Section 01

1. A safe contains 2 bags of coins and 4 bags of paper money. The total value of the money in the 6 bags is $1,200.

Quantity A	Quantity B
The total value of the money in the bags that contain coins	$401

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

2. R is a function defined as R(a, b)= $\sqrt{b-a}$, for all real numbers a and b, where a<b.

Quantity A	Quantity B
R(-3, -1)	1.8

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

3.

$$27-k=\frac{k-17}{4}$$

Quantity A	Quantity B
k	19

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

4.

11, 21, 15, 9, 3, 17, x

In the list shown, x is a positive integer.

Quantity A	Quantity B
The median of the integers in the list	13

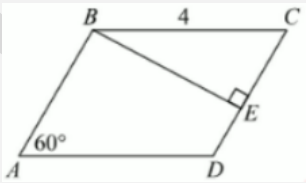
A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

5. The finite sets R, S, and T have the same number of elements. The number of elements in the set R ∪ T is less than the number of elements in the set S ∪ T.

Quantity A	Quantity B
The number of elements in the set R ∩ T	The number of elements in the set S ∩ T

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

6.



ABCD is a parallelogram.

Quantity A	Quantity B
CE	2

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

7.

Quantity A	Quantity B
The 50th digit to the right of the decimal point in the decimal expansion of $\frac{2}{7}$	The 50th digit to the right of the decimal point in the decimal expansion of $\frac{3}{7}$

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

8.

Quantity A	Quantity B
$\frac{\sqrt[3]{48+\sqrt[3]{512}}}{10-12\sqrt[3]{5}}$	$\frac{\sqrt[3]{6+\sqrt[3]{2}}}{5-6\sqrt[3]{5}}$

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

9. A telephone call from City X to City Y costs $3.00 for the first 3 minutes and $0.75 per minute for each minute after the first 3 minutes. At this rate, a call from City X to City Y that costs $12.00 is how many minutes long?

A. 4
B. 9
C. 12
D. 15
E. 16

10.

A={6, 9, 12, 15}
B={-1, -4, -7, -10}

If a number x is to be selected from set A and a number y is to be selected from set B, what is the range of all possible values of x+y?

A. 9
B. 16
C. 18
D. 19
E. 21

11. A continuous random variable R has a mean of 69 and a standard deviation of 11. What is the value of R that is 0.5 standard deviation below the mean?

A. 47
B. 57.5
C. 58
D. 63.5
E. 68.5

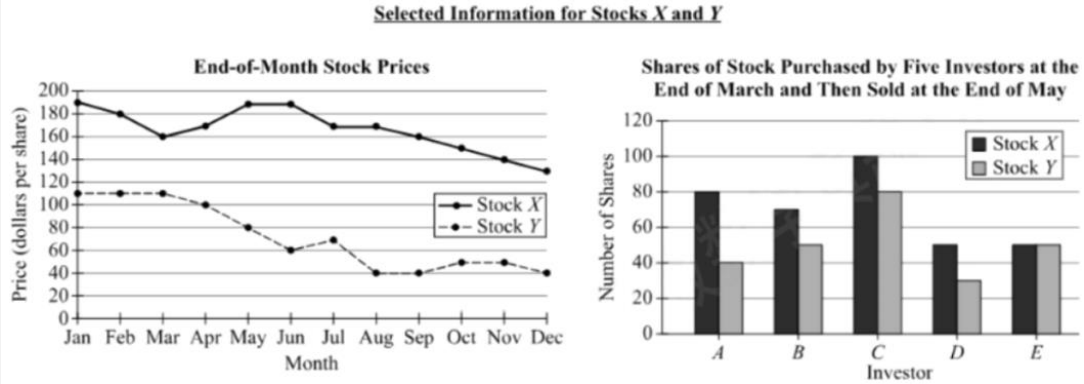
12. x, y, z, u, v, w, and t are seven nonzero integers. Which of the following values can be the number of these seven integers that are negative if xyz=uvwt?
Indicate **all** such values.

A. Three
B. Four
C. Five

13. In a survey, 300 people were asked which candidate they had decided to vote for in an upcoming election. Of those surveyed, 35 percent responded that they had decided to vote for Candidate A, 42 percent responded that they had decided to vote for Candidate Band the remaining 23 percent responded that they were undecided about which candidate to vote for. What fraction of those surveyed responded that they had decided which candidate they would vote for in the

election?

Questions 14 and 16 are based on the following data



Note: The prices and the numbers of shares are multiples of 10.

14. Another investor, F, purchased a total of 180 shares of Stock X and Stock Y at the end of March and then sold all the shares at the end of June. earning a total profit of S600.How many shares of Stock X did Investor F purchase? (Note: Profit equals selling price minus purchase price.)

_____shares

15. For how many of the months shown was 7 times the end-of-month price of Stock Y greater than 2 times the end-of-month price of Stock X?

A. One
B. Two
C. Ten
D. Eleven
E. Twelve

16. For Investor A, the sum of the prices of all the shares of Stock X and Stock Y purchased at the end of March was p percent less than the sum of the prices of all the shares of Stock X and Stock Y sold at the end of May. Which of the following is closest to the value of p?

A. 0.0
B. 1.2

C. 1.7
D. 6.5
E. 7.0

17. If n is an integer such that $12n-n^2>35$, what is the value of n?

n=_____

18. Asmaa is mixing two types of coffee beans. She will mix x kilograms of coffee beans costing 6 euros per kilogram with y kilograms of coffee beans costing 30 euros per kilogram. If the final mixture will contain8 kilograms of coffee beans costing 16.5 euros per kilogram what is the value of x?

A. 4.5
B. 5.0
C. 5.5
D. 6.0
E. 6.5

19.

The figure shows a square in which each of four interior line segments connects the midpoint of a side to a vertex of the square. The area of the shaded region is what fraction of the area of the square?

A. $\frac{1}{6}$
B. $\frac{1}{5}$
C. $\frac{\sqrt{5}}{10}$

D. $\frac{1}{4}$

E. $\frac{\sqrt{3}}{6}$

20. A piece of wood is in the shape of a right rectangular prism with a square base, where the length of each side of the base is 2 feet and the height of the prism is 0.1 foot. A construction worker placed one of the square faces of the piece of wood on a horizontal surface and made a hole vertically through the wood from the top square face to the bottom square face, where the hole was in the shape of a right circular cylinder with a radius of 0.75 foot and a height of 0.1 foot. Which of the following is closest to the surface area, in square feet, of the piece of wood after the hole was made?

A. 4.5
B. 5.7
C. 6.1
D. 7.5
E. 9.2

Section 02

1. y is a positive even integer.

Quantity A	Quantity B
x+y	x+1

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

2. -4<x<2 and -2<x<4

Quantity A	Quantity B
|x|	2

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

3.

List K: 4, x, 5, 8, 5

For the five numbers in list K, the median is greater than the average (arithmetic mean).

Quantity A	Quantity B
x	3

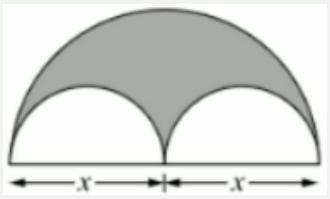
A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

4. x≠y and y≠0

Quantity A	Quantity B
$\frac{x+y}{y}$	$\frac{x^2-y^2}{xy-y^2}$

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

5.



The three arcs are semicircles.

Quantity A	Quantity B
The area of the shaded region	The sum of the areas of the two unshaded semicircular regions

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

6.

$$|x| \geqslant \frac{1}{2}$$

Quantity A	Quantity B
x^{-2}	x^{-4}

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

7. In a survey, 60 percent of those surveyed use long-distance company R, and 20 percent of those who use company R subscribe to an internet service.

Quantity A	Quantity B
The percent of those surveyed who do not subscribe to any internet service	50%

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

8. In pentagon ABCDE, the sum of the measures of interior angles A, B, and C is 270 degrees.

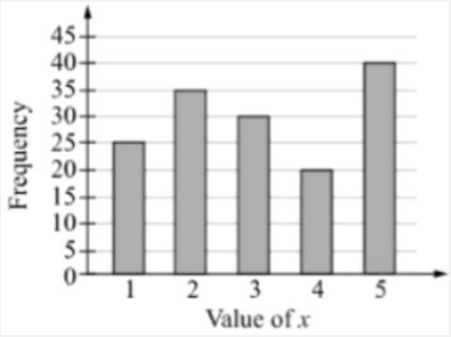
Quantity A	Quantity B
The sum of the measures of interior angles D and E in the pentagon	270 degrees

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

9. At the post office, Sonia purchased mailing envelopes priced at $3.50 each including tax and postcards priced at $1.25 each, including tax. She paid for the envelopes and postcards with a $20.00 bill and received $2.25 in change. How many postcards did Sonia purchase?

A. 1
B. 2
C. 3
D. 4
E. 5

10.



The variable x takes on the values 1, 2, 3, 4, or 5. The graph shows the frequency distribution for 150 values of x. Which of the following is closest to the average (arithmetic mean) of the 150 values?

A. 2.9
B. 3.1
C. 3.3
D. 3.5
E. 3.7

11. How many different positive three-digit integers are there that have an odd hundreds digit?

A. 400
B. 405
C. 495
D. 500
E. 1,000

12. N is a 3-digit integer with tens digit t and units digit u. If 621<N<685 and N is a multiple of 3, which of the following must also be a multiple of 3?

A. t+u
B. t-u
C. tu
D. t^u
E. u^t

13. A local store combined two consecutive discounts into a single discount. If the two consecutive discounts were 20 percent off the retail price and then 40 percent off the discounted price. what is the single discount off the retail price that is equivalent to the two consecutive discounts?

_____%

Questions 14 and 16 are based on the following data

Actions that Affect Computer Security:
a Survey of 250 Companies

Action Cited	Percent That Cited the Action	Total Amount of Losses Due to the Action Cited (in millions)
Financial fraud	14%	$19.2
Insider abuse of Internet access	82%	$10.6
Laptop theft	56%	$6.5
Sabotage	24%	$4.8
Theft of proprietary information	20%	$48.1
Unauthorized access	40%	$50.2
Virus attack	66%	$16.6
Total	-	$156.0

14. For the seven actions listed in the table, what is the range of the numbers of companies that cited the actions?

A. 130
B. 140
C. 150
D. 160
E. 170

15. Which of the following is closest to the amount by which the average (arithmetic mean) dollar amount of losses due to the actions cited exceeds the median dollar amount of the losses?

A. $5,400,000
B. $5,700,000
C. $6,000,000
D. $6,200,000
E. $6,600,000

16. The dollar amount of losses due to financial fraud was what percent greater, to the nearest whole percent, than the dollar amount of losses due to virus attack?

A. 5%
B. 6%
C. 11%
D. 16%
E. 21%

17. If p and r are integers such that $x^2+px-72=(x+r)(x-18)$ for all values of x, what is the value of p?

p=_____

18. If the area of a square is 20, the length of its diagonal is

A. $2\sqrt{5}$
B. $2\sqrt{10}$
C. $5\sqrt{2}$
D. $5\sqrt{3}$
E. $5\sqrt{10}$

19. On his trip home, Pat bicycled $\frac{2}{3}$ of the distance, then got a flat tire and walked the remaining distance. If he spent 3 times the amount of time walking that he spent bicycling, his average bicycling speed was how many times as fast as his average walking speed?

A. 2
B. 3
C. 4
D. 6
E. 9

20. A research report states that the average (arithmetic mean) of 120 measurements was 72.5, the greatest of the 120 measurements was 92.8 and the range of the 120 measurements was 51.6. The information given above is sufficient to determine the value of which of the following statistics? Indicate **all** such statistics.

A. The least of the 120 measurements
B. The median of the 120 measurements
C. The standard deviation of the120 measurements
D. The sum of the 120 measurements

Section 04

1.

$x+y=5$

$x-y=-3$

Quantity A	Quantity B
x	y

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

2.

The perimeter of the figure is 20.

Quantity A	Quantity B
2x	$\frac{10}{3}$

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

3. A total of 2.200 people attended an awards dinner in a ballroom. The tables in the room were numbered consecutively beginning with 1, and 8 people were seated at each table. If a table had an odd number. it was covered with a red tablecloth; and if a table had an even number. it was covered with a yellow tablecloth.

Quantity A	Quantity B
The number of tables in the ballroom that were covered with a red tablecloth	The number of tables in the ballroom that were covered with a yellow tablecloth

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

4.

Quantity A	Quantity B
$7^{-4}+7^{-5}$	8^{-5}

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

5. Set S consists of the multiples of 3 from 9 to 99, inclusive.

Quantity A	Quantity B
The median of the numbers in set S	48

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

6. In the xy-plane, line l has x-intercept 5 and y-intercept -4, and line k has x-intercept -4 and y-intercept 5.

Quantity A	Quantity B
The slope of line l	The slope of line k

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

7. x is a 2-digit positive integer that is a multiple of 3, and the units digit of 3x is 7.

Quantity A	Quantity B
x	69

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

8. Let n be a positive integer and let x and y be nonzero numbers. List Q consists of 2n values whose average (arithmetic mean) is 2x+y. List R consists of 3n values whose average is x+2y. The average of the 5n values in lists Q and R combined is 1.2x+ 1.9y.

Quantity A	Quantity B
$\frac{x}{y}$	1.5

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

9. For a certain task, an office worker will be paid a total of s dollars for the first 20 hours worked plus t dollars for each hour worked in excess of 20 hours. Which of the following represents the total amount, in dollars, that the office worker will be paid for x hours worked where x is an integer greater than 20?

A. s+tx
B. 20s+tx
C. st(x-20)
D. s+t(x-20)
E. E.20s+t(x-20)

10. Sphere K has radius k, and sphere N has radius n. If the ratio of the surface area of sphere K to the surface area of sphere N is 9 to 4 what is the ratio of k to n? (Note: The surface area of a sphere of radius r is $4\pi r^2$.)

A. 45 to 32
B. 81 to 16
C. 27 to 16
D. 9 to 4
E. 3 to 2

11. If $0 \leqslant n \leqslant 1$ and $0 \leqslant p \leqslant 1$, which of the following statements must be true? Indicate **all** such statements.

A. $0 \leqslant n+p \leqslant 1$
B. $-1 \leqslant n-p \leqslant 1$
C. $0 \leqslant np \leqslant 1$

12. Working at a constant rate, a certain irrigation system takes 3 days to water a level, circular field with a radius of 400 meters. Approximately what is the area, in square meters of the part of the field that is watered each day?

A. 120,000
B. 160,000

C. 170,000
D. 250,000
E. 500,000

13. A certain vase holds 4,286 milliliters of water. If 1 milliliter of water weighs 1 gram, how many kilograms of water does the vase hold?

_____kilograms

Questions 14 and 16 are based on the following data

Population and Motor Vehicle Data for Selected States, 2001

State	Population (in thousands)	Number of Motor Vehicles per 1,000 People	Average Number of Miles Driven per Motor Vehicle	Average Number of Miles Driven per Gallon of Gasoline Used
Alaska	635	941	7,898	11.9
California	34,494	834	10,796	17.6
Florida	16,348	875	10.855	17.3
New Jersey	8,502	776	10,444	14.2
Texas	21,316	673	15,058	15.6

Notes:
(1) Populations and numbers of motor vehicles registered are for the end of 2001.
(2) Miles driven and gasoline used are for the entire year of 2001.

14. For the motor vehicles registered in Texas, approximately what was the average (arithmetic mean) number of miles driven per person in 2001?

A. 10,000
B. 15,000
C. 22,000
D. 26,000
E. 30,000

15. For the total number of miles driven by the motor vehicles registered in Alaska in 2001 approximately how many gallons of gasoline were used?

A. 40 million
B. 56 million
C. 400 million
D. 4,000 million
E. 5,600 million

16. Registered motor vehicles consist of automobiles, buses, and trucks. In New Jersey at the end of 2001 if the number of registered automobiles was 2 times the total number of registered buses and trucks, how many automobiles were registered in New Jersey at the end of 2001? Give your answer to the nearest 100,000.

_____automobiles

17. The operation★is defined by $x★y=\frac{y}{x+1}$ for all numbers x and y, where $x\neq -1$.

For what value of x is $x★1=\frac{7}{10}$?

Give your answer as a fraction.

$x=\frac{\square}{\square}$

18. The cover price of Magazine X is $2.25 per copy. Last week a total of n copies of Magazine X were sold, of which 60 percent were sold at the cover price and the rest were sold for 25 percent less than the cover price. What is the total revenue, in dollars. from sales of Magazine X last week, in terms of n?

A. 1.575n
B. 1.80n
C. 2.0n
D. 2.025n
E. 2.25n

19. A continuous random variable R has a mean of 60 and a standard deviation of 15. What is the value of R that is 0.5 standard deviation above the mean?

A. 60.5
B. 67.5
C. 75
D. 75.5
E. 90

20. The standard deviation of the values in a data set is 8. The least value in the data set is 3.25 standard deviations below the mean. and the greatest value in the data set is 4.5 standard deviations above the mean. What is the range of the values in the data set?

A. 10
B. 26
C. 36
D. 48
E. 62