100
Most Frequently
Asked Questions

Most Frequently Asked Questions - 1

1) There are six bells ringing at an interval of 5 sec, 6sec, 8 sec, 12 sec, 20 sec and 30 sec. If all of them start together at 12:00 pm till 1:00 pm they will ring together how many times?
a) 20　　　　　　　　b) 30　　　　　　　　c) 31　　　　　　　　d) 21

2) The arithmetic mean of two numbers is 34 and their geometric mean is 16. Find the bigger of the two numbers.
a) 64　　　　　　　　b) 32　　　　　　　　c) 16　　　　　　　　d) 48

3) Find the minimum number of square tiles needed to floor a room of size 4.83m * 7.35m.
a) 905　　　　　　　b) 1005　　　　　　　c) 805　　　　　　　d) None of these

4) The radius of a circle is increased by 50%. Find the percentage change in the area of circle?
a) 100%　　　　　　b) 125%　　　　　　c) 250%　　　　　　d) 2500%

5) The side of a square is increased by some percentage which resulted in 69% increase in the area of the square. Find the percentage increase in side?
a) 13%　　　　　　　b) 30%　　　　　　　c) 33%　　　　　　　d) 35%

6) A spherical ball of radius 3 cm is dropped in a cylinder of radius 6 cm. Find the increase in the height of the water level in the jar?
a) 3 cm　　　　　　b) 6 cm　　　　　　c) 1 cm　　　　　　d) 4.5 cm

7) A tree of height 36 m is present at one of the ends of a road. It broke down because of wind in such a manner that the top of tree touches the other end of the road making an angle of elevation of 30 deg with ground. Find the height at which the tree broke?
a) 12 m　　　　　　b) 6 m　　　　　　c) 24 m　　　　　　d) None of these

8) Four horses are tied at the four corners of a square plot of side 25 m with a rope of length 10.5 m each. Find the area of plot that cannot be grazed by the horses?
a) 280 m^2　　　　b) 276.5 m^2　　　　c) 278.5 m^2　　　　d) 287.5 m^2

9) There is a circular ground of radius 35m. At the centre of the ground a cylindrical well of radius 7m is dug up to a depth of 15m and the sand taken out is spread on the ground so that it is in proper level. Find the height of the sand?
a) 0.675 m　　　　b) 0.625 m　　　　c) 0.650 m　　　　d) 0.6 m

10) The cost of a diamond varies as the square of its weight. If a diamond is broken into four smaller pieces of size in the ratio 1:2:3:4 it results in a loss of Rs 70000. Find the Price of the original Diamond.
a) Rs. 100000　　　b) Rs. 90000　　　c) Rs. 120000　　　d) None of these

11) There is certain number of students in the class. If the number of students per bench is increased by 4 then we need 5 lesser benches. But if the number of students per bench is reduced by 5 then we need 10 more benches. Find the number of students in the class?
a) 800　　　　　　　b) 600　　　　　　　c) 500　　　　　　　d) 700

12) There is a wheel of diameter 35 cm. The wheel completes 125 revolutions per minute. Find the distance travelled by the wheel in 3 hrs?
a) 8.25 km　　　　b) 16.5km　　　　c) 24.75 km　　　　d) 49.5 km

13) By selling an article for Rs 480 a person makes a loss of 25%. At what price should he sell the article to make a profit of 25%?
a) Rs. 800　　　　b) Rs. 500　　　　c) Rs. 505　　　　d) Rs. 600

14) A person sold an article at a loss of 7.5%. If he increases the selling price by Rs 132 he makes a profit of 4.5%.Find the cost price of the article?
a) Rs.1800　　　　b) Rs. 4400　　　　c) Rs.1200　　　　d) Rs.1100

15) By selling an article for Rs.1682 a person makes twice as much percent loss as the percentage profit he makes by selling the same article for Rs 2087. Find the cost price of the article?

Pankaj Gandhi's Academy

a) Rs 1952   b) Rs 1884.5   c) Rs.2000   d) none of these

16) Find a single discount equivalent to a series of discounts of 20%, 15% and 12%?
a) 20.08%   b) 40.16%   c) 60.16%   d) 15.80%

17) A person sold two articles at the same selling price of Rs 4692. One of them is sold at a loss of 15% and other at a profit 15%. Find the total overall profit /loss in the whole transaction?
a) 2.25%   b) 0% no profit no loss   c) 5%   d) 3%

18) A jar contains 20 lit of 30% concentrated sugar solution. To that solution 5kg of sugar is added find the concentration of sugar in the solution?
a) 45%   b) 48%   c) 44%   d) 42%

19) To a jar containing 360 lit of 32% concentrated salt solution, 600 lit of 48% concentrated salt solution is added what will be the concentration.
a) 46%   b) 48%   c) 44%   d) 42%

20) Three jars containing spirit and alcohol in the ratio 2:3, 3:5 and 5:4. The contents of the three jars are mixed. Find the ratio of spirit to alcohol in the mixture If the total quantity of liquid in each jar is equal.
a) 498:601   b) 479: 601   c) 499:590   d) 489:590

21) In a zoo there are some peacocks and remaining tigers. Find the number of tigers in the zoo if there are in all 320 eyes and 420 legs.
a) 50   b) 80   c) 110   d) 120

22) The population of a village is increased by 15% in the first year and then again by 10% in the next year. But in the third year it decreases by 8%. What will be the population at the end of three years if in the beginning it was 80000?
a) 90104   b) 91104   c) 93104   d) 93000

23) Find how many numbers less than 500 are there which are not divisible by 2, 3 or 5.
a) 143   b) 145   c) 147   d) 134

24) Find how many three digit numbers are there which when divided by 7 give remainder 3
a) 128   b) 129   c) 154   d) 160

25) Find the summation of all three digit number divisible by 9?
a) 54350   b) 55350   c) 55450   d) 55550

26) Find how many numbers between 200 and 800 are divisible by 14.
a) 44   b) 43   c) 45   d) 46

27) A ball is dropped from a height of 1200 m. Every time it touches ground it renounces to 3/4th of the height from which it had fallen. Find the distance travelled by the ball before coming to the rest?
a) 8400 m   b) 8600 m   c) 8500 m   d) None of these

28) A square of side 120 cm is drawn. The mid points of the four sides are joined to form another square. The mid points of the new square formed are again joined to form another square. The process is continued till we get a fine dot. Find the summation of the areas of all the squares formed?
a) 28100   b) 28900   c) 27900   d) 28800

29) In a class of 1500 students 620 are preparing for CSAT, 480 are preparing for MBA and 820 are preparing for IT jobs. 280 are preparing for CSAT and MBA, 190 are preparing for MBA and IT jobs and 330 are preparing for IT jobs and CSAT. Find how many of them do all the three if 270 students are preparing for none of these three.
a) 80   b) 90   c) 100   d) 110

30) In a class 38% failed in maths and 68% passed in English. Find what percent of the students failed in both if 45% passed in both
a) 15   b) 10   c) 20   d) 25

31) At a party every person shook hand with every other person once. If the total number of handshakes was 91 find how many persons were present at the party.

a) 20   b) 14   c) 12   d) 40

32) Walking at a speed 5/6th of usual a person reaches 9 min late to the office. Find the time required usually.

a) 45 min   b) 69 min   c) 51 min   d) 54 min

33) A person went from home to office by bike and came back walking, and in all required 6hrs 45 min. Had he gone walking both the sides he would have needed 1hr 30 min more. Find how much time he will need if he goes both the sides on bike?

a) 5 hr 52 min   b) 5 hr 30 min   c) 4 hr 15 min   d) 5 hr 15 min

34) A person goes from home to office with the speed of 30 km /hr and reaches 20 min late. But if he goes with speed of 60 km/hr he reaches 40 min earlier. Find the speed with which he should travel the distance to be on time?

a) 45 km/hr   b) 40 km/hr   c) 36 km/hr   d) 50 km/hr

35) A train of length 1200 m crosses a man standing on the platform in 36 sec. While the same train crosses a man sitting in a train travelling in the opposite direction in 24 seconds. Find the Speed of the other train if the length of the other train is 800m.

a) 60km/hr   b) 150 km/hr   c) 100 km/hr   d) 180km/hr

36) Two trains of lengths 360m and 540m crossed each other in 30 sec while going in opposite direction and in 1.5min while going in same direction. Find the speed of the faster train?

a) 36km/hr   b) 54 km/hr   c) 60 km/hr   d) 72km/hr

37) The expenditure of a hostel is partly fixed and partly variable. The expenditure per head is Rs. 1600 when 120 students are there and is Rs. 1400 when 200 students are there. What will be the expenditure per head when 300 students are there?

a) 1200   b) 1100   c) 1300   d) None of these

38) A certain amount of money at certain rate of compound interest triples itself in 9 yrs. In how many years Rs. 1lakh will become 7.29 Cr?

a) 243 years   b) 81 years   c) 54 years   d) 27 years

39) A person bought 2000 bananas at rate of Rs. 9 per dozen. He sold a part of it at Rs. 1 per banana and the remaining at Rs. 0.8 per banana. Find the number of bananas he sold at Rs. 1 if in all he made a profit of 10%.

a) 1000   b) 500   c) 750   d) 250

40) Two Stations Pune and Delhi are 1800 kms apart. A train started from Delhi towards Pune at 6 am with a speed of 120 km/hr. And a train started from Pune towards Delhi at 8 am with a speed of 180 km/hr. Find at what time the two trains will meet?

a) 1:20 pm   b) 1:12 pm   c) 3:12 pm   d) 3:20 pm

41) There are certain number of students in a class, if the number of students per bench is increase by 2 we need 9 lesser benches but if the number of student per bench is reduced by 2 we need 15 more benches. Find the number of students in the class?

a) 300   b) 360   c) 450   d) 240

42) The price of sugar is reduced by 20%. By what percent the consumption should be reduced so that the expenditure remains constant.

a) 25%   b) 20%   c) 15%   d)10%

43) The price of tomato is increased by 25%. By what percent the consumption be reduced so that the expenditure is increased only by 10%.

a) 24%   b) 12%   c) 15%   d) 20%

44) A reduction of 16 2/3 % in price of oranges enables a person to buy 3 dozen more oranges for the same price of Rs 9000. Find the new price per orange.

a) Rs. 3.133   b) Rs. 2.133   c) Rs. 4.133   d) Rs. 5.133

Pankaj Gandhi's Academy

45) A person got 32% marks in an exam and failed by 48 marks. Another person scored 45% marks and got 30 marks more than the minimum marks needed for passing. Find the maximum possible marks in the exam?

a) 800   b) 600   c) 500   d) 1000

46) A person scored 48% marks and failed by 49 marks another person scored 61% marks and got 42 marks more than the minimum marks needed for passing. Find the minimum % marks needed for passing the exam?

a) 56%   b) 52%   c) 55%   d) 58%

47) The length, breadth and height of a cuboid are increased by 20%, 15% and 12% resp. Find the percentage change in the volume of the cuboid?

a) 54.56%   b) 54.60%   c) 56%   d) 55%

48) The population of a village in the first year increased by 20%, next year it reduced by 10% and in the next year again it increased by 20%. If at the end of three years it was 16,20,000. Find the population in the beginning.

a) 1260000   b) 1250000   c) 1245000   d) none of these

49) Fresh Chillies contain 75% water. When they are dried for an hour it contains 40% water. Find how many kgs of dried chillies can be obtained from 36 kg of fresh chillies?

a) 16 kg   b) 12 kg   c) 20 kg   d) 15 kg

50) When a number is divided successively by 6, 8 and 9 it gives the remainder 2,3and 4 respectively. Find what will be the remainder when it is divided by 24 what will be the remainder

a) 12   b) 0   c) 20   d) 18

51) When a certain number is divided by 154 it gives 73 as remainder. What will be the remainder when it is divided by 22?

a) 9   b) 0   c) 7   d) cannot be determined

52) A number when divided by 441 it gives 20 as remainder. What will be the remainder when it is divided by 20?

a) 1   b) 0   c) 11   d) cannot be determined

53) The average of seven consecutive odd numbers is 73. What will the average if the next two odd numbers are also included.

a) 74   b) 73.5   c) 75   d) None of these

54) The average of 11 consecutive even numbers is 226. Which is the largest number?

a) 238   b) 236   c) 234   d) None of these

55) A batsman had a certain average for certain average for first 27 innings. In the next he scored 120 runs thereby increasing the average by 3. Find the new average.

a) 36   b) 37   c) 38   d) 39

56) The average weight a class of 60 students was calculated to be 78.2.Later on it was found out that weights of three persons were recorded as 57, 38 and 49 instead of 75,83 and 94. Find the actual average of the class.

a) 80   b) 79   c) 78.5   d) cannot be determined

57) A class has 45 students. When a student of weight 68 kg was taken out and replaced a person. The average weight of the class got increased by 1.5kg find the weight of new added person.

a)135.5 kg   b) 130 kg   c) 140 kg   d) 135 kg

58) A person scored marks in the ratio 6:7:8:9:10 in a five paper exam. Find in how many papers he scored more than 80% if overall he scored 60% in the exam?

a)0   b) 2   c) 3   d) 4

59) 3 pencils, 7 erasers and 10 sharpeners cost Rs 74. 7 pencils, 9 erases and 6 sharpeners cost Rs 98. Find the cost of 5 pencils, 8 erasers and 8 sharpeners?

a) 88   b) 86   c) 80   d) 84

Pankaj Gandhi's Academy

60) Divide Rs 6650 among three persons A,B and C such that For every 2 Rs that A gets , B gets 3 Rs. And for every 4Rs that B gets, C gets 5 Rs. Find the share of C?
a) 2280   b) 1520   c) 2850   d) none of these

61) A and B together can complete a work in 36 days, B and C together can complete the same work in 45 days and C and A together can complete the same work in 60 days. Find in how many days all the three together can complete the same work?
a) 20 days   b) 30 days   c) 24 days   d) 10 days

62) A, B and C together can complete a work in 40 days. All of them started to work together But after 10 days A left and B and C completed the remaining work in 45 days. Find in how many days can B alone can complete the work if speed of B is twice that of A.
a) 60 days   b) 90 days   c) 75 days   d) 120 days

63) Two persons A and B together can complete a work in 30 days and 40 days resp. But because of viral infection on a particular day A can work only at 75% of usual efficiency and B can work at 66 2/3 % of his usual efficiency. Find in how many days both together now can complete the work?
a) 24   b) 25   c) 34   d) 20

64) A work can be completed by A alone in 5 days less than required by B alone to complete the same work and in 9 days more than the time required by both of them working together to complete the same work. Find in how many days both together can complete the work?
a) 5 days   b) 10 days   c) 8 days   d) 6 days

65) Three persons A,B and C can complete a work in 30,24 20 days resp. If A is assisted by B and C on alternate days find in how many days will the work get completed if A and B start on the first day
a) 12 12/19 days   b) 12 2/3 days   c) 12 3/5 days   d) None of these

66) Saifu and Kareena can complete a certain work in 15 days and 25 days. But when they work together their efficiency gets increased by 25%. Fin in how many days will they together complete the same work?
a) 9 days   b) 7.5 days   c) 20 days   d) 8 days

67) A can complete a certain work in 72 days. A worked for 12 days and left the work and B completed the remaining work in 48 days. Find in how many days will they together complete the same work.
a) 32 days   b) 40 days   c) 36 days   d) 45 days

68) Two Pipes A and B can fill a tank completely in 45 min and 60 min resp. Both of them are started to fill together after how many minutes pipe B should be closed so that the tank gets completely filled in 27 minutes.
a) 15 min   b) 20 min   c) 24 min   d) 10 min

69) A, B, C can paint a house in 6,8 and 12 days respectively. They together undertook a work to paint three houses. First A alone worked for 8 days and left the work. Then B alone worked for 6 days and left the work. Find in how many days now C alone will finish the remaining work?
a) 9 days   b) 11 days   c) 12 days   d) 10 days

70) A Pipe can fill a tank completely in 12 hrs. But because of a leak of 20 lit/min at the bottom of the tank it takes 20 hrs to fill the same. Find the capacity of the tank.
a) 24000 lit   b) 30000 lit   c) 36000 lit   d) 18000 lit

71) Three pipes A, B and C are attached to a tank. Pipe A can fill the tank completely in 12 hrs. B can fill the same in 15 hrs while Pipe C can empty the full tank in 10 hrs. First Pipe A is opened at 6 am. Then pipe B is opened at 8 am and then finally Pipe C is opened at 10 am. Fin at what time the tank will be completely filled?
a) 6:40 pm   b) 7:20 pm   c) 8:20 pm   d) 8:40 pm

72) There are three pipes whose cross sectional diameters are in the ratio 1:3:5. Pipe A and B together can fill the tank in 14 hrs. Find in how much time will all the three together fill the same tank?
a) 5 2/9 hrs   b) 5 hrs   c) 6 2/9 hr   d) 4 hrs

Pankaj Gandhi's Academy

73) 100 men working together can complete a certain work in 36 days. All the 100 men started together but after 9 days 28 men left the work. Find in all in how days the work will get completed?
a) 37.5 days   b) 39.5 days   c) 42.5 days   d) 46.5 days

74) 18 men and 15 women working together 10 hrs a day can complete a work in 12 days. While 9 men and 10 women working together 9 hrs a day can complete the same work in 24 days. Find in how many days will 15 men and 15 women working together 9 hrs a day complete twice the work?
a) 15 day   b) 20 days   c) 24 days   d) 30 days

75) 10 painters can make 10 paintings working 10 hrs a day in 10 days using 10 canvases. Find how many paintings can be made by 15 painters working 16 hr a day in 20 days using 100 canvases.
a) 48   b) 50   c) 20   d) 50

76) 12 hens can lay 60 eggs in 4 days. Find how many eggs will be laid by 20 hens in 30 days.
a) 800   b) 750   c) 850   d) 600

77) A project can be completed by 10 workers working together in 10 hrs. All of them started working together at 6 am. But starting from 12 pm every hour one person left the work. Find at what time will the work get completed?
a) 6:20 pm   b) 6:40 pm   c) 7:20 pm   d) 7:40 pm

78) There are n men all of them started together to work. At the end of everyday one person left the work. The work was completed just when the last person was going to leave. Had no person left the work the work would have been completed in 3/5th of the time. Find how many men were there on the first day?
a) 8 men   b) 10   c) 15   d) 5

79) a boat goes 36 km upstream and returns back in 4 hrs 48 min. Fin the speed of boat in still water if the rate of current is 4 km/hr
a) 10 km/hr   b) 12km/hr   c) 16 km/hr   d) 20 km/hr

80) In an exam there were 200 questions. A student gets one mark for every right answer and 1/3 mark gets deducted for every wrong answer. A person attempted all the questions and got 144 marks. Find how many question did he get right?
a) 144   b) 155   c)151   d) 158

81) In a zoo there are some lions and some ostriches. In all there are 360 eyes and 488 legs. Find how many lions are there in the zoo?
a) 96   b) 116   c) 54   d) 64

Speed Time Distance Tough (Q 82 to 85)

82) Two persons are swimming along the opposite ends of a swimming pool. Both of them started together. First time they met at a distance of 38 m from one end. They continued to swim reached the ends and turned back this time they met at a distance of 17 m from other end. Find the Length of swimming pool.
a) 97 m   b) 100 m   c) 107 m   d) 94 m

83) Two persons are running around a circular track. Both of them started at the same time from the same starting point but in opposite direction. First time they met at a distance of 600 m from one end. They continued to run and next time they met at a distance of 300 m from the other end. Find the length of the circular track given that both of them are running at a constant speed.
a) 750 m   b) 1500 m   c) both (a) and (b)   d) none of these

84) A hare and a tortoise are decided to have a race around a circular track with both running in the opposite directions. The hare did not start till the tortoise had covered 1/4th of the distance. But the over confident hare started with a slower speed and when they met hare had covered only 1/4th of the distance. Now by how much % should hare increase his speed so that both of them reach the end at the same time?
a) 300%   b) 450%   c) 500%   d) 260%

85) A train is travelling from Pune to Nagpur. After travelling for 3 hrs it developed a technical problem and to be on a safer side it travelled the remaining distance with a speed 4/5th of the usual and reached 48 min late. Had the train reduced the speed 60 km further on it would reached only 36 min late. Find the distance to be travelled?

Pankaj Gandhi's Academy

a) 460   b) 495   c) 465   d) 437

86) A monkey is climbing the pole 150 meters high. Every alternate minute it goes up by 10 meters and the next minute it comes down by 6 meters. Find in how many minutes it will reach the top for the first time?

87) A monkey is climbing the pole 80 meters high. Every alternate minute it goes up by 12 meters and the next minute it comes down by 9 meters. Find in how many minutes it will reach the top for the first time.

88) A gong clock strikes for 2.5 seconds at 6 'o' clock for how much time it will strike at 12 'o' clock?

89) A gong clock strikes at an interval of 1sec. Find for how much time it strikes in a day?

90) If all the six lettered words that can be formed using the letters A,B,C,D, E and F once are arranged in a dictionary what will be the rank of the word "DEBCAF"
(a) 413   (b) 431   (c) 441   (d) none of these

91) How many Squares are there on the chess board?
a) 64   b) 154   c) 204   d) 304

92) How many rectangles are there on a chess board?
a) 1064   b) 1524   c) 1296   d) 1396

93) Find how many 8 digit numbers divisible by 5 can be formed using the digits 1, 2, 3, 4, 5?
(a) 76025   (b) 78125   (c) 80125   (d) 90625

94) Out of 8 teachers , 5 lawyers & 7 doctors a team of 10 persons is to be selected in how many different ways it can be done such that
a) It contains at least 1 teacher
b) It contains 1 of each
c) It contains exactly 3 teachers
d) It contains the number of teacher is thrice that of lawyer

95) A box contains 15 red, 8 white & 12 green balls. 4 balls are taken out what is the probability that
a) All balls are red
b) 2 balls are red & 2 balls are white
c) At least 1 ball is red
d) 2 balls are of same colour and 2 of different colour.
e) 2 balls are of same colour and other 2 of same colour

96) Aishwarya is having certain number of diamonds. If she divides them amongst two brothers Salman and Vivek, the difference between the square of the two numbers is 48 times the difference of the two numbers. Find the total number of diamonds she is having.
a) 24   b) 48   c) 96   d) cannot be determined

97) There is certain quantity of grass present in lawn and it grows at uniform rate. 60 cows eat the whole grass in 30 days while 30 cows eat it in 80 days.
I) Find how many days would 20 cows eat the whole grass?
II) Find maximum number of cows that can be fed on the grass for the infinite time period.
a) I.160 days II.18 cows   b) I.150 days II.15 cows
c) I.180 days II.12 cows   d) none of these

98) There are two candles of equal length one of them burns completely in 4 hours while the other burns completely in 6 hours. Both of them are ignited together and are extinguished after some time. The remaining length of one candle is four times the remaining length of other candle. Find for how much time the candles were burning?
a) 2hr 24min   b) 3hr 36min   c) 3hr 24 min   d) 3hr 20 min

99) A person stole certain number of oranges from an orchard and on his back he met 3 guards, to each guard he gave half the number of remaining oranges and half extra orange. At the end he was left with only one orange. Find how many oranges he had stolen?
a) 23   b) 19   c) 15   d) none of these

Pankaj Gandhi's Academy

100) There are 1000 bottles of wine arranged for a party. But a mischievous person added poison in one of the bottles. There is just one hour left for the party. The king has some rats which die in one house even if they are given even a slightest of the dose of poison. What is the minimum number of rats needed to find the bottle which contains the poison?

a) 1000　　　　　　　b) 999　　　　　　　c) 10　　　　　　　d) none of these

Solutions

1. LCM of (5, 6, 8, 12, 20, 30)
= (5 × 2 × 3) × 2 × 2 = 120
So, all bells will ring together after every 120 sec so, from 12.00 pm to 1 pm.
In 1 hr all bells will ring for $\frac{1 \times 60 \times 60}{120}$ = 30 times
And all will ring together at 12.00 pm. So, totally = 30 + 1 = 31 times.

2. let the numbers be x and y
So, GM = $\sqrt{xy}$
$\sqrt{xy}$ = 16
xy = 256 ➜ y = 256/x
$\frac{x+y}{2}$ = **34**
x + y = 68
x + 256/x = 68
$x^2 + 256 = 68x$
$x^2 - 68x + 256 = 0$
x = 4 or x = 64
If **x = 4 then y = 64**
And if **x = 64 then y = 4**

3. Let x × x be the size of a tile.
X should be maximum possible so as the number of tiles required will be minimum and x must divide 7.35 and 4.83
HCF of 4.83 and 7.35

3	483
7	161
23	23
	1

7	735
3	105
7	35
5	5
	1

HCF of 483 and 735
HCF = 7 × 3 = 21
So, HCF of 4.83 and 7.35 = 0.21
Size of tile = (0.21 × 0.21)
Number of tiles needed = $\frac{total\ Area}{size\ of\ tile}$ = $\frac{7.35 \times 4.83}{0.21 \times 0.21}$ = 35 × 23 = 805 tiles.

4. if r = 10 new r = 15
Original area = $\pi \times 10^2$ = 100 π

New area = $\pi \times 15^2$ = 225 π
% increase = $\frac{225\ \pi - 100\ \pi}{100\ \pi} \times 100$ = 125% ↑

5. Area = (Side)^2
Let original Area = 100.
So, original side = $\sqrt{100}$ = 10
New area = 100 + 69 = 169
New side = $\sqrt{169}$ = 13
% increased in side = $\frac{13-10}{10} \times 100$
= 30% ↑

Pankaj Gandhi's Academy

6. Volume of a sphere $= \frac{4}{3}\pi r^3$

r = 3 cm

So, increased in volume (volume of ball) $= \frac{4}{3}\pi \times 3 \times 3 \times 3$

$= 36\pi$

Let increase in water level is h and R is the radius of cylinder

So, increase in volume $= \pi R^2 h$

R = 6 cm

So, increase in volume $= \pi 6^2 h = 36\,\pi h$

Hence, $36\,\pi h = 36\,\pi$

So, h = 1 cm

7.
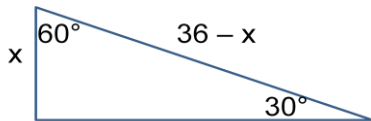
Width of road

For $\qquad\qquad 30^0 - 60^0 - 90^0$

Sides are in the ratio $1 \; : \sqrt{3} \quad : 2$

Side opposite to 30^0 is half of Hypotenuse

$x = \frac{1}{2}(36 - x) = \frac{x}{(36-x)} = \frac{1}{2}$

$2x = 36 - x$ ➔ $3x = 36$ hence, **x = 12**

8.
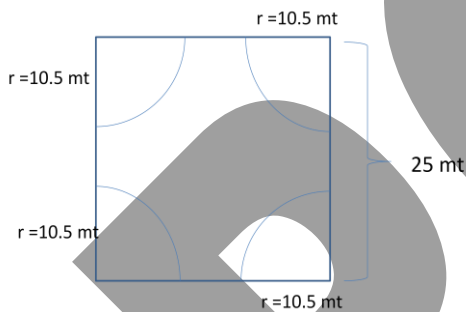
Total area = 25 × 25 = 625

Area that can be grazed $= 4 \times \left(\frac{1}{4}\pi r^2\right) = \pi \times (10.5)^2$

$= \frac{22}{7} \times 1.5 \times 10.5 = 22 \times 15.75 = 346.5$

Area that cannot be grazed = 625 − 346.5 = 278.5

9.
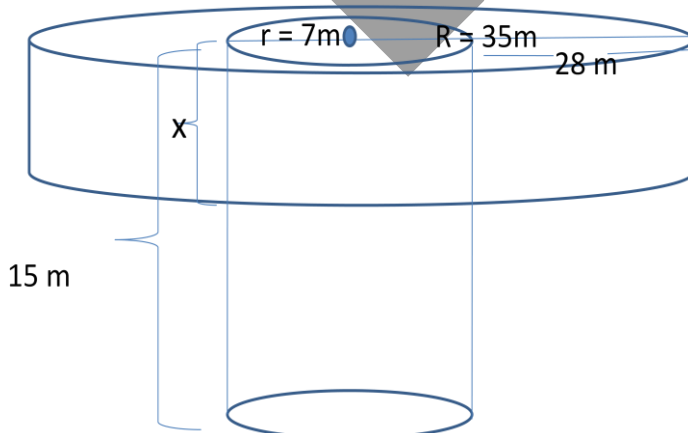
Volume of cylinder = $\pi R^2 h$
Volume of sand taken out = $\pi r^2 h$
$$= \pi \times 7^2 \times 15$$
$$= 735\,\pi$$
Volume of sand spread around = $\pi R^2 x - \pi r^2 x$
$$= \pi 35^2 x - \pi 7^2 x$$
$$= \pi x (35^2 - 7^2)$$
$$= \pi x \times 42 \times 28$$
$$= 1176\,\pi x$$
Hence, $735\,\pi = 1176\,\pi x$
x = 735/1176
x = 0.625 meters

10. Assume that the weight of original diamond is of 10x gm.
So, original cost = $(10x)^2 = 100x^2$
It is cut into the pieces → x, 2x, 3x, 4x
Cost of pieces,
1 gm → C1 = $(x)^2 = x^2$
         C2 = $(2x)^2 = 4x^2$
         C3 = $(3x)^2 = 9x^2$
         C4 = $(4x)^2 = 16x^2$
New total cost = $x^2 + 4x^2 + 9x^2 + 16x^2 = 30x^2$
Loss = $100x^2 - 30x^2 = 70x^2$
$70x^2 = 70000 = x^2 = 1000$
Original price = $100x^2 = 100 \times 1000 =$ **100000**

11. x be the number of student per bench
y be the number of benches.
Total student = xy ………… (1)
Total students = (x + 4) (y – 5) …………….. (2)
Total students = (x – 5) (y + 10) …….. (3)
(x + 4) (y – 5) = xy
(xy – 5x + 4y – 20) = xy
4y – 5x = 20 ……………… (i)

(x – 5) (y + 10) = xy
Xy + 10x – 5y – 50 = xy
10x – 5y = 50 …………….. (ii)
Solving we get,
x = 20 and y = 30
so, total students = xy
$$= 20 \times 30$$
$$= 600 \text{ students.}$$

12. Circumference = $2\pi r = 2 \times \frac{22}{7} \times \frac{35}{2} = 110$ cm
Dist in 1 min = 125 $\times$ 110 cm
Dist travelled in 3 hr = 3 $\times$ 60 min $\times$ 125 $\times$ 110 cm
= 180 $\times$ 125 $\times$ 110
= 180 $\times$ 13750
= 2475000 cm
= 24.75 km

13. SP = 480   loss = 25%
          CP   SP
25% loss 100 : 75
          4   :   3
$= \frac{CP}{SP} = \frac{4}{3} = $ CP $= \frac{4}{3} \times 480 = $ CP = 640

Pankaj Gandhi's Academy

New profit 25%

	CP		SP
Profit 25%	100	:	125
	4	:	5

$$= \frac{CP}{New\ CP}\ \frac{4}{5} = \frac{640}{New\ CP} = \frac{4}{5}$$

New CP $= \frac{5}{4} \times 640 = 800$

14.

	CP		SP
Original Price →	100x	$\xrightarrow[7.5\%\ loss]{}$	92.5x
New Price →	100x	$\xrightarrow[4.5\%\ profit]{}$	104.5x

Increase in SP = 104.5x – 92.5x

132	=	12x
12x	=	132

x = 11
CP = 100x
= 100 × 11 = 1100

15. Let if he sells article for 2087 he makes profit of x%
So, if he sells it 1682 he should had loss 2x%
CP + x% of CP = 2087 ……………. (1)
CP – 2x% of CP = 1682 …………… (2)
(1) – (2) → x% of CP + 2x% of CP = 2087 – 1682
3x% of CP = 405
x% of CP = 135
So,
CP + x% of CP = 2087
CP + 135 = 2087
CP = 2087 – 135
CP = 1952

16.

$$100x \xrightarrow{20\%\ reduced} 80x \xrightarrow{15\%\ reduced} 68x \xrightarrow{12\%\ reduced} 59.84x$$

Hence, Single discount = 100x – 59.84x = 40.16x = 40.16%.

17. S.P. of first article = 4692
And % profit = 15%
So, C.P. + 15% of C.P. = 4692
CP1 $= \frac{100}{115} \times 4692$
CP1 = 4080
S.P. of second article = 4692
And % loss = 15%
So, C.P. - 15% of C.P. = 4692
CP2 $= \frac{100}{85} \times 4692$
CP2 = 5520
Total cost price = 4080 + 5520
= 9600
Total selling price = 4692 + 4692
= 9384
Loss = SP – CP
Loss = 9600 – 9384
Loss = **216**

%loss = $\frac{SP-CP}{CP} \times 100$

= $\frac{216}{9600} \times 100$

= 2.25%

OR

Whenever, SP of two articles are same and one is sold at a profit of R% and another at a loss of R%

%loss = $\frac{R^2}{100} = \frac{15^2}{100}$ = **2.25%**

18. 20 lit of 30% conc. Sugar solution contains 30% of 20 = 6kg sugar
Added sugar = 5kg
Total sugar in mixture = 6 + 5 = 11kg
Total Quantity of mixture = 25
% of sugar in mixture = $\frac{11}{25} \times 100$ = 44%

19. Quantity of salt in 1st salt solution = $\frac{32}{100} \times 360$ = 115.22

Quantity of salt in 2nd salt solution = $\frac{48}{100} \times 600$ = 288kg

Total Quantity of salt in mixture = 115.2 + 288 = 403.2
Total Quantity of mixture = 360 + 600 = 960
% of salt in mixture = $\frac{403.2}{960} \times 100$ = 42%

20.   spirit   alcohol   total
1st →   2   :   3   5

2nd →   3   :   5   8

3rd →   5   :   4   9
Let each jar contains 360 lit (LCM of 5, 8, 9)
       Spirit   alcohol   total
1st → 2   :   3   5
i.e   144   :   216   360 = (5 × 72)

2nd → 3   :   5   8
i.e.   135   :   225   360

3rd → 5   :   4   9
i.e.   200   :   160   360

Sprit in total mix = 144 + 135 + 200 = 489
Alcohol in total mix = 216 + 225 + 160 = 601
Sprit is : Alcohol = 479: 601

21. No of tigers + peacocks = $\frac{320}{2}$ = 160
Let there are x tigers and y peacocks.
So, x + y = 160 … (1)
And 4x + 2y = 420 …. (2)
Equation (1)×2 ➔2x + 2y = 320
- equation (2) –   (4x + 2y) = 420

              - 2x = - 100
x = 50 and hence, y = 110
So, there were 50 tigers and 110 peacocks

Pankaj Gandhi's Academy

22. Initial population = 80, 000
Population after 1 yr = 80, 000 + 15% of 80,000 = 92, 000
Population after 2yrs = 92000 + 10% of 92,000 = 1,01,200
Population Next yr = 101200 – 8 % of 101200 = 93,104
So, population at the end of three years = **93,104**

23. Numbers less than 500 i.e. 1 to 499
Which are divisible by 2 = 249   (excluding 500)
Which are divisible by 3 = 166
Which are divisible by 5 = 99   (excluding 500)
Which are divisible by 2&3 i.e. 6 = 500/6 = 83
Which are divisible by 3&5 i.e. 15 = 500/15 = 33
Which are divisible by 2&5 i.e. 10 = 500 / 10 = 49   (excluding 500)
Which are divisible by 2&3&5 = 500/30 = 16
So, numbers which are divisible by 2 or 3 or 5 = 249 + 166 + 99 – 83 – 33 – 49 + 16 = 365
So, numbers which are not divisible by 2 or 3 or 5 = 499 – 365 = **134**

24. Three digits number → 100 to 999
Numbers which are 7's multiple + 3,
7's 14th multiple + 3 = 98 + 3 = 101
And 7's 142nd multiple + 3 = 997
Total required numbers = (142 – 14 + 1) = **129**

25. Three digits number 100 to 999
9's 12th multiple = 108
9's 111th multiple = 999
Total 9's multiples = 111 – 12 + 1 = 100
108 + 117 + 126 +...... 100 terms
This is A.P.
So, required summation = $\frac{100}{2}\{2 \times 108 + 99 \times 9\} = \frac{100}{2}\{216 + 891\} = \frac{100}{2}\{1107\} = 55350$

26. Numbers between 200 to 800,
14's 15th multiple is 210
And 14's 57th multiple is 798
Total 14's multiples = 57 – 15 + 1 = **43**

27. Distance travelled by ball = 1200 + {(900 + 900) + (675 +675)+ ..... ∞ }
= 1200 + {1800 + 1350 + ... ∞ }
= 1200 + {G.P. a = 1800 r = ¾ and n =∞}
= 1200 + { $\frac{1800}{1-\frac{3}{4}}$ }
= 1200 + 7200
= **8400 meters**

28.
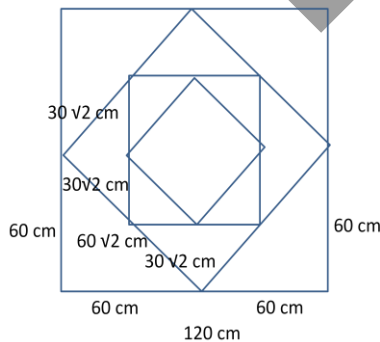
Side of first square S1 = 120
Side of second square S2 = $60\sqrt{2}$
Side of third square S3 = 60

Side of fourth square S4 = $30\sqrt{2}$

.
.
.

And so on.

Area of first square A1 = side^2 = $(120)^2$ = 14400
Area of second square A2 = $(60\sqrt{2})^2$ = 7200
Area of third square A3 = $(60)^2$ = 3600
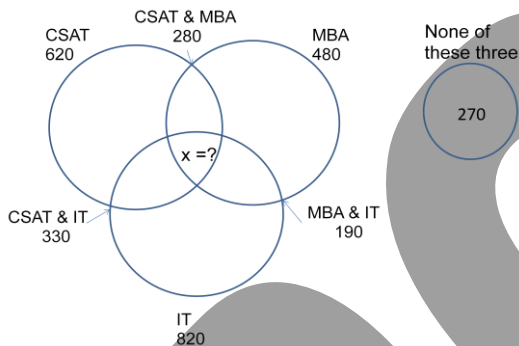Area of fourth square A4 = $(30\sqrt{2})^2$ = 1800

.
.
.
.

And so on.
Summation of the areas of all square formed = 14400 + 7200 + 3600 + 1800 + ... ∞

$$= \frac{14400}{1-\frac{1}{2}} = \textbf{28800}$$

29.

Students preparing for at least
One of these three   = CSAT+ MBA + IT – both CSAT & MBA – both MBA & IT – both IT & CSAT + all three
(1500 – 270) = 620 + 480 + 820 – 280 – 190 – 330 + x
1230 = 1120 + x
x = 110

30.

	Passed	Failed
Maths	62%	38%
English	68%	32%
Both	45%	?

Students passed in at least one of the subject (i.e. passed in Maths or English or both)
= 62% + 68% – 45%
= 85%
So, students failed in both = 100 – 85 = 15%

31. if n persons are there,
                No. of handshakes
1st person --   (n – 1)
2nd person --   (n - 2)
3rd person --   (n - 3)
.
.
.
(n – 1)th person- 1
nth person --   0

Pankaj Gandhi's Academy

Total handshakes = 1 + 2 + 3 + 4 + ... + (n - 1)

$91 = \frac{(n-1)(n-1+1)}{2}$

$91 = \frac{(n-1)n}{2}$

n(n – 1) = 182

n = 14 persons

32. As distance is constant,

Speed $\propto \frac{1}{time}$

	Original		new
Speeds→	x	:	5x / 6
Ratio of speeds →	6	:	5
So, ratio of time →	5	:	6

If original time is 5 min new time is 6 min difference is of 1 min but actual difference is 9 min,

So, original time required = 45 min

And new time = 54min

33. Let, x is the time required to reach office by bike and y be the time required while walking

x + y = 6hr 45 min ... (1)

y + y = 6hr 45 min + 1 hr 30min

2y = 8hr 15 min

y = 4hr 7.5min

x = 6hr 45 min – 4hr 7.5 min

x = 2hr 37.5 min

time to travel both sides on bike = x + x

= 2x

= 2 (2hr 37.5 min)

= 5hr 15min

34. If speed is 30km/hr time → (t + 20 min)

And if speed is 60km/hr → (t – 40 min)

Time difference in these two cases is 60 min

As distance is constant,

Speed $\propto \frac{1}{time}$

	Original		new
Speeds→	30km/h	:	60 km/h
Ratio of speeds →	1	:	2
So, ratio of time →	2	:	1

If original time is 2 min new time is 1 min difference is of 1 min but actual difference is 60min,

So, original time required = 2×60 = 120min i.e. 2hr

And new time = 54min= 1×60 = 60min i.e. 1hr

Distance travelled = 30km/hr × 2hr = 60km

(t + 20) = 120 min →t = 100min

Speed to reach on time = $\frac{60 km}{\frac{100}{60} hr}$ = **36 km/hr**

35. While crossing a man standing on platform,

$(l_{train} + l_{object}) = (S_{train} \pm S_{object})t$

$(1200 + 0) = (S_{train})$ 36 sec

S_{train} = 1200 / 36

S_{train} = 100/3 m/s

S_{train} = 12km/hr

While crossing a man sitting in a train travelling in the opposite direction,

$(1200 + 0) = (100/3 + S_{train2})$ 24 sec

$50 = (100/3 + S_{train2})$

S_{train2} = 50 – 100/3

S_{train2} = 50/3

S_{train2} = 60 km/hr

Pankaj Gandhi's Academy

36. Crossing each other when trains are going in the opposite direction,

$l1 + l2 = (s1 + s2)t$

$360 + 540 = (s1 + s2)30 sec$

$900 = (s1 + s2)30$

$(s1 + s2) = 30$ m/s .... (1)

Crossing each other when trains are going in the same direction,

t = 1.5 min = 90sec

$l1 + l2 = (s1 - s2)t$

$360 + 540 = (s1 - s2)90$

$900 = (s1 - s2)90$

$(s1 - s2) = 10$ ..... (2)

Add above equations,

➔ 2s1= 30 + 10

2s1 =40

s1 = 20 m/s ➔ s1 = 72 km/hr

So, s2 = 10m/s ➔ s2 = 36km/hr

37. X be the fixed expenditure

Y be the variable expenditure per head

X + 120Y = 120 ×1600

X + 120Y = 19,2000 .... (1)

X + 200Y = 1400×200

X + 200Y = 2,80,000 .... (2)

Solving 1 and 2,

80Y = 88,000

Y = 1100

And X = 60,000

So, if 300 students are there 'z' be the expenditure per head

Total expenditure = X + 300Y

300z = 60,000 + 300 × 1100

300z = 390,000

z = 1300

38.

1 lac	After 9 years →	3 lakh
3 lac	After next 9 years →	9 lakh
9 lac	After next 9 years →	27 lakh
27 lac	After next 9 years →	81 lakh
81 lac	After next 9 years →	243 lakh
243 lac	After next 9 years →	729 lakh i.e. 7.29cr

So, after 18 years (9+9+9+9+9+9) = 54 years, 1 lakh will become 7.29cr

39. Cost price = 2000×9/12 = Rs.1500

Profit = 10%

So, SP = 1500 + 150 = 1650

Let he sold x banana's for Rs.1 each and remaining (2000 – x) at Rs. 0.8 each

So, x + 0.8 (2000 – x) = 1650

x + 1600 – 0.8x = 1650

o.2x = 50   x = 250 banana's

Pankaj Gandhi's Academy

40. 1st train started at 6am
So, from 6am to 8am,
It will travel 120km/hr × 2hr = 240km
After 8 am both the trains are running,
So, they will meet after travelling remaining distance of 1800 – 240 = 1560km together
So, time to meet after 8am = $\frac{1560}{120+180}$ = $\frac{1560}{300}$ = **5hr 12min**
So, trains will meet at **1:12pm**

41. Let there are x students per bench and y no. of benches.
Total students = xy
Also, total students = (x+2)(y - 9)
$\qquad\qquad\qquad$ xy = xy − 9x + 2y − 18
So, 2y − 9x = 18 .... (1)
Also, total students = (x - 2)(y + 15)
xy = xy +15x − 2y − 30
15x − 2y = 30 ...... (2)
Adding above two equations we get,
6x = 48
x = 8
And y = 45
So, total students = 45 × 8 = **360 students**

42. As expenditure is constant Rates $\propto \frac{1}{Quantity}$

	Original		new
Ratio of rates →	100	:	80
	5	:	4
Ratio of Quantity →	4	:	5

So, % increase in Quantity = $\frac{5-4}{4} \times 100$ = 25%

43. Let original price 100 and original quantity 100
Original expenditure = 10000
New expenditure = 10000 + 10% of 10000 = 11,000
New price = 125
Let new consumption be y
So, 125y = 11000
y = 88
% reduction in consumption = $\frac{100-88}{100} \times 100$ = 12%

44. As expenditure is constant Rates $\propto \frac{1}{Quantity}$

	Original		new
Ratio of rates →	100	:	83.33
	6	:	5
Ratio of Quantity →	5	:	6

So, if original quantity is 5 doz new quantity is 6 doz i.e. 1 doz more
But, actual quantity is 3 doz more
So, original quantity = 5 × 3 = 15 doz
And new Quantity = 6 × 3 = 18 doz
New price per orange = $\frac{900}{18 \times 12} =$ Rs.4.133 per orange

45. T be the total marks of exam.
1st case,
Passing marks = 32% of T + 48 = 0.32T +48
2nd case,
Passing marks = 45% of T – 30 = 0.45T – 30
So, 0.32T + 48 = 0.45T – 30

Pankaj Gandhi's Academy

0.13T = 78   T = **600**

46. T be the total marks of exam.
1st case,
Passing marks = 48% of T + 49 = 0.48T +49
2nd case,
Passing marks = 61% of T – 42 = 0.61T – 42
So, 0.48T + 49 = 0.61T – 42
0.13T = 91
T = **700**
Passing marks = 0.61 x 700 – 42 = 427 – 42 = 315
Minimum % marks needed to pass = $\frac{385}{700} \times 100$ = **55%**

47. Let original l,b and h were 10,10,10
So, original volume = 10×10×10 = 1000
New l = 1.2 , new b = 1.15 and new h = 1.12
New volume = 12 x 11.5 x 11.2 = 1545.6
% increase in volume = $\frac{545.6}{1000} \times 100$ = **54.56%**

48. Let the initial population = 100x
Population after 1 yr = 120x
Population after 2yrs = 120x – 12x = 108x
Population after 3 years = 108x + 20% of 108x =129.6x
So, 129.6x = 16, 20, 000
x = 12500
so, initial population = 12,50,000

49. Out of the total weight of fresh chillies 75% is water
Water = 75% of 36 = 27kg
Other material = 36 – 27 = 9kg
When they are dried water will evaporate but wt of other material will remains same i.e. 9kg
Let x be the new wt of dried chillies
In that 40% is water so, % of other material = 60%
Hence, 60% of x = 9kg
3x/5 = 9 ➔ **x = 15kg**

50. let the number be 'a'
a = 6b + 2
b = 8c + 3
c = 9d + 4
a = 6(8c + 3) + 2
➔a = 48c + 20
So, a =48 (9d + 4) + 20
So, when {48 (9d + 4) + 20} divided by 24 we will get remainder 20.

51. Number (n) = 154x + 73
As 154 is divisible by 22
When number is divided by 22 we will get remainder from 73/22 ➔remainder = **7**

52. We can say that number is 441's multiple + 20
But when it is divided by 20 remainder cannot be determined.
Cannot be determined

53. As average of seven consecutive odd numbers is 73.
Middle number is 73.
So, numbers are 67,69,71,**73**,75,77,79
If next two are included nine numbers will be 67,69,71,73,**75**,77,79,81,83
New average = **75**

54. As average of seven consecutive even numbers is 226.

Pankaj Gandhi's Academy

Middle number is 226.
So, numbers are 216,218,220,222,224,**226**,228,230,232,234,**236**
Largest number is **236**

55. Let his average for 27 innings = x

So, new average = $\dfrac{27x+120}{28}$

$(x + 3) = \dfrac{27x+120}{28}$

28x + 84 = 27x + 120

x = 36

Original average = 36

New average = 36 + 3 = **39**

56. Summation of weights = 60 × 78.2 = 4702

Actual summation of weights = 4692 − 57 − 38 − 49 + 75 + 83 + 94 = 4800

Actual average = 4800/60 = 80

57. Let the original average is x and y be the weight of a newly added person

Summation = 45x

New summation = 45x − 68 + y

New average = $\dfrac{45x-68+y}{45}$

$(x + 1.5) = \dfrac{45x-68+y}{45}$

45x + 1.5 × 45 = 45x − 68 + y

y = 67.5 + 68

y = **135.5 kg**

58. Let marks scored are 6x,7x,8x,9x,10x

So, total score = 6x + 7x + 8x + 9x + 10x = 40x

But he got 60% marks

Let T be the total marks of exam

So, 60% of T = 40x

3T/5 = 40x

T = 200x / 3

Marks of each subject = $\dfrac{200x/3}{5}$ = 40x / 3

80% of each subject = 80% of 40x/3 = $\dfrac{4}{5} \times \dfrac{40x}{3}$ = 32x / 3 = 10.66x

So, there is no subject in which he scored more than 80% marks

59. 3p + 7e + 10s = 74 ..... (1)

   7p + 9e + 6s = 98 .... (2)

Adding above equations,

10p + 16e + 16s = 74 + 98

10p + 16e + 16s = 172

Divide by 2→5p + 8e + 8s = 86

60.

A	:	B	:	C
2	:	3		
		4	:	5
8	:	12	:	15

(total = 8 + 12 + 15 = 35)

As actual total is 6650 i.e. 35 × 190

A's share = 8 × 190 = 1520

B's share = 12 × 190 = 2280

C's share = 15 × 190 = 2850

Pankaj Gandhi's Academy

61. Let the total work is **180** (i.e. L.C.M. of 36, 45 and 60 just for making calculations easier)

	A+B	B+C	C+A	A+B+C
Days	36 days	45 days	60 days	**? = 30 days**
Per day work	**5**	**4**	**3**	**6 i.e. (5+4+3)/2**
Total work	180	180	180	180

A+B+B+C+C+A = 5+4+ 3
2 (A+B+C) = 12
A+B+C = 12/2
A+B+C = 6 unit work per day
So, all of them can complete the work in 30 days.

62.

	(A + B + C)	(A + B + C)	(B + C)	A
Days →	40 days	10 days	45 days	$? = \frac{240}{2} = 120$ **days**
Per day work →	**6**	**6**	$? = \frac{180}{45} = 4$	**6 − 4 = 2**
Total Work →	240	**60**	**180 (240 − 60)**	**240**

Assume total work as any multiple of 40
Per day work of A, B and C = 6
Per day work of B and C = 4
Per day work of A = 6 − 4 = 2
So, A alone can finish the work in 120 days.

63.

	A	B	(A + B)
Days →	30 days	40 days	$? = \frac{120}{5} = 24$ days
Per day work →	4	3	(3 + 2) = 5
Total work →	120	120	120

A's efficiency = 4 unit/day   B's efficiency 3 unit/day
So, 75% of 4 = $\frac{3}{4} \times 4 = 3$ so, 66.66% of B's efficiency = 66.66% of 3 = $\frac{2}{3} \times 3 = 2$

64.
Let they require x days
So, A alone can complete the work in (x + 4) days
And B alone can complete in (x + 9) days
Now, we will assume total work as (x + 4) (x + 9)

	(A)	B	(A + B)
Days →	(x + 4)	(x + 9)	(x)
Per day work →	(x + 9)	(x + 1)	x + 9 + x + 4 = 2x + 13
Total work →	(x + 4) (x + 9)	(x + 4) (x + 9)	(x + 4) (x + 9)

x(2x + 13) = (x + 4) (x + 9)
$2x^2 + 13x = x^2 + 9x + 4x + 36 = x^2 = 36$ ➔ x = **6 days**

65.

	A	B	C	1st day	2nd day	3rd day	4th day
				(A + B)	(A + C)	A + B	A + C… and so on
Days	30 days	24 days	20 days				
Per day work	**4**	**5**	**6**	**4 + 5 = 9**	**4 + 6 = 10**	**9**	**10 …. And so on**
Total Work	120	120	120				

2 days → 19 units
So, in 2 × 6 = 12 days → 19 × 6 = 114 unit work will be finished.

On 13th days A and C can do 9 unit in 1 day. But there is only 6 unit of work is remaining. So, they can do 6 unit of work in $\frac{6}{9} = \frac{2}{3}$ days

Total = $12 + \frac{2}{3} = \textbf{12}\frac{2}{3}$ **days**.

66.

	Saifa	Kareena	Together with 25% more efficiency
Days →	15 days	25 days	**?** = $\frac{75}{10} = \frac{15}{2}$ = **7.5 days**
Per day work →	**5**	**3**	**10** i.e. (5+3 = 8 + 25% of 8 = 10)
Total Work →	75	75	75

Their combined efficiency = 5 + 3 = 8
But, they work with 25% increased efficiency.
New efficiency = 8 + 25% of 8 = 8 + 2 = 10

67.

	A	A	B	A + B
Days	72 days	12 days	48 days	? = $\frac{72}{\frac{9}{4}}$ = **32 days**
Per day work	**1**	**1**	? = $\frac{60}{48} = \frac{5}{4}$	$1 + \frac{5}{4} = \frac{9}{4}$
Total Work	72	12	60 (72 – 12)	72

So, together they can complete the work in 32 days.

68.

	A	B	A	B
Days →	45 min	60 min	27 min	? $\frac{72}{3}$ = 24 min
Per day work →	**4**	**3**	**4**	**3**
Total Work →	180	180	108	72

So, pipe B should be closed after **24 min**

69.
Assume that paint 1 house → 24 unit to be done.
So, for 3 houses → 24 × 3 = 72 units has to be done.

	A	B	C	A	B	C
Days →	6 days	8 days	12 days	8 days	6 days	? = $\frac{22}{2}$ = 11 days
Per day work →	4	3	2	4	3	2
Total Work →	24	24	24	32	18	22 (72 – 32 – 18)

So, C alone will finish the remaining work in **11 days.**

70.

	A	A + Leak	Leak
Time →	12 hr	20 hr	? = $\frac{60}{2}$ = 30 hr
Speed per hr →	5	3	3 – 5 = - 2 lit/hr
Capacity →	60 lit	60 lit	60 lit

If capacity 60 lit, leak is 2 lit/hr.
But actual leak is 30 20 lit/min = 20 × 60 lit/hr = 1200 lit/hr.

So, actual capacity = 60 × $\frac{1200}{2}$ = 36000 lit.

Pankaj Gandhi's Academy

71.

	A	B	C empty	6 am to 8 am A	8 am to10 am (A + B)	After 10 am A + B + C
Time →	12 hr	15 hr	10 hr	2hr	2hr	? = $\frac{32}{3}$ = 10 hr 40 min
Speed per hr →	5	4	6	5	5 + 4 = 9	5 + 4 − 6 = 3
Capacity →	60	60	60	10	18	32 (60 − 10 − 18)

So, tank will be filled in 10 hr 40 min after 10 am i.e. 8:40 pm.

72.

Ratio of diameters → 1:3:5

Area of cross section = πr^2

So, ratio, of areas of cross-section = 1:9:25

	A + B	A + B + C
time	14 hr	= $\frac{140}{35}$ = 4 hr
Speed per hr	1 + 9 = 10	1 + 9 + 25 = 35
Capacity	140	140

73.

$$\frac{100 \ men \ \times 36 \ days}{(100 \ men \ \times 9 + 72 \times x)} = \frac{work}{work} = 100 \times 36 = 100 \times 9 + 72 \times x$$

72x = 100 × (36 − 9) = 72x = 2700 = x = $\frac{2700}{2} = \frac{300}{8}$ = 37.5 days.

74.

$$\frac{(18 \ m + 15 \ w) \times 10 \frac{hr}{day} \times 12 \ days}{(9 \ m + 10 \ w) \times 9 \frac{hr}{day} \times 24 \ days} = \frac{work}{work}$$

➔ (18 m + 15 w) × 5 = 9 × (9 m + 10 w) = 90 m + 75 w = 81 m + 90 w

9 m = 15 w = M = $\frac{5}{3}$ W.1

18 m + 15 w = 18 × $\frac{5}{3}$ w + 15 w = 30 w + 15 w = 45 w

15 m + 15 w = 15 × $\frac{5}{3}$ w + 15 w = 25 w + 15 w = 40 w

$\frac{45 \ w \ \times 10 \ \times 12}{40 \ w \ \times 9 \ \times x} = \frac{w}{2w}$ = x = 30 days.

75. Number of paintings is directly proportional to number of painters , hrs/day they work and the number of days they work . The canvases cannot paint so its something which will not affect the wrok done. But if the number of canvases available is less than what painters can paint then painters will be idle.

$$\frac{10 \ painters \ \times 10 \frac{hr}{day} \times 10 \ day}{15 painters \ \times 16 \frac{hr}{day} \times 20 \ day} = \frac{10 \ paintings}{? = x}$$

x = 48 paintings.

So, out of 100 canvases only 48 will be used.
So, 48 paintings can be made.

Had it been given, there are 15 painters, working 16hr a day for 20 days and there are 20 canvases only. Then we know they can paint 48 paintings but no. canvases are only 20. So in that case answer would have been 20.

76.

$$\frac{12 \ hen \ \times 4 \ days}{20 \ hen \ \times 30 \ days} = \frac{60 \ eggs}{x = ?}$$

x = 750 eggs.

Pankaj Gandhi's Academy

3rd Floor, Above Hotel Woodland, Near Sharda Center, Nal Stop , Pune **Contact No. : 8600972993, 9850424051**

77.

Total work = 10 work × 10 hr = 100 unit

Work between done: 6 am to 12 pm (6 hr) = 10 × 6 = 60 unit +

12 pm to 1 pm = 9 × 1 hr = 9 unit +
1 pm to 2 pm = 8 × 1 hr = 8 unit +
2 pm to 3 pm = 7 × 1 hr = 7 unit +
3 pm to 4 pm = 6 × 1 hr = 6 unit +
4 pm to 5 pm = 5 × 1 hr = 5 unit +
5 pm to 6 pm = 4 × 1 hr = 4 unit +

_____

99 unit

From 6 pm to 7 pm 3 workers can do 3 unit work but only 1 unit of work is left

So, it will take, $\frac{1}{3}$ hr = 20 min.

So, work will be completed at 6:20 pm

78.

If a person do 1 unit work per day

Work done on 1st day = n units

Work done on 2nd day = (n − 1) units.

Work done on 2nd last day = 2

Work done on last day = 1 unit

Total work done = 1 + 2 + 3 + ……. + n

(in n days) = $\frac{n\ (n+1)}{2}$

If no person left the work time required to complete is $\frac{3}{5}$ n

So, total work = per day × time = n × 1 × $\frac{3}{5}$ n = $\frac{3}{5}$ n^2

So, in both the cases total work done is same

$\frac{n\ (n+1)}{2} = \frac{3}{5} n^2 = \frac{(n+1)}{2} = \frac{3n}{5}$ = 5n + 5 = 6n. So, n = 5

79.

S up → Speed while going upstream

S down → Speed while going downstream

Time = $\frac{Distance}{Speed}$

Time to go + rime to come back = 4 hr 48 min

$\frac{36\ km}{S\ up} + \frac{36\ km}{S\ down} = \frac{24}{5}\ hr$

$\frac{36}{(B-4)} + \frac{36}{(B+4)} = \frac{24}{5}$

$\frac{1}{(B-4)} + \frac{1}{(B+4)} = \frac{24}{5\ \times 36}$

$\frac{(B+4)+(B-4)}{(B-4)+(B+4)} = \frac{2}{15}$

$\frac{2B}{B^2-4^2} = \frac{2}{15}$ = 15B = B^2 − 16 = B^2 − 15B − 16 = 0

B = 16 OR B = - 1

B = 16 km/hr

80.

Let x be the number of questions get wrong

So, (200 − x) questions he gets right

Total marks = (200 − x) × 1 - $\frac{1}{3}$ × x

144 = (200 − x) - $\frac{1}{3}$ x

144 = 200 - $\frac{4x}{3}$

Pankaj Gandhi's Academy

$$\frac{4x}{3} = 56 = x = 42$$

Number of questions rightly solved = 200 – 42 = 158
Number of questions attempted questions = 42.

81. As there are 360 eyes

Lions + ostriches = $\frac{360}{2}$ = 180

Let there were x lions and y ostriches
X + y = 180   …………….. (1)
As a lion has 4 legs and a ostriches has 2 legs
4x + 2y = 488 …………….. (2)
(1) × 2 = 4x + 4y = 720
(2)   4x + 2y = 488
_____
      2y = 232
      Y = 116
So, x = 180 – 116
X = 64. So, number of lions = 64

82. Let the length of swimming pool be x m
When 1st time two persons meet one covered the distance of 38 m from 1 end
So, 2nd person will cover (x-38) m

Therefore the ratio of their speed S1/S2 = 38/(x-38) ……………………… (a)

Now both of them reach to the end and again meet at 17 m from other end

1st person till now covered (x+17)m
While the second person covered (2x-17)m i.e x+(x-17)
Both of them have constant speed while swimming in both directions
Therefore we can write S1/S2 = (x+17)/(2x-17)......................................(b)
Solving equation (a) and (b)

$$\frac{38}{x-38} = \frac{x+17}{2x-17}$$

$38 \times 2x - 38 \times 17 = x^2 + 17x - 38x - 38 \times 17$
$97x = x^2$
We get x = 97 m

Other method:
Let's consider the length of swimming pool be x m
the distance covered by both of persons till they met 2nd time is 3x
when they meet 1st time the distance covered by 1st person is 38 m
it means out of distance X 1st person covers 38m
So out of 3x he will cover (3*38) = 114 m
But this 114 is nothing but (x+17)m as he is meeting to the 2nd person after completing distance x and additional 17 m
Therefore x = 114-17
x = 97 m

Similarly if we take another example as - two persons swimming in opposite direction meets at a distance of 20 m from one end for the first time and for the second time they meet at a distance of 10 m from other end
So, based on above logic we can solve this example as (3*20)-10=50m
So, the length of swimming pool for this example is 50 m

Pankaj Gandhi's Academy

PGA's shortcut:
for such examples of persons travelling in opposite direction with constant speed for the same distance we have to multiply the distance to which persons meet for the first time by 3 and subtract the distance from other end to which persons meet for the 2nd time.

So, for our given example we can say,
They meet first time at 38 m
And second time at 17m from other end
Length of swimming pool = $3 \times 38 - 17$
$$= 97m$$

83. Let the length of circular track be x m
(In Such examples we get 2 different answers)

CASE1: 600 m distance is less than half of circular track.
When first time they meet one covered the distance of 600 m from 1 end
So the 2nd person will cover the distance (x-600)m
Therefore the ratio of their speed will be S1/S2 = 600/(x-600)..............(a)
Now they meet at a distance of 300 m from other end
So now total distance covered by 1st person will be (x-300)m
While total distance covered by 2nd person will be (x+300) m
Both of them have constant speed
Therefore the ratio of their speed will be S1/S2 = (x-300)/(x+300)............(b).
Solving equation (a) and (b)

$$\frac{600}{x-600} = \frac{x-300}{x+300}$$

$$x^2 = 1500x$$

We get x = 1500 m

PGA's SHORTCUT:
When 600 m distance is less than half of the track ,the person will cover the distance of 1200 m when he meet 2nd time to the other person on the same track and as 600 is less than half of the track ,1200 will be less than the total length of track. when 2nd time he meet to the 2nd person he meets at a distance of 300 m from the other side so we can say that the total length of the track will be 600+600+300= 1500 m.

CASE2: 600 m distance is greater than half of circular track.
When first time they meet one covered the distance of 600 m from 1 end
So the 2nd person will cover the distance (x-600)m
Therefore the ratio of their speed will be S1/S2 = 600/(x-600)..............(a)
Now they meet at a distance of 300 m from other end
So now total distance covered by 1st person will be (2x-300)m
While total distance covered by 2nd person will be 300 m
Both of them have constant speed
Therefore the ratio of their speed will be S1/S2 = (2x-300)/(300) ....(b).
Solving equation (a) and (b)
$$\frac{600}{x-600} = \frac{2x-300}{300}$$
$$300 \times 600 = 2x^2 - 1200x - 300x + 300 \times 600$$
$$2x^2 = 1500x$$
X = **750**

84. first tortoise cover the ¼ distance of circular track and at that time hare will started from the other end But he started with slower speed and when they meet first time hare covered ¼ distance So till that time tortoise had covered ¾ of circular path. but as we know that hare started when tortoise covered 1/4 distance of circular track
If they want to meet at the end same time hare has to cover the ¾ distance of path in a time in which the tortoise is going to cover the ¼ th of the circular path

Pankaj Gandhi's Academy

3rd Floor, Above Hotel Woodland, Near Sharda Center, Nal Stop , Pune **Contact No. : 8600972993, 9850424051**

Now to avoid the fractions let's consider the circular path is of 400 m
So, first tortoise covered ¼ th of 400 = 100
They meet when hare covered 100mt
Means→hare covered 100mt and in the same time tortoise covered 200m
Hence, the ratio of the speed of hare to tortoise is 1:2
So, if old speed of hare was x then speed of tortoise was 2x

Now hare has to cover 300 m in a time in which tortoise covers 100 m
New speeds should be in the ratio →300:100 i.e. 3:1

New speed of hare should be thrice as that of tortoise
As speed of tortoise was 2x
So, new speed of hare = $3 \times 2x$ = 6x

So, % increase in speed of hare should be = $\frac{6x-x}{x} \times 100$ = **500%**

85. Let the speed of the train be S km/hr
And it covers the distance X km.
After travelling for 3 hours train will reduce its speed to 4/5 of original speed
So that train will reach to the destination 48 min late

But if train goes more 60 km with original speed S it will reach to the destination 12 min earlier as that it will reach by previous case.
It means train gets late by 12 min if it covers 60 km of distance by 4/5 of the original speed
We can write it as
$$\frac{60\,km}{\frac{4}{5}S} - \frac{60}{S} = \frac{12}{60}$$
$$\frac{75}{s} - \frac{60}{s} = \frac{1}{5}$$
Therefore we get S = 75 km/hr
Now speed for first 3 hours was 75 km/hr
Distance = speed * time
Therefore, distance covered by the train = 75×3 = 225km

In 1st case, after travelling for 3 hours train will reduce its speed to 4/5 of original speed
So that train will reach to the destination 48 min late
Let x is the distance to be travelled after 3hrs
$$\frac{x}{\frac{3}{4} \times 75\,km/hr} - \frac{x}{75\,km/hr} = \frac{48}{60}hr$$
$$\frac{x}{60} - \frac{x}{75} = \frac{4}{5}$$
$$\frac{1}{15} \times \left(\frac{x}{4} - \frac{x}{5}\right) = \frac{4}{5}$$
$$\left(\frac{x}{4} - \frac{x}{5}\right) = \frac{4}{5} \times 15$$
$$\frac{x}{20} = 12$$
x = 240km
So, total distance = 225km + 240km = **465km**

86. 1st min monkey goes 10 m up
2nd min it comes down by 6 m
Hence, in every 2 min it goes 10 – 6 = 4 meters up
So, time required to reach the height of 150 – 10 = 140m
t = $\frac{140}{4} \times 2$ = 70 min
So, in next min monkey will go 10 meters up. i.e. It will reach top for the first time.
Total time = 70 + 1 = **71 min**

87. 1st min monkey goes 12 m up

2nd min it comes down by 9 m

Hence, in every **2 min** it goes 12 – 9 = **3 meters up**

80 – 12 = 68 but as 68 is not multiple of 3.

So, we will find time required to reach a height of 69 meter

t = $\frac{69}{3} \times 2$ = 46 min

On 47th min monkey can climb 12 meter but there is only 11 meter height left.

On 47th min

More time needed = $\frac{11}{12} \times 60 sec$ = **55 sec**

Total time = **46 min and 55 sec**

88. at 6 'o' clock there are 5 intervals in between 1st gong and 6th gong

As clock strikes for 2.5 sec

Time required for five interval = 2 ½ = 5/2 sec

So, each interval is of $\frac{5/2}{5}$ = 1/2 seconds

Hence, at 12 'o' clock there are 11 intervals

Time it strikes at 12 'o' clock = 11 × $\frac{1}{2}$

$\qquad\qquad\qquad\qquad$ = **5 ½ sec**

89.

Time it strikes at 1 'o' clock = 0 sec $\qquad$ 0 interval

Time it strikes at 2 'o' clock = 1 sec $\qquad$ 1 interval

Time it strikes at 3 'o' clock = 2 sec $\qquad$ 2 intervals

.

.

.

Time it strikes at 11 'o' clock = 10 sec $\qquad$ 10 intervals

Time it strikes at 12 'o' clock = 11 sec $\qquad$ 11 intervals

Total time it strikes for = 1 + 2 + 3 + ... + 10 + 11 sec

$\qquad\qquad\qquad\qquad$ = $\frac{11 \times 12}{2}$ = 66 sec

So, it strikes for 66 sec in 12 hrs

So, in a day i.e. 24hrs

Clock strikes for 66×2 = 132 sec

$\qquad\qquad\qquad\qquad$ = **2min and 12 sec**

90.

Total words = 6 × 5 × 4 × 3 × 2 × 1 = 720

Words starting with A = 1 × 5 × 4 × 3 × 2 × 1 = 120

Words starting with B = 1 × 5 × 4 × 3 × 2 × 1 = 120

Words starting with C = 1 × 5 × 4 × 3 × 2 × 1 = 120

Words starting with DA = 1 × 1 × 4 × 3 × 2 × 1 = 24

Words starting with DB = 1 × 1 × 4 × 3 × 2 × 1 = 24

Words starting with DC = 1 × 1 × 4 × 3 × 2 × 1 = 24

Words starting with DEA = 1 × 1 × 1 × 3 × 2 × 1 = 6

Words starting with DEBA = 1 × 1 × 1 × 1 × 2 × 1 = 2

Next word will be DEBCAF = 1

Hence, rank of the word DEBCAF = 120 + 120 + 120 + 24 + 24 + 24 + 6 + 2 + 1 = **441**

91. $\qquad$ Size $\qquad\qquad$ no. of squares

$\qquad\qquad$ 1×1 $\qquad\qquad$ 8^2 = 64

$\qquad\qquad$ 2×2 $\qquad\qquad$ 7^2 = 49

$\qquad\qquad$ 3×3 $\qquad\qquad$ 6^2 = 36

$\qquad\qquad$.

$\qquad\qquad$.

$\qquad\qquad$.

Pankaj Gandhi's Academy

8×8 $1^2 = 1$

No. of squares on chess board $= 1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 + \ldots\ldots +8^2 = \dfrac{8\times9\times17}{6} = \textbf{204}$

92. For a rectangle we need two horizontal lines and two vertical lines.
In chess board there are 9 horizontal lines and 9 vertical lines.
So, number of rectangles $= {}^9C_2 \times {}^9C_2$
Total number of rectangles $= 36 \times 36 = \textbf{1296}$

93. 8 digit numbers divisible by 5 can be formed using the digits 1, 2, 3, 4, 5 $= 5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 1$
$= \textbf{78125}$

94. Total ways $= {}^{20}C_{10} = \dfrac{20!}{10!\times10!} = 184756$

a) At least 1 teacher $= {}^{20}C_{10} - {}^{12}C_{10} = \dfrac{20!}{10!\times10!} - \dfrac{12!}{10!\times2!} = 184756 - 66 = \textbf{184690}$

b) 1 of each type $= {}^{20}C_{10} - {}^{12}C_{10} - {}^{13}C_{10} - {}^{15}C_{10}$
$= \textbf{181401}$

c) It contains exactly 3 teachers $= {}^8C_3 \times {}^{12}C_7 = \textbf{44352}$

d) It contains the number of teacher is thrice that of lawyer
1lawyer & 3 teacher & 6 doctor + 2lawyer & 6 teacher & 2 doctor

$= {}^5C_1 \times {}^8C_3 \times {}^7C_6 + {}^5C_2 \times {}^8C_6 \times {}^7C_2$

$= 5 \times \dfrac{8\times7\times6}{3\times2\times1} \times 7 + \dfrac{5\times4}{2\times1} \times \dfrac{8\times7\times6\times5\times4\times3}{6\times5\times4\times3\times2\times1} \times \dfrac{7\times6}{2\times1}$

$= \textbf{7840}$

95.
(a)
${}^{15}C_4 / {}^{35}C_4$

$= \dfrac{15}{35} \times \dfrac{14}{34} \times \dfrac{13}{33} = \dfrac{\textbf{13}}{\textbf{187}}$

(b) $({}^{15}C_2 \times {}^8C_2) / ({}^{35}C_4)$
$= (\dfrac{15}{35} \times \dfrac{14}{34} \times \dfrac{8}{33} \times \dfrac{7}{32}) = \dfrac{\textbf{63}}{\textbf{187}}$

(c) At least 1 ball is red = 1 – probability that none of them is red

$= 1 - \dfrac{20\times19\times18\times17}{35\times34\times33\times32}$

$= 1 - \dfrac{57}{616} = \dfrac{\textbf{559}}{\textbf{616}}$

(d) 2 balls are of same colour and 2 of different colour

= 2 red & 1 white & 1 green **or** 1 red & 2 white & 1 green **or** 1 red & 1 white & 2 green

$= \{({}^{15}C_2 \times {}^8C_1 \times {}^{12}C_1) / ({}^{35}C_4)\} + \{({}^{15}C_2 \times {}^8C_2 \times {}^{12}C_1) / ({}^{35}C_4)\} + \{({}^{15}C_2 \times {}^8C_2 \times {}^{12}C_1) / ({}^{35}C_4)\}$

$= (\dfrac{15\times14}{35\times34} \times \dfrac{8}{33} \times \dfrac{12}{32}) + (\dfrac{15}{35} \times \dfrac{8\times7}{34\times33} \times \dfrac{12}{32}) + (\dfrac{15}{35} \times \dfrac{8}{34} \times \dfrac{12\times11}{33\times32})$

$= \dfrac{15\times8\times12\times(14+7+11)}{35\times34\times33\times32}$

Pankaj Gandhi's Academy

$$= \frac{15 \times 8 \times 12 \times 32}{35 \times 34 \times 33 \times 32} = \frac{48}{1309}$$

(e) 2 red & 2 White or 2 red & 2 green or 2 white & 2 green

$(^{15}C_2 \times {}^{8}C_2) / (^{35}C_4) + (^{8}C_2 \times {}^{12}C_2) / (^{35}C_4) + (^{8}C_2 \times {}^{12}C_2) / (^{35}C_4)$

$$= \frac{15 \times 14}{35 \times 34} \times \frac{8 \times 7}{33 \times 32} + \frac{15 \times 14}{35 \times 34} \times \frac{12 \times 11}{33 \times 32} + \frac{8 \times 7}{35 \times 34} \times \frac{12 \times 11}{33 \times 32}$$

$$= \frac{(15 \times 14 \times 8 \times 7 + 15 \times 14 \times 12 \times 11 + 8 \times 7 \times 12 \times 11)}{35 \times 34 \times 33 \times 32}$$

$$= \frac{279}{7480}$$

96. Suppose Aishwarya gave x diamonds to Salman and y diamonds to Vivek
So, $(x^2 - y^2) = 48 (x - y)$
        $(x - y)(x + y) = 48 (x - y)$
        $(x + y) = 48$
Therefore, Aishwarya is having total (x + y) = **48 diamonds.**

97. let a cow eats 1 unit grass per day
G – be the grass present on 1st day
r unit grass grows per day.
So, $60 cow \times 30\ days = G + 30r$ .... (1)
$30 cow \times 80\ days = G + 80r$ .... (2)
Solving we get,
$50r = 600$
$r = 12$
G = 1440

a) $20 cow \times x\ days = G + xr$
$20x = 1440 + 12x$
$x = 1440/8$ ➔ $x = $ **180 Days**

b) As, r = 12
Means 12 unit grass grows per day
And a cow eats 1 unit grass per day 12 unit grass is sufficient for 12 cows
So, maximum number of cows that can be fed for infinite time period is **12 cows.**

98. Let 'l' be the lengths of each candles.
So, 1st candle burns at the rate l/4 per hr and 2nd candle burns at the rate l/6 per hr
Let candles were burning for t hr

Part of 1st candle burnt = $\frac{l}{4} \times t$

Part of 2nd candle burnt = $\frac{l}{6} \times t$

Hence, $\dfrac{l - \frac{lt}{4}}{l - \frac{lt}{6}} = \dfrac{1}{4}$

$\dfrac{\frac{4-t}{4}}{\frac{6-t}{6}} = \dfrac{1}{4}$

$6 \times (4 - t) = (6 - t)$

$24 - 6t = 6 - t$
5t = 18
t = 18/5 hr
t = 3hr 36 min   (For more explanation please visit **www.youtube.com/user/pgapuzzles**)

Pankaj Gandhi's Academy

99. 'a' be the number of oranges he stolen i.e. (before giving to 1st)
'b' be the remaining oranges before giving to 2nd guard
'c' be the remaining oranges before giving to 3rd guard
And at last he was left with only one orange

In reverse way,
So, $c - c/2 - ½ = 1$
$c/2 = 1 + ½$
$c/2 = 3/2$
c = 3

Now, $b - b/2 - ½ = 3$
$b/2 = 3 + ½$
$b/2 = 7/2$
b = 7

Similarly,
$a - a/2 - ½ = 7$
$a/2 = 7 + ½$
$a/2 = 15/2$
a = 15
So, originally he stolen **15 oranges**
(For more explanation please visit **www.youtube.com/user/pgapuzzles**)

100.
2 bottles → 1 rat
4 bottles → 2 rats
8 bottles → 3 rats
16 bottles → 4 rats
.
.
.
512 bottles → 9 rats
1024 bottles → 10 rats
As 1000 bottles are there we will need **10 rats.**
(For more explanation please visit **www.youtube.com/user/pgapuzzles 'The poison puzzle').**

Some Important Links

www.facebook.com/pgaedutech

www.youtube.com/user/pgapune

www.youtube.com/user/pgapuzzles

www.pgexams.com

www.pgfunda.com