



## Number System-1 \_EXPLANATION

### Answer 1: (B)

The first person shook hands with 11 remaining people and the second person also shook hands with 11 people but we count 10, as the hand shake with the first person has already been counted. Then add 9 for the third person, 8 for the fourth one & proceeding in this fashion.

$$11+10+9+8+7+6+5+4+3+2+1 = 66$$

Hence,

66 hand shakes took place before & 66 after the meeting, therefore 132 hand shakes took place.

### Answer 2: (B)

Jacob standing at the middle of the ladder. He goes up 6 rungs so he is now at  $m+6$  and when he goes down 10 rungs so he is at  $m-4$ . Jacob goes up 18 rungs so he now at  $m+14 = T$

14 rungs from the top, 14 rungs from the bottom and the middle rung.

$$\text{Total rungs} = 14+14+1 = 29$$

### Answer 3: (C)

monkey climbs in a minute = 5 metres

Next min he slips down by 2 metres

Distance covered in 2 min =  $5-2=3$  metres

2 minute → 3 metres

$$\begin{array}{r} \times 25 \\ 50 \text{ min} \end{array} \quad \begin{array}{r} \times 25 \\ 75 \text{ metres} \end{array}$$

$$\begin{array}{r} +1 \text{ min} \\ 51 \text{ min} \end{array} \quad \begin{array}{r} +5 \text{ metres} \\ 80 \text{ metres} \end{array}$$

$$51 \text{ min} = 80 \text{ metres}$$

He climbs 80 metres in 51 minutes

### Answer 4 : (C)

Let us assume W be the number of wrong Questions and R be the number of right Questions.

$$R-3W = 75 \quad (1)$$

$$R+W = 135 \quad (2)$$

$$-4W = -60$$

$$W = 15$$

From (2),

$$15+R = 135$$

$$R = 135-15 = 120$$

Number of Questions solved correctly by Rohit = 120

### Answer 5: (D)

Total Length of pencil = 12 cm

Length of larger piece = 7 cm

Shorter part =  $12-7$

$$= 5 \text{ cm}$$

Length of larger piece - shorter piece =  $7-5$

$$= 2 \text{ cm}$$

### Answer 6: (B)

Total height of eucalyptus tree = 56 metres.

Height of point from which it is broken =  $\frac{1}{4} \times 56$

$$= 14 \text{ metres}$$

Height of broken part =  $56-14$

$$= 42 \text{ metres}$$

Let width of river be x metres.

Applying pythagoras theorem, we get

$$42^2 = 14^2 + x^2$$

$$\Rightarrow x^2 = 42^2 - 14^2$$

$$\Rightarrow x^2 = (42-14)(42+14)$$

$$\Rightarrow x^2 = 56 \times 28$$

$$\Rightarrow x = 28\sqrt{2}$$

### Answer 7: (B)

we know that

1 foot = 50 cm (approx)

$$\therefore 1 \text{ square feet} = 50 \times 50 = 2500 \text{ square cm}$$

Or, 1000 square feet =  $2500 \times 1000$  square cm

$$= 25 \times 10^5 \text{ square cm}$$

Hence, the correct answer is option (B)

### Answer 8: (C)

A goes down by 2 steps | B goes up by 1 steps

initially at 28	initially at 1
26	2
24	3
22	4
20	5
18	6
16	7
14	8
12	9
10 (meet)	10 (meet)

So, they will meet at the 10<sup>th</sup> step from the bottom

**Answer 9: (C)**

We have to race each of the 25 horses, since we can race 5 at a time, we must start out with  $\frac{25}{5} = 5$  races.

$\therefore$  We need another race to compare the winners in order to find the fastest race (1 race)

We need at least one more race to compare (amongst other possible comparisons) in order to find the second fastest horse (atleast 1 race)

This means 7 races is a minimal value to get the top 3 horses

**Answer 10: (D)**

Number divisible by 4 and 6 will be divisible by the LCM of 4 and 6

Number divisible by 12 from 1 to 100 are 12, 24, 36, 48, 60, 72, 84 and 96.

So, there are total 8 students who will play both cricket and football.

**Answer 11: (D)**

Jumps required by frog to come out of the well = x

In the last jump frog not gets slide down = (x-1)

$$x \times 30 - (x-1) \times 15 = 450 \text{ cm}$$

$$\Rightarrow 30x - 15x + 15 = 450$$

$$\Rightarrow 15x = 435$$

$$\Rightarrow x = \frac{435}{15}$$

$$\Rightarrow x = 29$$

**Answer 12: (B)**

From 4 butts he gets 1 cigarette. Hence from 64 butts he gets  $\frac{64}{4} = 16$  cigarettes. Then from 16 butts

he gets 4 cigarettes and from 4 butts he gets 1 more cigarette.

$$\text{Total number} = 64 + 16 + 4 + 1 = 85$$

So, he smoked 85 cigarettes

**Answer 13: (A)**

Initially	x	x	x
Now	x-8	x-8	x-8

According to question,

$$3x - 24 = x$$

$$\Rightarrow 2x = 24$$

$$\Rightarrow x = 12$$

**Answer 14: (B)**

Lets assume that the elephant was carrying E sacks and the tiger was carrying T sacks.

As the tiger told the elephant, "If you gave me one of your sacks I'd have double what you have."

According to question,

$$T + 1 = 2 \times (E - 1)$$

$$\Rightarrow T + 1 = 2E - 2$$

$$\Rightarrow T = 2E - 3$$

The tiger also said, "If I give you one of my sacks we'd have an even amount."

Then,

$$T - 1 = E + 1$$

$$\Rightarrow T = E + 2$$

Comparing both the equations,

$$2E - 3 = E + 2$$

$$\Rightarrow E = 5$$

Substituting E = 5 in any of above equation, we get:

$$T = 7$$

Hence, the elephant was carrying 5 sacks and the tiger was carrying 7 sacks.

**Answer 15: (A)**

$$\text{Cigarettes} = \frac{120}{5} = 24$$

and from (24+1) cigarettes,

$$\frac{25}{5} = 5 \text{ cigarettes and then } \frac{5}{5} = 1 \text{ cigarette}$$

$$\text{Total number of cigarettes he can make} = 24 + 5 + 1$$

$$= 30 \text{ cigarettes}$$

**Answer 16: (C)**

Each time the monkey trees to go up climbs upward =  $3 \times 30 \text{ cm} = 90 \text{ cm}$  (takes 3 steps)

Slips downward =  $2 \times 40 \text{ cm} = 80 \text{ cm}$  (takes 2 steps)

Total number of steps taken in each forward attempt

$$= 3 \text{ steps} + 2 \text{ steps} = 5 \text{ steps}$$

$$\text{Remaining distance} = 90 \text{ cm} - 80 \text{ cm} = 10 \text{ cm}$$

So, already it reaches 10 cm after 5 steps, now it's moving 90 cm in next 3 steps.

Then it reaches the top after 8<sup>th</sup> steps.

**Answer 17: (B)**

Number of digits from 1 to 150 = Number of units digits + Number of tens digit + Number of hundreds digit

$$= 150 + (150 - 9) + (150 - 99)$$

$$= 150 + 141 + 51$$

$$= 342$$

**Alternate method:**

Total number of pages = 150

Total one digit numbers to be printed

$$= 1 \text{ to } 9 = 1 \times 9 = 9 \quad \dots(i)$$

Total 2 digit numbers to be printed = 10 to 99

$$= 2 \times 90 \quad [90 \text{ numbers lie from 10 to 99}]$$

$$= 180 \quad \dots(ii)$$

Total three digit numbers to be printed = 100 to 150

$$= 3 \times 51 \quad [51 \text{ numbers lie from 100 to 150}]$$

$$= 153 \quad \dots(iii)$$

Adding (i), (ii) & (iii), we get

$$9 + 180 + 153 = 342$$

$\therefore$  342 digits are printed in total

**Answer 18: (C)**

To minimize the number of working days, let us consider february month of a non-Leap year i.e. a month of 28 days

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

In all the Sundays i.e. 1, 8, 15 and 22 will be holidays. Also 2<sup>nd</sup> and 4<sup>th</sup> Saturday i.e. 14 and 28 will be holidays too.

Hence, minimum possible working days of any month of any year =  $28 - 6 = 22$  days.

**Answer 19: (C)**

Let the time spent on each question of Quantitative Ability be  $2x$  minutes.

According to question,

$$50 \times 2x + 200x = 240 \text{ min}$$

$$\Rightarrow 300x = 240 \text{ min}$$

$$\Rightarrow x = 240/300 \text{ min}$$

Thus, 50 questions of quant section should be

$$\text{attempted in } 2x = 50 \times 2 \times \frac{240}{300} = 80 \text{ min}$$

**Answer 20: (C)**

It is given that

Length of Stick A = 7.5 feet

Length of Stick B = 3.25 feet

To get the minimum length, which we can measure, we will use stick B and measure the Length of stick A

Therefore, we get :

Total length of A =  $3.25 + 3.25 + \text{remaining length of A}$

$$\text{Or, } 6.5 + \text{remaining length of A} = 7.5$$

$$\text{Or, remaining length of A} = 7.5 - 6.5$$

$$= 1 \text{ feet}$$

Hence, the minimum length which we can measure of 1 feet.

**Copyright © by Vision IAS**

All rights are reserved. No part of this document may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission of Vision IAS.