



## Most world record achievers in Mathematics

















RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

**Direction** (1-5): Study the following information

carefully and answer the given questions:

Eleven boxes A, B, C, D, E, F, G, H, I, J, K are kept one above the other. Box G is kept at fifth position from the top. Two boxes are kept between G and H. Box D is kept just above box H. There are as many boxes above box D as below box B. Five boxes are kept between box F and box K, which is kept at one of the positions below box G. Box A is kept at one of the positions above box F. Only one box is kept between Box G and Box C. Box I is kept above box E but not just above. Box E is not kept immediately above or immediately below box C.

### 1. What is the position of box I?

- (a) 8th from the bottom
- (b) 7th from the top
- (c) 3rd from the top

#### (d) 6th from the bottom

(e) none of these

# 2. How many boxes are kept between box E and Box H?

(a) seven

#### (b)six

- (c) five
- (d) four
- (e) eight

# 3. Which among the following statement is true regarding box J?

- (a) it is 7th from the bottom
- (b) Box K is placed above box J

# (c) only two boxes are kept between box B and box I

(d) It is kept just below box H

(e) All are true

4. Which of the following represents the boxes | 1 kept between boxes A and I?

- (a)C, B
- (b) A, K
- (c) F, G
- (d) J, D
- (e) none of these

# 5. Which of the following box is kept just above box B?

- (a) C
- (b) K
- (c) F
- (d) D
- (e) none of these

Direction (6-8): Study the following information carefully and answer the given questions Point B is 14m east of point A. Point C is 9m north of point B. Point D is 12m east of point C. Point E is 15m south of point D. Point F is 30m west of point E. Point G is 10m north of point F.

# 6. If point X is 6m south of point A then which point is at shortest distance from point X?

Point H is 18 m east of point G.

- (a) E
- (b) A
- (c) F
- (d) B
- (e) G

#### 7. What is the distance of point C from point H?

- (a) 9m
- (b) 5m
- (c) 4m
- (d) 6m
- (e) 7m

www.spardha.guru
Spardhaguru India Private Limited
Copyright © All Rights Reserved | https://www.spardha.guru





## Most world record achievers in Mathematics



















RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

- 8. Point B is in which direction with respect to point F?
- (a) South
- (b) South-east
- (c) North
- (d) North-east
- (e) North-west

**Direction** (9-13): Study the following information carefully and answer the given questions

Eight persons A, B, C, D, E, F, G, H are sitting around a circular table such that five of them are facing towards the center and the rest are facing away from the center. Three persons are sitting between F and H, who is facing center. C is 2nd to the right of F and faces opposite direction to F. A sits 3rd to the left of C.G is one of the neighbor of E. Two persons sit between G and B, who is not neighbor of H.G does not face C. G and A face same direction but opposite to F.

- 9. What is the position of E with respect to A?
- (a) immediate right
- (b) 5th to the left
- (c) 2nd to the right
- (d) 2nd to the left
- (e) none of these
- 10. How many persons are sitting between C and H, wen counted from the left of C?
- (a) one
- (b) two
- (c) three
- (d) four
- (e) none

- 11. Four of the five are alike in a certain way | 2 which among the following does not belongs to that group?
- (a) C
- (b) B
- (c) F
- (d) D
- (e) E
- 12. Which of the following represents the immediate neighbor of G?
- (a) C
- (b) B
- (c) F
- (d) D
- (e) A
- 13. Which of the following is not true regarding F?
- (a) it faces towards the center
- (b) E is immediate left to F
- (c) Two persons sit between F and D, when counted from the right to D
- (d) All are true
- (e) no one sits between F and B

**Direction** (14-18): Study the following information carefully and answer the given questions.

Certain number of persons are sitting in a row facing north. M sits 4th to the right of S. Five persons sit between M and X. T sits at one of the positions left to S. The number of persons sitting between M and U are same as between S and T. Q is 2nd from one of the extreme ends. Four persons sit between S and U. No one sits to the right of N, who is immediate right to P. X is 3<sup>rd</sup> left to P. Not more than two persons sit between Q and U.





## Most world record achievers in Mathematics

















### RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

#### 14. How many persons are sitting in the row?

- (a) 17
- (b) 20
- (c) 24
- (d) 26
- (e) 27

## 15. How many persons are sitting between S and T?

- (a) seven
- (b)six
- (c) five
- (d) four
- (e) eight

#### 16. What is the position of U from the left end?

- (a) 6th
- (b) 5th
- (c) 4th
- (d) 2nd
- (e) 3rd

# 17. How many persons are sitting between Q and M?

- (a) seven
- (b) eleven
- (c) ten
- (d) nine
- (e) eight

# 18. Which of the following represents the person sitting at extreme end?

- (a) M
- (b) U
- (c) X
- (d) P
- (e) T

19. If the second, forth, seventh and eighth | 3 letter of the word "FRACTION" are combined to form a meaningful word, then what will be the 3rd letter from the left in the so formed word. If more than one meaningful word is formed then the answer is X, if no such word is formed then answer is Z?

- (a) 0
- (b) X
- (c) R
- (d) Z
- (e) C

20. How many pair of digits have same number of digits between them in the number "573814269" as in the numeric series?

- (a) five
- (b) four
- (c) six
- (d) three
- (e) more than six

**Direction** (21-25): Study the following information carefully and answer the given questions:

Movies of different duration released on different days starting from Monday to Friday (starting from Monday). Movie A was released On Tuesday. No movie released between A and the one which is of 75-minute duration. Only one movie is released between the one which is of 75-minute duration and the one which is of 100-minute duration. No movie released between the one which is of 100 minute and B. Only one movie released after B. B released immediately after 100-minute duration movie. Movie C released immediately after the one which is of 130-minute duration. More than two movies released in between C and D. The movie which is of 90-minute duration released before





## Most world record achievers in Mathematics

















#### RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

E. One of movie was of 20 minutes more duration than E.

#### 21. How many movies were released after E?

- (a) One
- (b) Two
- (c) None
- (d) Three
- (e) More than three

## 22. Which of the following movie was of 150-minute duration?

- (a) E
- (b) A

#### (c) There is no such movie

- (d) C
- (e) D

# 23. What is the total duration of movie D and E together?

- (a) 135
- (b) 225
- (c) 165
- (d) 175
- (e) 190

# 24. Which of the following statement is true regarding B?

# (a) The movie released after B is of 120-minute duration

- (b) Two movies released in between A and B
- (c) Movie B is of 100-minute duration
- (d) Total duration of movie B and A is 225 minutes
- (e) Movie A released after B.

#### 25. Which of the following statement is true?

- (a) The movie released before A is of 130-minute duration
- (b) Three movies released in between A and E

#### (c) No movie released in between A and E

Page | 4

- (d) Total duration of movie C and A is 230 minutes
- (e) Movie C released immediately after E.

**Direction** (26-28): Study the following information carefully and answer the given questions:

F is the husband of G. K is the mother-in-law of G. H is the Father of F. M is the mother of H, P is the mother of K and B.

## 26. If Y is the father of H then how is Y related to M?

- (a) Mother
- (b) Father
- (c) Sister
- (d) Brother
- (e) Husband

#### 27. How is P related to F?

- (a) Grandfather
- (b) Aunt
- (c) Mother

#### (d) Grandmother

(e) Wife

#### 28. How is B related to H?

- (a) Sister
- (b) Brother
- (c)Husband

#### (d) Can't be determine

(e) Wife

**Direction** (29-31): Study the following information carefully and answer the given questions: There are six persons M, N, O, P, Q, R of different heights. N is shorter than M but taller than Q. Only two person are taller than





Page | 5

## Most world record achievers in Mathematics

















#### RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

M. R is taller than Q and O. Q is not the shortest. The one who is second shortest is 154m. P is not the shortest person.

# 29. If M is 19m taller than Q then what is the height of M?

- (a) 190m
- (b) 181m
- (c) 175m
- (d) 130m
- (e) 173m

## 30. If P is 181m than which of the following is true?

I. Only one person is taller than P.

II. The difference between the heights of P and Q is 27m

III. O is the shortest person.

- (a) Only I
- (b) Only II and I
- (c) All are true

#### (d) Only III and II

(e) Only III and I

#### 31. How many persons are shorter than N?

- (a) One
- (b) Two
- (c) None
- (d) Three
- (e) More than three

Directions (32-35): Question consists of Some statements followed by two conclusions. Consider the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follow from the given statements using all statements together.

32. Statements: All Grills are Arrow.

Some Hat are Grills.

Some Cell are Arrow.

Conclusions: I. Some Cell are definitely not

II. Some Hat can never be Arrow.

- (a) Only I follows
- (b) Only II follows

#### (c) Neither I nor II follow

- (d) Both I and II follow
- (e) Either I or II follow

#### 33. Statements: All Grills are Arrow.

Some Hat are Grills.

Some Cell are Arrow.

Conclusions: I. Some Hat are Arrow.

- II. Some Grills are Cell.
- (a) Only II follows

#### (b) Only I follows

- (¢) Either I nor II follow
- (d) Both I and II follow
- (e) Neither I or II follow

34. Statements: Some Door are Fan.

No Door is Rose.

No Fan is Shelf.

Conclusions: I. Some Fan can never be Rose.

- II. Some Rose are Shelf is a possibility.
- (a) Neither I nor II follows
- (b) Only I follows
- (c) Either I or II follow
- (d) Both I and II follow
- (e) Only II follows

35. Statements: Some Door are Fan.

No Door is Rose.

No Fan is Shelf.

**Conclusions: I.** All Door are Shelf is a possibility.

- II. All Shelf can be Doors.
- (a) Either I or II follows

N S





## Most world record achievers in Mathematics

















RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

#### (b) Only II follows

- (c) Neither I nor II follow
- (d) Both I and II follow
- (e) Only I follows

**Direction** (36-40): Study the following information carefully and answer the given questions:

Fourteen persons are sitting in two parallel rows such that seven persons are sitting in each row. A, B, C, D, E, F, G are sitting in row-1 facing north while P, Q, R, S, T, U, V are sitting in row-2 facing south. G sits third to the left of A and neither of them sits at an extreme end of the row. The one faces A sits immediate right to T. Only one person sits between T and Q. The one who faces Q sits third to the right of E. S sits to the immediate left of V. S neither faces G nor E. D is an immediate neighbour of the one who faces S. The one who faces C sits fifth to the left of P. B sits third to the left of F. U sits at one of position to the right of R.

36. Four of the following are alike in a certain way so form a group which of the following does not belong to that group?

- (a) U
- (b) B
- (c) T
- (d) C
- (e) P

#### 37. How many persons sits between F and C?

- (a) One
- (b) Two
- (c) None
- (d) Three
- (e) More than three

# 38. Which of the following is not true regarding | 6 U?

- (a) No one sits to the right of U
- (b) U sits third to the right of Q,
- (c) P is an immediate neighbour of U.
- (d) E is an immediate neighbour of the one who faces U,
- (e) Only two persons sit between U and S

#### 39. What is the position of C with respect to A?

- (a) Second to the left
- (b) Third to the right
- (c) Immediate right
- (d) Immediate left
- (e) Second to the right

#### 40. What is the position of B with respect to D?

- (a) Third to the left
- (b) Second to the left
- (c) Forth to the left
- (d) Third to the right
- (e) Fifth to the right

**Directions (41-45):** Find the wrong number in the following number series?

#### 41. 1, 3, 7, 15, 31, 64, 127

- (a) 1
- (b) 3
- (c) 15
- (d) 64
- (e) 127

#### 42. 1, 15, 119, 475, 949, 947, 473

- (a) 947
- (b) 475
- (c) 15
- (d) 473
- (e) 1





## Most world record achievers in Mathematics

















#### RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

43. 250, 260, 291, 314, 340, 370, 405

(a) 370

(b) 314

(c) 260

(d) 405

(e) 250

44. 750, 535, 411, 348, 322, 314, 315

(a) 315

(b) 750

(c) 411

(d) 348

(e) 314

45. 2, 7, 27, 107, 427, 1708, 6827

(a) 107

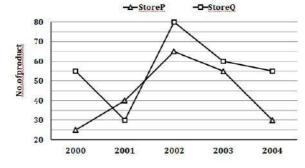
(b) 1708

(c)2

(d) 6827

(e)7

Directions (46-50): Study the line-graph carefully & answer the question given below. Line-graph given below shows the total no. of products for (kid + adult) in two different stores P & Q in five different years.



46. What is the difference between total no. of products in store P in year 2003 & 2004 together and total no. of products in year 2000?

(a) None of these

(b) 10

(c)20

(d) 15

(a) 15 (e) 5 Page | 7

47. If total products in both the stores in year 2006 is increased by 20% as compared to year 2004. Then find total no. of products in year 2006?

(a) 102

(b) None of these

(c)96

(d) 108

(e)92

48. What is the ratio of total products in store Q in year 2002 & 2003 together to total products in store Q in year 2000?

(a) 23:12

(b) 23:11

(c) 28:11

(d) None of these

(e) 27:13

49. What is the average no. of products in all the years together in store P?

(a) 48

(b) 43

(c)57

(d) None of these

(e) 53

50. Total no. of products in store P in year 2003 and in store Q in year 2004 together is what percent more/less than total no. of products in store Q in year 2000?

(a) 150%

(b) 40%

(c) 125%

(d) 100%

(e) 50%

www.spardha.guru
Spardhaguru India Private Limited
Copyright © All Rights Reserved | https://www.spardha.guru

## ಸ್ಪರ್ಧಾಗುರು Spardhaguru India Private Limited

### IBPS RRB PO 2018 Prelims



## Most world record achievers in Mathematics

















#### RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

Directions (51-55): Solve the given quadratic equations and mark the correct option based on your answer-

- (a)  $x \ge y$
- (b)  $x \le y$
- (c) x > y
- (d) x = y or no relation can be established between x and y.
- (e) x < y
- **51.** (i)  $\chi^2 20x + 96 = 0$
- (ii)  $y^2 = 64$
- (a)  $x \ge y$
- (b)  $x \le y$
- (c) x > y
- (d) x = y or no relation can be established between x and y.
- (e) x < y

52. (i)  $4x^2 - 21x + 20 = 0$ 

- (ii)  $3y^2 19y + 30 = 0$
- (a)  $x \ge y$
- (b)  $x \le y$
- (c) x > y

(d) x = y or no relation can be established between x and y.

(e) x < y

53. (i)  $x^2 - 11x + 24 = 0$ 

- (ii)  $v^2 12y + 27 = 0$
- (a)  $x \ge y$
- (b)  $x \le y$
- (c) x > y

(d) x = y or no relation can be established between x and y.

(e) x < y

54. (i)  $x^2 + 12x + 35 = 0$ 

- (ii)  $5y^2 + 33y + 40 = 0$
- (a)  $x \ge y$
- (b)  $x \le y$

(c) x > y

- (d) x = y or no relation can be established between x and y.
- (e) x < y

**55.** (i)  $4x^2 + 9x + 5 = 0$ 

- (ii)  $3v^2 + 5y + 2 = 0$
- (a)  $x \ge y$

(b)  $x \le y$ 

- (c) x > y
- (d) x = y or no relation can be established between x and y.
- (e) x < y

Directions (56-60): Study the following paragraph carefully & answer the question given below.

There are 1000 students in a college. Out of 1000 students some appeared in exams 'X', 'Y' and 'Z' while some not. Number of student not appeared in any exam is equal to number of students appeared in exam 'Z' only. Number of students appeared in exam 'Y' is 360. Ratio of number of students appeared in exam 'X' and 'Y' only to number of students appeared in exam 'Y' and 'Z' only is 2 : 3. Number of student appeared in exam 'X' and 'Z' both is half of number of students appeared in only exam 'Z'. Number of students appeared in exam 'X' only is 50% more than number of students appeared in 'Y' only. Number of students appeared in all the three exam is 4% of the total number of students in the college. Number of students appeared in 'Y' exam only is same as number of students appeared in 'Y' and 'Z' only.

56. How many students appeared in at least two exams?

- (a) 240
- (b) 260





## Most world record achievers in Mathematics

















RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

#### (c)300

(d) 360

(e) 500

### 57. How many students appeared in two exams only?

(a) 280

(b) 220

(c)340

(d) 300

(e) 260

# two exams?

(a) 240

(b) 260

(c)300

(d) 500

(e) 960

# 58. How many students appeared in at most

(a) 40

(b) 44

(c) 52

(d) 60

(e)72

### 59. How many students not appeared in exam

Y?

(a) 440

(b) 360

(c)540

#### (d) 640

(e) None of these

### 60. How many students appeared in exam X or in exam Z?

(a) 240

(b) 360

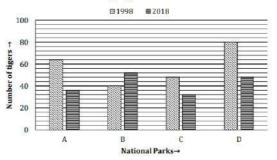
(c)500

(d) 680

(e)760

Direction (61-65): Bar chart given below shows Number of tigers in different National Parks i.e. A to D of a country in

two different years. Study the data carefully and answer the following questions



61. Number of tigers in National Park B and C together in 2018 is how much less more/less than Number of tigers in National Park A and D together in 1998?

62. Number of tigers in National Park 'D' in both years together is what percent of the Number of tigers in National Park 'C' in both years together?

(a) 60%

#### (b) 160%

(c) 140%

(d) 120%

(e) 180%

63. Find the ratio between number of tigers in National Park 'A' in 2018 to number of tigers in National Park 'B' in 1998?

#### (a) 9:10

(b) 10:9

(c) 16:13

(d) 13:16

(e) 3:4





Page | 10

## Most world record achievers in Mathematics



















#### RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

64. Number of tigers in National Park 'E' in 2018 is 40% more than number of tigers in National Park 'D' in 1998 while number of tigers in National park 'E' in 1998 is 25% less than number of tigers in National Park 'C' in 2018. Find total number of tigers in National park 'E' in 1998 and 2018 together?

- (a) 148
- (b) 84
- (c) 172
- (d) 160
- (e) 136

65. Average number of tigers in all National park in 2018 is how much less/more than average number of tigers in all National park in 1998?

- (a) 14
- (b) 16
- (c) 18
- (d) 20
- (e) 22

66. The difference between downstream speed and upstream speed of boat is 6 km/hr and boat travels 72 km from P to Q (downstream) in 4 hours. Then find the speed of boat in still water?

#### (a) 15 km/hr

- (b) 18 km/hr
- (c)20km/hr
- (d) 16 km/hr
- (e) 24 km/hr

67. In a vessel, there are two types of liquids A and B in the ratio of 5: 9. 28 lit of the mixture is taken out and 2 lit of type B liquid is poured into it, the new ratio(A:B) thus formed is 1: 2. Find the initial quantity of mixture in the vessel?

- (a) 84 lit
- (b) 42 lit
- (c) 50 lit
- (d) 56 lit
- (e) 70 lit

68. The average weight of 5 students in a class is 25.8 kg. When a new student joined them, the average weight is increased by 3.9 kg. Then find the approximate weight of the new student.

- (a) 55 kg
- (b) 49 kg
- (c) 42 kg
- (d) 44 kg
- (e) 58 kg

69. A person has purchased two adjacent plots, one is in rectangular shape and other is in square shape and combined them to make a single new plot. The breadth of the rectangular plot is equal to the side of the square plot and the cost of fencing the new plot is Rs. 390 (Rs. 5/m). Find the side of square if the length of the rectangular plot is 15 m.

- (a) 10 m
- (b) 8 m
- (c) 12 m
- (d) 9 m
- (e) 6 m

70. A shopkeeper marked his article 50% above the cost price and gives a discount of 20% on it. If he had marked his article 75% above the cost price and gives a discount of 20% on it then find the earlier profit is what percent of the profit earned latter?

- (a) 50%
- (b) 60%
- (c)  $33\frac{1}{3}$  %

www.spardha.guru





## Most world record achievers in Mathematics

















RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

- (d) 40%
- (e) 75%
- 71. A person invested two equal amounts in two

different schemes. In first scheme, amount is invested at 8% p.a. on SI for T years and SI received is Rs 2000 while in second scheme, amount is invested at 10% p.a. for 2 years at CI and the compound interest received is Rs. 1050. Find the value of T.

- (a) 4 yr
- (b) 8 yr
- (c) 6 yr
- (d) 5 yr
- (e) 3 yr
- 72. Satish saves 20% of his monthly salary. And of the remaining salary  $\frac{1}{4}$  th and  $\frac{1}{2}$  th he gives to his mother and sister respectively and the

to his mother and sister respectively and the remaining salary he submits as his EMI for the payment of his car. If his annual EMI was Rs. 60,000, then find his monthly salary?

- (a) Rs. 40,000
- (b) Rs. 35,000
- (c) Rs. 32,000
- (d) Rs. 30,000
- (e) Rs. 25,000
- 73. The sum of four times of an amount 'x' and (x 9.75) is Rs. 442. Find the approximate value of x.
- (a) Rs. 85
- (b) Rs. 90
- (c) Rs. 100
- (d) Rs. 1100
- (e) Rs. 75

74. A and B entered into a partnership by age | 11 investing some amounts. The investment of A is twice of the investment of B. Another person C joined them after 4 months. At the end of a year, the profit share of A and C is equal. Then find the profit share of B is what percent of the profit share of C.

### (a) 50%

- (b)  $33\frac{1}{3}\%$
- (c) 40%
- (d) 60%
- (e) 75%
- 75. The ratio of age of Ishu 8 years hence and that of Ahana 6 years hence is 5:6. The age of Ishu 10 years hence is equal to the age of Ahana 6 years hence. Then, find the present age of Ishu.
- (a) 1.5 yr
- (b) 2 yr
- (c) 3 yr
- (d) 4 yr
- (e) 5 yr
- 76. What is the difference between 20% of P and 20% of (P + 5000).
- (a) 1500
- (b) 1200
- (c) 1000
- (d) 2000
- (e) 1600
- 77. The ratio of the diameter of base and height of a cylinder is 2 : 3. Find the radius of the cylinder if the approximate volume of cylinder is 3234.01 cm<sup>3</sup>?
- (a)  $\frac{21}{2}$  cm





## Most world record achievers in Mathematics



















RBI,C-SAT,Banking, SBI Clerk & PO, IBPS Clerk & PO, IBPS RRB, IPPB, SSC CGL, CHSL, MTS, GD, CPO,

(b)  $\frac{7}{2}$  cm

Page | 12

- (c) 21 cm
- (d) 7 cm
- (e) 14 cm

78. A train of some length passes the platform of length 524 m in 55 seconds. Find the length of train if the speed of train is 72 km/hr.

- (a) 476 m
- (b) None of these
- (c) 428 m
- (d) 526 m
- (e) 576 m

79. Efficiency of B is two times more than efficiency of A. Both started working alternatively, starting with B and completed the work in total 37 days. If C alone complete the same work in 50 days then find in how many days A and C together will complete the work?

(a) 24 days

#### (b) 30 days

- (c) 36 days
- (d) 48 days
- (e) 18 days

80. 7 men and 6 women together can complete a piece of work in 8 days and work done by a women in one day is half the work done by a man in one day. If 8 men and 4 women started working and after 3 days 4 men left the work and 4 new women joined then, in how many more days will the work be completed

- (a) 7 days
- (b) 6 days
- (c) 5.25 days
- (d) 6.25 days
- (e) 8.14 days