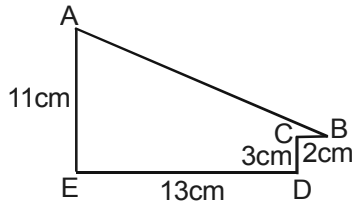
Practice Test-8

Number of questions: 25 **Time Allowed: 30 mins.**

1. Ajay writes hundred whole numbers from 100 to 199. How many 1's does he write exactly two times?
   (a) 12 (b) 11
   (c) 19 (d) 10
2. If the difference between the CI and the SI at the end of 2 years is Rs. 100, what is the principal? Rate is 5% per annum in both the cases. (Assume same principal for both the cases.)
   (a) Rs. 50,000 (b) Rs. 40,000
   (c) Rs. 10,000 (d) None of these
3. The par value of the shares of company x and y is Rs. 10. The market price of the shares are Rs. 40 and Rs. 50 respectively. Find the ratio of the return on investment for an investor if the dividends are 20% and 40% respectively. Investment in both the cases is the same.
   (a) 5 : 8 (b) 8 : 5
   (c) 8 : 13 (d) None of these
4. How many kilograms of rice costing Rs. 9 per kilogram must be mixed with 27 kg of rice costing Rs. 7 per kilogram so that 10% gain may be obtained by selling the mixture at Rs. 9.24 per kilogram?
   (a) 54 kg (b) 69 kg
   (c) 36 kg (d) 63 kg
5. A can build a wall in 15 days, which B alone can build in 20 days. If they build it together and get a total payment of Rs. 189, how much is B's share?
   (a) Rs. 108 (b) Rs. 81
   (c) Rs. 27 (d) Rs. 96
6. A square and an equilateral triangle are inscribed in a circle of radius r. Then there sides are in the ratio
   (a) 1 : 3 (b) $\sqrt{2} : \sqrt{3}$
   (c) 1 : $\sqrt{3}$ (d) 2 : 3
7. The spring balance of a trader showed 1 kg for 900 gm. Find the profit/loss percentage if the trader marks up the price 10% above the cost price.
   (a) 20% profit (b) 22.22% loss
   (c) 22.22% profit (d) None of these
8. Find the value of [10 × 36 of $\frac{1}{3}$ – (110 ÷11) × 3 + 52].
   (a) 115 (b) 65
   (c) – 430 (d) None of these
9. If 15 men working 9 hr a day can reap a field in 16 days, in how many days will 18 men reap the same field, working 8 hr a day?
   (a) 15 days (b) 17 days
   (c) 21 days (d) 14 days
10. What is the remainder when 9875347 × 7435789 × 5789743 is divided by 4?
    (a) 1 (b) 2
    (c) 3 (d) None of these
11. If you pick up two numbers out of first 29 multiples of 11, what is the probability that the product of these two numbers is divisible by 3267?
    (a) $\frac{12}{{}^{29}C_2}$ (b) $\frac{13}{{}^{29}C_2}$
    (c) $\frac{41}{{}^{29}C_2}$ (d) $\frac{40}{{}^{29}C_2}$
12. In the adjacent figure, AE ⊥ ED, ED = 13 cm, CD ⊥ ED, CD = 3 cm, DC ⊥ CB, CB = 2 cm, AE = 11 cm. Find the length of AB.



    (a) 8 cm (b) 17 cm
    (c) 12 cm (d) 14 cm
13. In how many ways can three integers be selected from the set {1, 2, 3, ⋯ 37} such that the sum of the three integers is an odd number?
    (a) 3876 (b) 7638
    (c) 6378 (d) 1938
14. S.I. on a sum at 4% p.a. for 2 years is Rs. 80. Find the C.I. on the same sum for the same period at the same rate of interest.
    (a) Rs. 81.60 (b) Rs. 72.60
    (c) Rs. 181.60 (d) Rs. 66

15. A sum of money doubles itself in 7 years. In how many years will it become four-fold; if interest rate is simple?
    (a) 21 years
    (b) 21 years 3 months
    (c) 21 years 6 months
    (d) 22 years

16. A train crosses a platform, which is 250 m long. The speed of the train is 36 km/hr. The total time taken to cross the platform is 35 sec. Find the length of the train.
    (a) 120 m (b) 100 m
    (c) 120 km (d) 100 km

17. How many four-digit numbers can be made with the digits 0, 1, 2 and 7 so that at least one of the digits is repeated in every number?
    (a) 192 (b) 96
    (c) 174 (d) None of these

18. Two coins are such that the first has a tail and a head and the second has both heads. One of these coins is tossed and the result is a head. What is the probability that it is the coin with 2 heads?
    (a) $\frac{1}{2}$ (b) $\frac{1}{3}$
    (c) $\frac{2}{3}$ (d) $\frac{2}{7}$

19. A shopkeeper buys a table for Rs. 4,650 and marks its price 20% above its cost price. If he allows a discount of 15% on it, find the selling price.
    (a) Rs. 5,301 (b) Rs. 4,743
    (c) Rs. 4,822 (d) Cannot be determined

20. A man can row 12 km/hr in still water. If it takes him twice as long as to row up as to row down the river, find the speed of the stream.
    (a) 8 km/hr (b) 2 km/hr
    (c) 4 km/hr (d) 16 km/hr

21. If $2x + 5y = 54$ and $\frac{x}{y} = \frac{1}{5}$, find the value of $(x + y)$.
    (a) 10 (b) 2
    (c) 8 (d) 12

22. A garrison of 600 men had provisions for 28 days. After 4 days, a reinforcement of 200 men arrived. The food will now last for how many days?
    (a) 32 days (b) 21 days
    (c) 24 days (d) 18 days

23. Find the total length of fencing a rectangular area of dimensions 64 m × 36 m.
    (a) 2 × 34 × 36 m (b) $\sqrt{64 \times 36}$ m
    (c) $\frac{64 \times 36}{3}$ m (d) 200 m

24. The cost of oil is Rs. 100 per L. After adulteration with another oil that costs Rs. 50 per L, Ram sells the mixture at Rs. 96 per kilogram, making a profit of 20%. In what ratio does he mixes the two?
    (a) 1 : 2 (b) 3 : 2
    (c) 3 : 1 (d) 3 : 4

25. A train travelling at the rate of 90 km/hr, crosses a pole in 10 sec. Its length is
    (a) 250m (b) 150m
    (c) 900m (d) 100m

Answer Key

1. (d)	**2.** (d)	**3.** (d)	**4.** (d)	**5.** (b)	**6.** (b)	**7.** (d)	**8.** (c)	**9.** (c)	**10.** (d)
11. (b)	**12.** (c)	**13.** (d)	**14.** (d)	**15.** (c)	**16.** (b)	**17.** (c)	**18.** (a)	**19.** (d)	**20.** (b)
21. (b)	**22.** (c)	**23.** (c)	**24.** (c)	**25.** (a)					

Explanations

1. c Hundred whole numbers from 100 to 199 are as follows.

101 102 ...110

111 112 ... 119 120

121...

131...

141...

151...

161...

171...

181...

191...

Thus number of 1's appearing exactly two times is

2 + 9 + 8 = 19 times

2. b Suppose the principal is P, r = 5% (given)

CI – SI (for 2 years) = $P\left(\frac{r}{100}\right)^2$

or 100 = $P\left(\frac{5}{100}\right)^2$

or P = Rs. 40,000.

3. a Par value for x as well as y = Rs. 10

Since dividends are 20% and 40% means Rs. 2 and Rs. 4 respectively.

So, return on investment for x = $\frac{2}{40}$

Return on investment for y = $\frac{4}{50}$

Ratio = $\frac{2}{40} : \frac{4}{50}$

100 : 160 = 5 : 8.

4. d Let x kg of rice costing Rs. 9 per kilogram is mixed.

Now according to the question

$$\frac{[(27+x)\,9.24 - (9x + 27\times 7)]\times 100}{9x + 27\times 7} = 10$$

$\Rightarrow$ [27(9.24 – 7) + 0.24x] × 10 = 9x + 27 × 7

$\Rightarrow$ 27(22.4 – 7) = 9x – 2.4x

$\Rightarrow \frac{27(15.4)}{6.6} = x \Rightarrow$ x = 63 kg

5. b In one day A can build $\frac{1}{15}$ wall.

In one day B can build $\frac{1}{20}$ wall.

Working together for x days they can earn Rs. 189,

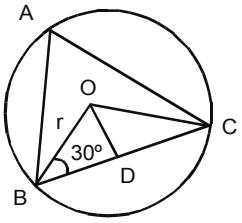
i.e. A + B = Rs. 189.

$$\Rightarrow \frac{x}{15} + \frac{x}{20} = \text{Rs. } 189$$

$$\Rightarrow \frac{4x + 3x}{60} = \text{Rs. } 189 \Rightarrow x = \frac{189\times 60}{7} = 27\times 60$$

So, B's share = $\frac{27\times 60}{20} = 27\times 3 = \text{Rs. } 81$

6. b



ABC is an equilateral triangle inscribed in a circle of radius r and centre O.

$\therefore BC = 2BD = 2\cdot r\cdot \cos 30°$

$= 2\cdot r\frac{\sqrt{3}}{2} = r\sqrt{3}$

$x\sqrt{2} = 2r$, where x is the side of the square

$\therefore x = \sqrt{2}\,r$ $\therefore$ Required ratio = $\sqrt{2} : \sqrt{3}$

7. c Suppose the CP be Rs. x per kg.

$\therefore$ Marked price = 1.1x per kg.

CP of 900 g = 0.9x

SP of 900 g = Marked price of 1 kg = 1.1x

$\therefore$ Profit percentage = $\frac{1.1x - 0.9x}{0.9x}$ × 100 = 22.22%

8. d The given expression is

$$\left[10\times 36 \text{ of } \frac{1}{3} - (110 \div 11)\times 3 + 52\right]$$

(Using BODMAS)

$$10\times 36\times \frac{1}{3} - 10\times 3 + 52$$

= 120 – 30 + 52 = 172 – 30 = 142

9. a

	Men	hours	days
	15	9	16
	18	8	x

Also

Men	hours
15	9 × 16
18	8x

Again in 1 hr work done

Men	work
15	$\frac{1}{9\times16}$
18	$\frac{1}{8x}$

$15\times\frac{1}{8x}=18\times\frac{1}{9\times16}\Rightarrow\frac{15\times9\times16}{18\times8}=x$

$\Rightarrow x = 15$ days.

10. a 9875347 × 7435789 × 5789743

= (9875344 + 3) (7435788 + 1) (5789740 + 3)

= $(4k_1 + 3)(4k_2 + 1)(4k_3 + 3)$.

When this is divided by 4, the remainder will be 1.

11. c Two numbers can be picked up out of 29 numbers in $^{29}C_2$ ways. Product of two multiples of 11 is always divisible by 121, so in order to check whether the product is divisible by 3267 or not we just need to check whether the product is a multiple of $\frac{3267}{121}=27$ or not. In first 29 natural numbers, we have,

Number of numbers divisible by 27 is 1.

Number of numbers divisible by 9 but not by 27 is 2.

Number of numbers divisible by 3 but not by 9 is 6.

Therefore, number of the pairs whose product is a multiple of 27 is 1 × 28 + 2 × 6 + 1 = 41

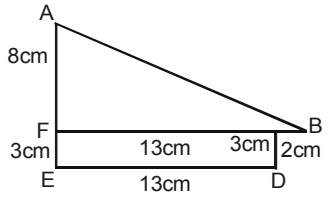
$\therefore$ The required probability = $\frac{41}{^{29}C_2}$

12. b In right-angled triangle AFB

$(8)^2 + (13 + 2)^2 = AB^2$

$\Rightarrow 64 + 225 = AB^2$

$\Rightarrow 289 = AB^2 \Rightarrow AB = 17$ cm.



13. a There are 18 even and 19 odd numbers in the given set. For odd sum either all the three numbers should be odd or two of them even and one odd.

This is possible in $^{19}C_3+\left(^{18}C_2\times{}^{19}C_1\right)=3876$.

14. aLet the required amount be Rs. P.

$80 = P\times4\times\frac{2}{100}$

P = Rs. 1,000

$A = P\{1 + r/100\}^n$

$A = 1{,}000\times\left(\frac{26}{25}\right)^2$

A = Rs. 1081.60

CI = A – P = Rs. 1081.60 – Rs. 1,000 = Rs. 81.60

15. a Interest earned = Principal = x.

$x = x\times\frac{R}{100}\times7$

$\Rightarrow\frac{R}{100}=\frac{1}{7}\Rightarrow R=\frac{100}{7}=\frac{100}{7}$

In order to become four-fold, interest = 3x

$3x = x\times\frac{1}{100}\times\frac{100}{7}\times t\Rightarrow t = 21$ years

16. b Let the length of the train be x m.

Also 36 km/hr = $\frac{36\times1000}{3600}$ = 10 m/sec

Now $\frac{250+x}{10}=35$

$\Rightarrow x = 100$ m.

17. c Total number of numbers that can be made is $3\times4^3=192$

Out of these 192 numbers, in 4! – 3! = 18 numbers there will be no repetition.

$\therefore$ In remaining 192 – 18 = 174 numbers there will be at least one repetition.

18. c Total number of heads on both the coins = 3

Number of heads on the second coin = 2

$\therefore$ The required probability = $\frac{2}{3}$.

19. b C.P = Rs. 4,650

M.P = C.P + $\frac{20}{100}$ × C.P

= 4650 + $\frac{20}{100}$ × 4650 = 4650 + 930 = Rs. 5580

Discount allowed = 15%

S.P = M.P – Discount

= 5580 – $\frac{15}{100}$ × 5580

= 5580 – 837 = Rs. 4,743

20. c Let the speed of the stream be x km/hr and distance travelled = d km.

Time taken by a man to row up = $\frac{d}{12-x}$

Time taken by a man to row down = $\frac{d}{12+x}$

Now, according to the question

$$\frac{2d}{12+x}=\frac{d}{12-x}$$

$\Rightarrow 24 - 2x = 12 + x$

$\Rightarrow x = 4$ km/hr.

21. d Given that $\frac{x}{y}=\frac{1}{5}\Rightarrow x=\frac{y}{5}$ … (i)

Also $2x + 5y = 54$ … (ii)

Using (i) in (ii), we get

$$2\times\frac{y}{5}+5y=54$$

$\Rightarrow 2y + 25y = 270$

$\Rightarrow 27y = 270$

$\Rightarrow y = 10$ and $x = 2$, now $x + y = 12$

22. d

Men	**Days**	**Consumption**	
600	28	1	
600	1	$\frac{1}{28}$	… (i)
600	4	$\frac{1}{7}$	
800	x	$\frac{6}{7}$	
800	1	$\frac{6}{7x}$	… (ii)

Comparing (i) and (ii), we get

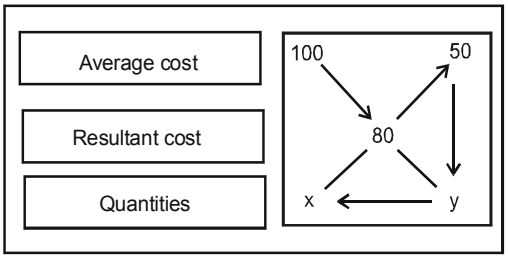
$$600\times\frac{6}{7x}=800\times\frac{1}{28}$$

$\Rightarrow x = 18$ days.

23. d Length of fencing = Perimeter of rectangular field

= 2(64 + 36) = 2 × 100 = 200 m

24. b Cost price of mixture = $\frac{96\times100}{120}=$ Rs. 80



$$\frac{100-80}{80-50}=\frac{y}{x}\Rightarrow\frac{30}{20}=\frac{x}{y}$$

Hence, the ratio = 3 : 2.

25. a Speed of the train = 25 m/s

Length of the train = $25\times10=250$ m