

IBPS RRB Officer Scale-I Preliminary Grand Test –IRP-180702

HINTS & SOLUTIONS

ANSWER KEY

1. (2)	21. (5)	41. (2)	61. (2)
2. (4)	22. (5)	42. (4)	62. (1)
3. (5)	23. (4)	43. (2)	63. (5)
4. (1)	24. (1)	44. (4)	64. (2)
5. (3)	25. (3)	45. (1)	65. (4)
6. (2)	26. (4)	46. (3)	66. (4)
7. (5)	27. (5)	47. (1)	67. (4)
8. (3)	28. (1)	48. (3)	68. (4)
9. (3)	29. (2)	49. (1)	69. (3)
10. (3)	30. (1)	50. (4)	70. (1)
11. (5)	31. (4)	51. (3)	71. (3)
12. (2)	32. (4)	52. (3)	72. (1)
13. (2)	33. (3)	53. (4)	73. (1)
14. (4)	34. (3)	54. (1)	74. (5)
15. (3)	35. (5)	55. (2)	75. (4)
16. (1)	36. (4)	56. (4)	76. (4)
17. (4)	37. (1)	57. (2)	77. (1)
18. (2)	38. (2)	58. (3)	78. (5)
19. (3)	39. (3)	59. (5)	79. (3)
20. (5)	40. (5)	60. (1)	80. (2)

The number of boxes between Boxes A and F is same as between Boxes A and H, So, case2 gets eliminated as there is no place for A as per the condition and position of F gets fixed in case1. i.e. immediately above I. Also, position of K is confirmed i.e. at the top.

Box	Cups
K	
F	
I	32
A	
J	
H	
G	13

Now, Box A, contains cups which more than the cups Box F has. Two boxes are between the boxes containing 40 and 81, which is not above the box containing 40 cups. Box K contains 5/8 of the number of cups present in Box F. So, F contains 40 cups and J contains 81 cups. Box K is above the box containing 51 cups, which is above box J. One of the boxes contain 29 cups. The final arrangement is:

Box	Cups
K	25
F	40
I	32
A	51
J	81
H	29
G	13

HINTS & SOLUTIONS

- 1. (2) Conclusions:
I. $J < O$ (False)
II. $M > O$ (True)
- 2. (4) Conclusions:
I. $C > H$ (False)
II. $D > I$ (False)
- 3. (5) Conclusions:
I. $S < X$ (True)
II. $U < Y$ (True)
- 4. (1) Conclusions:
I. $B < E$ (True)
II. $A > F$ (False)
- 5. (3) Conclusions:
I. $X > B$ (False)
II. $X = B$ (False)

- 6. (2)
- 7. (5)
- 8. (3)
- 9. (3)
- 10. (3)
- 11. (5)
- 12. (2) %61
- 13. (2)
- 14. (4)
- 15. (3)

16-20. Not more than three persons were born before B. B was not born in the month having 31 days. Only two persons born between B and D. So, there will be three possible cases.

	Case 1	Case 2	Case 3
Month	Person	Person	Person
January			D
February	B		
March			
April		B	B
June	D		
August			
December		D	

Now, A was born immediately before the month in which C was born. A was not born in the month having 30 days nor in the month having least number of days. C was not born in the month immediately before D.

	Case 1	Case 2	Case 3
Month	Person	Person	Person
January		A	D
February	B	C	
March			
April		B	B
June	D		
August	A		A
December	C	D	C

Case1		Case2	
Box	Cups	Box	Cups
		H	
J/F		G	13
I	32	J/F	
		I	32
J/F			
H		J/F	
G	13		

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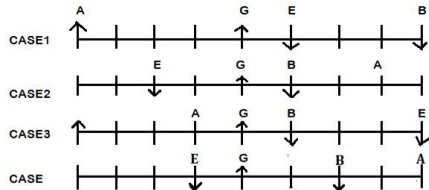


Only three persons born were between A and E, who was born in one of the months after F. So, case 1 and case 3 will be eliminated. The final arrangement is:

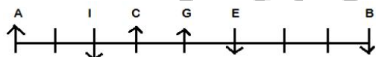
Month	Person
January	A
February	C
March	F
April	B
June	E
August	G
December	D

16. (1) 17. (4) 18. (2) 19. (3) 20. (5)

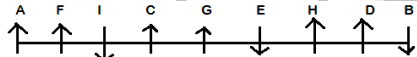
21-25. G sits in the middle of the row and faces north. Four persons sit between A and E. Two persons are sitting between E and B, who is right to G. E faces south and faces same direction as B. The one sitting at the end are facing opposite direction. We get four possibilities:



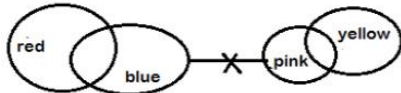
C, who sits next to G and I are immediate left to each other. So, case2, 3 and 4 gets eliminated. Not more than three persons are facing south.



Not more than three persons are facing south. So, the rest of the persons face north. H is immediate left to D. The final arrangement is:

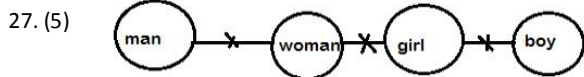


21. (5) 22. (5) 23. (4) 24. (1) 25. (3) 26. (4)



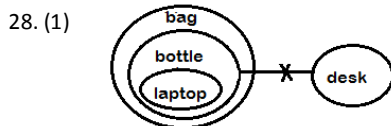
For I- From the venn diagram it is clear that some pink is yellow and no pink is blue. So, some yellow which is pink will not be blue. Hence, conclusion I can be concluded.

For II-. From the venn diagram it is clear that some red is blue and no pink is blue. So, some red which is blue will not be pink but nothing can be said about no red is pink. Hence, conclusion II cannot be concluded.



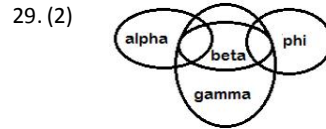
For I- Since there is no direct relation between the elements man and girl. Therefore, we cannot conclude that no man is girl.

For II- Since there is no direct relation between the elements woman and boy. Therefore, we cannot conclude that no woman is boy.



For I- From the venn diagram it is clear that all laptop are bottle and no bottle is desk . Hence, conclusion I can be concluded.

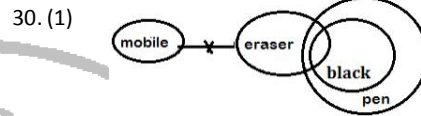
For II- From the venn diagram it is clear that all laptop are bottle and all bottle are bag . So, All laptop will also be bag. Hence, conclusion II can be concluded.



For I- Since there is no direct relation between the elements alpha and phi. Therefore, we cannot conclude that no phi is alpha.

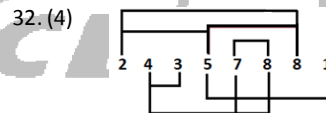
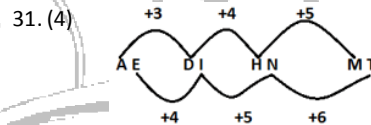
For II- Since there is no direct relation between the elements alpha and phi. Therefore, we cannot conclude that some phi is alpha.

Since the subject and predicate in both the conclusions are same and it is the case of some and no, therefore it will be either and or .



For I- Since it is given that no mobile is eraser. Therefore, we can conclude that some mobile can never be eraser.

For II- From the venn diagram it is clear that some eraser is black and no mobile is eraser . So, some black which is eraser will not be mobile. Hence, conclusion II can be concluded.



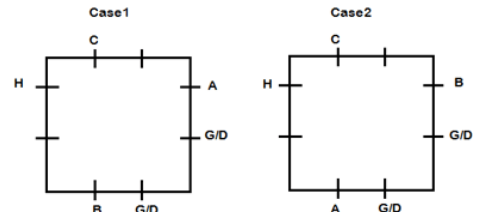
33. (3) The 1st , 2nd , 4th and 7th letters of the word 'ELEMENTARY' are 'E, L, M and T'. Only one meaningful word can be formed using these letters which is 'MELT'.

34. (3) 6 7 6 4 2 3 5

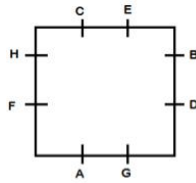
35. (5) R I V E R I N E

E E I I N R R V

36-40. Two persons sit between A and B. G and D sit next to each other but sit on different sides of the table. C is immediate left to H but they do not sit on the same side of the table. C and H are not immediate neighbor of A and B.



Two persons sit between G and E , counted from right of G, So G faces E and sits immediate right to B in case1 and immediate right to A in case2. No two persons sit opposite to each other according to the English alphabet (i.e. A does not sit opposite to B and B does not sit opposite to C and A and so on), So case1 gets eliminated as B is facing C. The final arrangement is:



36. (4)

37. (1)

38. (2)

39. (3)

40. (5)

41. (2)

I. $6x^2 + 11x - 35 = 0$
 $\Rightarrow 6x^2 + 21x - 10x - 35 = 0$
 $\Rightarrow 3x(2x + 7) - 5(2x + 7) = 0$
 $\Rightarrow (3x - 5)(2x + 7) = 0$
 $x = \frac{5}{3}, x = -\frac{7}{2}$

II. $2y^2 + 15y + 28 = 0$
 $\Rightarrow 2y^2 + 8y + 7y + 28 = 0$
 $\Rightarrow 2y(y + 4) + 7(y + 4) = 0$
 $\Rightarrow (2y + 7)(y + 4) = 0$
 $y = -\frac{7}{2}, y = -4$
 $\therefore x \geq y$

42. (4)

I. $x^2 - 17x = 0$
 $\Rightarrow x(x - 17) = 0$
 $\Rightarrow x = 0$ or 17 .

II. $y^3 - 4913 = 0$
 $\Rightarrow y = \sqrt[3]{4913} = 17$
 $\therefore y \geq x$

43. (2)

I. $(x - 5)^2 - 100 = 0$
 $\Rightarrow x^2 - 10x + 25 - 100 = 0$
 $\Rightarrow x^2 - 10x - 75 = 0$
 $\Rightarrow x^2 - 15x + 5x - 75 = 0$
 $\Rightarrow (x - 15)(x + 5) = 0$
 $x = 15, x = -5$

II. $y^2 + 16y = 5(y - 6)$
 $\Rightarrow y^2 + 16y - 5y + 30 = 0$
 $\Rightarrow y^2 + 11y + 30 = 0$
 $\Rightarrow y^2 + 6y + 5y + 30 = 0$
 $\Rightarrow (y + 6)(y + 5) = 0$
 $y = -6, y = -5$
 $\therefore x \geq y$

44. (4)

I. $11x^2 + 18x + 7 = 0$
 $\Rightarrow 11x^2 + 11x + 7x + 7 = 0$
 $\Rightarrow (11x + 7)(x + 1) = 0$
 $x = -\frac{7}{11}, x = -1$

II. $22y^2 + 25y + 7 = 0$
 $\Rightarrow 22y^2 + 14y + 11y + 7 = 0$
 $\Rightarrow 2y(11y + 7) + 1(11y + 7) = 0$
 $\Rightarrow (2y + 1)(11y + 7) = 0$
 $y = -\frac{1}{2}, y = -\frac{7}{11}$
 $\therefore y \geq x$

45. (1)

$8x + 7y = 38$

$3x - 5y = -1$

Multiply 1st equation by 5 and 2nd equation by 7 and add both.

$40x + 35y = 190$
 $21x - 35y = -7$

$61x = 183$

$\Rightarrow x = 3$

Put $x = 3$ in 2nd equation.

$\Rightarrow 9 - 5y = -1$

$\Rightarrow 5y = 10$

$\Rightarrow y = 2$

$\therefore x > y$

46. (3)

Let cost price of cycle for Archit be Rs x
 CP of cycle for Anu = $(\frac{6x}{5} + 400) \times \frac{112.5}{100}$

$4500 = (\frac{6x}{5} + 400) \times \frac{9}{8}$

$4000 = \frac{6x}{5} + 400$

$x = \text{Rs } 3000$

47. (1)

Case I -

Relative speed = $\frac{75}{\frac{15}{2}} = 10 \text{ m/s}$

$= 10 \times \frac{18}{5} = 36 \text{ km/hr}$

Speed of train = $36 - 6 = 30 \text{ km/hr}$

Case II -

Relative speed = $\frac{75}{\frac{27}{4}} = \frac{100}{9} \text{ m/s}$

$= \frac{100}{9} \times \frac{18}{5} = 40 \text{ km/hr}$

Speed of second person = $40 - 30 = 10 \text{ km/hr}$

Let speed of Roly be $x \text{ km/hr}$

Therefore, speed of Abhishek is $\frac{3}{4}x \text{ km/hr}$

ATQ -

$\frac{48 \times 4}{3x} - \frac{48}{x} = 1$

$x = 16$

\therefore speed of Abhishek = $16 \times \frac{3}{4} = 12 \text{ km/hr}$

Speed of Rahul = $12 \times \frac{350}{100}$

$= 42 \text{ km/hr}$

\therefore Required Time = $\frac{840}{42} = 20 \text{ hr}$

49. (1)

In vessel X, let water be $3x$ liter and wine be $4x$ liter

In 56 liters of mixture -

Water taken out = $\frac{3}{7} \times 56 = 24$ liter

Wine taken out = $\frac{4}{7} \times 56 = 32$ liter

Water in vessel Y = $24 + 48 = 72$ liter

Wine in vessel X = $32 \times 4 = 128$ liter

Water in vessel X = $\frac{128}{4x} \times 3x$

$= 96$ liter

Therefore, total quantity of mixture in vessel $x = 128 + 96 = 224$ liter

Radius of sphere = radius of semicircle

Surface area of sphere = $4\pi(\text{radius})^2$

$(\text{radius of sphere})^2 = \frac{616 \times 7}{4 \times 22} = 49$

$(\text{radius of sphere}) = 7$

Height of cylinder = 7×2.5

$= 17.5 \text{ cm}$

Radius of cylinder = $\frac{17.5}{5} = 3.5 \text{ cm}$

Let radius of cylinder = r

And height of cylinder = h

Total surface area of cylinder = $2\pi r(r + h)$

Curved surface area of cylinder = $2\pi rh$

ATQ,

$\frac{2\pi r(r+h)}{2\pi rh} = \frac{4}{3}$

$\Rightarrow 3r + 3h = 4h$

$\Rightarrow 3r = h$

Required % = $\frac{h-r}{h} \times 100 = \frac{3r-r}{3r} \times 100$

$= \frac{200}{3} \% = 66\frac{2}{3} \%$

Let Amount invested by A = $8x$

\Rightarrow Amount invested by B = $10x$

And Amount invested by C = $10x \times \frac{3}{2} = 15x$

Ratio of investment of A, B and C is = $8 : 10 : 15$

Let A, B and C invested for 'a', 'b' and 'c' months respectively, then

$8a : 10b : 15c = 8 : 15 : 25$

$\frac{8a}{15c} = \frac{8}{25}$

$\Rightarrow \frac{a}{c} = \frac{3}{5}$

If $c = 20$ months, then $a = 12$ months

53. (4)

Ratio of efficiency of A and B = $3 : 5$

\Rightarrow Time taken by A and B alone to complete the work = $5 : 3$

Ratio of time taken by B and C alone to complete the work = $4 : 5$

\Rightarrow Ratio of time taken by A, B and C alone to complete the work = $20 : 12 : 15$

Let, A, B and C alone can complete the work alone is $20x$, $12x$ and $15x$ days respectively.

ATQ,

$$\frac{12}{20x} + \frac{12}{12x} = \frac{80}{100}$$

$$\Rightarrow \frac{144+240}{240x} = \frac{4}{5}$$

$$\Rightarrow \frac{5 \times 384}{4 \times 240} = x$$

$$\Rightarrow x = 2$$

Let in 'a' days 'B' and 'C' can complete 60% of work

ATQ,

$$\frac{a}{12 \times 2} + \frac{a}{15 \times 2} = \frac{60}{100}$$

$$\Rightarrow \frac{5a+4a}{120} = \frac{3}{5}$$

$$\Rightarrow a = \frac{3}{5} \times \frac{120}{9} = 8 \text{ days}$$

54. (1) Three year ago, sum of age of A, B and C together = $27 \times 3 = 81$ year
 Four years hence, sum of ages of A, B and C together = $81 + 7 \times 3 = 102$
 Let Four years hence

A's age be $7x \Rightarrow$ C's age be $10x$ and B's age be $10x-6$

ATQ,

$$7x+10x-6+10x = 102$$

$$\Rightarrow 27x = 108 \Rightarrow x = 4$$

Four years hence, A's age = $7 \times 4 = 28$

Present age of A = $28-4 = 24$ year

55. (2) Starting five whole number = 0, 1, 2, 3, 4
 Total three-digit number can be
 Formed with repetitions = $4 \times 5 \times 5 = 100$
 To be divisible by 4, last two number should be divisible by 4
 Last numbers can be = 00, 20, 40, 12, 32, 04, 24, 44
 Total favorable case = $4 \times 8 = 32$
 Required probability = $\frac{32}{100} = \frac{8}{25}$

56. (4) Required percent

$$= \frac{24}{100} \times 50 - \frac{5}{100} \times 75$$

$$= \frac{24}{100} \times 50 - \frac{375}{100}$$

$$= \frac{1200 - 375}{100} \times 100$$

$$= \frac{825}{100} \times 100$$

$$= 825\%$$
 less

57. (2) Required ratio
 30% of 175

$$= \frac{45}{100} \text{ of } 85$$

$$= 70 : 51$$

58. (3) Required percent

$$= \frac{120}{150} \times 100 = 80\%$$

59. (5) Required difference = 33% of 1,20,000 – 40% of 75000

$$= 39600 - 30000$$

$$= 9600$$

60. (1) Required average

$$= \frac{45\% \text{ of } 85000 + 10\% \text{ of } 150000 + 12\% \text{ of } 120000}{3}$$

$$= \frac{38250 + 15000 + 14400}{3} = 22550$$

61. (2) Required average = $\frac{(18+15+12)}{3} \times \frac{45000}{100} = 6750$

62. (1) ODIs runs scored by Kohli

$$= \frac{45000}{3} \times 2 \times \frac{28}{100}$$

$$= 8400$$
 Runs scored by Pujara in Test matches = $18 \times \frac{45000}{100} = 8100$
 Required difference = $8400 - 8100 = 300$

63. (5) Required percentage = $\frac{12}{33} \times 100\%$

$$= \frac{400}{11}\% = 36\frac{4}{11}\%$$

64. (2) Required ratio = $\frac{30 \times \frac{45000}{100}}{\frac{30 \times 45000}{100} \times 2} = \frac{13500}{6000} = \frac{9}{4}$

65. (4) Average of the runs scored by Sachin, Pujara and Dhoni in Test matches

$$= \frac{(30+18+12) \times 45000}{3 \times 100} = 9000$$

Average of the runs scored by the five players in ODIs

$$= \frac{45000 \times 2}{5} = 6000$$

$$\text{Required \%} = \frac{9000-6000}{6000} \times 100 = 50\%$$

66. (4)
$$\begin{array}{cccccc} 5 & 8 & 14 & 26 & 50 & 98 \\ \hline \times 2-2 & \times 2-2 & \times 2-2 & \times 2-2 & \times 2-2 & \end{array}$$

67. (4)
$$\begin{array}{cccccc} 2 & 4 & 10 & 22 & 42 & 72 \\ \hline 2 & 6 & 12 & 20 & 30 & \\ \hline 4 & 6 & 8 & 10 & & \\ \hline 2 & 2 & 2 & & & \end{array}$$

68. (4)
$$\begin{array}{cccccc} \text{Alternate,} & 2 & 4 & 10 & 22 & 42 & 72 \\ \hline 2 & 6 & 12 & 20 & 30 & & \\ \hline 1^2+1 & 2^2+2 & 3^2+3 & 4^2+4 & 5^2+5 & & \\ \hline 3 & 2 & 3 & 8 & 36 & 296 & \\ \hline \times 0.5+0.5 & \times 1+1 & \times 2+2 & \times 4+4 & \times 8+8 & & \\ \hline 32 & 64 & 16 & 128 & 8 & 256 & \\ \hline \times 2 & +4 & \times 8 & +16 & \times 32 & & \end{array}$$

69. (3)
$$\begin{array}{cccccc} 2 & 17 & 89 & 359 & 1079 & 2159 \\ \hline \times 6+5 & \times 5+4 & \times 4+3 & \times 3+2 & \times 2+1 & \end{array}$$

70. (1)
$$\frac{130}{100} \times 1200 + \frac{1250}{50} \times 30 = ?$$

$$130 \times 12 + 25 \times 30 = ?$$

$$? = 1560 + 750$$

$$? = 2310$$

71. (3)
$$\frac{156}{13} + (3)^2 \times 40 = \frac{?}{100} \times 600$$

$$12 + 9 \times 40 = ? \times 6$$

$$? = \frac{372}{6} = 62$$

72. (1)
$$\sqrt{81 \times 36} + \frac{680}{17} = ? + (512)^{\frac{1}{2}}$$

$$\sqrt{2916} + 40 = ? + 8$$

$$? = 54 + 40 - 8 = 86$$

73. (1)
$$\frac{1600}{100} \times 140 + \frac{?}{100} \times 1600 = 72 \times 40$$

$$16 \times 140 + 16 \times ? = 72 \times 40$$

$$2240 + 16 \times ? = 2880$$

$$? = \frac{640}{16} = 40$$

74. (5)
$$(17)^2 + (22)^2 + (8)^2 + ? = 1750 - 820 + 2210$$

$$? + 289 + 484 + 64 = 1750 - 820 + 2210$$

$$? = 2303$$

75. (4)
$$\begin{array}{ccc} \text{Time} & \text{efficiency} & \text{LCM} \\ P & 12 \text{ days} & 25 \\ Q & 15 \text{ days} & 20 \\ R & 25 \text{ days} & 12 \\ & & \text{---} \\ & & 300 \text{ (total work)} \end{array}$$

Let the work is completed in 'x' days.

ATQ,

$$20 \times 2 + 25(x-7) + 12 \times 5 = 300$$

$$\Rightarrow 25(x-7) = 200$$

$$\Rightarrow x-7 = 8 \Rightarrow x = 15 \text{ days.}$$

Work done by P, Q and R in 15 days.

$$P = 25 \times 8 = 200$$

$$Q = 20 \times 2 = 40$$

$$R = 12 \times 5 = 60$$
 Share of P = $\frac{13500}{300} \times 200 = \text{Rs. } 9000$

- Alternative solution
 Work done by Q in 2 days = $\frac{1}{15} \times 2 = \frac{2}{15}$
 Work done by R in 5 days = $\frac{1}{12} \times 5 = \frac{5}{12}$
 Work done by P = $1 - \left(\frac{2}{15} + \frac{5}{12}\right) = \frac{10}{15}$
 Share of P = $\frac{13500}{1} \times \frac{10}{15} = \text{Rs. } 9,000$

77. (1) Let the present age of mother be x yr.
 and that of daughter = $(65-x)$ yr.
 ATQ,

$$(x-10)(65-x-10) = 5 \times (x-10)$$

$$65x - x^2 - 10x - 650 + 10x + 100 = 5x - 50$$

$$-x^2 + 65x - 550 = 5x - 50$$

$$x^2 - 60x + 500 = 0$$

$$\Rightarrow x = 50, 10$$
 Required ratio = $\frac{50}{15} = 10 : 3$

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78. (5) Let the marked price of a book be Rs. $100x$.
Selling price after two successive discounts of 20% and $16\frac{2}{3}\%$
 $= 100x \times \frac{4}{5} \times \frac{5}{6}$
 $= \frac{200}{3}x$
 $CP = \frac{200}{3}x \times \frac{100}{125} = \frac{160}{3}x$
Required ratio = $\frac{\frac{160x}{3}}{100x} = 8 : 15$.

79. (3) Let the speed of faster cyclist be x km/hr.
Then, the speed of slower cyclist = $(x - 5)$ km/hr.
ATQ,
 $\frac{120}{(x-5)} - \frac{120}{x} = 4$
 $\Rightarrow \frac{120x - 120(x-5)}{(x-5)(x)} = 4$
 $\Rightarrow \frac{120x - 120x + 600}{x^2 - 5x} = 4$
 $\Rightarrow x^2 - 5x - 150 = 0$
 $\Rightarrow (x - 15)(x + 10) = 0$
 $\Rightarrow x = -10$ or 15
 $\Rightarrow x = 15$ km/hr
Speed of slower cyclist = $15 - 5 = 10$ km/hr
 \therefore Required time = $\frac{120}{10} = 12$ hr.

80. (2) One side of rectangle = 24 m. (breadth)
 \therefore other side = $\frac{\text{Area}}{\text{breadth}} = \frac{720}{24} = 30$ m.
Perimeter of rectangular field = $2(30 + 24) = 108$ m.
 \Rightarrow Perimeter of triangular field = $\frac{108}{3} = 36$ m
As all sides of triangular field are equal
i.e. field is of equilateral triangle shape
 \Rightarrow side = $\frac{36}{3} = 12$ m.
Required area = $\frac{\sqrt{3}}{4} \times (12)^2 = 36\sqrt{3} \text{ m}^2$

