1, second is Room 6, and third is Room 2
- he cannot use Rooms 4 and 5

Sort by:

Room	Maximum occupancy	Projector?	Video conferencing?	Availability this week
1	12	yes	yes	Thursday
2	12	yes	no	Wednesday
3	20	yes	no	Tuesday
4	8	no	no	Monday
5	8	yes	yes	Tuesday
6	20	yes	yes	Friday

☒ Based on the information provided, for each of the following statements, select Yes if the statement would, if true, help explain at least one of Felipe's conclusions. Otherwise, select No.

Yes	No	
<input checked="" type="radio"/>	<input type="radio"/>	For this meeting, Felipe is willing to schedule later in the week in order to have a room with video-conferencing equipment.
<input checked="" type="radio"/>	<input type="radio"/>	For this meeting, Felipe is willing to use a room that does not have video-conferencing equipment.
<input checked="" type="radio"/>	<input type="radio"/>	Felipe is planning for at least 10 people to attend the meeting at the office.

City X | City Y | Migration Patterns

City Y is proud of the diversity of its base of residents. Our new approach to maintaining and enhancing our diversity is to offer incentives specifically targeted to individuals from population sectors in which migration from the city to the surrounding area has been greater than migration to the city from the surrounding area. To further this approach, we plan to provide the following incentives:

- increase arts and recreational opportunities for people 25 – 34 years of age
- make the city more attractive to people with young children
- improve all of the city's schools (primary and secondary schools)
- improve continuing education opportunities for adults
- develop a program to celebrate the various ethnicities represented in the city

For each of the following factors listed in the Migration Patterns tab, select Yes if the data presented with respect to this factor clearly suggests that City Y's incentives are appropriately targeted, given the city's stated approach. Otherwise, select No.

Yes	No
<input type="radio"/>	<input checked="" type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>

30-34 (age in years)
Children aged 0-5 in same residence
Children aged 6-17 in same residence

Factors	From City X (%)	To City X (%)	From City Y (%)	To City Y (%)
Sex				
Female	14	04	17	05
Male	14	05	14	05
Age in years				
25-29	11	08	11	14
30-34	17	14	05	15
35-39	16	09	10	12
40-44	13	07	15	02
Children in same residence				
No children	07	02	06	02
Children aged 0-5	21	02	11	03
Children aged 6-17	25	04	9	05
Education				

For each of the following factors listed in the Migration Patterns tab, select Yes if the data presented with respect to this factor clearly suggests that City Y's incentives are appropriately targeted, given the city's stated approach. Otherwise, select No.

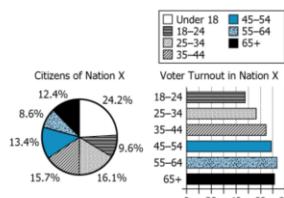
Yes	No
<input type="radio"/>	<input checked="" type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>

30-34 (age in years)
Children aged 0-5 in same residence
Children aged 6-17 in same residence

3 Of the students at a certain school, 40 took French, 30 took Latin, and 20 took Spanish. How many students at the school took only two of the three languages?

- (1) 5 students at the school took all three languages.
 - (2) 52 students at the school took at least one of the three languages.
- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
 - Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
 - BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
 - EACH statement ALONE is sufficient.
 - Statements (1) and (2) TOGETHER are NOT sufficient.

3



In Nation X, all citizens aged 18 or older are eligible to vote and all citizens under age 18 are not. The left graph shows the percentage of citizens of Nation X who fell within various age ranges at the time of the last election. For the same age ranges during that election, the right graph shows the voter turnout—the percentage of eligible voters who voted.

Select from each drop-down menu the option that creates the most accurate statement based on the information provided.

If a citizen of Nation X who was eligible to vote at the time of the last election was selected at random, the probability that the citizen was age 25 to 34 is, to the nearest percent, , and the probability that the citizen both voted in the last election and was age 25 to 34 is, to the nearest percent, .

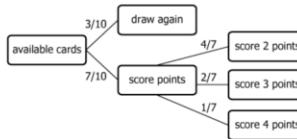
Correct Answer:
Dropdown 1: 21%
Dropdown 2: 16%

!A stamp collection that has an appraised value of \$600 consists of twice as many foreign stamps as domestic stamps. If there is a total of 1,200 stamps in the collection, what is the total appraised value of all of the foreign stamps in the collection?

- (1) The average (arithmetic mean) appraised value of the foreign stamps in the collection is \$0.06 greater than the average appraised value of the domestic stamps.
- (2) The sum of the average (arithmetic mean) appraised values of the foreign stamps and the domestic stamps from the collection is \$0.98.

- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
- Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
- BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- EACH statement ALONE is sufficient.
- Statements (1) and (2) TOGETHER are NOT sufficient.

☒



In a certain game, each player's turn consists of drawing a card from a randomized deck and immediately carrying out the instruction on the card. For example, if the card's instruction is to draw again, the player immediately draws another card and carries out that card's instruction. After the instruction is carried out, the card is removed from the game and, except when the card instruction is to draw again, the player's turn ends. It is currently Mardea's turn, and she knows that each of the remaining cards instructs the player to do exactly one of the following: score 2 points, score 3 points, score 4 points, or draw again. Mardea will win the game this turn if and only if she scores 3 or more points on this turn. The diagram shows the probabilities associated with the possible outcomes for the next card that is drawn.

Select from the drop-down menus the options that complete the statement so that it is accurate based on the information provided.

The probability that Mardea will draw at least 2 cards this turn is in .

Correct Answer:

Dropdown 1: 3

Dropdown 2: 10

The table gives information about teacher absenteeism in 21 school systems worldwide for 2012–2013. For each school system, the table gives the country where it is located, the number of teachers it employed in 2012–2013, the average number of days those teachers were absent, and the percent of those teachers who were chronically absent (absent 18 or more days).

Sort <input type="button" value="FEEDBACK"/>				
School system	Location (country)	Number of teachers	Average days absent	Percent chronically absent
1	A	5,636	10.19	11.12
2	B	2,382	13.87	36.82
3	C	1,778	13.20	14.12
4	C	2,896	15.60	33.81
5	C	2,151	14.82	32.03
6	A	9,435	11.93	15.22
7	A	8,266	9.68	13.65
8	D	6,642	13.91	27.12
9	E	974	9.56	12.22
10	F	21,867	9.20	10.61
11	B	59,750	8.80	7.43
12	B	10,108	12.52	12.44
13	G	9,114	8.80	8.98
14	G	1,608	11.56	17.29
15	F	2,035	12.05	19.46
16	A	5,977	13.37	21.69
17	F	4,991	11.78	18.01
18	F	3,286	9.87	12.63
19	F	1,290	11.00	15.04
20	E	1,710	9.77	10.94
21	D	11,362	8.63	6.07

☒ For each of the following statements, select Yes if, based on the information provided, it can be inferred that the statement is true. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>

For the 21 school systems in the table, the number of chronically absent teachers in the school systems in Country D is greater than the number of chronically absent teachers in the school systems in Country G.

For the 21 school systems in the table, there is a positive correlation between the number of teachers and the average number of days the teachers were absent.

The school system in the table with the median number of teachers is in the same country as the school system in the table with the median percent of chronically absent teachers.

Reservoir **Constraints** **Predictions**

The ABC Reservoir on Clear River is used to prevent flooding in downstream cities and to provide a recreation area for fishing, swimming, and boating. Engineers control the depth of the reservoir by controlling the *outflow rate*—the rate at which water flows out of the reservoir. The *inflow rate*—the rate at which water flows into the reservoir—is uncontrolled and varies. The engineers use a computer model to predict the inflow rate. It is considered a rare event for the actual average inflow to differ from the model's prediction by more than 4% of the prediction.

The reservoir depth decreases whenever the outflow exceeds the inflow. Similarly, the reservoir depth increases whenever the inflow exceeds the outflow. Whenever possible, the engineers are expected to keep the reservoir depth within a certain 23 meter allowable range—high enough to support recreational activities and not above the reservoir's maximum allowable depth—and to keep the outflow rates within a certain 25 cubic meters per second (m^3/s) allowable range. The engineers have never failed to satisfy these constraints.

☒ For each of the following changes in conditions, select Yes if the information provided suggests that the change would have a negative long-term impact on the engineers' ability to stay within the given constraints. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>

An upstream water diversion project on the Clear River permanently reduces the average inflow to the reservoir by 50% .

An equipment failure prevents engineers from increasing the reservoir's outflow for 12 hours.

A new source of funding allows the engineers to purchase additional computers to increase the speed and accuracy of the model's prediction.

Reservoir **Constraints** **Predictions**

The following table indicates the minimum and maximum values allowed for the reservoir depths and for the outflow rates.

	Allowable values	
	Minimum	Maximum
Reservoir depth in meters (m)	195	218
Outflow rate in cubic meters per second (m^3/s)	85	110

Reservoir | **Constraints** | **Predictions**

Figure 1 shows the inflow predicted by the engineers' model for a certain 7-day period last year. Based on these predictions and on the engineers' plans for outflow rate over that same time period, Figure 2 shows how the depth of the reservoir was predicted to change.

Figure 1: Predicted Average Inflow Rates

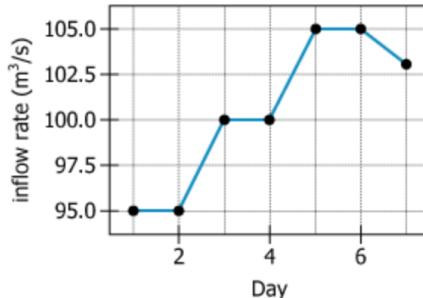
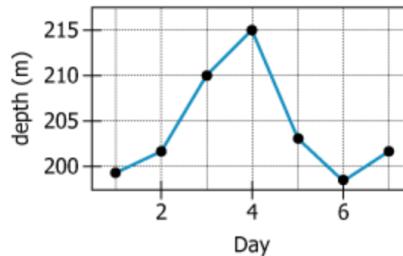


Figure 2: Predicted End-of-Day Depths



Reservoir | **Constraints** | **Predictions**

Figure 1 shows the inflow predicted by the engineers' model for a certain 7-day period last year. Based on these predictions and on the engineers' plans for outflow rate over that same time period, Figure 2 shows how the depth of the reservoir was predicted to change.

Figure 1: Predicted Average Inflow Rates

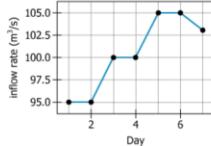
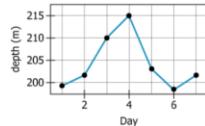
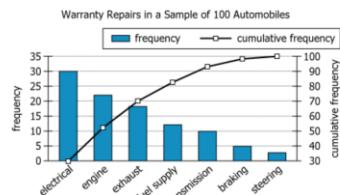


Figure 2: Predicted End-of-Day Depths



Suppose that the reservoir depth is currently at 217 m. If the engineers maintain the current outflow rate, the inflow rates predicted by the model will cause the depth to increase by 1 m in the next day and remain at that depth for the following 2 days. For each of the following statements about the model's predictions, select Yes if the information provided suggests that the statement is true. Otherwise, select No.

Yes	No
<input checked="" type="checkbox"/>	<input type="radio"/>
The predictions indicate that the reservoir's depth will be sufficient for recreational activities.	
<input checked="" type="checkbox"/>	<input type="radio"/>
The predictions indicate that the reservoir will reach its maximum allowable depth.	
<input type="radio"/>	<input checked="" type="checkbox"/>
The predictions indicate that the reservoir will exceed its maximum allowable depth.	



The graph summarizes data on a sample of 100 automobiles requiring warranty service within one year of purchase. Each automobile required service in exactly one of seven categories. For each category, the *frequency* is the number of automobiles in the sample requiring service in that category; the *cumulative frequency* is the total number of automobiles in the sample requiring service in that category or any of the categories to the left in the graph. In the graph, the frequency scale is on the left and the cumulative frequency scale is on the right.

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

Taken together, the 3 categories having the greatest frequencies account for % of the repairs in the sample.

Taken together, the 3 categories having the lowest frequencies account for % of the repairs in the sample.

Correct Answer:
Dropdown 1: 70
Dropdown 2: 18

Plans **Parks Brochure**

Maly, Simon, and Yemmy have just arrived at the Ocean Cliff Park picnic area. They each plan to spend the day hiking, only on trails, and then return to the picnic area. Each may hike separately from the others. They will make their determinations about hiking time, trail difficulty, and level of scenery according to the information in the park's brochure. Their individual plans are as follows:

- Maly's Plan
 • To hike 1 or more trail or trail section with a difficulty rating of high
 • Not to hike any trail or trail section twice

- Simon's Plan
 • To take at least 2 hikes of no more than 4 hours each
 • To begin and end each hike at the picnic area

- Yemmy's Plan
 • To avoid the trail with the lowest scenery rating and each trail or trail section with a high difficulty rating

Inasmuch as doing so is compatible with each person's plan, each wants to hike to as many of these 4 scenic features today as possible: Heath Hill, Shrub Hill, Surf Beach, and Whale Point.

Suppose a sign at the picnic area informs the hikers that park officials have closed the section of Trail B through Red Gorge. Given this and based on the information provided, which one of the following statements is correct?

- Maly will be unable to hike to Surf Beach and back to the picnic area without hiking the same trail or trail section twice.
- Simon will be unable to take 2 hikes of no more than 4 hours each.
- Yemmy will be unable to hike without taking the trail with the lowest scenery rating.
- Maly will be unable to hike on any difficult trails or trail sections.
- Yemmy will be unable to hike without taking at least one trail or trail section with a high difficulty rating.

Data Insights

The table and map are excerpted from the Ocean Cliff Park brochure. The table lists the characteristics of the park's main hiking trails. The more asterisks there are under Scenery, the more scenic the trail.

Trail	Length (km)	Hiking time (hr)	Difficulty	Scenery
Trail A	1.0	0.25	low	*
Trail B	3.8	3.00	(see note)†	**
Trail C	2.4	1.00	medium	***
Trail D	1.0	0.25	low	***
Trail E	1.7	0.75	medium	****
Trail F	2.7	2.00	high	**
Trail G	4.6	3.00	medium	****

†medium, though the section through Red Gorge is high

The map shows the park's hiking trails. The connector trails are not considered sections of the main trails.



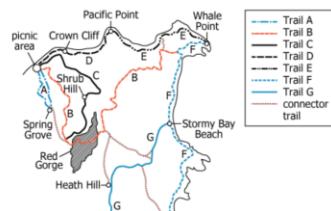
Plans Parks Brochure

The table and map are excerpted from the Ocean Cliff Park brochure. The table lists the characteristics of the park's main hiking trails. The more asterisks there are under Scenery, the more scenic the trail.

Trail	Length (km)	Hiking time (hr)	Difficulty	Scenery
Trail A	1.0	0.25	low	*
Trail B	3.8	3.00	(see note)*	**
Trail C	2.4	1.00	medium	***
Trail D	1.0	0.25	low	***
Trail E	1.7	0.75	medium	****
Trail F	2.7	2.00	high	***
Trail G	4.6	3.00	medium	****

*medium, though the section through Red Gorge is high.

The map shows the park's hiking trails. The connector trails are not considered sections of the main trails.



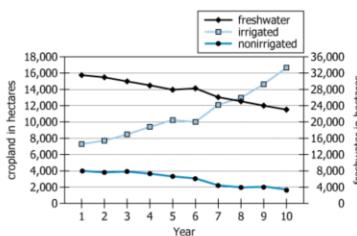
Based on the information provided, for each of the following scenic features, select Yes if starting at the picnic area and hiking along only main trails to that feature would be compatible with Yemmy's plan as it is described. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>

Crown Cliff

Spring Grove

Stormy Bay Beach



For each of 10 consecutive years (Year 1 through Year 10), the graph shows a certain region's irrigated cropland area in hectares (left scale), nonirrigated cropland area in hectares (left scale), and freshwater area in hectares (right scale).

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

For the 10 years shown in the graph for this region, the number of hectares of freshwater exceeded the number of hectares of irrigated cropland in exactly 1 of the years.

For the 10 years shown in the graph for this region, the number of hectares of irrigated cropland exceeded the number of hectares of nonirrigated cropland in all of the years.

Correct Answer:

Dropdown 1: all

Dropdown 2: all

Today a certain cinema multiplex has exactly two showings (an early showing and a late showing) for each of five films (Films A, B, C, D, and E). All of these showings occur after noon, and each showing consists of the film only, with no previews, announcements, or advertisements. The following gives the duration of each film and the start time for each showing:

- Film A (90 minutes); 3:45 and 5:30
- Film B (100 minutes); 1:30 and 7:15
- Film C (105 minutes); 2:00 and 6:00
- Film D (115 minutes); 5:00 and 8:00
- Film E (125 minutes); 12:15 and 7:00

Statement: The early showing of Film ___1___ overlaps with at least part of both showings of Film ___2___.

Select for 1 and for 2 the options that complete the statement so that it is accurate of the showings listed in the information provided. Make only two selections, one in each column.

1	2	
<input checked="" type="radio"/>	<input checked="" type="radio"/>	A
<input type="radio"/>	<input type="radio"/>	B
<input type="radio"/>	<input type="radio"/>	C
<input checked="" type="radio"/>	<input type="radio"/>	D
<input type="radio"/>	<input checked="" type="radio"/>	E

For a certain retail company, a customer can purchase a membership and receive a percent discount applied to all purchases made from that company for one year, or the customer can make purchases from the company without buying a membership and pay full price for purchases. There are exactly four membership types:

1. The 1% discount for \$100.
2. The 2% discount for \$200.
3. The 5% discount for \$500.
4. The 10% discount for \$1,000.

Provided that a customer expected to spend exactly \$2,400 on purchases made from the retail company during a one-year period (before any discounts are applied), select for Most advantageous and for Least advantageous the membership option that would be most financially advantageous and least financially advantageous, respectively, for the customer based on the information provided. Make only two selections, one in each column.

Most advantageous	Least advantageous	
<input checked="" type="radio"/>	<input type="radio"/>	No membership
<input type="radio"/>	<input type="radio"/>	A 1% discount membership
<input type="radio"/>	<input type="radio"/>	A 2% discount membership
<input type="radio"/>	<input type="radio"/>	A 5% discount membership
<input checked="" type="radio"/>	<input checked="" type="radio"/>	A 10% discount membership

3 If the prices of four of the five books that Ann bought are \$4, \$6, \$10, and \$12, what is the price of the fifth book that Ann bought?

- (1) The price of the fifth book that Ann bought is greater than \$8.
 - (2) The median price of the five books that Ann bought is equal to the average (arithmetic mean) price of the five books.
- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
- Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
- BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- EACH statement ALONE is sufficient.
- Statements (1) and (2) TOGETHER are NOT sufficient.

Study Description **Survival Rate** **Canopy Spread**

A community organization wants to restore the indigenous forests around the Mahurangi River in New Zealand by planting millions of trees along the banks of the river. Unfortunately, seedlings of indigenous tree species are expensive. At the beginning of the project in 2010, high-quality seedlings of common nonnative plants in the area cost around 0.30 New Zealand dollars (NZ\$) each. By contrast, high-quality indigenous seedlings cost around NZ\$3 each. Although scale did play a role, the principal cause of the price difference was the nursery methods used. Nonnative species were raised in open-ground beds utilizing mechanization, whereas indigenous species were typically raised in containers because of the perception that they are particularly prone to transplantation shock.

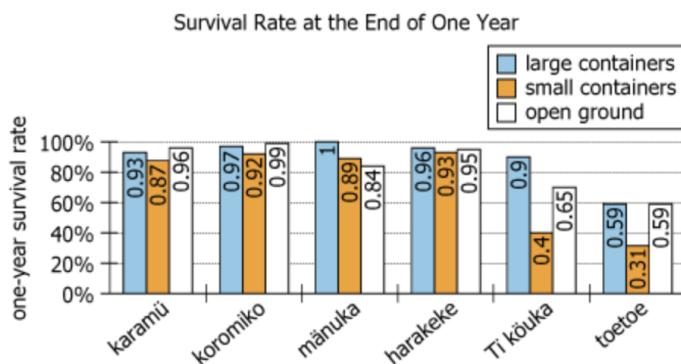
The organization conducted a study to evaluate whether indigenous species could be successfully produced using the *open ground* method of forestry and to determine the approximate post-transplantation survival rates and foliage growth they could expect from seedlings raised in this manner. They planted a test plot with seedlings of six indigenous species commonly used for restoration plantings in the area. One third of the seedlings of each species had been raised using open ground methods, one third had been raised in large containers, and one third had been raised in small containers.

For each of the following statements about the indigenous New Zealand plants used in the study, select Yes if that statement is true of every species in the study, according to the information provided. Otherwise select No.

Yes	No	
<input checked="" type="radio"/>	<input type="radio"/>	They had both higher survival rates and larger canopy spreads after one year when grown in large containers rather than in small containers or open ground.
<input type="radio"/>	<input checked="" type="radio"/>	They had higher survival rates after one year when grown in open ground rather than in either small or large containers.
<input checked="" type="radio"/>	<input type="radio"/>	They had smaller canopy spreads after one year when grown in small containers rather than in large containers or open ground.

Study Description **Survival Rate** **Canopy Spread**

The graphic shows the percentage of the seedlings of each species in the study that survived to one year after they had been transplanted to the test plot, by the method used to raise the seedling.

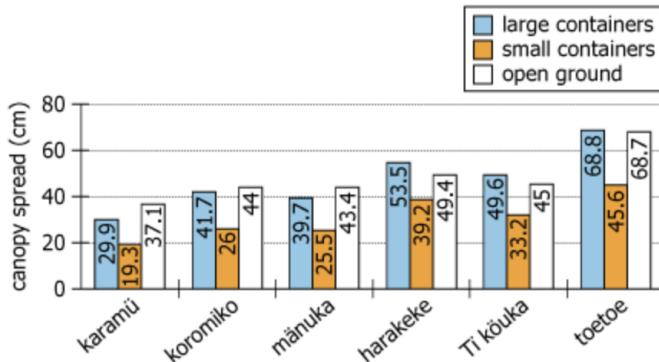


Study Description | **Survival Rate** | **Canopy Spread**

The graphic shows the average leaf canopy spread, a measurement of length used to reflect a plant's foliage growth, for each species in the study, by the method used to raise the seedling.

Note: The figures only include the plant specimens that survived to one year.

Canopy Spread at the End of One Year



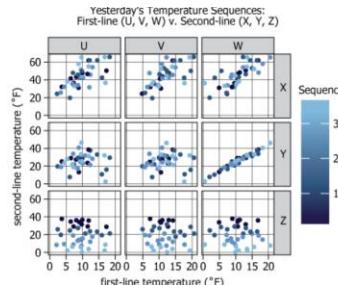
Driving at their respective constant speeds along the same route, Alfred passed a certain landmark 1 hour after Violet did. Both Alfred and Violet continued driving along the same route in the same direction at their respective constant speeds. If Alfred's speed was 24 kilometers per hour greater than Violet's, what was Violet's speed?

- (1) Alfred overtook Violet 4 hours after she passed the landmark.
 - (2) Alfred's speed was $\frac{4}{3}$ of Violet's speed.
- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
 - Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
 - BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
 - EACH statement ALONE is sufficient.
 - Statements (1) and (2) TOGETHER are NOT sufficient.

At a carnival game, a winning player spins a wheel that always lands on either Prize 1 or Prize 2 to determine which of the two prizes he or she wins. The probability that the prize wheel indicates Prize 2 is double the probability that it indicates Prize 1. If a player does not want the prize that the prize wheel first indicates, then he or she may spin the wheel again. In such cases, the player must accept whichever prize the prize wheel indicates on the second spin.

Select for Prize 1 the number nearest to the probability that a winning player who wants Prize 1 will receive Prize 1 after one or two spins of the prize wheel, and select for Prize 2 the number nearest to the probability that a winning player who wants Prize 2 will receive Prize 2 after one or two spins of the prize wheel. Make only two selections, one in each column.

Prize 1	Prize 2	
<input type="radio"/>	<input type="radio"/>	0.1
<input type="radio"/>	<input type="radio"/>	0.3
<input checked="" type="radio"/>	<input type="radio"/>	0.5
<input type="radio"/>	<input type="radio"/>	0.7
<input type="radio"/>	<input checked="" type="radio"/>	0.9



In a certain factory, each product passes through exactly two of six processing lines—through one of the first lines (Lines U, V, and W), and then through one of the second lines (Lines X, Y, and Z). Each day, the surface temperature of the first 36 products from each line is recorded in sequence. The graph shows the relationship between each of yesterday's first-line temperature sequences and each of yesterday's second-line temperature sequences. Each dot represents one first-line temperature reading paired with one second-line temperature reading of the same sequence position. The shading on each dot indicates the relative position of the readings within the sequence (i.e., lighter dots correspond to later parts of the sequence).

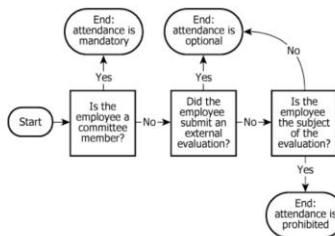
Based on the information provided, select from each drop-down menu the option that creates the most accurate statement.

Yesterday, the greatest of the observed temperatures from any of the temperature sequences was observed in Line .

Yesterday's temperature sequence from Line was generally declining.

Correct Answer:
Dropdown 1: X
Dropdown 2: Z

x



At a certain company, the Performance Review Committee is a group of employees that have been elected to conduct performance evaluations. An employee who is the subject of a performance evaluation writes a self-report and invites fellow employees to submit external evaluations to be considered by the committee. After the self-report and external evaluations have been submitted, the committee meets to conduct the performance review. Attendance is restricted during such reviews. The diagram shows the process for determining whether attendance is mandatory, optional, or prohibited for a given employee.

Select from each drop-down menu the option that creates the most accurate statement.

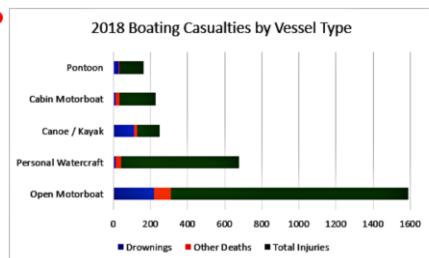
According to the diagram, an employee who is should never be allowed to attend a performance review unless that employee is also .

Correct Answer:

Dropdown 1: the subject of the review

Dropdown 2: a committee member

x



In 2018, drownings were the most likely cause of death for users accounting for nearly of all deaths in that category.

x A fruit stand sold 76 oranges to 19 customers. How many customers bought only one orange?

(1) No customer bought more than 4 oranges.

(2) The difference between the number of oranges bought by any two customers is even.

- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
- Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
- BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- EACH statement ALONE is sufficient.
- Statements (1) and (2) TOGETHER are NOT sufficient.

A certain company has the following policy regarding membership in Committees A, B, and C: Each of the committees must have exactly 40 members, and each employee must be a member of at least one of the committees. The company currently has a total of 110 employees.

Let X be the current number of employees who are members of more than one of the committees. Based on the current total number of employees, select the least value of X that is compatible with the policy, and select the greatest value of X that is compatible with the policy. Make only two selections, one in each column.

Least value of X	Greatest value of X	
<input type="radio"/>	<input type="radio"/>	3
<input checked="" type="radio"/>	<input type="radio"/>	5
<input type="radio"/>	<input type="radio"/>	6
<input type="radio"/>	<input type="radio"/>	8
<input checked="" type="radio"/>	<input checked="" type="radio"/>	10
<input type="radio"/>	<input type="radio"/>	12

3 Some of the books on a certain shelf are in English, and the rest of the books are in Spanish. If 2 books are to be chosen at random from the shelf and neither book is returned to the shelf, what is the probability that at least one of the 2 books chosen will be in English?

- (1) On the shelf, the ratio of the number of books in Spanish to the number of books in English is 3:1.
 - (2) There are fewer than 20 books on the shelf.
- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
 - Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
 - BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
 - EACH statement ALONE is sufficient.
 - Statements (1) and (2) TOGETHER are NOT sufficient.

Plan **Ratios** **Nutrients**

Vegfood, a food wholesaler, plans to sell three different nut blends to grocery stores. Each blend will consist of two to four types of nuts and will be marketed in 300 gram (g) packages, each containing a total of 10 standard servings. Vegfood's plan stipulates that the blends should meet the following criteria:

1. The total price paid to suppliers for the ingredients of each blend must not exceed 50% of the blend's wholesale selling price.
2. Each blend's average nutritional profile per serving must comply with at least two of the following constraints for nutritional content:

Carbohydrate: at most 10 g
 Protein: at least 5 g
 Dietary fiber: at least 4 g
 Saturated fat: at most 3 g

✖ Suppose Blend 2 complies with the initial proposals of Vegfood's marketing department. For each of the statements concerning average nutritional content of a 30 g serving of Blend 2, select Yes if the information provided indicates that the statement is correct. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input checked="" type="radio"/>

Plan **Ratios** **Nutrients**

The following table shows initial proposals from Vegfood's marketing department concerning the proportions, by weight, of each type of nut that the blends would contain. The table also gives the maximum prices that the marketing department recommended should be paid to Vegfood's suppliers for each type of nut.

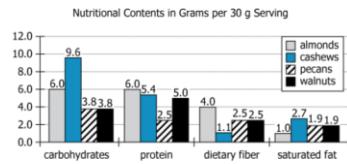
	Almonds €7.00/kg	Cashews €6.00/kg	Pecans €7.00/kg	Walnuts €5.00/kg
Blend 1	0.4	0.2	0.1	0.3
Blend 2	0.2	0.4	0.4	0.0
Blend 3	0.3	0.0	0.3	0.4

✖ Suppose Blend 2 complies with the initial proposals of Vegfood's marketing department. For each of the statements concerning average nutritional content of a 30 g serving of Blend 2, select Yes if the information provided indicates that the statement is correct. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input checked="" type="radio"/>

Plan **Ratios** **Nutrients**

The following graph shows important nutritional contents for a 30 g serving of each of the four types of nuts that Vegfood plans to use in the blends.



✖ Suppose Blend 2 complies with the initial proposals of Vegfood's marketing department. For each of the statements concerning average nutritional content of a 30 g serving of Blend 2, select Yes if the information provided indicates that the statement is correct. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input checked="" type="radio"/>

✖ Suppose Vegfood, after a review of the marketing department's proposal for Blend 1, decided to reconfigure the blend by excluding almonds while making no changes to the 300 g package weight or to the ratios, by weight, among the other types of nuts. Given the information provided, which one of the following must then be true of the reconfigured blend?

- The blend's protein content is at least as much as that of the originally proposed Blend 1.
- The blend violates the nutritional-profile condition for carbohydrate.
- The blend violates the nutritional-profile condition for dietary fiber.
- The blend violates the nutritional-profile condition for saturated fat.
- The blend's saturated-fat content derived from walnuts is no greater than that of the originally proposed Blend 1.

Survey **Results**

The table shows the results of the survey. The respondents used a 7-point scale where, in relation to the comparison group, 1 means ethicists' moral behavior is substantially better, 4 means ethicists' moral behavior is about the same, and 7 means ethicists' moral behavior is substantially worse. The values indicate, for the ethicists and other-philosopher respondent groups, the number of responses for each of the ranges of ratings.

Ethicists' behavior as compared to:	Respondent specialization	# of responses		
		Better (1-3)	Same (4)	Worse (5-7)
other philosophers	ethicists	12	18	4
other philosophers	other philosophers	15	18	13
non-academics	ethicists	19	11	4
non-academics	other philosophers	19	16	11

For each of the following statements about the non-ethicist philosophers surveyed, select Yes if it accurately reflects the information provided. Otherwise, select No.

Yes	No	
<input checked="" type="radio"/>	<input type="radio"/>	A majority reported that ethicists' moral behavior was about the same as that of other philosophers.
<input type="radio"/>	<input checked="" type="radio"/>	They tend to be more skilled at moral reflection than are ethicists.
<input type="radio"/>	<input checked="" type="radio"/>	They were more likely to report better moral behavior by ethicists relative to the comparison groups than they were to report worse moral behavior.

Survey **Results**

Researchers: Ethicists (philosophers of ethics) devote their careers to reflecting on morality and presumably care deeply about it. Moral reflection tends to promote moral behavior, and ethicists tend to be both more prone to and more skilled at moral reflection than non-ethicists. Given that the philosophical ethical theories of ethicists broadly agree with widely accepted moral standards, we expect that ethicists would tend to be better behaved than non-ethicists with regard to widely accepted moral standards.

To test this expectation we surveyed some of the attendees of a philosophical conference to assess whether people who have contact with ethicists believe that ethicists are, indeed, particularly well-behaved with regard to widely accepted moral standards. Respondents to the survey belonged to exactly one of two categories: *ethicists* and *other philosophers* (non-ethicists). Each was asked to evaluate the moral behavior of ethicists as compared to that of other philosophers and to that of non-academics. Each respondent provided an answer to each question in the survey.

For each of the following statements about the non-ethicist philosophers surveyed, select Yes if it accurately reflects the information provided. Otherwise, select No.

Yes	No	
<input checked="" type="radio"/>	<input type="radio"/>	A majority reported that ethicists' moral behavior was about the same as that of other philosophers.
<input type="radio"/>	<input checked="" type="radio"/>	They tend to be more skilled at moral reflection than are ethicists.
<input type="radio"/>	<input checked="" type="radio"/>	They were more likely to report better moral behavior by ethicists relative to the comparison groups than they were to report worse moral behavior.

If 50 people paid a total of \$110 for tickets to attend a certain high school play and spent a total of \$100 for refreshments at intermission, how many adults attended the play?

- (1) Each adult who attended the play paid \$3 for tickets, and each child who attended paid \$1 for tickets.
 (2) Each adult who attended the play spent \$2 for refreshments at intermission, and each child spent \$2 for refreshments at intermission.

- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
- Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
- BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- EACH statement ALONE is sufficient.
- Statements (1) and (2) TOGETHER are NOT sufficient.

Matheus: Our city council is considering whether to zone the last undeveloped stretch of waterfront within the city limits for industrial development. I think this land should become a nature preserve instead. It is a major nesting area for migratory waterfowl, some of them endangered species.

Ramizah: But our city suffers high unemployment, and industrial riverfront development would be among the most promising ways to create jobs. A short distance away, other undeveloped riverfront areas outside the city limits are available for migratory waterfowl.

Assuming the information provided is true, select Matheus for the statement that would, if true, most strongly support Matheus's position, and select Ramizah for the statement that would, if true, most strongly support Ramizah's position. Make only two selections, one in each column.

Matheus	Ramizah	
<input type="radio"/>	<input type="radio"/>	The city council wants to protect migratory waterfowl.
<input checked="" type="radio"/>	<input type="radio"/>	Industrial riverfront development outside the city limits could create jobs in addition to those created through industrial development within the city limits.
<input type="radio"/>	<input type="radio"/>	Of the endangered waterfowl that nest in or near the city, the largest nesting population is found in the undeveloped waterfront within the city limits.
<input type="radio"/>	<input type="radio"/>	There are more undeveloped areas along the waterfront near but outside the city limits than there are inside the city limits.
<input type="radio"/>	<input checked="" type="radio"/>	Losing this one nesting area is unlikely to reduce the populations of any waterfowl species that nest in the area.

For a certain province, the table shows all of the types of places in the province where removal of various types of invertebrates from tide pools requires a permit. An "X" indicates that a permit is required to take the invertebrate from tide pools in the specified type of place. A blank space indicates that no permit is required. Types of invertebrates not listed in the table may be removed without a permit from any tide pool in the province.

Sort by:

Invertebrates	Marine life refuges	Provincial parks	National parks	All other parks
Abalones	x		x	
Ghost shrimp	x			x
Limpets		x	x	
Mussels		x		
Octopuses	x	x		x
Sea urchins	x		x	x

For each of the following statements about permit requirements in the province, select Correct if the information provided indicates that the statement is correct. Otherwise, select Incorrect.

Correct	Incorrect	
<input type="radio"/>	<input checked="" type="radio"/>	A permit is required for removal of sea urchins from tide pools everywhere a permit is required for removal of abalones from tide pools.
<input checked="" type="radio"/>	<input type="radio"/>	Mussels may be removed from tide pools without a permit anywhere octopuses may be removed from tide pools without a permit.
<input type="radio"/>	<input checked="" type="radio"/>	If a type of invertebrate may be removed from tide pools without a permit in a marine life refuge, it may also be removed from tide pools without a permit anywhere outside a provincial or national park.

Rufus has a total of 20 coins of 2 types, Type Q and Type R. The value of each Type Q coin is $5q$ currency units (cu), and the value of each Type R coin is $5r$ cu, where q and r are positive integers and $q < r$. The total value of the Type Q coins is Q cu and the total value of the Type R coins is R cu. Additionally, $Q + R = 130$, and there are more Type Q coins than Type R coins.

In the table, select a value for Q and a value for R that are jointly consistent with the given information. Make only two selections, one in each column.

Q	R	
<input type="radio"/>	<input type="radio"/>	25
<input checked="" type="radio"/>	<input type="radio"/>	60
<input type="radio"/>	<input type="radio"/>	65
<input type="radio"/>	<input checked="" type="radio"/>	70
<input type="radio"/>	<input type="radio"/>	105

A fish hatchery has been raising large populations of endangered fish species and releasing them into a local lake. At the end of each year, the hatchery takes a sample of fish from the lake and compares the number of hatchery-raised fish found in the sample with the number of wild fish found in the sample. The table provides release and sample data for five years of the hatchery's operation.

Sort by:

Year	Number released (thousands)	Sample size	Number wild	Number hatchery	Percent hatchery contribution
3	150	100	55	45	45
2	530	150	125	25	17
4	450	115	90	25	22
1	580	150	130	20	13
5	600	125	110	15	12

For each of the following statements, select Yes if that statement accurately reflects the information provided. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>

The year with the smallest sample size also had the greatest number of hatchery-raised fish in the sample.

The year in which the hatchery released the greatest number of fish was the year when the hatchery took the largest sample of fish.

The year with the smallest number of hatchery-raised fish in the sample was the year in which the hatchery released the smallest percentage of the total five-year fish release.

Lea estimated each of the charges on her telephone bill by rounding the charge to the nearest \$1. Was the sum of Lea's estimated charges within \$8 of the sum of the actual charges on her telephone bill?

- (1) Each of the actual charges on Lea's telephone bill was less than \$7.75.
 - (2) There were 14 charges on Lea's telephone bill.
- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
 - Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
 - BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
 - EACH statement ALONE is sufficient.
 - Statements (1) and (2) TOGETHER are NOT sufficient.

Lauren wants to assemble a collection of books with fish-themed titles by shopping at her local bookstore. On the bookstore's website, she searched for the keyword *fish*. The search returned only the results shown in the table. From the copies in stock included in the search results, Lauren purchased 4 books with distinct titles from 4 different sections with an average (arithmetic mean) price of more than \$12.00.

Sort by:

Title	Author	Format	Section	Copies in stock	Price
<i>Curious George at the Aquarium</i>	Rey, Margaret	used hardcover	children's	1	\$3.99
<i>Curious George Goes Fishing</i>	Rey, H. A.	new hardcover	children's	3	\$2.98
<i>Eels</i>	Prosek, James	new hardcover	science	1	\$25.99
<i>Fish</i>	Bittman, Mark	used hardcover	cooking	2	\$11.00
<i>Fish</i>	Bittman, Mark	paperback	cooking	4	\$9.98
<i>Float-fishing Strategies</i>	Streeks, E. Neale	new paperback	outdoors	0	\$19.95
<i>Salmon</i>	Morgan, Diane	new paperback	cooking	2	\$9.98
<i>Saving Fish from Drowning</i>	Tan, Amy	used paperback	literature	6	\$2.63
<i>Saving Fish from Drowning</i>	Tan, Amy	new paperback	literature	1	\$7.98

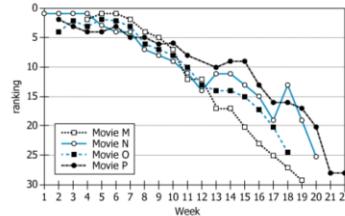
For each of the following statements, select Yes if the statement is true about the purchase that Lauren made. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>

Lauren purchased a new book.

Lauren purchased a book from the cooking section.

Lauren purchased *Eels*.



For 22 consecutive weeks (Weeks 1–22) of last year, the graph gives weekly ticket sales rankings for each of 4 movies (Movies M–P) when compared to all movies shown in theaters that week. Lower-numbered rankings indicate greater sales. If no data are given for a movie during a given week, the movie either was not yet or was no longer being shown in theaters. None of the 4 movies were shown in theaters during any week other than Weeks 1–22.

Select the options from the drop-down menus that create the most accurate statement based on the information provided.

For each of the weeks that all 4 movies were shown in theaters, exactly of the 4 movies never had the greatest ticket sales among the 4 movies, and exactly never had the least ticket sales among the 4 movies.

Correct Answer:
Dropdown 1: 1
Dropdown 2: 1

Next semester, Professors A and B will each teach two of the four nonoverlapping sections of Econ 107, with no section taught by both professors. The sections will begin at 8:00, 9:00, 10:00, and 11:00. At their department chair's request, Professors A and B ranked their preferences for these sections on a 1 (greatest) to 4 (least) scale. For the beginning times 8:00, 9:00, 10:00, and 11:00, the rankings for Professor A were, respectively, 1, 2, 3, and 4, and the rankings for Professor B were, respectively, 4, 1, 3, and 2. For each teaching assignment of Econ 107, the department chair computed the **preference index** (PI)—the sum of all 4 rankings associated with that teaching assignment. For example, if Professor A teaches Econ 107 at 9:00 and 10:00 (and thus Professor B teaches Econ 107 at 8:00 and 11:00), then the PI would be $(2 + 3) + (4 + 2) = 11$.

Based on the information provided, select for *Gives least PI* a choice of sections for Professor A to teach such that the associated PI is least, and select for *Gives greatest PI* a choice of sections for Professor A to teach such that the associated PI is greatest. Make only two selections, one in each column.

Gives least PI	Gives greatest PI	
<input type="radio"/>	<input type="radio"/>	8:00 and 9:00
<input checked="" type="radio"/>	<input type="radio"/>	8:00 and 10:00
<input type="radio"/>	<input checked="" type="radio"/>	8:00 and 11:00
<input type="radio"/>	<input type="radio"/>	9:00 and 10:00
<input type="radio"/>	<input type="radio"/>	9:00 and 11:00
<input type="radio"/>	<input type="radio"/>	10:00 and 11:00



A tank contains x gallons of antifreeze that is, by volume, $y\%$ propylene glycol and $(100 - y)\%$ water, where $y < 60$. Shilah wishes to strengthen the mixture to 60% propylene glycol and 40% water. How many gallons of propylene glycol must Shilah add to make the stronger mixture?

- (1) $xy = 3,200$
 (2) $0.6x - \frac{xy}{100} = 16$

- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
- Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
- BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- EACH statement ALONE is sufficient.
- Statements (1) and (2) TOGETHER are NOT sufficient.

The table shows results from a survey conducted by representatives of Candidate C, who is standing for election to a seat in a national parliament. The survey had exactly 945 respondents, and there were no respondents in age ranges outside of those listed in the table.

Sort FEEDBACK

by:

Age range	Respondents indicating support for Candidate C*	Respondents indicating enthusiastic support for Candidate C
18–27	47	32
28–37	126	85
38–47	134	79
48–57	107	66
58–67	79	34
68–77	85	31
78–87	31	28

*Data include both respondents who indicated enthusiastic support and those who did not.

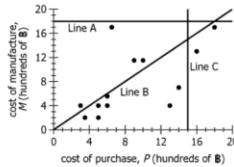
For each of the following quantities, select Yes if the information provided is sufficient for determining the value of the quantity. Otherwise, select No.

Yes	No	
<input checked="" type="radio"/>	<input type="radio"/>	The percentage of all respondents who indicated support for Candidate C
<input type="radio"/>	<input checked="" type="radio"/>	The percentage, among all respondents, who indicated support for Candidate C but did NOT indicate enthusiastic support
<input type="radio"/>	<input checked="" type="radio"/>	The percentage of the respondents in the 28–37 range who indicated support for Candidate C

The amount of refrigeration and transport required to bring a food from farm to table substantially affects the sum total of carbon emissions associated with that food. Organically grown foods, while they keep many harmful chemicals out of the environment, are often transported over great distances. To reduce carbon emissions associated with their food, consumers in our community should choose locally grown foods over organically grown foods.

Select *Strengthens* for the statement that would, if true, most strengthen the argument, and select *Weakens* for the statement that would, if true, most weaken the argument. Make only two selections, one in each column.

Strengthens	Weakens	
<input type="radio"/>	<input type="radio"/>	On average, food travels 1,300 to 2,000 miles from farm to table.
<input type="radio"/>	<input type="radio"/>	The total of carbon emissions associated with organic food production prior to the food being transported from farm to table is much less than that associated with non-organic food production.
<input type="radio"/>	<input type="radio"/>	Food grown on farms that do not use organic production methods is often transported to markets far away.
<input type="radio"/>	<input type="radio"/>	Very little of the organically produced food that can be found locally is locally or regionally grown.
<input checked="" type="radio"/>	<input checked="" type="radio"/>	Some local food growers use harmful chemicals as fertilizers and pesticides when growing crops.



For a manufacturing company in Thailand, the graph displays data on the cost of purchase from an outside supplier (P) versus the cost of in-house manufacture (M), in hundreds of Thai baht (฿), for 13 different industrial parts. For each of the 13 parts, if $M < P$, the company will manufacture that part in-house. There is a fixed value, k , such that for any of the 13 parts, if $k \geq M \geq P$, the company will purchase the part from an outside supplier; if $P \geq k$, the company will manufacture the part in-house, even if $M \geq P$. The graph also displays 3 lines, one of which represents the maximum amount the company will pay to purchase a part from an outside supplier.

Use the drop-down menus to create the most accurate statements based on the information provided.

The graph displays data for industrial parts for which the cost of in-house manufacture exceeds the cost of purchase from an outside supplier. For industrial parts for which the cost of in-house manufacture exceeds the cost of purchase from an outside supplier, the maximum cost of purchase is ₧.

3 An elementary school class tried feeding apples, broccoli, cucumbers, hay, and lettuce to a guinea pig and a rabbit. When given any two of these foods, each animal clearly and consistently preferred one over the other:

- The guinea pig preferred apples to broccoli, but the rabbit showed the opposite preference.
- The rabbit preferred cucumbers to hay, but the guinea pig showed the opposite preference.
- The guinea pig preferred cucumbers to the rabbit's favorite of the five foods.
- The rabbit preferred lettuce to the guinea pig's favorite of the five foods.

Based on the information, select for *Guinea pig's favorite* a pair of foods such that either might have been the guinea pig's favorite and select for *Rabbit's favorite* a pair of foods such that either might have been the rabbit's favorite. Make only two selections, one in each column.

Guinea pig's favorite	Rabbit's favorite	
<input checked="" type="radio"/>	<input type="radio"/>	Apples or hay
<input type="radio"/>	<input checked="" type="radio"/>	Broccoli or lettuce
<input type="radio"/>	<input type="radio"/>	Cucumbers or broccoli
<input type="radio"/>	<input checked="" type="radio"/>	Hay or cucumbers
<input type="radio"/>	<input type="radio"/>	Lettuce or apples

3 Sue's monthly earnings consist of a monthly salary and a 4 percent commission on the portion of her monthly sales that is in excess of \$2,000. If Sue's monthly salary was the same in July as in August, how much greater were her sales in July than in August?

- (1) Sue's monthly earnings were \$3,620 in July and \$3,580 in August.

- (2) Sue's monthly salary was \$3,500 in July and in August.

- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
- Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
- BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- EACH statement ALONE is sufficient.
- Statements (1) and (2) TOGETHER are NOT sufficient.

3 The biological offspring of Arianna and Noah are such that each male has the same number of brothers as sisters, and each female has half as many sisters as brothers.

Based on the information provided, select for *Number of male offspring* the number of male offspring of Arianna and Noah and select for *Number of female offspring* the number of female offspring of Arianna and Noah. Make only two selections, one in each column.

Number of male offspring	Number of female offspring	
<input type="radio"/>	<input checked="" type="radio"/>	1
<input type="radio"/>	<input type="radio"/>	2
<input checked="" type="radio"/>	<input checked="" type="radio"/>	3
<input checked="" type="radio"/>	<input type="radio"/>	4
<input type="radio"/>	<input type="radio"/>	5

3 An elementary school class tried feeding apples, broccoli, cucumbers, hay, and lettuce to a guinea pig and a rabbit. When given any two of these foods, each animal clearly and consistently preferred one over the other:

- The guinea pig preferred apples to broccoli, but the rabbit showed the opposite preference.
- The rabbit preferred cucumbers to hay, but the guinea pig showed the opposite preference.
- The guinea pig preferred cucumbers to the rabbit's favorite of the five foods.
- The rabbit preferred lettuce to the guinea pig's favorite of the five foods.

Based on the information, select for *Guinea pig's favorite* a pair of foods such that either might have been the guinea pig's favorite and select for *Rabbit's favorite* a pair of foods such that either might have been the rabbit's favorite. Make only two selections, one in each column.

Guinea pig's favorite	Rabbit's favorite	
<input checked="" type="radio"/>	<input type="radio"/>	Apples or hay
<input type="radio"/>	<input checked="" type="radio"/>	Broccoli or lettuce
<input type="radio"/>	<input type="radio"/>	Cucumbers or broccoli
<input type="radio"/>	<input checked="" type="radio"/>	Hay or cucumbers
<input type="radio"/>	<input type="radio"/>	Lettuce or apples

A fish hatchery has been raising large populations of endangered fish species and releasing them into a local lake. At the end of each year, the hatchery takes a sample of fish from the lake and compares the number of hatchery-raised fish found in the sample with the number of wild fish found in the sample. The table provides release and sample data for five years of the hatchery's operation.

Sort by:

Year	Number released (thousands)	Sample size	Number wild	Number hatchery	Percent hatchery contribution
1	580	150	130	20	13
2	530	150	125	25	17
3	150	100	55	45	45
4	450	115	90	25	22
5	600	125	110	15	12

For each of the following statements, select Yes if that statement accurately reflects the information provided. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>

The year with the smallest sample size also had the greatest number of hatchery-raised fish in the sample.

The year in which the hatchery released the greatest number of fish was the year when the hatchery took the largest sample of fish.

The year with the smallest number of hatchery-raised fish in the sample was the year in which the hatchery released the smallest percentage of the total five-year fish release.

[Journal](#) [Review Rules](#) [Reviewers/Authors](#)

The editor of *Metathesis*, a new academic journal of literature, manages the peer-review of articles submitted for publication. The journal accepts articles focusing on any of three general subject areas: comparative literature, modernist literature, and postcolonial literature.

When an article is submitted, the editor has the article peer-reviewed by exactly three experts, none of whom authored or coauthored the article. The table (see the Reviewers/Authors tab) consists of all the authors or coauthors who have recently submitted articles and all the experts who currently peer-review or have recently peer-reviewed those articles. It also lists the general subject areas for each of the authors and reviewers.

Each author of each submitted article specializes in the general subject area of the article. Moreover, each recently submitted article was peer-reviewed by experts listed in the table.

Suppose that all three reviewers for a certain recently submitted article were from the same university. For each of the following statements, select Consistent if the supposition, together with the information provided, does NOT imply that the statement is FALSE. Otherwise, select Not consistent.

Consistent	Not consistent
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>

Amaros was a primary reviewer of the article.

Huang was the secondary reviewer of the article.

Huang was the author of the article.

[Journal](#) [Review Rules](#) [Reviewers/Authors](#)

The editor of *Metathesis*, a new academic journal of literature, manages the peer-review of articles submitted for publication. The journal accepts articles focusing on any of three general subject areas: comparative literature, modernist literature, and postcolonial literature.

When an article is submitted, the editor has the article peer-reviewed by exactly three experts, none of whom authored or coauthored the article. The table (see the Reviewers/Authors tab) consists of all the authors or coauthors who have recently submitted articles and all the experts who currently peer-review or have recently peer-reviewed those articles. It also lists the general subject areas for each of the authors and reviewers.

Each author of each submitted article specializes in the general subject area of the article. Moreover, each recently submitted article was peer-reviewed by experts listed in the table.

Suppose that Farkas and Kenyatta were both selected as reviewers for a certain recently submitted article. For each of the following statements, select Yes if the statement must be true, based on this supposition and the information provided. Otherwise, select No.

Yes	No
<input type="radio"/>	<input checked="" type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>

Laprade was not a reviewer of the article.

Farkas was a primary reviewer of the article.

Borsky was the secondary reviewer of the article.

Lea estimated each of the charges on her telephone bill by rounding the charge to the nearest \$1. Was the sum of Lea's estimated charges within \$8 of the sum of the actual charges on her telephone bill?

(1) Each of the actual charges on Lea's telephone bill was less than \$7.75.

(2) There were 14 charges on Lea's telephone bill.

-
-
-
-
-
-
-

Lauren wants to assemble a collection of books with fish-themed titles by shopping at her local bookstore. On the bookstore's website, she searched for the keyword *fish*. The search returned only the results shown in the table. From the copies in stock included in the search results, Lauren purchased 4 books with distinct titles from 4 different sections with an average (arithmetic mean) price of more than \$12.00.

Sort by:

Title	Author	Format	Section	Copies in stock	Price
<i>Curious George at the Aquarium</i>	Rey, Margaret	hardcover	children's	1	\$3.99
<i>Curious George Goes Fishing</i>	Rey, H. A.	new hardcover	children's	3	\$2.98
<i>Eels</i>	Prosek, James	new hardcover	science	1	\$25.99
<i>Fish</i>	Bittman, Mark	used hardcover	cooking	2	\$11.00
<i>Fish</i>	Bittman, Mark	new paperback	cooking	4	\$9.98
<i>Float-fishing Strategies</i>	Streeks, E. Neale	new paperback	outdoors	0	\$19.95
<i>Salmon</i>	Morgan, Diane	new paperback	cooking	2	\$9.98
<i>Saving Fish from Drowning</i>	Tan, Amy	used paperback	literature	6	\$2.63
<i>Saving Fish from Drowning</i>	Tan, Amy	new paperback	literature	1	\$7.98

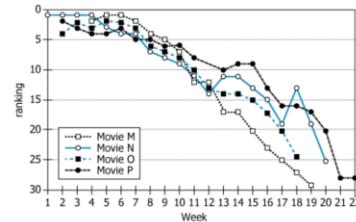
For each of the following statements, select Yes if the statement is true about the purchase that Lauren made. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>

Lauren purchased a new book.

Lauren purchased a book from the cooking section.

Lauren purchased *Eels*.



For 22 consecutive weeks (Weeks 1–22) of last year, the graph gives weekly ticket sales rankings for each of 4 movies (Movies M–P) when compared to all the movies shown in theaters that week. Lower-numbered rankings indicate greater sales. If no data are given for a movie during a given week, the movie either was not yet or was no longer being shown in theaters. None of the 4 movies were shown in theaters during any week other than Weeks 1–22.

Select the options from the drop-down menus that create the most accurate statement based on the information provided.

For each of the weeks that all 4 movies were shown in theaters, exactly of the 4 movies never had the greatest ticket sales among the 4 movies, and exactly never had the least ticket sales among the 4 movies.

Correct Answer:
Dropdown 1: 1
Dropdown 2: 1

Firm Size **Nation X** **Data**

Researchers have found that workers in firms with fewer than 20 employees are, on average, little more than half as productive as the workers in firms with 250 or more, and that, overall, a bias toward small firms is economically costly.

These researchers blame strict employment regulations for the small sizes of firms: because small firms are sheltered from these regulations, they act as a tax on large firm size. For example, the researchers attribute the steep drop in the number of manufacturing firms in Nation E with precisely 50 or more workers (see the Data tab) to just such regulations. Across both manufacturing and service sectors and for firms of various sizes, firms that might have grown bigger have chosen to stay small. The result is significantly less productivity per employee.

✖ Suppose that Nation X's present pattern of manufacturing productivity, per employee, aligns with the graph displaying the average productivity by size of manufacturing firm, and that Nation X has recently repealed most of the regulations listed in Tab 2. For each of the following statements, select Yes if the information provided clearly suggests that the statement describes a result of this change that would be expected by the researchers. Otherwise, select No.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>

The average firm size will increase.
Productivity per employee will increase.
The average productivity per employee across all firms with exactly 200 employees will increase.

Firm Size **Nation X** **Data**

Firms with at least 20 employees—the level at which regulatory scrutiny begins in earnest—must:

- submit taxes monthly rather than quarterly
- subsidize employees' transportation to and from work
- contribute an amount equal to 5 percent of employee compensation to continuing education for employees

Firms with at least 50 employees must:

- meet the requirements for firms with at least 20 employees
- provide compensatory rest, together with overtime pay, for employees who work more than 40 hours in any given week
- provide for election and compensation of an employee-representative committee

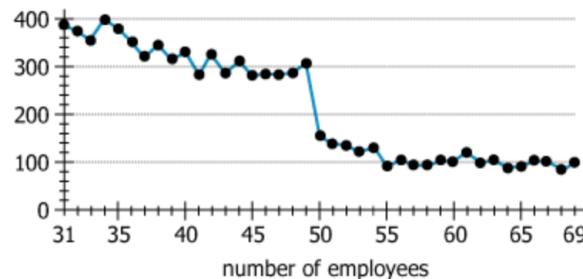
Firms with at least 200 employees must:

- meet the requirements for firms with at least 50 employees
- submit human resources planning to the appropriate government ministry for approval
- maintain a government-approved employee profit-sharing program

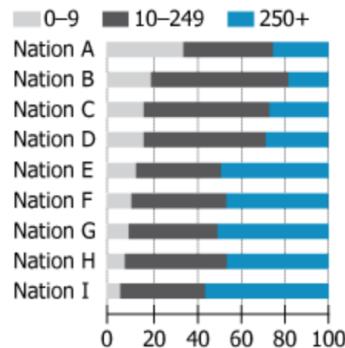
Firm Size | **Nation X** | **Data**

The charts show various economic data for nine European nations.

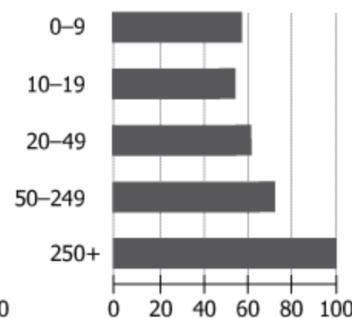
Number of manufacturing firms by employment size in Nation E, 2007



Distribution of employees by size of firm
% of total manufacturing, 2009



Average productivity by size of manufacturing firms,* 2009
(250+ workers = 100)



*Gross value-added per person employed. Average across the 9 nations.

The table shows results from a survey conducted by representatives of Candidate C, who is standing for election to a seat in a national parliament. The survey had exactly 945 respondents, and there were no respondents in age ranges outside of those listed in the table.

For each of the following quantities, select Yes if the information provided is sufficient for determining the value of the quantity. Otherwise, select No.

Sort

by:

Age range	Respondents indicating support for Candidate C*	Respondents indicating enthusiastic support for Candidate C
18–37	126	85
38–47	134	79
48–57	107	66
58–67	79	34
68–77	85	31
78–87	31	28

*Data include both respondents who indicated enthusiastic support and those who did not.

Yes	No
<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input checked="" type="radio"/>
<input type="radio"/>	<input checked="" type="radio"/>

The percentage of all respondents who indicated support for Candidate C
The percentage, among all respondents, who indicated support for Candidate C but did NOT indicate enthusiastic support
The percentage of the respondents in the 28–37 range who indicated support for Candidate C

3 A tank contains x gallons of antifreeze that is, by volume, $y\%$ propylene glycol and $(100 - y)\%$ water, where $y < 60$. Shilah wishes to strengthen the mixture to 60% propylene glycol and 40% water. How many gallons of propylene glycol must Shilah add to make the stronger mixture?

(1) $xy = 3,200$

(2) $0.6x - \frac{xy}{100} = 16$

- Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
- Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
- BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- EACH statement ALONE is sufficient.
- Statements (1) and (2) TOGETHER are NOT sufficient.

3 An elementary school class tried feeding apples, broccoli, cucumbers, hay, and lettuce to a guinea pig and a rabbit. When given any two of these foods, each animal clearly and consistently preferred one over the other:

- The guinea pig preferred apples to broccoli, but the rabbit showed the opposite preference.
- The rabbit preferred cucumbers to hay, but the guinea pig showed the opposite preference.
- The guinea pig preferred cucumbers to the rabbit's favorite of the five foods.
- The rabbit preferred lettuce to the guinea pig's favorite of the five foods.

Based on the information, select for *Guinea pig's favorite* a pair of foods such that either might have been the guinea pig's favorite and select for *Rabbit's favorite* a pair of foods such that either might have been the rabbit's favorite. Make only two selections, one in each column.

Guinea pig's favorite	Rabbit's favorite	
<input checked="" type="radio"/>	<input type="radio"/>	Apples or hay
<input type="radio"/>	<input checked="" type="radio"/>	Broccoli or lettuce
<input type="radio"/>	<input type="radio"/>	Cucumbers or broccoli
<input type="radio"/>	<input checked="" type="radio"/>	Hay or cucumbers
<input type="radio"/>	<input type="radio"/>	Lettuce or apples

4 The biological offspring of Arianna and Noah are such that each male has the same number of brothers as sisters, and each female has half as many sisters as brothers.

Based on the information provided, select for *Number of male offspring* the number of male offspring of Arianna and Noah and select for *Number of female offspring* the number of female offspring of Arianna and Noah. Make only two selections, one in each column.

Number of male offspring	Number of female offspring	
<input type="radio"/>	<input checked="" type="radio"/>	1
<input type="radio"/>	<input type="radio"/>	2
<input checked="" type="radio"/>	<input checked="" type="radio"/>	3
<input checked="" type="radio"/>	<input type="radio"/>	4
<input type="radio"/>	<input type="radio"/>	5

5 Sue's monthly earnings consist of a monthly salary and a 4 percent commission on the portion of her monthly sales that is in excess of \$2,000. If Sue's monthly salary was the same in July as in August, how much greater were her sales in July than in August?

- (1) Sue's monthly earnings were \$3,620 in July and \$3,580 in August.
- (2) Sue's monthly salary was \$3,500 in July and in August.
 - Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
 - Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
 - BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
 - EACH statement ALONE is sufficient.
 - Statements (1) and (2) TOGETHER are NOT sufficient.

6 Leah and Tyrell each rented a car for 1 day. Leah was charged a rental fee of \$45.00 plus \$0.22 for each mile she drove the car. Tyrell was charged a rental fee of \$28.00 plus \$0.26 for each mile he drove the car. How many miles did Tyrell drive the car he rented?

- (1) Tyrell would have been charged \$11.00 more if he had been charged the same rates as Leah.
- (2) Leah's total charge for her rental car was the same as Tyrell's total charge for his rental car.
 - Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
 - Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
 - BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
 - EACH statement ALONE is sufficient.
 - Statements (1) and (2) TOGETHER are NOT sufficient.