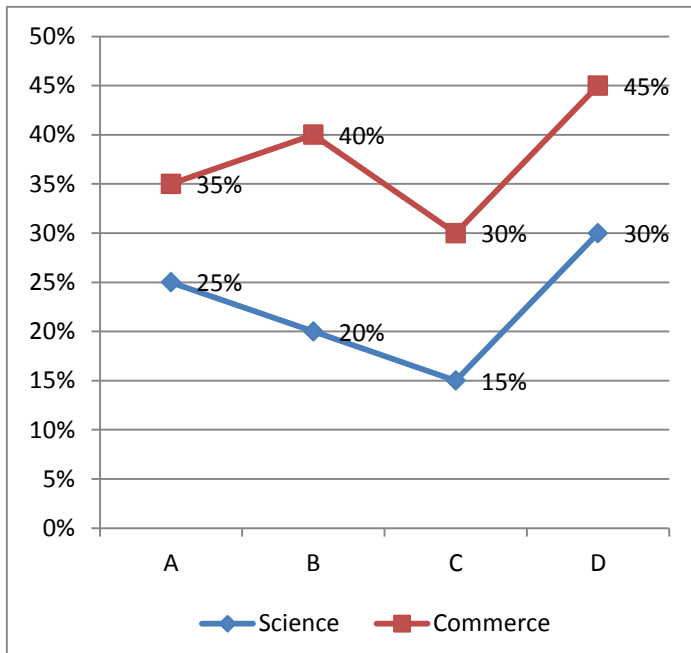


Memory Based Paper – SBI PO Prelims 2020-21 (Quantitative Aptitude)

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Directions (01-05): Study the following information carefully and answer the questions given below.

The given line graph shows the percentage of students in the two departments in four different schools.



The given table shows the total number of students (Maths, Commerce and Science) and the ratio of the number of boys to girls in four different schools.

Schools	Total students	Boys: Girls
A	1200	3:1
B	1000	3:2
C	1500	7:8
D	1800	5:4

1) What is the ratio of the number of students in Maths and Commerce departments in A to the number of students in Maths and Science departments in C?

- a) 5:6
- b) 6:7
- c) 3:5
- d) 9:10
- e) None of these

2) In B, If 25% of boys are from Commerce department and 30% of boys are from Science department, then what is the difference between the number of girls in Maths and commerce department in B?

- a) 100
- b) 110
- c) 120
- d) 130
- e) 150

3) If the number of boys in Maths department in A is 30% of total number of boys in A and the number of boys in Commerce department in D is 20% more than the number of boys in Maths department in A, then find the number of girls in commerce department in D?

- a) 486
- b) 492



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- c) 504
- d) 516
- e) 518

4) Ratio of the number of girls in commerce to Maths department in B is 3:2 and the ratio of the number of boys in commerce to Maths department in B is 5:6, then the number of boys in commerce and Maths department together in B is what percent of the total number of boys in D?

- a) 45%
- b) 50%
- c) 60%
- d) 55%
- e) Cannot be determined

5) What is the average number of girls in all the schools together?

- a) 525
- b) 545
- c) 555
- d) 565
- e) 575

Directions (06-10): Study the following information carefully and answer the questions given below.

The given table shows the number of persons living on first floor, second floor and third floor in five different buildings. (Some data is missing)

Buildings	First floor	Second floor	Third Floor
A	60	--	60
B	--	105	--
C	150	--	75
D	--	90	50
E	105	60	--

6) If the average number of persons living in B is 105 and the ratio of the number of persons living on first to third floor in B is 3:4, then find the difference between the number of persons living in First and second floor in B?

- a) 10
- b) 15
- c) 20
- d) 25
- e) 30

7) If the total number of persons living in A and C is 200 and 300 respectively, then find the average number of persons living on second floor in all the buildings together?

- a) 76
- b) 78
- c) 80
- d) 82
- e) 84

8) Ratio of the number of persons living on first floor in D to the number of persons living on third floor in E is 6:7. If the number of persons living in first floor in D is 20% more than the number of persons living on



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third floor in C, then what is the difference between the total number of persons living in D and E?

- a) 40
- b) 30
- d) 60
- d) 20
- e) 50

9) Average number of persons living on first floor in all the buildings together is 103 and the average number of persons living on third floor in all the buildings together is 75. What is the ratio of the number of person livings on first floor in B and D together to the number of person livings on third floor in B and E together?

- a) 10:9
- b) 1:1
- c) 5:3
- d) 4:3
- e) None of these

10) The number of persons living on second floor in D and E together is what percent of the number of persons living on first floor in A and C together?

- a) 71.42%
- b) 75.62%
- c) 69.02%
- d) 65.42%
- e) 78.92%

Directions (11-15): Study the following information carefully and answer the questions given below.

Total income of five persons Aari, Bala, Chitra, Divya and Ezhil together is Rs.70000. Ratio of the total

savings of all the persons together to the savings of Chitra is 11:2. Expenditure of Bala is half of the savings of Chitra. The expenditure of Bala is 25% of the expenditure of Divya and the expenditure of Ezhil is Rs.2000 more than the expenditure of Chitra. Income of Bala is Rs.12000 which is Rs.5000 more than the savings of Ezhil. Savings of Aari is 20% more than the savings of Divya and the ratio of the expenditure of Aari to the savings of Ezhil is 4:7. Total Expenditure of all the persons together is Rs.4000 more than the total savings of all the persons together.

11) What is the ratio of the income of Divya to Ezhil?

- a) 2:1
- b) 3:1
- c) 1:2
- d) 1:3
- e) None of these

12) What is the average income of Divya, Chitra and Ezhil?

- a) Rs.12000
- b) Rs.14000
- c) Rs.16000
- d) Rs.10000
- e) Rs.18000

13) What is the difference between the Savings and Expenditure of Bala, Chitra and Divya together?

- a) Rs.2000
- b) Rs.2500
- c) Rs.3000
- d) Rs.3500

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e) Rs.4000

14) The Savings of Aari is what percent of the income of Aari?

a) 60%

b) 40%

c) 80%

d) 70%

e) 50%

15) What is the ratio of the Savings to Expenditure of Ezhil?

a) 7:8

b) 7:10

c) 3:5

d) 14:19

e) 14:21

Directions (16-20): Find out the wrong number in the following number series.

16) 1, 13, 49, 73, 133, 170

a) 73

b) 133

c) 13

d) 170

e) 49

17) 12, 32, 70, 132, 224, 364

a) 70

b) 224

c) 32

d) 132

e) 364

18) 20, 30, 40, 65, 100, 145

a) 30

b) 145

c) 40

d) 65

e) 100

19) 30, 34, 50, 86, 150, 220

a) 150

b) 34

c) 220

d) 86

e) 50

20) 45, 91, 147, 183, 229, 275

a) 183

b) 229

c) 275

d) 147

e) 91

21) Ratio of sum of $\frac{2}{5}$ of the present age of Anu and present age of Nila to the present age of Nila is 2:1. If the average present age of Anu, Nila and Mala is 27 years and the age of Mala after 15 years is 60% more than her present age, find the present age of Nila?

a) 16

b) 20

c) 24

d) 12

e) 8

22) A boat with still water speed is 15 kmph can travel 20% more distance in downstream takes 50% more time than its usual downstream journey due to



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decrease in the speed of stream. Find the usual speed of the current?

- a) 6
- b) 4
- c) 8
- d) 2
- e) Cannot be determined

23) Anil, Bala and Shiv together can complete the work in 32 days and Shiv alone complete the work in 40 days. If Anil, Bala and Shiv started the work together and after 20 days Anil and Bala left the work, in how many days Shiv alone complete the remaining work?

- a) 12 days
- b) 15 days
- c) 18 days
- d) 20 days
- e) 24 days

24) David has total of Rs.12000 with him, partly invested in scheme A which offers 20% compound interest and remaining on scheme B which offers 18% simple interest. Amount of interest received by David from scheme B is Rs.3024 at the end of three years, what is the total amount received by David from scheme A at the end of two years?

- a) Rs.9216
- b) Rs.9340
- c) Rs.9116
- d) Rs.8226
- e) None of these

25) There are two vessels A and B has the mixture of Sand and Soil. The ratio of Sand to Soil in the mixture of Vessel A is 5:3 and the ratio of Sand to Soil in the mixture of Vessel B is 2:3. If the vessels A and B are mixed in the ratio of 8:5, then what is the percentage of the quantity of soil in the final mixture?

- a) 46.15%
- b) 43.23%
- c) 49.81%
- d) 51.89%
- e) 41.09%

26) Ratio of the length of two rectangles is 4:5 and the breadth of these two rectangles is 3:2. If the perimeter of second rectangle is 74 cm and the length of second rectangle is 13 cm more than its breadth, then find the area of the first rectangle?

- a) 270 cm²
- b) 540 cm²
- c) 360 cm²
- d) 480 cm²
- e) 620 cm²

27) Three pipes A, B and C. A and B are inlet pipes and C is outlet pipe. Pipe A alone fill the tank in 20 hours and the efficiency of pipe A is 75% of the efficiency of pipe B and the efficiency of pipe B is double of pipe C. If all the pipes are opened simultaneously, then in how many hours the tank will be completely filled?

- a) 12 hours
- b) 15 hours
- c) 18 hours



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d) 9 hours

e) 20 hours

28) Train passes a platform in 48 seconds and the speed of train is 54 kmph. If the same train crosses another platform which is double the length of first platform in 64 seconds, then find the length of train?

a) 440

b) 450

c) 480

d) 540

e) 360

29) Ratio of the cost price of Pen and Pencil is 3:2. If the shopkeeper sold the pen at 10% profit and pencil at 20% profit and offers a discount of 10% and 5% on marked price of Pen and Pencil respectively, then what is the ratio of the marked price of Pen and Pencil?

a) 211:142

b) 209:144

c) 211:141

d) 219:143

e) None of these

30) Amuthan and Bala started the business with the investment in the ratio of 2:3. After 4 months, Bala withdrew half of his initial investment and Amuthan left the business. After 2 more months, David joined with the investment of Rs.8000 which is Rs.2000 more than the initial investment of Bala. At the end of the year, the difference between the profit share of Amuthan and David is Rs.3000, then find the total profit of the business?

a) Rs.9800

b) Rs.10400

c) Rs.9800

d) Rs.10500

e) None of these

Directions (31-35): Following question contains two equations as I and II. You have to solve both equations and determine the relationship between them and give answer as,

31)

I) $x^2 - x - 210 = 0$

II) $y^2 - 13y - 198 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined.

d) $x < y$

e) $x \leq y$

32)

I) $4x^2 - 28x + 40 = 0$

II) $3y^2 - 9y - 30 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined.

d) $x < y$

e) $x \leq y$

33)

I) $x^2 + 12x + 35 = 0$

II) $y^2 + 16y + 63 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined.

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d) $x < y$

e) $x \leq y$

34)

I) $x^2 - 22x + 121 = 0$

II) $y^2 - 23y + 132 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined.

d) $x < y$

e) $x \leq y$

35)

I) $x^2 - 45x + 506 = 0$

II) $y^2 - 50y + 621 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined.

d) $x < y$

e) $x \leq y$

Answers:

1) Answer: B

Schools	Total	Commerce	Science	Maths	Boys	Girls
A	1200	420	300	480	900	300
B	1000	400	200	400	600	400
C	1500	450	225	825	700	800
D	1800	810	540	450	1000	800

Required ratio = $(480 + 420) : (225 + 825)$

= $900 : 1050$

= $6 : 7$

2) Answer: C

Number of boys in commerce = $25/100 * 600 = 150$

Number of girls in commerce = $400 - 150 = 250$

Number of boys in Maths = $600 * (45/100) = 270$

Number of girls in Maths = $400 - 270 = 130$

Difference = $250 - 130 = 120$

3) Answer: A

Number of boys in Maths in A = $30/100 * 900 = 270$

Number of boys in Commerce in D = $120/100 * 270 = 324$

Number of girls in commerce in D = $810 - 324 = 486$

4) Answer: D

Number of girls in commerce in B = $3x$

Number of girls in Maths in B = $2x$

Number of boys in commerce in B = $5y$

Number of boys in Maths in B = $6y$

$3x + 5y = 400$ ----(1)

$2x + 6y = 400$

$x + 3y = 200$ -----(2)

From (1) and (2)

$4y = 200$

$y = 50$

$x = 50$

Number of boys in commerce and Maths in B = $11 * 50 = 550$

$50 = 550$

Required percentage = $550/1000 * 100$

= 55%

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5) Answer: E

$$\begin{aligned} \text{Required average} &= (300 + 400 + 800 + 800)/4 \\ &= 2300/4 \\ &= 575 \end{aligned}$$

6) Answer: B

$$\begin{aligned} \text{Total number of persons in B} &= 105 * 3 = 315 \\ \text{Number of persons is living on first floor in B} &= 3/7 * \\ &(315 - 105) = 90 \\ \text{Difference} &= 105 - 90 = 15 \end{aligned}$$

7) Answer: D

$$\begin{aligned} \text{Number of persons livings on second floor in A} &= 200 \\ &- (60 + 60) = 80 \\ \text{Number of persons living on second floor in C} &= 300 \\ &- (150 + 75) = 75 \\ \text{Required average} &= (80 + 75 + 105 + 90 + 60)/5 \\ &= 410/5 \\ &= 82 \end{aligned}$$

8) Answer: A

$$\begin{aligned} \text{Number of persons living on first floor in D} &= 120/100 \\ &* 75 = 90 \\ \text{Number of living on third floor in E} &= 7/6 * 90 = 105 \\ \text{Required difference} &= (105 + 105 + 60) - (90 + 90 + \\ &50) \\ &= 270 - 230 \\ &= 40 \end{aligned}$$

9) Answer: E

$$\begin{aligned} \text{Number of persons living on first floor in B and D} &= \\ &103 * 5 - (60 + 150 + 105) \\ &= 200 \\ \text{Number of persons living on third floor in B and E} &= \\ &75 * 5 - (60 + 75 + 50) \end{aligned}$$

$$= 190$$

$$\text{Required ratio} = 200:190 = 20:19$$

10) Answer: A

$$\begin{aligned} \text{Required percentage} &= (90 + 60)/(150 + 60) * 100 \\ &= (150/210) * 100 \\ &= 71.42\% \end{aligned}$$

11) Answer: E

$$\begin{aligned} \text{Total savings} &= (70000 - 4000)/2 = \text{Rs.}33000 \\ \text{Total expenditure} &= 33000 + 4000 = 37000 \\ \text{Savings of Chitra} &= 2/11 * 33000 = 6000 \\ \text{Income of Bala} &= 12000 \\ \text{Expenditure of Bala} &= 6000/2 = 3000 \\ \text{Savings of Bala} &= 12000 - 3000 = 9000 \\ \text{Expenditure of Divya} &= 100/25 * 3000 = 12000 \\ \text{Savings of Ezhil} &= 12000 - 5000 = 7000 \\ \text{Savings of Aari and Divya} &= 33000 - 6000 - 9000 - \\ &7000 = 11000 \\ \text{Ratio of the savings of Aari and Divya} &= 120:100 = \\ &6:5 \\ \text{Savings of Aari} &= 6/11 * 11000 = 6000 \\ \text{Savings of Divya} &= 5/11 * 11000 = 5000 \\ \text{Expenditure of Aari} &= 4/7 * 7000 = 4000 \\ \text{Expenditure of Chitra and Ezhil} &= 37000 - 4000 - \\ &3000 - 12000 = 18000 \\ \text{Expenditure of Ezhil is Rs.2000 more than the} & \\ \text{expenditure of Chitra.} & \\ \text{Expenditure of Ezhil} &= 10000 \\ \text{Expenditure of Chitra} &= 8000 \\ \text{Required ratio} &= (5000 + 12000):(7000 + 10000) \\ &= 1:1 \end{aligned}$$

12) Answer: C



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Required average = $((8000 + 6000) + (10000 + 7000) + (5000 + 12000))/3$
 $= (14000 + 17000 + 17000)/3$
 $= 48000/3$
 $= 16000$

13) Answer: C

Savings of Bala, Chitra and Divya = $9000 + 6000 + 5000 = 20000$

Expenditure of Bala, Chitra and Divya = $3000 + 8000 + 12000 = 23000$

Difference = $23000 - 20000 = 3000$

14) Answer: A

Required ratio = $6000/10000 * 100 = 60\%$

15) Answer: B

Required ratio = $7000:10000 = 7:10$

16) Answer: D

$1 + 12 * 1 = 13$

$13 + 18 * 2 = 49$

$49 + 24 * 1 = 73$

$73 + 30 * 2 = 133$

$133 + 36 * 1 = 169$

17) Answer: E

$2^3 + 4 = 12$

$3^3 + 5 = 32$

$4^3 + 6 = 70$

$5^3 + 7 = 132$

$6^3 + 8 = 224$

$7^3 + 9 = 352$

18) Answer: A

$20 + 5 = 25$

$25 + 15 = 40$

$40 + 25 = 65$

$65 + 35 = 100$

$100 + 45 = 145$

19) Answer: C

$30 + 2^2 = 34$

$34 + 4^2 = 50$

$50 + 6^2 = 86$

$86 + 8^2 = 150$

$150 + 10^2 = 250$

20) Answer: D

$(45 * 1) + 0 = 45$

$(45 * 2) + 1 = 91$

$(45 * 3) + 2 = 137$

$(45 * 4) + 3 = 183$

$(45 * 5) + 4 = 229$

$(45 * 6) + 5 = 275$

21) Answer: A

$M + 15 = 160/100 * M$

$5M + 75 = 8M$

$M = 25$

$A + N = 27 * 3 - 25 = 56$

$(2/5 A + N)/N = 2/1$

$2/5 * A = N$

$A/N = 5/2$

$N + 5N/2 = 56$

$7N/2 = 56$

$N = 2/7 * 56 = 16$

22) Answer: E

Original speed of stream = x

New speed of stream = y

$D/(15 + x) = t$

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$$(D * 120/100)/(15 + y) = t * 150/100$$

We cannot find the answer.

23) Answer: B

$$1/A + 1/B + 1/S = 1/32$$

$$1/S = 1/40$$

$$1/A + 1/B = 1/32 - 1/40 = (5 - 4)/160 = 1/160$$

$$20/160 + (x + 20)/40 = 1$$

$$(x + 20)/40 = 7/8$$

$$x = 15 \text{ days}$$

24) Answer: A

Amount invested by B = x

$$X * 18 * 3/100 = 3024$$

$$X = 5600$$

$$\text{Amount invested by A} = 12000 - 5600 = 6400$$

$$CA = 6400 * (1 + 20/100)^2$$

$$= 9216$$

25) Answer: A

$$\frac{5}{8} \qquad \frac{2}{5}$$

x

$$8 \qquad \qquad \qquad 5$$

$$(2/5 - x)/(x - 5/8) = 8/5$$

$$8x - 5 = 2 - 5x$$

$$x = 7/13$$

$$\text{Soil in final mixture} = 6/13$$

$$\text{Required percentage} = 6/13 * 100 = 46.15\%$$

26) Answer: C

$$\text{Perimeter of first rectangle} = 2 * (4x + 3y)$$

$$\text{Perimeter of second rectangle} = 2 * (5x + 2y)$$

$$2 * (5x + 2y) = 74$$

$$5x + 2y = 37$$

$$5x - 2y = 13$$

$$10x = 50$$

$$x = 5$$

$$y = 6$$

$$\text{Length of first rectangle} = 5 * 4 = 20$$

$$\text{Breadth of first rectangle} = 6 * 3 = 18$$

$$\text{Area of first rectangle} = 20 * 18 = 360 \text{ cm}^2$$

27) Answer: A

$$A = 20$$

$$B = 20 * 75/100 = 15$$

$$C = 15 * 2 = 30$$

$$1/A + 1/B - 1/C = 1/20 + 1/15 - 1/30$$

$$= (3 + 4 - 2)/60$$

$$= 5/60$$

$$= 1/12$$

28) Answer: C

$$\text{Length of train} = x$$

$$\text{Length of first platform} = y$$

$$\text{Length of second platform} = 2y$$

$$x + y = 54 * 5/18 * 48$$

$$x + y = 720 \text{ ----(1)}$$

$$x + 2y = 54 * 5/18 * 64$$

$$x + 2y = 960 \text{ ----(2)}$$

From (1) and (2)

$$x = 480$$

29) Answer: B

$$\text{MP of Pen} * 90/100 = 3x * 110/100$$

$$\text{MP of pen} = 11x/3$$

$$\text{MP of Pencil} * 95/100 = 2x * 120/100$$

$$\text{MP of pencil} = 240x/95 = 48x/19$$

$$\text{Required ratio} = 11x/3 : 48x/19$$



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= 209:144

30) Answer: D

Initial investment of Bala = 8000 – 2000 = 6000

Amuthan initial investment = 6000 * 2/3 = 4000

Profit ratio of Amuthan, Bala, David = 4000 * 4:(6000 * 4 + 6000 * 50/100 * 8):(8000 * 6)

= 16:48:48

= 1:3:3

Total profit = 7/2 * 3000 = Rs.10500

31) Answer: C

$$x^2 - x - 210 = 0$$

$$x^2 - 15x + 14x - 210 = 0$$

$$x(x - 15) + 14(x - 15) = 0$$

$$(x + 14)(x - 15) = 0$$

$$x = -14, 15$$

$$y^2 - 13y - 198 = 0$$

$$y^2 - 22y + 9y - 198 = 0$$

$$y(y - 22) + 9(y - 22) = 0$$

$$(y + 9)(y - 22) = 0$$

$$y = -9, 22$$

Relationship between x and y cannot be established.

32) Answer: C

$$4x^2 - 28x + 40 = 0$$

$$4x^2 - 20x - 8x + 40 = 0$$

$$4x(x - 5) - 8(x - 5) = 0$$

$$(4x - 8)(x - 5) = 0$$

$$x = 2, 5$$

$$3y^2 - 9y - 30 = 0$$

$$3y^2 - 15y + 6y - 30 = 0$$

$$3y(y - 5) + 6(y - 5) = 0$$

$$(3y + 6)(y - 5) = 0$$

$$y = -2, 5$$

Relationship between x and y cannot be established.

33) Answer: B

$$x^2 + 12x + 35 = 0$$

$$x^2 + 7x + 5x + 35 = 0$$

$$x(x + 7) + 5(x + 7) = 0$$

$$(x + 5)(x + 7) = 0$$

$$x = -5, -7$$

$$y^2 + 16y + 63 = 0$$

$$y^2 + 7y + 9y + 63 = 0$$

$$y(y + 7) + 9(y + 7) = 0$$

$$(y + 9)(y + 7) = 0$$

$$y = -9, -7$$

$$x \geq y$$

34) Answer: E

$$x^2 - 22x + 121 = 0$$

$$x^2 - 11x - 11x + 121 = 0$$

$$x(x - 11) - 11(x - 11) = 0$$

$$(x - 11)(x - 11) = 0$$

$$x = 11, 11$$

$$y^2 - 23y + 132 = 0$$

$$y^2 - 12y - 11y + 132 = 0$$

$$y(y - 12) - 11(y - 12) = 0$$

$$(y - 11)(y - 12) = 0$$

$$y = 11, 12$$

$$x \leq y$$

35) Answer: E

$$x^2 - 45x + 506 = 0$$

$$x^2 - 23x - 22x + 506 = 0$$

$$x(x - 23) - 22(x - 23) = 0$$

$$(x - 22)(x - 23) = 0$$

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$$x = 22, 23$$

$$y^2 - 50y + 621 = 0$$


$$y^2 - 23y - 27y + 621 = 0$$

$$y(y - 23) - 27(y - 23) = 0$$

$$(y - 27)(y - 23) = 0$$


$$y = 27, 23$$

$$x \leq y$$

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