Direction (1-5): Read the following information carefully and answer the following questions:

**Percentage of readers in different states in 2008**

<table>
<thead>
<tr>
<th>States</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>26%</td>
</tr>
<tr>
<td>B</td>
<td>14%</td>
</tr>
<tr>
<td>C</td>
<td>17%</td>
</tr>
<tr>
<td>D</td>
<td>9%</td>
</tr>
<tr>
<td>E</td>
<td>10%</td>
</tr>
<tr>
<td>F</td>
<td>24%</td>
</tr>
</tbody>
</table>

**Percentage of readers in 2012**

<table>
<thead>
<tr>
<th>States</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>22%</td>
</tr>
<tr>
<td>B</td>
<td>16%</td>
</tr>
<tr>
<td>C</td>
<td>15%</td>
</tr>
<tr>
<td>D</td>
<td>9%</td>
</tr>
<tr>
<td>E</td>
<td>16%</td>
</tr>
<tr>
<td>F</td>
<td>28%</td>
</tr>
</tbody>
</table>
1. If the number of readers from state D in the year 2008 and 2012 were 38700 and 57000 respectively, what is the difference between the total number of readers from state F in the year 2012 and that in 2008?
   a) 30750
   b) 45000
   c) 13600
   d) 27500
   e) 60800

2. If the ratio of the number of readers from state A in the year 2008 to that in 2012 was 2:5, what will be the ratio of the total number of readers from all states together in year 2008 to that in 2012?
   a) 3:5
   b) 4:5
   c) 9:7
   d) 2:7
   e) 3:8

3. If the number of readers from state C in 2008 and that from state E in the year 2012 were 73100 and 51300 respectively, then what is the total number of readers from state B in the year 2008 and 2012 together?
   a) 307515
   b) 450045
   c) 151400
   d) 275000
   e) 608000

4. If the total number of readers from all the six states together in 2008 and 2012 were 4.3 lakhs and 5.7 lakhs respectively, what is the difference between the total number of readers from state B and state C together in the year 2008 and 2012?
   a) 307515
   b) 450045
   c) 151400
   d) 117500
   e) 608000

5. If the difference between the number of readers from state E and F in 2008 is 5200 and in 2012 number of readers in state B has increased by 30% as compared to 2008, then find number of readers of state B in 2012?
   a) 30751
   b) 47320
   c) 15140
   d) 27500
   e) 60800

Directions (6-10) Read the information carefully and answer the following question. The Table below shows data related to sales of different companies of mobile by a dealer:

<table>
<thead>
<tr>
<th>Companies</th>
<th>Cost price</th>
<th>Selling price</th>
<th>Profit %</th>
<th>Loss %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redmi</td>
<td>8000</td>
<td></td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Micromax</td>
<td>12000</td>
<td>20000</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Apple</td>
<td>15000</td>
<td>20000</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

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6). The selling price of Redmi is how much percent more/ less than the selling price of Nokia?
   a) 60%
   b) 50%
   c) 40%
   d) 72.50%
   e) 58.26%

7). Find the difference between the cost price of Micromax and Samsung.
   a) Rs 5000
   b) Rs 10000
   c) Rs 16000
   d) Rs 3000
   e) Rs 1000

8). Find the average Cost Price of all the Mobile companies.
   a) Rs 16000
   b) Rs 20000
   c) Rs 18000
   d) Rs 25000
   e) Rs 15600

9). The Apple Company announces a discount of 35% on the Marked price for each mobile. Find the marked price of the Apple mobile phone?
   a) Rs. 42000
   b) Rs. 28000
   c) Rs. 37000
   d) Rs. 30000
   e) None of these

10). The profit earned by Apple phone is how much percent more than the profit earned in Redmi phone?
    a) 200%
    b) 181.25%
    c) 175%
    d) 167.33%
    e) 123.55%

Direction (11-15): The table below shows number of three kinds of balls in 5 different bags:

<table>
<thead>
<tr>
<th>Bags</th>
<th>Yellow Balls</th>
<th>Green Balls</th>
<th>Red Balls</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>B</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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11). If the probability of drawing a red ball from bag A is 3/10 and the number of yellow and green balls present in bag A is in the ratio of 3:4 then find the probability of drawing a yellow balls if two balls are drawn from bag A at random?
   a) 132/225
   b) 147/295
   c) 68/225
   d) 126/295
   e) None of these

12). If the number of total balls in bag C is 60 while the ratio of yellow and red balls in the bag is 3:5 then find the probability of getting one red ball and one green ball if 2 balls are drawn from bag C at random?
   a) 13/59
   b) 11/34
   c) 12/59
   d) 10/17
   e) 10/19

13). If the number of yellow balls is 4 more than the green balls in bag D and the probability of drawing a red ball is ¾ if one ball is picked at random then find the total number of balls in bag D?
   a) 70
   b) 60
   c) 36
   d) 18
   e) 32

14). What is the probability of getting at least one green ball from Bag B when 3 balls are picked at random if there are total 50 balls in bag B and number of red ball in bag B is 2 more than yellow ball in bag E?
   a) 667/784
   b) 877/1225
   c) 107/189
   d) 106/193
   e) 104/189

15). If the number of green balls and red balls in bag E is in the ratio of 4:5 then find the probability of getting either a red or a green ball if one ball is picked at random from bag E?
   a) 10/19
   b) 9/11
   c) 13/19
   d) 15/17
   e) 15/19

Direction: (Q. 16 – 20) Study the following information carefully and answer the questions given below:
The following table represents time taken(in hours) by different pipes to fill a cistern. Some values are missing.
16. If A and C kept open for 4 hours then A is replaced by D and kept open for 5 more hours, the tank is filled. In how many hours pipe C alone can fill the cistern?
   a) 27/4 hours  
   b) 27/2 hours  
   c) 25/4 hours  
   d) 23/2 hours  
   e) none of these

17. Two pipes D and E are opened simultaneously to fill the cistern. After how much time should D be closed so that E alone can fill the cistern in another 20 hours?
   a) 8 hours  
   b) 14 hours  
   c) 12 hours  
   d) 10 hours  
   e) none of these

18. If C takes half of the time taken by F to fill the cistern and F takes half of the time taken by B to fill the cistern and all of them working together can fill the cistern in 48 hours, What is the time taken by F to fill the cistern?
   a) 152 hours  
   b) 142 hours  
   c) 186 hours  
   d) 168 hours  
   e) none of these

19. Two pipes A and D can fill the cistern. If they are opened on alternative hours and if pipe A is opened first, in how many hours will the cistern be full?
   a) 24(3/5) hours  
   b) 26(3/5) hours  
   c) 26(3/4) hours  
   d) 25(3/4) hours  
   e) none of these

20. If B can fill the tank in 12 hours and pipe A works with one third of its efficiency, In how much time both the pipes can fill the cistern?
   a) 10 2/7 hours  
   b) 7 2/7 hours

<table>
<thead>
<tr>
<th>Pipes</th>
<th>Time taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>24</td>
</tr>
<tr>
<td>B</td>
<td>__</td>
</tr>
<tr>
<td>C</td>
<td>__</td>
</tr>
<tr>
<td>D</td>
<td>30</td>
</tr>
<tr>
<td>E</td>
<td>45</td>
</tr>
<tr>
<td>F</td>
<td>__</td>
</tr>
</tbody>
</table>
c) 5 3/7 hours  
d) 12 4/7 hours  
e) none of these

Directions (Q. 21-25) Study the following information carefully and answer the given questions:
Number of different balls in two bags A and B:-

21. If two balls are picked at random from Bag A then what is the probability that both balls are red?  
   a) 1/7  
   b) 3/7  
   c) 2/7  
   d) 3/14  
   e) None of these

22. If three balls are picked at random from Bag B, what is the probability that two are red and one is green?  
   a) 3/25  
   b) 3/22  
   c) 4/23  
   d) 5/24  
   e) None of these

23. If four balls are picked at random from Bag A what is the probability that one is green, two are blue and one is red?  
   a) 23/455  
   b) 3/910  
   c) 24/455  
   d) 1/66  
   e) None of these

24. If two balls are picked at random from Bag B, what is the probability that both are blue?  
   a) 1/66  
   b) 3/74  
   c) 6/77
25). If two balls are picked at random from Bag A, what is the probability that either both are green or both are yellow?
   a) 2/105
   b) 6/105
   c) 9/51
   d) 4/105
   e) None of these

Directions (Q. 26-30) Study the following table carefully and answer the given questions:

Table below shows different Rate of Interest offered by three schemes:

<table>
<thead>
<tr>
<th>Name</th>
<th>Scheme A</th>
<th>Scheme B</th>
<th>Scheme C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amit</td>
<td>10</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Sumit</td>
<td>8</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Vineet</td>
<td>6</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Sujan</td>
<td>9</td>
<td>————</td>
<td>6</td>
</tr>
</tbody>
</table>

NOTE:
   a. Money Invested in all the schemes is for the period of 4 years unless mentioned.
   b. Missing is to be calculated
   c. Calculate Simple Interest unless specified.

26). If the interest earned by Sumit in Scheme A and Scheme B together is Rs 1500 and the amount invested in both the schemes is same then find the interest earned in Scheme C? (Ratio of Investment in Scheme B to Scheme C is 25:15)
   a) 750
   b) 675
   c) 715
   d) 820
   e) None of these

27). If the interest earned from scheme B by Sujan is equal to Rs 900 which is half of the interest earned from Scheme C then find the rate of interest offered by Scheme B? (Ratio of investment in Scheme B to Scheme C is 7:15)
   a) 6.42%
   b) 6%
   c) 5.65%
   d) 5%
   e) None of these

28). When the interest received from Scheme A by Amit in 4 years is invested in scheme C it bears a interest of Rs 1200 then find the sum invested in scheme A?(Approx)
   a) 5500
   b) 5750
   c) 6250
   d) 6500

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29). Find the difference between the interest earned by Amit in Scheme A which bears Simple Interest and Scheme C which bears Compound Interest and the sum invested is Rs15000.( Take time as 2 years)
   a) 765
   b) 816
   c) 837
   d) 537
   e) None of these

30). If the money invested by Vineet together in Scheme A and Scheme B is Rs 10000 while the interest earned from both the scheme is half of the sum invested together then find the interest earned from Scheme B?
   a) 4160
   b) 4000
   c) 5160
   d) 6500
   e) None of these

Directions (Q. 31-35) Study the following bar graph carefully and answer the given questions:

Bar Graph shows time taken by 5 different pipes to fill a tank:-
Table above shows time taken by 5 different pipes to empty a tank.

<table>
<thead>
<tr>
<th>Pipe</th>
<th>Time (in Hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe A</td>
<td>15</td>
</tr>
<tr>
<td>Pipe B</td>
<td>10</td>
</tr>
<tr>
<td>Pipe C</td>
<td>16</td>
</tr>
<tr>
<td>Pipe D</td>
<td>8</td>
</tr>
<tr>
<td>Pipe E</td>
<td>10</td>
</tr>
</tbody>
</table>

All the units are in Hours.

31). Two pipes A and B are used to fill the tank but due to some damage both the pipes worked with ¾ of their efficiency then in how much time the tank will be filled?
a) 13.5  
b) 14  
c) 12.5  
d) 18  
e) None of these

32). If the Pipe C and E are used to fill the tank and Pipe A is used to empty the tank then how much time is required to fill 40% of the tank? 
   a) 10  
   b) 15  
   c) 8  
   d) 20  
   e) None of these

33). Two Pipes D and E are used to fill the tank and Pipe C is used to empty the tank. Then find how much time is required to fill the tank if the three pipes work alternatively for one hour starting with D? 
   a) 30  
   b) 28.325  
   c) 27.625  
   d) 24  
   e) None of these

34). Two Pipes A and D opened together to fill the tank but after the tank was 56% full the pipe D was closed then find the total time required to fill the tank? 
   a) 13  
   b) 24  
   c) 11  
   d) 18  
   e) None of these

35). Three Pipes A, B and C are opened together to fill a tank but after how much time the Pipe B should be closed to fill the tank in 10 hours? 
   a) 2.5 hrs  
   b) 3.5 hrs  
   c) 1 hr  
   d) 1.5 hr  
   e) None of these

Direction (36-40): The below table shows the number of days taken by 4 persons to complete two projects (A and B). Some Data’s are missing here.

<table>
<thead>
<tr>
<th>Person</th>
<th>No of days to Finish project A</th>
<th>No of days to Finish project B</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Q</td>
<td>__</td>
<td>40</td>
</tr>
<tr>
<td>R</td>
<td>30</td>
<td>___</td>
</tr>
<tr>
<td>S</td>
<td>15</td>
<td>60</td>
</tr>
</tbody>
</table>

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36). P & Q together works for 2 days (for project A) and they were replaced by R & S. R and S works for 2 days (for project A). How much work is still left. If P & Q finishes the whole project (A) in 7 1/7 days?
   a) 75 units
   b) 78 units
   c) 80 units
   d) 85 unit
   e) None of these

37). P, Q & R work together (for project B), how much time they will take to finish the project B, if Q, R & S together finishes the whole project(B) in 13 1/3 days?
   a) 9 3/13 days
   b) 3 5/13 days
   c) 10 days
   d) 11 days
   e) None of these

38). P and S started work for project A. P worked at 120% of his efficiency and S worked at 150% of his efficiency. In how many days P & S finish the whole project A?
   a) 4 days
   b) 5 18/30 days
   c) 4 18/33 days
   d) 10 days
   e) None of these

39). If the project B completed in 7 47/79 days by all the persons then in how many days R alone can complete the whole project B?
   a) 25
   b) 30
   c) 35
   d) 40
   e) None of these

40). If P and R started working together (Project A) and Q and S started working together (Project B), then find the ratio of number of days taken to complete by P and R in project A to the number of days taken to complete by Q and S in project B
   a) 11:13
   b) 5:16
   c) 5:6
   d) 6:7
   e) 3:4

Directions (Q. 41-45) Study the following bar graph carefully and answer the given questions:
41). The speed of Vehicle E on Day 2 is how much percent more or less than the speed of the Vehicle A on Day 1? (Approx)
   a) 40
   b) 23
   c) 15
   d) 32
   e) None of these

42). The speed of vehicle F on day 3 is 20% more than its speed on day 2 then find the time taken by the vehicle on day 3 to travel 70 km more distance than on day 2?
   a) 10
   b) 12
   c) 7
   d) 17
   e) None of these

43). What is the ratio between the total speed of all the vehicles on day 1 and day 2?
a) 85:79  
b) 23:56  
c) 67:49  
d) 57:79  
e) None of these

44). Vehicle B started its journey on day 3 with the same speed to travel the same distance as on day 2 but due to some breakdown it took 7 hours more than the usual time then find the difference between the speed on Day 1 and Day 3?
   a) 18  
b) 12  
c) 8  
d) 10  
e) None of these

45). The distance travelled by vehicle B on day 2 is how much percent more than the distance travelled by vehicle D on Day 1?
   a) 30  
b) 25  
c) 45  
d) 50  
e) None of these

Directions (Q. 46 – 50) Study the following information carefully and answer the questions given below:

The following table represents strength of six different school in 2014 and 2016 and percentage increase/decrease in 2015 and 2016. Some data are missing.

(NOTE: (+) sign indicates percentage increase and (-) sign indicates percentage decrease.)

<table>
<thead>
<tr>
<th>Schools</th>
<th>Strength in 2014</th>
<th>% increase/decrease in 2015</th>
<th>% increase/decrease in 2016</th>
<th>Strength in 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>1500</td>
<td>+10%</td>
<td>-</td>
<td>1980</td>
</tr>
<tr>
<td>Q</td>
<td>2000</td>
<td>-</td>
<td>-8%</td>
<td>1748</td>
</tr>
<tr>
<td>R</td>
<td>2200</td>
<td>+15%</td>
<td>-10%</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>1800</td>
<td>-</td>
<td>+10%</td>
<td>1881</td>
</tr>
<tr>
<td>T</td>
<td></td>
<td>-15%</td>
<td>+25%</td>
<td>2550</td>
</tr>
<tr>
<td>U</td>
<td>2500</td>
<td>-20%</td>
<td>+15%</td>
<td></td>
</tr>
</tbody>
</table>

46). Find the sum of strength of school U in 2015 and the strength of school R in 2016.
   a) 3456  
b) 2389  
c) 4277  
d) 4215  
e) none of these
47). Percentage increase/decrease in the strength of school P in 2016 is what percent of the percentage increase/decrease in the strength of school Q in 2015?
   a) 450%
   b) 400%
   c) 320%
   d) 250%
   e) none of these

48). Strength of school T in 2014 is what percent more than the strength of school Q in 2014?
   a) 20%
   b) 14%
   c) 15%
   d) 22%
   e) none of these

49). Find the sum of strength of all the schools in 2016.
   a) 13245
   b) 12736
   c) 11637
   d) 14235
   e) none of these

50). Find the respective ratio of the percentage increase/decrease in the strength of S in 2015 and that of P in 2016.
   a) 4:1
   b) 2:3
   c) 1:4
   d) 3:2
   e) none of these

Solution

1). Answer: (c)
Number of readers from state F in the year 2012
= \(57000 \times \frac{100}{10} \times \frac{22}{100} = 1.254\) lakh
Number of readers from state F in the year 2008
= \(38700 \times \frac{100}{9} \times \frac{26}{100} = 1.118\) lakh
Required difference= 1.254- 1.118= 13600

2). Answer: (a)
Let the number of readers from state A be 2x and 5x respectively in the year 2008 and 2012
So,
Total number of readers from state A in the year 2008
= 2x\*100/10 = 20x
Total number of readers from state A in the year 2012
= 5x\*100/15 = 100x/3
Required ratio= 20x: 100/3x= 3:5

3). Answer: (c)
The number of readers from state B in the year 2008
The number of readers from state B in the year 2012 = 51300*100/9 *16/100 = 91200
Total readers = 60200+91200 = 151400
4). Answer: (d)

The number of readers from state B in the year 2008 = 430000*14/100 = 60200
The number of readers from state C in the year 2008 = 430000*17/100 = 73100
Total readers from state B and C in the year 2008 = 133300
The number of readers from state B in the year 2012 = 570000*16/100 = 91200
The number of readers from state C in the year 2012 = 570000*28/100 = 159600
Total readers from state B and C in the year 2012 = 91200+159600 = 250800
Required difference = 250800-133300 = 117500
5). Answer: (b)

Let the total number of readers from all states be x
26x/100 - 24x/100 = 5200
2x/100 = 5200
x = 260000
Number of readers from state B
= 14*260000/100 = 36400
Number of readers in state B in 2012
= 36400*130/100 = 47320
6). Answer: (e)

Selling price of Redmi = 8000*120/100 = Rs 9600
Selling price of Nokia = 20000*115/100 = Rs 23000
Required percentage = (23000-9600)/23000* 100 = 58.26%
7). Answer: (a)

Cost price of Micromax = 12000/80*100 = Rs 15000
Cost price of Samsung = 18000/90*100 = Rs 20000
Required difference = 20000-15000 = Rs 5000
8). Answer: (e)

Cost price of Micromax = 12000/80*100 = Rs 15000
Cost price of Samsung = 18000/90*100 = Rs 20000
So, Average price of all the mobile companies
= (15000+20000+8000+15000+20000)/5
= 78000/5
= Rs 15600
9). Answer: (d)
Cost price of each Apple mobile = 15000
Selling price of each Apple mobile= 15000*130/100 = 19500
The Apple Company announces a discount of 35% on the marked price for each mobile.
Marked price*65/100 = Selling price
MP *(65/100) = 19500
MP = 19500*100/65= 30000

10). Answer: (b)
Profit earned in Apple= 15000*30/100= Rs 4500
Profit earned in Redmi = 8000* 20 /100= 1600
Required percentage= (4500-1600)/1600*100= 181.25%

11). Answer d
The probability of drawing a red ball from bag A is 3/10,
18 C1/(18+y+g) C1 = 3/10
18/(18+y+g) = 3/10
60 = 18+y+g
Yellow + green = 42 balls
The number of yellow and green balls present in bag A is in the ratio of 3:4
7’s = 42=> 1’= 6
Yellow balls= 18
Green balls= 24
Total balls in bag A= 18+24+18 = 60
The probability of drawing one yellow balls if two balls are drawn from bag A at random
=> > 18 C1 and 42 C1 / 60 C2
=> (18*42)/60 C2
=> 126/295

12). Answer c
Total number of yellow and red balls = 60-12= 48
Number of yellow balls= 48*3/8= 18
Number of red balls = 48*5/8= 30
Required probability= 30 C1 *12 C1 /60 C2
= 12/59

13). Answer e
Let the number of green balls in bag D be x
Yellow balls = x+4
Probability of drawing one red ball= ¾
24 C1 /x+x+4+24 C1 = ¾
24/2x+28= ¾
32= 2x+28
4= 2x
x= 2
Total number of balls= 24+2+ (2+4) = 32

14). Answer a
Number of green balls in bag B = 50- (15+12)= 23
Probability of not getting green ball= 27C3/50C3
= 117/784
Probability of getting atleas one green ball
= 1- (117/784)
15. **Answer b**
Number of green balls in bag E = \(25 \times 4/5 = 20\)
Probability of getting either a red or green ball
= \((^{25}C_1 + ^{20}C_1)/^{35}C_1\)
= \((25+20)/55\)
= \(45/55\)
= \(9/11\)

16. **answer: b**
Let C takes \(X\) hours to fill the cistern.
According to the question:
\[
\frac{4}{24} + \frac{4}{x} + \frac{5}{x} + \frac{5}{30} = 1
\]
\[
\Rightarrow \frac{1}{6} + \frac{9}{x} + \frac{1}{6} = 1
\]
\[
\Rightarrow \frac{2}{6} + \frac{9}{x} = 1
\]
\[
\Rightarrow \frac{9}{x} = 1 - \frac{1}{3}
\]
\[
\Rightarrow \frac{9}{x} = \frac{2}{3}
\]
\[
\Rightarrow x = \frac{27}{2} \text{ hours}
\]
Hence, C can alone fill the cistern in \(\frac{27}{2}\) hours.

17. **answer: d**
Let D should be closed after \(x\) hours.
\[
\frac{x}{30} + \frac{x}{45} + \frac{20}{45} = 1
\]
\[
\Rightarrow (\frac{3x+2x}{90}) = 1 - \frac{20}{45}
\]
\[
\Rightarrow \frac{5x}{90} = \frac{(45-20)}{45}
\]
\[
\Rightarrow \frac{x}{18} = \frac{25}{45}
\]
\[
\Rightarrow x = 10 \text{ hours.}
\]
Hence, D should be closed after 10 hours.

18. **answer: d**
Let time taken by B to fill the cistern = \(4x\) hours
Hence, time taken by F to fill the cistern = \(2x\) hours
And time taken by C to fill the cistern = \(x\) hours
According to the question:
\[
\frac{48}{x} + \frac{48}{2x} + \frac{48}{4x} = 1
\]
\[
\Rightarrow (\frac{192 + 96 + 48}{4x}) = 1
\]
\[
\Rightarrow 4x = 336
\]
\[
\Rightarrow x = \frac{336}{4}
\]
\[
\Rightarrow x = 84 \text{ hours.}
\]
Hence, time taken by F to fill the cistern = \(2 \times 84 = 168\) hours.

19. **answer: b**
Part of the tank filled in 2 hours = \(\frac{1}{24} + \frac{1}{30} = \frac{3}{40}\)
\Rightarrow \text{Part of the tank filled in } 2 \times 13 \text{ hours} = 3 \times 13/40 = \frac{39}{40}
Remaining part = \(1 - \frac{39}{40} = \frac{1}{40}\)
Since A is opened first, time taken by A to fill \(1/40\) part:
\[
x/24 = 1/40
\]
\[
\Rightarrow x = \frac{3}{5}
\]
Hence total time = \(2 \times 13 + \frac{3}{5} = 26(3/5)\) hours.

20. **answer: a**
Let both the pipes can fill the cistern in \(x\) hours.
According to the question:
\[ \frac{x}{12} + \frac{x}{24 \times 3} = 1 \]
\[ \Rightarrow \frac{x}{12} + \frac{x}{72} = 1 \]
\[ \Rightarrow (6x + x)/72 = 1 \]
\[ \Rightarrow 7/72 = 1 \]
\[ \Rightarrow x = 10\ 2/7 \text{ hours.} \]
Hence, both the pipes can fill the cistern in 10 2/7 hours.

21). Answer a
Total number of balls in Bag A
= 6+4+2+3=15
Ways of selection of two red balls
=n(E)= \( ^6C_2 \)
Ways of selection of two balls
= n(S) = \( ^{15}C_2 \)
So required probability= \( \frac{^6C_2}{^{15}C_2} \)
= \( \frac{6\times5}{15\times14} \)
= 1/7

22). Answer b
Total number of balls =12
= \( ^{12}C_3 \)
Ways to pick 2 red balls= \( ^4C_2 = 6 \)
Ways to pick one green balls= \( ^5C_1 = 5 \)
Required probability= \( \frac{6\times5}{220}= \frac{3}{22} \)

23). Answer c
Ways of selection of 4 balls = \( ^{15}C_4 \)
Ways of selection of one green ball= \( ^2C_1 \)
Ways of selection two blue balls= \( ^4C_2 \)
Ways of selection of one red ball= \( ^6C_1 \)
Required probability = \( \frac{24}{455} \)

24). Answer a
Total balls =12
Total outcomes = \( ^{12}C_2 \)
Favorable outcomes = \( ^2C_2 = 1 \)
Required Probability= \( 1/66 \)

25). Answer d
Total Ways to select two green balls= \( ^2C_2 \)
Total Ways to select two yellow balls= \( ^3C_2 \)
Probability of both green balls= \( \frac{1}{^{15}C_2} \)
Probability of both yellow balls= \( \frac{3}{^{15}C_2} \)
Required probability = \( \frac{1}{^{15}C_2} + \frac{3}{^{15}C_2} = \frac{4}{105} \)

26). Answer: b
Explanation:
Let the sum invested in both the schemes be X
Then
\[ X \times 8 \times 4/100 + X \times 12 \times 4/100 = 1500 \]
\[ 32X/100 + 48X/100 = 1500 \]
\[ 80X/100=1500 \]
\[ X = 1500 \times 100/80 \]
X = 1875
Money Invested in scheme A and B = Rs 1875 (Investment is same)
Therefore,
Money invested in scheme C = 1875/25*15 (Ratio Given)
= 1125
Interest earned in Scheme C = 1125*4*15/100
= Rs 675

27). Answer a
Let the Money Invested in scheme C be X
Now,
=1800* 100 / 4*6 (Interest earned in scheme C is twice the Scheme B)
= Rs 7500
Money invested in Scheme C = Rs 7500
Money Invested in Scheme B = 7500/15*7
= Rs 3500
Rate of Interest in Scheme B= 900*100/3500*4
= 6.42%

28). Answer c
Let the principal invested in scheme C is X
X*12*4/100=1200
X= 1200 *100/48
=2500
Therefore, Interest received from Scheme A =Rs 2500
Money Invested =2500*100/4*10
= Rs 6250
Therefore,
Money invested in Scheme A= Rs 6250

29). Answer b
Simple Interest earned by Amit in Scheme A= 15000*2*10/100
= Rs 3000
Compound Interest earned by Amit in Scheme C =15000{(1+12/100)^2-1})
= Rs 3816
 Difference = Rs (3816-3000) = Rs 816

30). Answer: a
Let the money invested in Scheme A be X, Scheme B = 10000-X
X*4*6/100+ 16*4(10000-x)=5000
24x/100 + 640000-64X/100 =5000
-40X + 640000/100= 5000
-40X+640000= 500000
40X=140000
X= 3500
Therefore,
Interest earned in Scheme B= 6500*16*4/100
=Rs 4160

31). Answer c
Total units of work = 75 (LCM of 25 and 15)
Work units done by both the pipes in 1 hour = 8
Work units done in 1 hour with ¾ of their actual efficiency= ¾ of 8 = 6
Time required to fill the tank = \( \frac{75}{6} = 12.5 \) hours.

32). Answer c
Total units of work = 60
Units of work done in 1 hour = (3+4)-4
= 3
Time required to fill 40% of the tank = \( \frac{24}{3} \)
= 8 hours

33). Answer c
Total Units of work = 240
Units of work done in 1 hour = (24+16)-15
= 25
Units of work done in 27 hours alternatively = 9 * 25
= 225
Remaining units needs to be done by A = \( \frac{15}{24} \)
= \( \frac{5}{8} \)
Total time required = \( \frac{27+5}{8} \)
= 27.625 hours

34). Answer e
Total units of work = 50
Units of work done in 1 hour = 7
Time required to fill 56% of the tank by A and D = \( \frac{28}{7} \)
= 4 hours
Time required to fill the remaining tank by A = \( \frac{22}{2} \)
= 11 hours
Total time required = 4 + 11
= 15 hours.

35). Answer d
Total units of work = 300
A and C will be opened for 10 hours
So, work done by A and C = (12+15) * 10
= 270
So, B should be opened for remaining units = \( \frac{300-270}{20} \)
= 1.5 hours.

36). Answer: (b)
P finishes project A in 10 days
Q finishes project A in x days
Total work 10x
Efficiency of P is x
Efficiency of Q is 10
10x/10+x = 50/7
X=25 days
Total work becomes 150 units
Efficiency of P is 15
Efficiency of Q is 6
Efficiency of R is 5
Efficiency of S is 10
P & Q finishes 42 units in 2 days
R & S finishes 30 units in 2 days
Remaining work = 150-72=78 units

37). Answer: (a)
Q —— 40 days total work
R —— x days 120x
S —— 60 days
Efficiency of Q 3x
Efficiency of R 120
Efficiency of S 2x
120x/5x+120 = 40/3
X = 30 days
P, Q & R finishes the whole work in 120/13 = 9 3/13 days

38). Answer: (c)
P —— 10 days total work
S —— 15 days 30 units
Efficiency of P is 3 —— 120%3= 18/5
Efficiency of S is 2 —— 150%2= 3
P & S finishes the whole project(A) in 30/(3 + 18/5)= 4 18/33 days

39). Answer: (a)
P —— 20 days Total work
Q —— 40 days 120x
R —— x days
S —— 60 days
Efficiency of P is 6x
Efficiency of Q is 3x
Efficiency of R is 120
Efficiency of S is 2x
120x/11x+120 =600/79 —— --> x=25 days

40). Answer: b
Project A:
1/10+1/30 = 4/30 = 30/4
Project B:
1/40+1/60=5/120 =120/5
Required ratio = 30/4 : 120/5 = 5:16

41). Answer d
Speed of vehicle E on Day 2= 450/9= 50kmph
Speed of vehicle A on day 1= 380/10= 38kmph
Required percentage= 12/38*100= 32%

42). Answer c
Speed of vehicle F on day 3= 120/100*50= 60kmph
Total distance on day 3= 350+70= 420 km
Required time= 420/60= 7 hours

43). Answer a
Total speed of all vehicles on day 1= 38+23+40+55+55+44= 255
Total speed of all vehicles on day 2= 56+22+25+34+50+50= 237
Required ratio= 255:237= 85:79

44). Answer c
Speed of vehicle B on day 3 = 330/22= 15 kmph
Speed of vehicle B on day 1= 253/11= 23 kmph
Required difference = 23-15 = 8 kmph

45). Answer d
Distance travelled by vehicle B on day 2 = 330
Distance travelled by vehicle D on day 1 = 220
Required percentage = \((330-220)/220\times100 = 50\%\)

46). Answer: c
Strength of school U in 2015 = 2500 x 80/100 = 2000
Strength of school R in 2016 = 2200 x 115/100 x 90/100 = 2277
Required sum = 2000 + 2277 = 4277

47). Answer: b
Let percentage increase/decrease in the strength of school P in 2016 = x%
And percentage increase/decrease in the strength of school Q in 2015 = y%
Now,
1500 x 110/100 x (100 + x)/100 = 1980
=> (100 + x)/100 = 1980 x 100/110 x 1/1500
=> (100 + x)/100 = 1.2
=> 100 + x = 120
=> x = 20 => 20% increase
And
2000 x (100 + y)/100 x 92/100 = 1748
=> (100 + y)/100 = 1748 x 100/92 x 1/2000
=> (100 + y)/100 = 0.95
=> 100 + y = 95
=> y = -5 => 5% decrease
Required percentage = \((20/5)\times100 = 400\%\)

48). Answer: a
Let the strength of school T in 2014 = y
y x 85/100 x 125/100 = 2550
=> y = 2550 x 100/125 x 100/85
=> y = 2400
Required percentage = \[((2400 - 2000)/2000)\times100 = 400/2000\times100 = 20\%\)

49). Answer: b
Strength of school R in 2016 = 2200 x 115/100 x 90/100 = 2277
Strength of school U in 2016 = 2500 x 80/100 x 115/100 = 2300
Required sum = 1980 + 1748 + 2277 + 1881 + 2550 + 2300 = 12736

50). Answer: c
Let percentage increase/decrease in the strength of school S in 2015 = x%
And percentage increase/decrease in the strength of school P in 2016 = y%
1800 x (100 + x)/100 x 110/100 = 1881
=> (100 + x)/100 = 1881 x 100/110 x 1/1800
=> (100 + x)/100 = 0.95
=> 100 + x = 95
=> x = -5 => 5% decrease
1500 x 110/100 x (100 + y)/100 = 1980
=> (100 + y)/100 = 1980 x 100/110 x 1/1500
=> (100 + y)/100 = 1.2
=> 100 + y = 120
=> y = 20 => 20% increase
Required ratio = 5:20 = 1:4