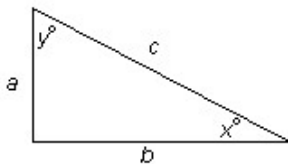


**SECTION 8**  
**30 Minutes 25 Questions**

1. Committee member  $W$  wants to schedule a one-hour meeting on Thursday for himself and three other committee members,  $X$ ,  $Y$ , and  $Z$ . Is there a one-hour period on Thursday that is open for all four members?
  - (1) On Thursday  $W$  and  $X$  have an open period from 9:00 a.m. to 12:00 noon.
  - (2) On Thursday  $Y$  has an open period from 10:00 a.m. to 1:00 p.m. and  $Z$  has an open period from 8:00 a.m. to 11:00 a.m.
2. If Jack's and Kate's annual salaries in 1985 were each 10 percent higher than their respective annual salaries in 1984, what was Jack's annual salary in 1984?
  - (1) The sum of Jack's and Kate's annual salaries in 1984 was \$50,000.
  - (2) The sum of Jack's and Kate's annual salaries in 1985 was \$55,000.
3. What is the value of  $x$ ?
  - (1)  $x + 1 = 2 - 3x$
  - (2)  $\frac{1}{2x} = 2$
4. How many newspapers were sold at a certain newsstand today?
  - (1) A total of 100 newspapers were sold at the newsstand yesterday, 10 fewer than twice the number sold today.
  - (2) The number of newspapers sold at the newsstand yesterday was 45 more than the number sold today.
5. How much did a certain telephone call cost?
  - (1) The call lasted 53 minutes
  - (2) The cost for the first 3 minutes was 5 times the cost for each additional minute.
6. A certain expressway has exits  $J$ ,  $K$ ,  $L$ , and  $M$ , in that order. What is the road distance from exit  $K$  to exit  $L$ ?
  - (1) the road distance from exit  $J$  to exit  $L$  is 21 kilometers.
  - (2) The road distance from exit  $K$  to exit  $M$  is 26 kilometers.
7. Two cars,  $S$  and  $T$ , each traveled a distance of 50 miles. Did car  $S$  use more gasoline than car  $T$ ?
  - (1) Cars  $S$  and  $T$  traveled the entire distance at the rates of 55 miles per hour and 50 miles per hour, respectively.
  - (2) For the entire distance, car  $S$  traveled 20 miles per gallon of gasoline and car  $T$  traveled 25 miles per gallon of gasoline.
8. If  $n$  is a positive integer, is  $n$  odd?
  - (1)  $3n$  is odd.
  - (2)  $n + 3$  is even.
9. Does  $2m - 3n = 0$ ?
  - (1)  $m \neq 0$
  - (2)  $6m = 9n$
10. If  $xy < 3$ , is  $x < 1$ ?
  - (1)  $y > 3$
  - (2)  $x < 3$
11. Each of the eggs in a bowl is dyed red, or green, or blue. If one egg is to be removed at random, what is the probability that the egg will be green?
  - (1) There are 5 red eggs in the bowl.
  - (2) The probability that the egg will be blue is  $\frac{1}{3}$
12. Is the average (arithmetic mean) of  $x$  and  $y$  greater than 20?
  - (1) The average (arithmetic mean) of  $2x$  and  $2y$  is 48.
  - (2)  $x = 3y$

13. Marcia's bucket can hold a maximum of how many liters of water?

- (1) The bucket currently contains 9 liters of water.
- (2) If 3 liters of water are added to the bucket when it is half full of water, the amount of water in the bucket will increase by  $\frac{1}{3}$ .

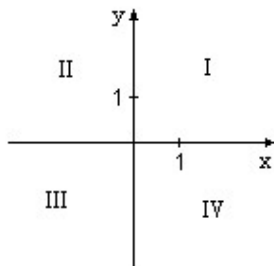


14. In the triangle above, does  $a^2 + b^2 = c^2$ ?

- (1)  $x + y = 90$
- (2)  $x = y$

15. What is the value of the positive integer  $n$ ?

- (1)  $n^4 < 25$
- (2)  $n \neq n^2$



16. If  $ab \neq 0$ , in what quadrant of the coordinate system above does point  $(a, b)$  lie?

- (1)  $(b, a)$  lies in quadrant IV.
- (2)  $(a, -b)$  lies in quadrant III.

17. From 1984 to 1987, the value of foreign goods consumed annually in the United States increased by what percent?

- (1) In 1984 the value of foreign goods consumed constituted 19.8 percent of the total value of goods consumed in the United States that year.
- (2) In 1987 the value of foreign goods consumed constituted 22.7 percent of the total value of goods consumed in the United States that year.

18. If  $x$ ,  $y$ , and  $z$  are positive, is  $x = \frac{y}{z^2}$ ?

- (1)  $z = \frac{y}{xz}$
- (2)  $z = \sqrt{\frac{y}{x}}$

19. If  $x$  and  $y$  are positive integers and  $x^y = x^{2y-3}$ , what is the value of  $x^y$ ?

- (1)  $x = 2$
- (2)  $x^3 = 8$

20. If  $k$  and  $n$  are integers, is  $n$  divisible by 7?

- (1)  $n - 3 = 2k$
- (2)  $2k - 4$  is divisible by 7.

21. If  $x$  and  $y$  are integers and  $y = |x + 3| + |4 - x|$ , does  $y$  equal 7?

- (1)  $x < 4$
- (2)  $x > -3$

22. If  $1 < d < 2$ , is the tenths' digit of the decimal representation of  $d$  equal to 9?

- (1)  $d + 0.01 < 2$
- (2)  $d + 0.05 > 2$

23. The participants in a race consisted of 3 teams with 3 runners on each team. A team was awarded  $6 - n$  points if one of its runners finished in  $n$ th place, where  $1 \leq n \leq 5$ . If all of the runners finished the race and if there were no ties, was each team awarded at least one point?

- (1) No team was awarded more than a total of 6 points.
- (2) No pair of teammates finished in consecutive places among the top five places.

24. If  $x + y + z > 0$ , is  $z > 1$ ?

- (1)  $z > x + y + 1$
- (2)  $x + y + 1 < 0$

25. How many integers  $n$  are there such that  $r < n < s$ ?

- (1)  $s - r = 5$
- (2)  $r$  and  $s$  are not integers.

**SECTION 9**  
**30 Minutes 25 Questions**

1. A total of 9 women and 12 men reside in the 21 apartments that are in a certain apartment building, one person to each apartment. If a poll taker is to select one of the apartments at random, what is the probability that the resident of the apartment selected will be a woman who is a student?

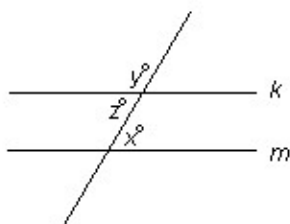
- (1) Of the women, 4 are students.  
 (2) Of the women, 5 are not students.

2. Is  $x$  greater than 1.8?

- (1)  $x > 1.7$   
 (2)  $x > 1.9$

3. Hoses  $X$  and  $Y$  simultaneously fill an empty swimming pool that has a capacity of 50,000 liters. If the flow in each hose is independent of the flow in the other hose, how many hours will it take to fill the pool?

- (1) Hose  $X$  alone would take 28 hours to fill the pool.  
 (2) Hose  $Y$  alone would take 36 hours to fill the pool.

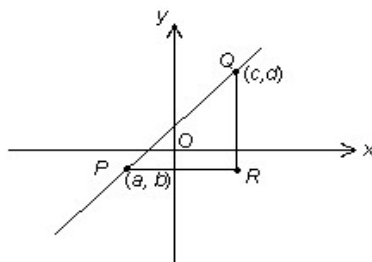


4. In the figure above, if lines  $k$  and  $m$  are parallel, what is the value of  $x$ ?

- (1)  $y = 120$   
 (2)  $z = 60$

5. If  $x$  and  $y$  are integers, what is the value of  $y$ ?

- (1)  $xy = 27$   
 (2)  $x = y^2$



6. In the figure above, segments  $PR$  and  $QR$  are each parallel to one of the rectangular coordinate axes. Is the ratio of the length of  $QR$  to the length of  $PR$  equal to 1?

- (1)  $c = 3$  and  $d = 4$ .  
 (2)  $a = -2$  and  $b = -1$ .

7. In a school election, if each of the 900 voters voted for either Edith or Jose (but not both), what percent of the female voters in this election voted for Jose?

- (1) Eighty percent of the female voters voted for Edith.  
 (2) Sixty percent of the male voters voted for Jose.

8. During week  $W$ , how much did it cost, per mile, for the gasoline used by car  $X$ ?

- (1) During week  $W$ , car  $X$  used gasoline that cost \$1.24 per gallon.  
 (2) During week  $W$ , car  $X$  was driven 270 miles.

9. If  $r$  and  $s$  are integers, is  $r$  divisible by 7?

- (1) The product  $rs$  is divisible by 7.  
 (2)  $s$  is not divisible by 7.

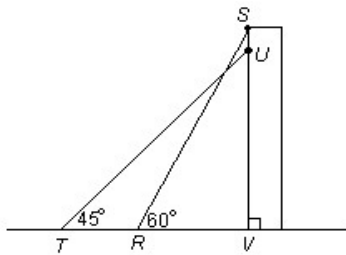
10. If  $\frac{m}{n} = \frac{5}{3}$ , what is the value of  $m + n$ ?

- (1)  $m > 0$   
 (2)  $2m + n = 26$

11. If  $P$  and  $Q$  are each circular regions, what is the radius of the larger of these regions?

- (1) The area of  $P$  plus the area of  $Q$  is equal to  $90\pi$ .  
 (2) The larger circular region has a radius

- that is 3 times the radius of the smaller circular region.
12. Is  $z$  less than 0?
- (1)  $xy > 0$  and  $yz < 0$ .
  - (2)  $x > 0$
13. If the total price of  $n$  equally priced shares of a certain stock was \$12,000, what was the price per share of the stock?
- (1) If the price per share of the stock had been \$1 more, the total price of the  $n$  shares would have been \$300 more.
  - (2) If the price per share of the stock had been \$2 less, the total price of the  $n$  shares would have been 5 percent less.
14. What is the ratio of  $x : y : z$ ?
- (1)  $z = 1$  and  $xy = 32$
  - (2)  $\frac{x}{y} = 2$  and  $\frac{z}{y} = \frac{1}{4}$ .
15. What is Ricky's age now?
- (1) Ricky is now twice as old as he was exactly 8 years ago.
  - (2) Ricky's sister Teresa is now 3 times as old as Ricky was exactly 8 years ago.
16. Is  $xy > 5$ ?
- (1)  $1 \leq x \leq 3$  and  $2 \leq y \leq 4$ .
  - (2)  $x + y = 5$
17. In year  $X$ , 8.7 percent of the men in the labor force were unemployed in June compared with 8.4 percent in May. If the number of men in the labor force was the same for both months, how many men were unemployed in June of that year?
- (1) In May of year  $X$ , the number of unemployed men in the labor force was 3.36 million.
  - (2) In year  $X$ , 120,000 more men in the labor force were unemployed in June than in May.
18. If the average (arithmetic mean) of 4 numbers is 50, how many of the numbers are greater than 50?
- (1) None of the four numbers is equal to 50.
  - (2) Two of the numbers are equal to 25.
19. On Monday morning a certain machine ran continuously at a uniform rate to fill a production order. At what time did it completely fill the order that morning?
- (1) The machine began filling the order at 9:30 a.m.
  - (2) The machine had filled  $\frac{1}{2}$  of the order by 10:30 a.m. and  $\frac{5}{6}$  of the order by 11:10 a.m.
20. If  $n + k = m$ , what is the value of  $k$ ?
- (1)  $n = 10$
  - (2)  $m + 10 = n$
21. Town  $T$  has 20,000 residents, 60 percent of whom are female. What percent of the residents were born in Town  $T$ ?
- (1) The number of female residents who were born in Town  $T$  is twice the number of male residents who were not born in Town  $T$ .
  - (2) The number of female residents who were not born in Town  $T$  is twice the number of female residents who were born in Town  $T$ .
22. Can the positive integer  $n$  be written as the sum of two different positive prime numbers?
- (1)  $n$  is greater than 3.
  - (2)  $n$  is odd.



23. In the figure above, segments  $RS$  and  $TU$  represent two positions of the same ladder leaning against the side  $SV$  of a wall. The length of  $TV$  is how much greater than the length of  $RV$ ?

- (1) The length of  $TU$  is 10 meters.
- (2) The length of  $RV$  is 5 meters.

24. If both  $x$  and  $y$  are nonzero numbers,

what is the value of  $\frac{y}{x}$ ?

- (1)  $x = 6$
- (2)  $y^2 = x^2$

25. If  $x = 0.rstu$ , where  $r$ ,  $s$ ,  $t$ , and  $u$  each represent a nonzero digit of  $x$ , what is the value of  $x$ ?

- (1)  $r = 3s = 2t = 6u$
- (2) The product of  $r$  and  $u$  is equal to the product of  $s$  and  $t$ .

## SECTION 10

## 30 Minutes 25 Questions

1. If Hans purchased a pair of skis and a ski jacket, what was the cost of the skis?

- (1) The ratio of the cost of the skis to the cost of the jacket was 5 to 1.
- (2) The total cost of the skis and the jacket was \$360.

2. Is  $x < y$ ?

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

3. If a certain city is losing 12 percent of its daily water supply each day because of water-main breaks, what is the dollar cost to the city per day for this loss?

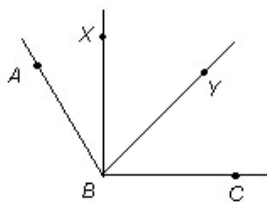
- (1) The city's daily water supply is 350 million gallons.
- (2) The cost to the city for each 12,000 gallons of water lost is \$2.

4. Machine  $X$  runs at a constant rate and produces a lot consisting of 100 cans in 2 hours. How much less time would it take to produce the lot of cans if both machines  $X$  and  $Y$  were run simultaneously?

- (1) Both machines  $X$  and  $Y$  produce the same number of cans per hour.
- (2) It takes machine  $X$  twice as long to produce the lot of cans as it takes machines  $X$  and  $Y$  running simultaneously to produce the lot.

5. If  $x$  and  $y$  are positive, what is the value of  $x$ ?

- (1) 200 percent of  $x$  equals 400 percent of  $y$ .
- (2)  $xy$  is the square of a positive integer.



6. In the figure above, what is the measure of  $\angle ABC$ ?

(1)  $BX$  bisects  $\angle ABY$  and  $BY$  bisects  $\angle XBC$ .

(2) The measure of  $\angle ABX$  is  $40^\circ$ .

7. If  $-10 < k < 10$ , is  $k > 0$ ?

(1)  $\frac{1}{k} > 0$

(2)  $k^2 > 0$

	$R$	$S$	$T$	$U$
$R$	0	$y$	$x$	62
$S$	$y$	0	56	75
$T$	$x$	56	0	69
$U$	62	75	69	0

8. The table above shows the distance, in kilometers, by the most direct route, between any two of the four cities,  $R$ ,  $S$ ,  $T$ , and  $U$ . For example, the distance between City  $R$  and City  $U$  is 62 kilometers. What is the value of  $x$ ?

(1) By the most direct route, the distance between  $S$  and  $T$  is twice the distance between  $S$  and  $R$ .

(2) by the most direct route, the distance between  $T$  and  $U$  is 1.5 times the distance between  $R$  and  $T$ .

9. Buckets  $X$  and  $Y$  contained only water and bucket  $Y$  was  $\frac{1}{2}$  full. If all of the water in bucket  $X$  was then poured into bucket  $Y$ , what fraction of the capacity of  $Y$  was then filled with water?

(1) Before the water from  $X$  was poured,

$X$  was  $\frac{1}{3}$  full.

(2)  $X$  and  $Y$  have the same capacity.

10. If  $n$  is an integer, is  $n+2$  a prime number?

(1)  $n$  is a prime number.

(2)  $n+1$  is not a prime number.

11. Is  $x$  between 0 and 1?

(1)  $x^2$  is less than  $x$ .

(2)  $x^3$  is positive.

12. Did Sally pay less than  $x$  dollars, including sales tax, for her bicycle?

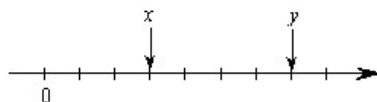
(1) The price Sally paid for the bicycle was  $(0.9)x$  dollars, excluding the 10 percent sales tax.

(2) The price Sally paid for the bicycle was \$170. excluding sales tax.

13. Is the positive square root of  $x$  an integer?

(1)  $x = n^4$  and  $n$  is an integer.

(2)  $x = 16$



14. If the successive tick marks shown on the number line above are equally spaced and if  $x$  and  $y$  are the numbers designating the end points of intervals as shown, what is the value of  $y$ ?

(1)  $x = \frac{1}{2}$

(2)  $y - x = \frac{2}{3}$

15. In a certain senior citizens' club, are more than  $\frac{1}{4}$  of the members over 75 years of age?

(1) Exactly 60 percent of the female members are over 60 years of age, and, of these,  $\frac{1}{3}$  are over 75 years

of age.

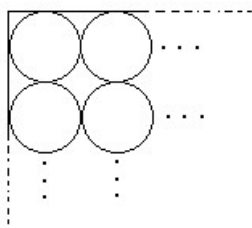
- (2) Exactly 10 male members are over 75 years of age.

16. If  $t \neq 0$ , is  $r$  greater than zero?

- (1)  $rt = 12$   
(2)  $r + t = 7$

17. If  $x$  is an integer, is  $y$  an integer?

- (1) The average (arithmetic mean) of  $x$ ,  $y$  and  $y - 2$  is  $x$ .  
(2) The average (arithmetic mean) of  $x$  and  $y$  is not an integer.



18. The inside of a rectangular carton is 48 centimeters long, 32 centimeters wide, and 15 centimeters high. The carton is filled to capacity with  $k$  identical cylindrical cans of fruit that stand upright in rows and columns, as indicated in the figure above. If the cans are 15 centimeters high, what is the value of  $k$ ?

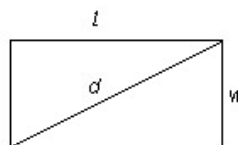
- (1) Each of the cans has a radius of 4 centimeters.  
(2) 6 of the cans fit exactly along the length of the carton.

19. If  $R = \frac{8x}{3y}$  and  $y \neq 0$ , what is the value of  $R$ ?

- (1)  $x = \frac{2}{3}$   
(2)  $x = 2y$

20. Is the positive integer  $n$  a multiple of 24?

- (1)  $n$  is a multiple of 4.  
(2)  $n$  is a multiple of 6.



21. What is the area of the rectangular region above?

- (1)  $l + w = 6$   
(2)  $d^2 = 20$

22. If Aaron, Lee, and Tony have a total of \$36, how much money does Tony have?

- (1) Tony has twice as much money as Lee and  $\frac{1}{3}$  as much as Aaron.  
(2) The sum of the amounts of money that Tony and Lee have is half the amount that Aaron has.

23. If  $n$  is a positive integer, is the value of  $b - a$  at least twice the value of  $3^n - 2^n$ ?

- (1)  $a = 2^{n+1}$  and  $b = 3^{n+1}$   
(2)  $n = 3$

24. The price per share of stock  $X$  increased by 10 percent over the same time period that the price per share of stock  $Y$  decreased by 10 percent. The reduced price per share of stock  $Y$  was what percent of the original price per share of stock  $X$ ?

- (1) The increased price per share of stock  $X$  was equal to the original price per share of stock  $Y$ .  
(2) The increase in the price per share of stock  $X$  was  $10/11$  the decrease in the price per share of stock  $Y$ .

25. Any decimal that has only a finite number of nonzero digits is a terminating decimal. For example, 24, 0.82, and 5.096 are three terminating decimals. If  $r$  and  $s$  are positive integers and the ratio  $r/s$  is expressed as a decimal, is  $r/s$  a terminating decimal?

- (1)  $90 < r < 100$   
(2)  $s = 4$