Book For

Bihar State Power Holding Company Ltd (BSPHCL)

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BIHAR STATE POWER HOLDING COMPANY LTD.

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(1) The difference between a two-digit number and the number obtained by interchanging the digits is 36. What is the difference between the sum and the difference of the digits of the number if the ratio between the digits of the number is 1 : 2 ?

[A] 4

[B] 8

[C] 16

[D] None of these

Answer : [B]

Explanation:
Since the number is greater than the number obtained on reversing the digits, so the ten's digit is greater than the unit's digit.
Let ten's and unit's digits be $2x$ and x respectively.
Then, $(10 \times 2x + x) - (10x + 2x) = 36$
$\Rightarrow 9x = 36$
$\Rightarrow x = 4.$
$\therefore$ Required difference $= (2x + x) - (2x - x) = 2x = 8.$

(2) The difference between a two-digit number and the number obtained by interchanging the positions of its digits is 36. What is the difference between the two digits of that number?

[A] 3

[B] 4

[C] 9

[D] Cannot be determined

[E] None of these

Answer : [B]

Explanation:
Let the ten's digit be x and unit's digit be y.
Then, $(10x + y) - (10y + x) = 36$
$\Rightarrow 9(x - y) = 36$
$\Rightarrow x - y = 4.$

(3) The greatest number of four digits which is divisible by 15, 25, 40 and 75 is:

[A] 9000

[B] 9400

[C] 9600

[D] 9800

Answer : [C]

Explanation:
Greatest number of 4-digits is 9999.
L.C.M. of 15, 25, 40 and 75 is 600.
On dividing 9999 by 600, the remainder is 399.
$\therefore$ Required number (9999 - 399) = 9600.

(4)

Reduce $\dfrac{128352}{238368}$ to its lowest terms.

[A]
$\dfrac{3}{4}$

[B]
$\dfrac{5}{13}$

[C]

$$\frac{7}{13}$$

[D]

$$\frac{9}{13}$$

Answer : [C]

Explanation:

```
128352) 238368 ( 1        128352        --------------        110016 ) 128352 ( 1        110016        --
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(5) The least number which should be added to 2497 so that the sum is exactly divisible by 5, 6, 4 and 3 is:

[A] 3

[B] 13

[C] 23

[D] 33

Answer : [C]

Explanation:
L.C.M. of 5, 6, 4 and 3 = 60.
On dividing 2497 by 60, the remainder is 37.
∵ Number to be added = (60 - 37) = 23.

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(6) Which of the following fraction is the largest ?

[A]

$$\frac{7}{8}$$

[B]

$$\frac{13}{16}$$

[C]

$$\frac{31}{40}$$

[D]

$$\frac{63}{80}$$

Answer : [A]

Explanation:
L.C.M. of 8, 16, 40 and 80 = 80.
$\frac{7}{8} = \frac{70}{80}$; $\frac{13}{16} = \frac{65}{80}$; $\frac{31}{40} = \frac{62}{80}$

Since, $\frac{70}{80} > \frac{65}{80} > \frac{63}{80} > \frac{62}{80}$, so $\frac{7}{8} > \frac{13}{16} > \frac{63}{80} > \frac{31}{40}$

So, $\frac{7}{8}$ is the largest.

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(7) The least number, which when divided by 12, 15, 20 and 54 leaves in each case a remainder of 8 is:

[A] 504

[B] 536

[C] 544

[D] 548

Answer : [D]

Explanation:
Required number = (L.C.M. of 12, 15, 20, 54) + 8
  = 540 + 8
  = 548.

(8) In how many ways can the letters of the word 'LEADER' be arranged?

[A] 72

[B] 144

[C] 360

[D] 720

[E] None of these

Answer : [C]

Explanation:
The word 'LEADER' contains 6 letters, namely 1L, 2E, 1A, 1D and 1R.

∴ Required number of ways = $\dfrac{6!}{(1!)(2!)(1!)(1!)(1!)}$ = 360.

(9) In how many different ways can the letters of the word 'LEADING' be arranged in such a way that the vowels always come together?

[A] 360

[B] 480

[C] 720

[D] 5040

[E] None of these

Answer : [C]

Explanation:
The word 'LEADING' has 7 different letters.
When the vowels EAI are always together, they can be supposed to form one letter.
Then, we have to arrange the letters LNDG (EAI).
Now, 5 (4 + 1 = 5) letters can be arranged in 5! = 120 ways.
The vowels (EAI) can be arranged among themselves in 3! = 6 ways.
∴ Required number of ways = (120 x 6) = 720.

(10) From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many ways can it be done?

[A] 564

[B] 645

[C] 735

[D] 756

[E] None of these

Answer : [D]

Explanation:
We may have (3 men and 2 women) or (4 men and 1 woman) or (5 men only).
∴ Required number of ways = $(^7C_3 \times {}^6C_2) + (^7C_4 \times {}^6C_1) + (^7C_5)$

$$= \left(\frac{7 \times 6 \times 5}{3 \times 2 \times 1} \times \frac{6 \times 5}{2 \times 1} \right) + (^7C_3 \times {}^6C_1) + (^7C_2)$$

$$= 525 + \left(\frac{7 \times 6 \times 5}{3 \times 2 \times 1} \times 6 \right) + \left(\frac{7 \times 6}{2 \times 1} \right)$$

$$= (525 + 210 + 21)$$

$$= 756.$$

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(11) In how many different ways can the letters of the word 'DETAIL' be arranged in such a way that the vowels occupy only the odd positions?

[A] 32

[B] 48

[C] 36

[D] 60

[E] 120

Answer : [C]

Explanation:
There are 6 letters in the given word, out of which there are 3 vowels and 3 consonants.
Let us mark these positions as under:
(1) (2) (3) (4) (5) (6)
Now, 3 vowels can be placed at any of the three places out 4, marked 1, 3, 5.
Number of ways of arranging the vowels = $^3P_3$ = 3! = 6.
Also, the 3 consonants can be arranged at the remaining 3 positions.
Number of ways of these arrangements = $^3P_3$ = 3! = 6.
Total number of ways = (6 x 6) = 36.

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(12) It was Sunday on Jan 1, 2006. What was the day of the week Jan 1, 2010?

[A] Sunday

[B] Saturday

[C] Friday

[D] Wednesday

Answer : [C]

Explanation:
On 31st December, 2005 it was Saturday.
Number of odd days from the year 2006 to the year 2009 = (1 + 1 + 2 + 1) = 5 days.
∵ On 31st December 2009, it was Thursday.
Thus, on 1st Jan, 2010 it is Friday.

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(13) Today is Monday. After 61 days, it will be:

[A] Wednesday

[B] Saturday

[C] Tuesday

[D] Thursday

Answer : [B]

Explanation:
Each day of the week is repeated after 7 days.
So, after 63 days, it will be Monday.
∵ After 61 days, it will be Saturday.

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(14) On what dates of April, 2001 did Wednesday fall?

[A] 1st, 8th, 15th, 22nd, 29th

[B] 2nd, 9th, 16th, 23rd, 30th

[C] 3rd, 10th, 17th, 24th

[D] 4th, 11th, 18th, 25th

Answer : [D]

Explanation: We shall find the day on 1st April, 2001.
1st April, 2001 = (2000 years + Period from 1.1.2001 to 1.4.2001)
Odd days in 1600 years = 0
Odd days in 400 years = 0
Jan. Feb. March April
(31 + 28 + 31 + 1)　 = 91 days ≡ 0 odd days.
Total number of odd days = (0 + 0 + 0) = 0
On 1st April, 2001 it was Sunday.
In April, 2001 Wednesday falls on 4th, 11th, 18th and 25th.

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(15) How many days are there in *x* weeks *x* days?

[A] $7x^2$

[B] $8x$

[C] $14x$

[D] 7

Answer : [B]

Explanation:
x weeks *x* days = $(7x + x)$ days = $8x$ days.

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(16) A towel, when bleached, was found to have lost 20% of its length and 10% of its breadth. The percentage of decrease in area is:

[A] 10%

[B] 10.08%

[C] 20%

[D] 28%

Answer : [D]

Explanation:
Let original length = *x* and original breadth = *y*.

$$\text{Decrease in area} = xy - \left(\frac{80}{100}x \times \frac{90}{100}y \right)$$

$$= \left(xy - \frac{18}{25}xy \right)$$

$$= \frac{7}{25}xy.$$

$$\therefore \text{Decrease \%} = \left(\frac{7}{25}xy \times \frac{1}{xy} \times 100 \right)_{\%} = 28\%.$$

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(17) A man walked diagonally across a square lot. Approximately, what was the percent saved by not walking along the edges?
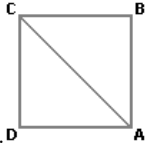
[A] 20

[B] 24

[C] 30

[D] 33

Answer : [C]

Explanation:
Let the side of the square(ABCD) be *x* metres.

Then, AB + BC = 2*x* metres.
AC = √2*x* = (1.41*x*) m.
Saving on 2*x* metres = (0.59*x*) m.

Saving % = $\left(\dfrac{0.59x}{2x} \times 100 \right)_{\%}$ = 30% (approx.)

(18) What is the least number of squares tiles required to pave the floor of a room 15 m 17 cm long and 9 m 2 cm broad?

[A] 814

[B] 820

[C] 840

[D] 844

Answer : [A]

Explanation:
Length of largest tile = H.C.F. of 1517 cm and 902 cm = 41 cm.
Area of each tile = (41 x 41) cm^2.

∴ Required number of tiles = $\left(\dfrac{1517 \times 902}{41 \times 41} \right)$ = 814.

(19) The diagonal of the floor of a rectangular closet is $7\frac{1}{2}$ feet. The shorter side of the closet is $4\frac{1}{2}$ feet. What is the area of the closet in square feet?

[A]
$5\frac{1}{4}$

[B]
$13\frac{1}{2}$

[C] 27

[D] 37

Answer : [C]

Explanation:
Other side = $\sqrt{\left(\dfrac{15}{2}\right)^2 - \left(\dfrac{9}{2}\right)^2}$ ft

$= \sqrt{\dfrac{225}{4} - \dfrac{81}{4}}$ ft

$= \sqrt{\dfrac{144}{4}}$ ft

= 6 ft.

∴ Area of closet = (6 x 4.5) sq. ft = 27 sq. ft.

(20) The diagonal of a rectangle is $\sqrt{41}$ cm and its area is 20 sq. cm. The perimeter of the rectangle must be:

[A] 9 cm

[B] 18 cm

[C] 20 cm

[D] 41 cm

Answer : [B]

Explanation:
$l^2 + b^2 = 41.$
Also, $lb = 20.$
$(l + b)^2 = (l^2 + b^2) + 2lb = 41 + 40 = 81$
$\Rightarrow (l + b) = 9.$
$\therefore$ Perimeter $= 2(l + b) = 18$ cm.