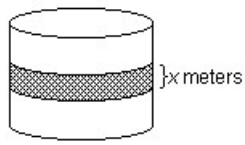
SECTIION 5
30 minutes 25 questions

1. At a certain picnic, each of the guests was served either a single scoop or a double scoop of ice cream. How many of the guests were served a double scoop of ice cream?

   (1) At the picnic, 60 percent of the guests were served a double scoop of ice cream.
   (2) A total of 120 scoops of ice cream were served to all the guests at the picnic.

2. By what percent was the price of a certain candy bar increased?

   (1) The price of the candy bar was increased by 5 cents.
   (2) The price of the candy bar after the increase was 45 cents.



3. A circular tub has a band painted around its circumference, as shown above. What is the surface area of this painted band?

   (1) $x = 0.5$
   (2) The height of the tub is 1 meter.

4. Is it true that $a > b$?

   (1) $2a > 2b$
   (2) a + c > b + c

5. A thoroughly blended biscuit mix includes only flour and baking powder. What is the ratio of the number of grams of baking powder to the number of grams of flour in the mix?

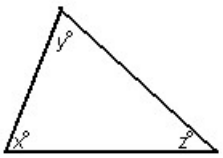
   (1) Exactly 9.9 grams of flour is contained in 10 grams of the mix.
   (2) Exactly 0.3 gram of baking powder is contained in 30 grams of the mix.

6. If a real estate agent received a commission of 6 percent of the selling price of a certain house, what was the selling price of the house?

   (1) The selling price minus the real estate agent's commission was $84,600.
   (2) The selling price was 250 percent of the original purchase price of $36,000.

7. What is the value of |x|?

   (1) x = -|x|
   (2) $x^2 = 4$



8. What is the value of z in the triangle above?

   (1) $x + y = 139$
   (2) $y + z = 108$

9. A certain bakery sells rye bread in 16-ounce loaves and 24-ounce loaves, and all loaves of the same size sell for the same price per loaf regardless of the number of loaves purchased. What is the price of a 24-ounce loaf of rye bread in this bakery?

   (1) The total price of a 16-ounce loaf and a 24-ounce loaf of this bread is $2.40.
   (2) The total price of two 16-ounce loaves and one 24-ounce loaf of this bread is $3.40.

10. If $\frac{\sqrt{x}}{y} = n$, what is the value of x?

    (1) $yn = 10$
    (2) $y = 40$ and $n = \frac{1}{4}$

11. If m and n are consecutive positive integers, is m greater than n?

    (1) $m - 1$ and $n + 1$ are consecutive positive integers.
    (2) m is an even integer.

12. Paula and Sandy were among those people who sold raffle tickets to raise money for Club *X*. If Paula and Sandy sold a total of 100 of the tickets, how many of the tickets did Paula sell?

(1) Sandy sold $\frac{2}{3}$ as many of the raffle tickets as Paula did.
(2) Sandy sold 8 percent of all the raffle tickets sold for Club *X*.

13. Is the integer *n* odd?

(1) *n* is divisible by 3.
(2) *n* is divisible by 5.

3.2□△6

14. If □and△each represent single digits in the decimal above, what digit does □ represent?

(1) When the decimal is rounded to the nearest tenth, 3.2 is the result.
(2) When the decimal is rounded to the nearest hundredth, 3.24 is the result.

15. A certain company currently has how many employees?

(1) If 3 additional employees are hired by the company and all of the present employees remain, there will be at least 20 employees in the company.
(2) If no additional employees are hired by the company and 3 of the present employees resign, there will be fewer than 15 employees in the company.

16. If x is equal to one of the numbers $\frac{1}{4}, \frac{3}{8}$, or $\frac{2}{5}$ what is the value of x?

(1) $\frac{1}{4} < x < \frac{1}{2}$
(2) $\frac{1}{3} < x < \frac{3}{5}$

17. If a,b, and c are integers, is $a - b + c$ greater than $a + b - c$?

(1) b is negative.
(2) c is positive.

18. If $x + 2y + 1 = y - x$, what is the value of x?

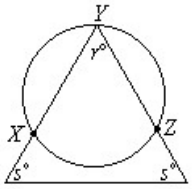
(1) $y^2 = 9$
(2) y = 3

19. If n is an integer, then n is divisible by how many positive integers?

(1) n is the product of two different prime numbers.
(2) n and 2^3 are each divisible by the same number of positive integers.

20. How many miles long is the route from Houghton to Callahan?

(1) It will take 1 hour less time to travel the entire route at an average rate of 55 miles per hour than at an average rate of 50 miles per hour.
(2) It will take 11 hours to travel the first half of the route at an average rate of 25 miles per hour.



21. What is the circumference of the circle above?

(1) The length of arc *XYZ* is 18.
(2) r = s

22. If $p,q,r,$ and s are nonzero numbers, is $(p-1)(q-2)^2(r-3)^3(s-4)^4 \geqq 0$?

(1) $q > 2$ and $s > 4$
(2) $p > 1$ and $r > 3$

23. If $\odot$ denotes a mathematical operation, does
$x \odot y = y \odot x$ for all x and y?

(1) For all x and y, $x \odot y = 2(x^2 + y^2)$.
(2) For all y, $0 \odot y = 2\ y^2$

24. All trainees in a certain aviator training program must take both a written test and a flight test. If 70 percent of the trainees passed the written test, and 80 percent of the trainees passed the flight test, what percent of the trainees passed both tests?

(1) 10 percent of the trainees did not pass either test.
(2) 20 percent of the trainees passed only the flight test.

25. If n is an integer, is $\frac{n}{15}$ an integer?

(1) $\frac{3n}{15}$ is an integer.

(2) $\frac{8n}{15}$ is an integer.

SECTION 6
30 minutes 25 questions

1. If x and y are positive, what's the value of x ?

(1) $x = 3.927y$
(2) $y = 2.279$

2. John and David each received a salary increase. Which one received the greater salary increase?

(1) John's salary increased 8 percent.
(2) David's salary increased 5 percent.

3. Carlotta can drive from her home to her office by one of two possible routes. If she must also return by one of these routes, what is the distance of the shorter route?

(1) When she drives from her home to her office by the shorter route and returns by the longer route, she drives a total of 42 kilometers.
(2) when she drives both ways from her home to her office and back, by the longer route, she drives a total of 46 kilometers.

4. If r and s are positive integers, r is what percent of s?

(1) $r = \frac{3}{4}s$

(2) $r \div s = \frac{75}{100}$

5. A shirt and a pair of gloves cost total of $41.70. How much does the pair of gloves cost?

(1) The shirt costs twice as much as the gloves.
(2) The shirt costs $27.80.

6. What is the number of 360-degree rotations that a bicycle wheel made while rolling 100 meters in a straight line without slipping?

(1) The diameter of the bicycle wheel, including the tire, was 0.5 meter.

(2) The wheel made twenty 360-degree rotations per minute.

7. What is the value of the sum of a list of n odd integers?

(1) $n = 8$
(2) The square of the number of integers on the list is 64.

8. If a certain animated cartoon consists of a total of 17,280 frames on film, how many minutes will it take to run the cartoon?

(1) The cartoon runs without interruption at the rate of 24 frames per second.
(2) It takes 6 times as long to run the cartoon as it takes to rewind the film, and it takes a total of 14 minutes to do both.

9. What was the average number of miles per gallon of gasoline for a car during a certain trip?

(1) The total cost of the gasoline used by the car for the 180-mile trip was \$12.00.
(2) The cost of the gasoline used by the car for the trip was \$1.20 per gallon.

10. If x and y are positive, is $\frac{x}{y}$ greater than 1?

(1) $xy > 1$
(2) $x - y > 0$

11. In $\triangle PQR$, if $PQ = x$, $QR = x + 2$, and $PR = y$, which of the three angles of $\triangle PQR$ has the greatest degree measure?

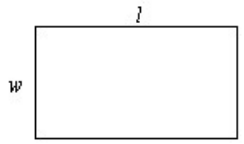
(1) $y = x + 3$
(2) $x = 2$

12. Is the prime number p equal to 37?

(1) $p = n^2 + 1$, where n is an integer.
(2) p^2 is greater than 200.

13. The only contents of a parcel are 25 photographs and 30 negatives. What is the total weight, in ounces, of the parcel's contents?

(1) The weight of each photograph is 3 times the weight of each negative.
(2) The total weight of 1 of the photographs and 2 of the negatives is $\frac{1}{3}$ ounce.



14. If l and w represent the length and width, respectively, of the rectangle above, what is the perimeter?

(1) $2l + w = 40$
(2) $l + w = 25$

15. What is the ratio of x to y?

(1) x is 4 more than twice y.
(2) The ratio of $0.5x$ to $2y$ is 3 to 5.

16. If x, y, and z are three integers, are they consecutive integers?

(1) $z - x = 2$
(2) $x < y < z$

17. What is the value of x?

(1) $-(x + y) = x - y$
(2) $x + y = 2$

18. A sum of \$200,000 from a certain estate was divided among a spouse and three children. How much of the estate did the youngest child receive?

(1) The spouse received 1/2 of the sum from the estate, and the oldest child received 1/4 of the remainder.
(2) Each of the two younger children received \$12,500 more than the oldest child and \$62,500 less than the spouse.

19. If the Lincoln Library's total expenditure for books, periodicals, and newspapers last year was \$35,000, how much of the expenditure was for books?

(1) The expenditure for newspapers was 40 percent greater than the expenditure for periodicals.

(2) The total of the expenditure for periodicals and newspapers was 25 percent less than the expenditure for books.

20. The symbol $\triangledown$ represents one of the following operations: addition, subtraction, multiplication, or division. What is the value of 3 $\triangledown$ 2?

(1) $0 \triangledown 1 = 1$
(2) $1 \triangledown 0 = 1$

21. Are the numbers $\frac{k}{4}, \frac{z}{3}$ and $\frac{r}{2}$ in increasing order?

(1) $3 < z < 4$
(2) $r < z < k$

22. In a certain group of people, the average (arithmetic mean) weight of the males is 180 pounds and of the females, 120 pounds. What is the average weight of the people in the group?

(1) The group contains twice as many females as males.
(2) The group contains 10 more females than males.

23. If $n = p + r$, where n, p, and r are positive integers and n is odd, does p equal 2?

(1) p and r are prime numbers.
(2) $r \neq 2$

24. If $y = 2^{x+1}$, what is the value of $y - x$?

(1) $2^{2x+2} = 64$
(2) $y = 2^{2x-1}$

25. If $x \neq 1$, is y equal to $x + 1$?

(1) $\frac{y-2}{x-1} = 1$
(2) $y^2 = (x + 1)^2$

SECTION 7
30 minutes 25 questions

1. The regular price for canned soup was reduced during a sale. How much money could one have saved by purchasing a dozen 7-ounce cans of soup at the reduced price rather than at the regular price?

(1) The regular price for the 7-ounce cans was 3 for a dollar.
(2) The reduced price for the 7-ounce cans was 4 for a dollar.

2. If on a fishing trip Jim and Tom each caught some fish, which one caught more fish?

(1) Jim caught $\frac{2}{3}$ as many fish as Tom.
(2) After Tom stopped fishing, Jim continued fishing until he had caught 12 fish.

3. If $5x + 3y = 17$, what is the value of x?

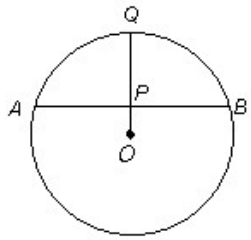
(1) x is a positive integer.
(2) $y = 4x$

4. Yesterday Nan parked her car at a certain parking garage that charges more for the first hour than for each additional hour. If Nan's total parking charge at the garage yesterday was \$3.75, for how many hours of parking was she charged?

(1) Parking charges at the garage are \$0.75 for the first hour and \$0.50 for each additional hour or fraction of an hour.
(2) If the charge for the first hour had been \$1.00, Nan's total parking charge would have been \$4.00.

5. If r and s are integers, is $r + s$ divisible by 3?

(1) s is divisible by 3.
(2) r is divisible by 3.



6. What is the radius of the circle above with center O?

(1) The ratio of OP to PQ is 1 to 2.
(2) P is the midpoint of chord AB.

7. A certain 4-liter solution of vinegar and water consists of x liters of vinegar and y liters of water. How many liters of vinegar does the solution contain?

(1) $\frac{x}{4} = \frac{3}{8}$

(2) $\frac{y}{4} = \frac{5}{8}$

8. Is $x < 0$?

(1) $-2x > 0$
(2) $x^3 < 0$

9. Of the 230 single-family homes built in City X last year, how many were occupied at the end of the year?

(1) Of all single-family homes in City X, 90 percent were occupied at the end of last year.
(2) A total of 7,200 single-family homes in City X were occupied at the end of last year.

10. Does the product $jkmn$ equal 1?

(1) $\frac{jk}{mn} = 1$

(2) $j = \frac{1}{k}$ and $m = \frac{1}{n}$

11. How many of the boys in a group of 100 children have brown hair?

(1) Of the children in the group, 60 percent have brown hair.
(2) Of the children in the group, 40 are boys.

12. Is the perimeter of Square S greater than the perimeter of equilateral triangle T?

(1) The ratio of the length of a side of S to the length of a side of T is 4:5.
(2) The sum of the lengths of a side of S and a side of T is 18.

13. If p and q are positive integers and $pq = 24$, what is the value of p?

(1) $\frac{q}{6}$ is an integer.

(2) $\frac{p}{2}$ is an integer.

14. If $x \neq 0$, what is the value of $\left(\frac{x^p}{x^q}\right)^4$?

(1) p = q
(2) $x = 3$

15. From May 1,1960 to May 1,1975, the closing price of a share of stock X doubled. what was the closing price of a share of stock X on May 1, 1960?

(1) From May 1,1975, to May 1,1984, the closing price of a share of stock X doubled.
(2) From May 1,1975, to May 1,1984, the closing price of a share of stock X increased by \$4.50.

16. If d is a positive integer, is $\sqrt{d}$ an integer?

(1) d is the square of an integer.
(2) $\sqrt{d}$ is the square of an integer.

17. If Q is an integer between 10 and 100, what is the value of Q?

(1) One of Q's digits is 3 more than the other, and the sum of its digits is 9.
(2) $Q < 50$

18. If digit h is the hundredths' digit in the decimal d=0.2h6, what is the value of d, rounded to the nearest tenth?

(1) $d < \frac{1}{4}$
(2) $h < 5$

19. What is the value of $x^2 - y^2$?

(1) $x - y = y + 2$
(2) $x - y = \frac{1}{x + y}$

20. If • represents one of the operations +, −, and ×, is $k \bullet (\lambda + m) = (k \bullet \lambda) + (k \bullet m)$ for all numbers k, λ and m?

(1) k • l is not equal to l • k for some numbers k.
(2) • represents subtraction.

21. What was Janet's score on the fourth physics test she took?

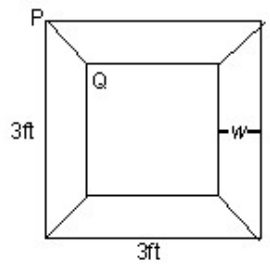
(1) Her score on the fourth test was 12 points higher than her average (arithmetic mean) score on the first three tests she took.
(2) Her score on the fourth test raised her average (arithmetic mean) test score from 87 to 90.

22. If $x + y > 0$, is $x > |y|$?

(1) $x > y$
(2) $y < 0$

23. If x is an integer, is $(x + p)(x + q)$ an even integer?

(1) q is an even integer.
(2) p is an even integer.



24. The figure above shows the dimensions of a square picture frame that was constructed using four pieces of frame as shown. If w is the width of each piece of the frame, what is the area of each piece?

(1) w = 3 inches
(2) $PQ = \sqrt{18}$ inches

25. A total of 774 doctorates in mathematics were granted to United States citizens by American universities in the 1972-1973 school year, and W of these doctorates were granted to women. The total of such doctorates in the 1986-1987 school year was 362, and w of these were granted to women. If the number of doctorates in mathematics granted to female citizens of the United States by American universities decreased from the 1972-1973 school year to the 1986-1987 school year, was the decrease less than 10 percent?

(1) $\frac{1}{10} < \frac{W}{774} < \frac{1}{9}$
(2) $W = w + 5$