GRE

数学教程

中国环境科学出版社

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本书编写组 编

中国环境科学出版社

·北 京·

图书在版编目（CIP）数据

GRE 数学教程/《GRE 数学教程》编写组编.
—北京：中国环境科学出版社，2002.7
ISBN 7-80163-337-7

Ⅰ.G... Ⅱ.G... Ⅲ.高等数学-研究生-入学考试
-美国-自学参考资料 Ⅳ.013

中国版本图书馆 CIP 数据核字（2002）第 046970 号

出　版　中国环境科学出版社出版发行
（100036　北京海淀区普惠南里 14 号）
网　　址：http://www.cesp.com.cn
电子信箱：cesp@public.east.cn.net
印　刷　北京市兆成印刷有限责任公司
经　销　各地新华书店
版　次　2002 年 7 月第 1 版　2002 年 7 月第 1 次印刷
印　数　1-10100
开　本　787×1092　1/16
印　张　19
字　数　270 千字

定　价　38.00 元

说　明

本GRE系列由《GRE类比·反义词教程》、《GRE填空教程》、《GRE数学教程》、《GRE阅读理解教程》和《GRE逻辑分析教程》构成，由全国数十名GRE著名教师和研究专家历经数年集体编撰而成；体现了近十年的GRE考试精华以及2000—2002年的最新考试趋势，真实地剖析和反映了ETS的出题思想。

本系列紧跟机考的最新变化，其中的习题均为考试中的重点和难点，因此实效性和实战性极强。广大同学只要使用本系列进行艰苦卓绝的训练，一定能获得理想的成绩。

2002年6月

目 录

Section 1.

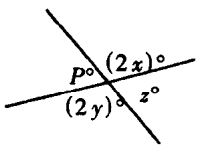
A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	ColumnB
1.	The number of minutes in 24 hours	The number of seconds in 24 minutes
2.	1.300×0.05	13×5

$3x + 5 = 20$

$5y + 3 = 23$

3.	x	y



4.	$p + x$	$y + z$

$x < 0 < y$

5.	$x - y$	$y - x$

l_1, l_2 and l_3 are three lines in space.

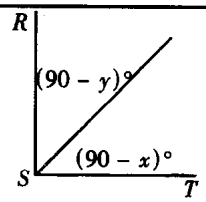
6.	The number of points at which lines l_1 and l_2 intersect	The number of points at which lines l_2 and l_3 intersect

Yesterday the average (arithmetic mean) number of cars per hour that passed point P was 34 between 1: 00 p. m. and 8: 00 p. m. and was x between 2: 00 p. m. and 7: 00 p. m.

7.	x	34

$2 \leqq y + 3 \leqq 6$

8.	y	-2
9.	$\frac{1}{7} + \frac{1}{7}$	$\frac{1}{6} + \frac{1}{8}$



RS ⊥ ST

10.	x	y

6 paneks = 10 regins

1regin = 25 neugins

1 neugin = 25 endgins

11.	1 panek	1, 025 endgins

$x + y = y$

$xy > y$

12.	x	y

The radius and circumference of circle P are r and c respectively.

13.	$\frac{r}{c}$	$\frac{1}{3}$

Two successive discounts of 20 percent and 40 percent are equivalent to a single discount of x percent.

14.	x	52

A. B. and C are points on a line. The distance between A and B is twice the distance between A and C. The distance between C and B is 10.

15.	The distance between A and B	10
16	5^2	2^5

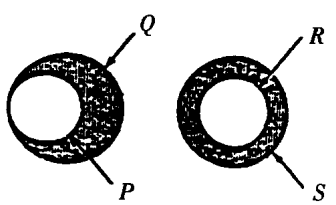


Figure1 Figure 2

Circles P and R have the same radius and circles Q and S have the same radius.

17. The area of the shaded region in Figure 1 | The area of the shaded region in Figure 2

$a = 2$

$b = 4$

18. $\frac{ab}{a+b}$ | $\frac{a+b}{ab}$

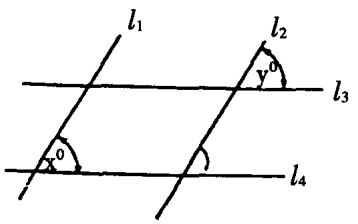
19. The number of $\frac{1}{4}$ – inch lengths in a 4 – inch length | 1

$2(x-5) = 10$

20. x | 5

Brand X golf balls cost \$15 for 12 balls. Brand Y golf balls cost \$9 for 6 balls.

21. The average (arithmetic mean) cost per ball for the 12 brand X balls | The average (arithmetic mean) cost per ball for the 6 brand Y balls



$l_1 // l_2$ and $l_3 // l_4$

22. x | y

23. $\left(\frac{3}{4}\right)\left(\frac{4}{5}\right)\left(\frac{5}{6}\right)$ | 0.5

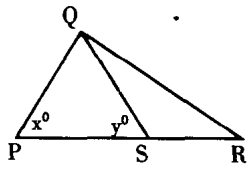
$a > b$, $c > d$, $a > c$

24. b | d

25. The number of inches in the perimeter of a square region with side of s inches | The number of square inches in the area of a square region with side of s inches

For all real numbers x and y, $x \otimes y = x^2 - y^2$.

26. $14 \otimes 15$ | $15 \otimes 14$

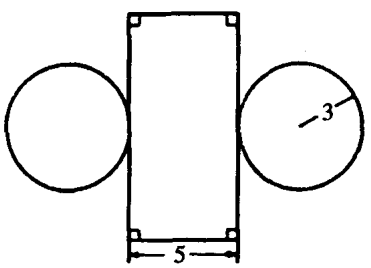


$x > y$

27. PQ + QR | QS + QR

The average (arithmetic mean) of 9 numbers is 90. The average (arithmetic mean) of the first 5 of these numbers is 50.

28. The average (arithmetic mean) of the last 4 numbers | 130



The figure above shows a cylindrical can that has been cut open and flattened.

29. The volume of the can before it was cut open | 45π

$x > 0$

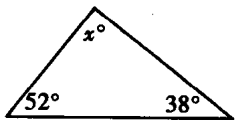
30. $\sqrt{x}$ | $\sqrt{x^2}$

Column A	Column B
31. $\frac{2}{3}$	$\frac{7}{11}$
32. $32 + (x + y)$	$x + (y + 32)$
33. The circumference of circle S	The diameter of circle S

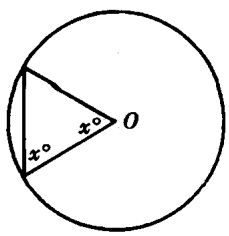
The sale price of Mrs. Goodnick's house

was \$73, 000, 6 percent of which she paid to an agent as a commission.

34.	The agent's commission	\$\$ 4, 400
35.	$5 - x$	$x - 5$



36.	x	80
37.	10% of 60% of x	20% of 30% of x



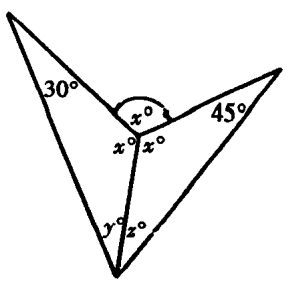
O is the center of the circle

38.	x	60

Each person at a party shook hands exactly once with each of the other people at the party. There was a total of 21 handshakes exchanged at the party.

39.	The number of people at the party	8

Column A Column. B



40.	y	z
41.	The sum of the 3 greatest distinct integers that are less than 2	The sum of the 2 least distinct integers that are greater than – 1

$$|x| + 2 = 5$$

42.	x	– 3
43.	The area of a tri angular region with perimeter of 50	The area of a rectangular region with perimeter of 50

$$\frac{x}{y} = \frac{y}{z} = \frac{1}{3}$$

44.	$\frac{x}{z}$	$\frac{1}{3}$

A total of \$480 is in a certain cash register. All of the money is in one – dollar and five – dollar bills, and there are 30 more one – dollar bills than five – dollar bills.

45.	The sum of 30 and the number of five – dollar bills in the cash register	105

Answer:

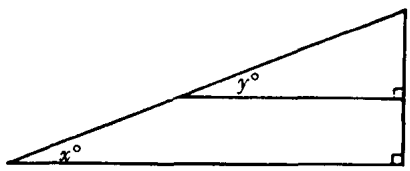
1. C C A C B
6. D D A B D
11. A A B C D
16. B C A A A
21. B C C D D
26. B B A C D
31. A C A B D
36. A C C B A
41. B D D B C

Section. 2

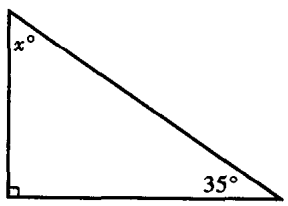
	Column A	Column B
1.	$\sqrt{389}$	20

$$\frac{x^2}{3}=\frac{5}{6}$$

2.	x	3



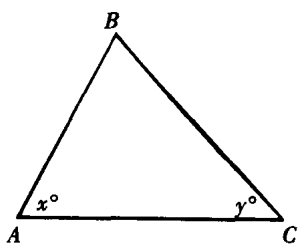
3.	x	y
4.	$\frac{18}{18-15}$	$\frac{18}{18-12}$



5.	x	50

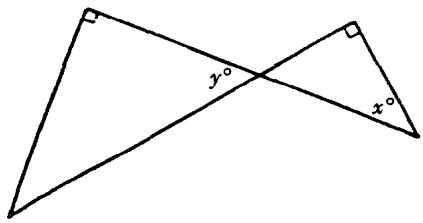
$m<0$

6.	$3(m+15)$	$3m+45$
7.	200.01 − 0.009	200.1 − 0.09



$x>y$

8.	AC	AB
9.	The distance traveled by a sports car at a speed of 150 kilometers per hour	The distance traveled by a sports car at a speed of 160 kilometers per hour



10.	x	y

A rope, 63 meters long, is cut crosswise into 3 pieces whose lengths are in the ratio 1 to 3 to 5.

11.	The length of the longest piece	34 meters
12.	The number of integers between 15 and 51 that are squares of integers	The number of integers between 6 and 126 that are cubes of integers
13.	The maximum number of solid cubes having edges of length $\frac{1}{2}$ meter that can be placed inside a cubical box having inside edges of length 1 meter	4

$x(x-2)=0$

14.	x	1

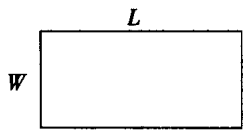
m is an integer.

15.	The remainder when m^3-m is divided by 2	1

	Column A	Column B
16.	500×14	$1,000\times7$

$x=10$ and $y=5$

17. $(x-y)^2$ | x^2-y^2



The perimeter of the rectangle above is 16.

18. W + L | 4

$x \neq 0$

19. $\frac{x+1}{x}$ | $\frac{1}{x}$

A cord that is 20 meters long is cut into three sections.

20. The length of the longest section | The sum of the lengths of the two shorter sections

Segments RS and MN intersect at point T and are diameters of the same circle.

21. The area of ΔRTM | The area of ΔSTN

$x > y$

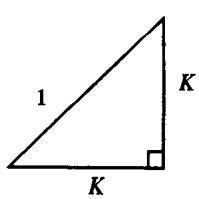
22. $x - y$ | 0

23. The remainder when 43 is divided by 5 | The remainder when 52 is divided by 7

Cube C has volume 8 cubic centimeters.

24. The area of one of the faces of cube C | 3 square centimeters

25. The number of prime numbers greater than 40 and less than 50 | The number of prime numbers greater than 10 and less than 20



26. K^2 | 1

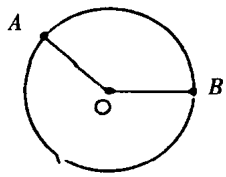
27. $2(-x)$ | $3x$

$m \neq 2$

28. $\frac{3}{m-2} - 1$ | $\frac{m-5}{2-m}$

Ms. Smith got an 8 percent cost – of – living raise of $20 per week.

29. Ms. Smith's new weekly salary | $260



The circle has center O.

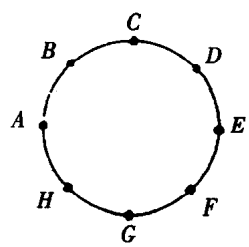
30. Length of minor arc AB | AO + BO

Column A	Column B
31. $1-\frac{2}{3}$	$1-\frac{3}{4}$

$3^x = 3$

$4^y = 4$

32. x | y



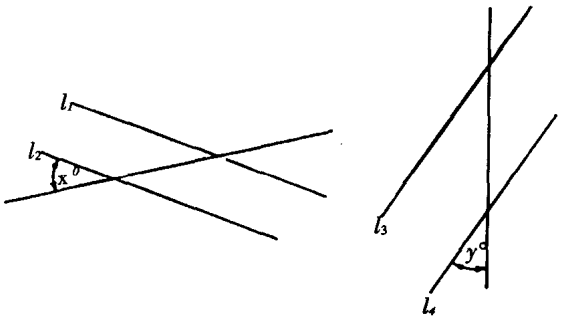
The circle above is divided into 8 arcs of equal length.

33. Length of a line segment from A to D | Length of a line segment from B to E

A total of 400 tickets to a concert were sold, some at $10 each and some at $5 each.

34. The total receipts from the 400 tickets sold | $3,000

35. $\sqrt{80} + x$ | $9 + x$



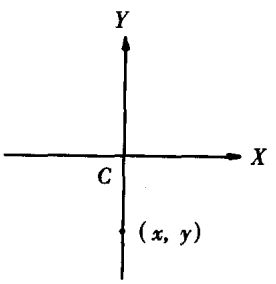
$l_1 // l_2$

$l_3 // l_4$

36. x y

$y = x + 2$

37. $y - 1$ $x + 1$



Note: Drawn to scale.

38. x y

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39. $\frac{1}{9}\%$ 0.11

---

40. The difference between 2 numbers, each of which is between 3 and 4 | The sum of 2 numbers, each of which is between 1 and 2

---

41. $(x+x)^2$ $x^2+2x^2+x^2$

---

42. The length of the diagonal of a rectangle with perimeter 20 | The length of the diagonal of a rectangle with perimeter 24

$2r = 3t$

$t \neq 0$

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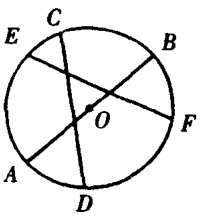
43. $\frac{r}{t}$ $r + t$



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44. Circumference of the circle with center O | Sum of the lengths of chords AB, CD, and EF

Mr. Smith traveled a distance of 100 kilometers, half the distance at 40 kilometers per hour and the other half at 80 kilometers per hour.

45. Mr. Smith's average speed for the 100 kilometers traveled | 60 kilometers per hour

Answer:

1. B B C A A

6. C B D D D

11. A C A D B

16. C B A A D

21. C A C A B

26. B D C A D

31. A C C D B

36. D C A B B

41. C D D A B

Section. 3

	Column A	Column B
1.	$12+3$	$\frac{4}{7}\times 7$
2.	$100.010-0.009$	$100.000+0.002$

---

x equals 25 percent of 12.
y equals 10 percent of 40.

3.	$\frac{x}{y}$	$\frac{y}{x}$

4.	$\left(\frac{1}{2}\right)^{15}$	$\left(-\frac{1}{2}\right)^{15}$

When x is divided by 25, the remainder is 0.

5.	The remainder when x is divided by 5	0

Tractor – trailer T has 5 axles, on one of which there are only 2 wheels. On each of the other axles, there are 4 wheels. T has no spare wheels and no spare axles.

6.	The number of wheels T has	3 times the number of axles T has

---

$2AF = AB = BD = DE = AE$

7.	The sum of the area of triangular region ABF and the area of triangular region CDE	The area of rectangular region BCEF

For all x, $x^2-7x-8=(x-p)(x-q)$

8.	p	q

9.	The number of walking steps, each of length 0.4 meter, needed to walk completely along the perimeter of a square rug with side of length 8 meters	The number of walking steps, each of length of 0.5 meter needed to walk completely along the perimeter of a rectangular rug with length of 11 meters and width of 8 meters

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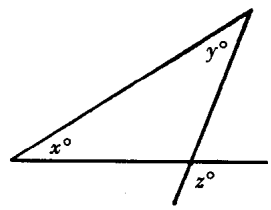
The average (arithmetic mean) of 2 positive integers is equal to 31 and each of the integers is greater than 26.

10.	The greater of the 2 integers	36



11.	$x+y$	z

For all real numbers p and r. $p \diamond r = pr - p + r$.

12.	$(-4)\diamond 5$	$5\diamond(-4)$

13.	The sum of 2 and the number of edges of a cube	The sum of the number of vertices of a cube and the number of faces of a cube

---

$n<0$, $q>0$, *and* $r>0$

14.	$(2n)(2q)(2r)$	$2[(n)(q)(r)]$

P and Q are points on a number line. The coordinate of P is 5 and the distance between P and Q is 12.

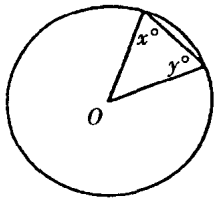
15.	The coordinate of Q	16

	Column A	Column B
16.	The number of hundreds in 834	The number of thousands in 7,234

$0.7+0.3+0.8+x=3$

17.	x	1.1

18.	$\frac{7+8+9+10}{4}$	$\frac{8+9+10}{3}$



O is the center of the circle above.

19. x | y

Jane is taller than Peter and Peter is shorter than Karen.

20. Jane's height | Karen's height

$x^5 = -32$

21. x | -1

22. The length of a diagonal of a square with area 16 | The length of a diagonal of a square with perimeter 16

23. $3\left(\frac{r}{3} - \frac{s}{3} + \frac{5}{3}\right)$ | $r - s + 5$

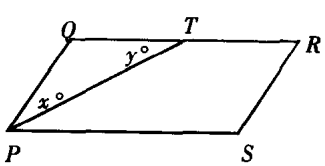
24. $\sqrt{\frac{1}{9}} + \sqrt{\frac{1}{9}} + \sqrt{\frac{1}{9}} + \sqrt{\frac{1}{9}}$ | $\sqrt{\frac{4}{9}}$

Point P has coordinates $(-1, 1)$.
point Q has coordinates $(0, 1)$.

25. The distance from P to the origin | The distance from Q to the origin

26. $x^2 + y$ | $x^2 - y$

27. The least positive integer that is divisible by both 14 and 21 | The least positive integer that is divisible by both 14 and 28

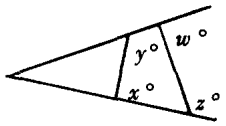


$PQRS$ is a parallelogram and $PQ = RT$.

28. x | y

Mrs. Jones sold two houses for \$80, 000 each. One house was sold at a 20 percent loss and the other at a 20 percent gain.

29. The gain minus the loss | 0



30. $x + y$ | $w + z$

Column A | Column B

31. $3 - \frac{4}{4}$ | $4 - \frac{4}{2}$

x is 7 more than y

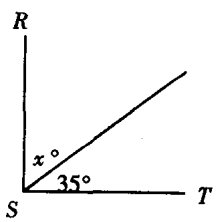
32. x | y

33. The average (arithmetic mean) of 65、67 and 69 | The average (arithmetic mean) of 64 and 70

34. $\frac{2}{3} + \frac{3}{4} + \frac{4}{5}$ | $\frac{3}{2} + \frac{4}{3} + \frac{5}{4}$

$x - 7 = 7$
$-7 + y = 7$

35. x | y



$RS \perp ST$

36. x | 60

The discount price of a sweater is 85 percent of its original cost and the discount price of a skirt is 80 percent of its original cost.

37. The discount price of the sweater | The discount price of the skirt

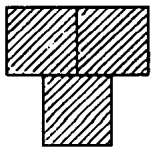
The perimeter of square $ABCD$ is $12\sqrt{2}$.

38. The length of a side of square $ABCD$ | $4\sqrt{2}$

$\sqrt{2x} = 8$

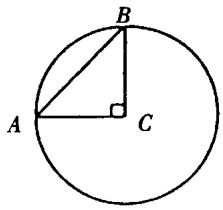
39. x | 25

40. $\left(\frac{1}{5}\times\frac{17}{19}\right)+\left(\frac{1}{5}\times\frac{3}{19}\right)$ | $\frac{1}{5}$



Each of the 3 square regions has area 100.

41. The perimeter of the shaded region | 80



The area of triangular region ABC is 25.
C is the center of the circle.

42. The redius of the circle | 5

$b+c=2$
$c+a=3$

43. $b+8+c+a$ | 13

ΔRST lies in the $XY-$plane and points R and T have (x, y) coordinates $(0, 0)$ and $(6, 0)$. respectively. The area of ΔRST is 12.

44. The $x-$coordinate of R | The $y-$coordinate of S

$1 < n < 5$
n is an integer

45. The sum of the first n odd integers that are greater than zero | n^2-1

Answer:

1. C B B A C
6. A D D A B
11. D A C B D
16. A A B C D
21. B C C A A
26. D A D B C
31. C A C B C
36. B D B A A
41. C A D D A

Section 4

	Column A	Column B
1.	$0.51+0.83$	$0.61+0.73$

A ccrtain automobile travels at the constant rate of 185 miles per $\frac{1}{2}$ tank of gasoline.

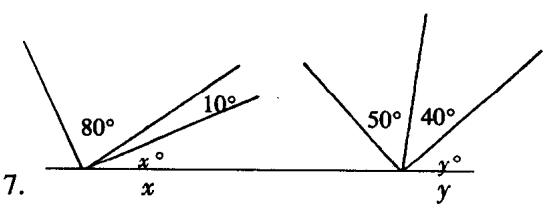
2. The number of miles the automobile travels per $\frac{3}{4}$ tank of gasoline | 300

3.	$(-3)(-4)(-2)(-1)$	$(-5)(-2)(-12)$
4.	The diameter of a circle with radius π	The radius of a circle with diameter π
5.	$2^3\cdot3\cdot5^9\cdot7^{11}$	$3^3\cdot5^9\cdot7^{11}$

$y=x^2-3x+2$

6. The value of y for $x=0$ | The value of y for $x=1$

7.

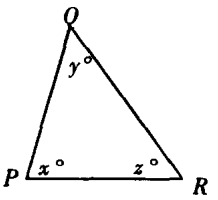


$x<-1$ and $y>1$

8. x^2 | y^2

A certain state has a population density of 150 people per square kilometer and an area of 75,000 square kilometers.

9. The total population of the state | $11,250 \times 10^3$

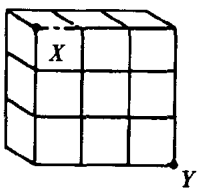


$PQ = PR$

10. x | y

When $x+2$ is divided by 5 the remainder is 3.

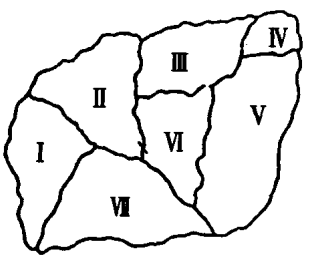
11. The remainder when x is divided by 5 | 2



Nine cubic blocks of the same size are arranged as shown. Each block has edges of length $\sqrt{2}$ centimeters.

12. The length of diagonal XY | 6 centimeters

13. $\frac{0.667}{0.166}$ | $\frac{\frac{2}{3}}{\frac{1}{6}}$



Regions sharing a common border are to be different colors.

14. The minimum number of colors needed | 3

a, b, and c are positive integers.

15. $a(c+b)$ | $ac+b$

Column A | Column B

A person saves $200 in the first month and each month thereafter saves exactly $\frac{1}{2}$ of the amount saved in the previous month.

16. The total amount saved in the first 3 months | $300

Points P, Q and S are on the same line and P is between Q and S.

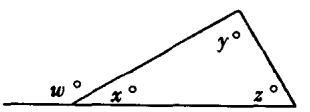
17. QP | PS

18. $3[5(6+7)+8]+1$ | 219

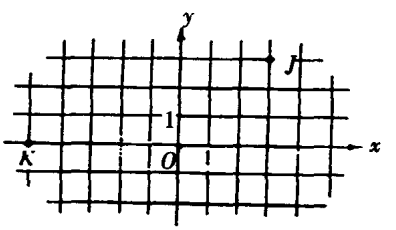
P, Q, R, S, and T are consecutive positive integers in that order.

19. $\frac{P+T}{2}$ | R

20. $(-1)^3$ | $(-1)^{13}$



21. $w+x$ | $x+y+z$



Note: Drawn to scale

22. The distance from the origin to J | The distance from the origin to K

$0 < x < y$

$x + y = 1$

23. xy