Book For

Institute of Banking Personnel Selection

IBPS PO Math Sample Paper In English 2017

(1) A is thrice as good as workman as B and therefore is able to finish a job in 60 days less than B. Working together, they can do it in:

[A] 20 days

[B] $22\frac{1}{2}$ days

[C] 25 days

[D] 30 days

Answer : [B]

Explanation:
Ratio of times taken by A and B = 1 : 3.
The time difference is (3 - 1) 2 days while B take 3 days and A takes 1 day.
If difference of time is 2 days, B takes 3 days.
If difference of time is 60 days, B takes $\left(\frac{3}{2} \times 60\right)$ = 90 days.

So, A takes 30 days to do the work.
A's 1 day's work = $\frac{1}{30}$

B's 1 day's work = $\frac{1}{90}$

(A + B)'s 1 day's work = $\left(\frac{1}{30} + \frac{1}{90}\right) = \frac{4}{90} = \frac{2}{45}$

$\therefore$ A and B together can do the work in $\frac{45}{2} = 22\frac{1}{2}$ days.

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(2) A can do a certain work in the same time in which B and C together can do it. If A and B together could do it in 10 days and C alone in 50 days, then B alone could do it in:

[A] 15 days

[B] 20 days

[C] 25 days

[D] 30 days

Answer : [C]

Explanation:
(A + B)'s 1 day's work = $\frac{1}{10}$

C's 1 day's work = $\frac{1}{50}$

(A + B + C)'s 1 day's work = $\left(\frac{1}{10} + \frac{1}{50}\right) = \frac{6}{50} = \frac{3}{25}$. .... (i)

A's 1 day's work = (B + C)'s 1 day's work .... (ii)
From (i) and (ii), we get: 2 x (A's 1 day's work) = $\frac{3}{25}$

$\Rightarrow$ A's 1 day's work = $\frac{3}{50}$.

$\therefore$ B's 1 day's work $\left(\frac{1}{10} - \frac{3}{50}\right) = \frac{2}{50} = \frac{1}{25}$.

So, B alone could do the work in 25 days.

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(3) A and B can do a piece of work in 30 days, while B and C can do the same work in 24 days and C and A in 20 days. They all work together for 10 days when B and C leave. How many days more will A take to finish the work?

[A] 18 days

[B] 24 days

[C] 30 days

[D] 36 days

Answer : [A]

Explanation:

2(A + B + C)'s 1 day's work = $\left(\frac{1}{30} + \frac{1}{24} + \frac{1}{20}\right) = \frac{15}{120} = \frac{1}{8}$.

Therefore, (A + B + C)'s 1 day's work = $\frac{1}{2 \times 8} = \frac{1}{16}$.

Work done by A, B, C in 10 days = $\frac{10}{16} = \frac{5}{8}$.

Remaining work = $\left(1 - \frac{5}{8}\right) = \frac{3}{8}$.

A's 1 day's work = $\left(\frac{1}{16} - \frac{1}{24}\right) = \frac{1}{48}$.

Now, $\frac{1}{48}$ work is done by A in 1 day.

So, $\frac{3}{8}$ work will be done by A in $\left(48 \times \frac{3}{8}\right)$ = 18 days.

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(4) A and B can do a work in 8 days, B and C can do the same work in 12 days. A, B and C together can finish it in 6 days. A and C together will do it in :

[A] 4 days

[B] 6 days

[C] 8 days

[D] 12 days

Answer : [C]

Explanation:

(A + B + C)'s 1 day's work = $\frac{1}{6}$;

(A + B)'s 1 day's work = $\frac{1}{8}$;

(B + C)'s 1 day's work = $\frac{1}{12}$.

$\therefore$ (A + C)'s 1 day's work = $\left(2 \times \frac{1}{6}\right) - \left(\frac{1}{8} + \frac{1}{12}\right)$

= $\left(\frac{1}{3} - \frac{5}{24}\right)$

= $\frac{3}{24}$

= $\frac{1}{8}$.

So, A and C together will do the work in 8 days.

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(5) A hall is 15 m long and 12 m broad. If the sum of the areas of the floor and the ceiling is equal to the sum of the areas of four walls, the volume of the hall is:

[A] 720

[B] 900

[C] 1200

[D] 1800

Answer : [C]

Explanation:
$2(15 + 12) \times h = 2(15 \times 12)$
$\Rightarrow h = \frac{180}{27}m = \frac{20}{3}m.$

$\therefore$ Volume $= \left(15 \times 12 \times \frac{20}{3}\right)_{m^3} = 1200\ m^3.$

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(6) A right triangle with sides 3 cm, 4 cm and 5 cm is rotated the side of 3 cm to form a cone. The volume of the cone so formed is:

[A] $12\pi\ cm^3$

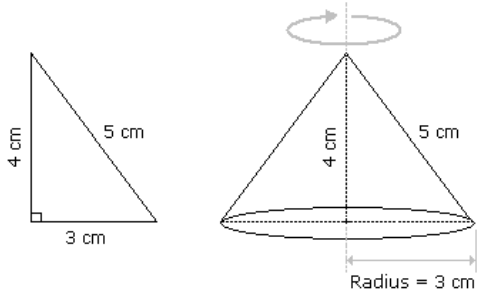
[B] $15\pi\ cm^3$

[C] $16\pi\ cm^3$

[D] $20\pi\ cm^3$

Answer : [A]

Explanation:



Clearly, we have $r = 3$ cm and $h = 4$ cm.
$\therefore$ Volume $= \frac{1}{3}\pi r^2 h = \left(\frac{1}{3} \times \pi \times 3^2 \times 4\right)_{cm^3} = 12\pi\ cm^3.$

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(7) A cistern 6m long and 4 m wide contains water up to a depth of 1 m 25 cm. The total area of the wet surface is:

[A] $49\ m^2$

[B] $50\ m^2$

[C] $53.5\ m^2$

[D] $55\ m^2$

Answer : [A]

Explanation:
Area of the wet surface $= [2(lb + bh + lh) - lb]$

$= 2(bh + lh) + lb$

$= [2\ (4 \times 1.25 + 6 \times 1.25) + 6 \times 4]\ m^2$

$= 49\ m^2.$

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(8) What is the total surface area of a right circular cone of height 14 cm and base radius 7 cm?

[A] 344.35 cm^2

[B] 462 cm^2

[C] 498.35 cm^2

[D] None of these

Answer : [C]

Explanation:
h = 14 cm, r = 7 cm.
So, l = $(7)^2 + (14)^2 =$ $245 = 7$ 5 cm.
$\therefore$ Total surface area $= \pi rl + \pi r^2$

$$= \left(\frac{22}{7} \times 7 \times 7 \ \ 5 + \frac{22}{7} \times 7 \times 7\right)_{cm^2}$$

$= [154(\ \ 5 + 1)] \ cm^2$

$= (154 \times 3.236) \ cm^2$

$= 498.35 \ cm^2.$

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(9) If 3 $\ 5 +$ $\ 125 = 17.88$, then what will be the value of $\ 80 + 6 \ \ 5$?

[A] 13.41

[B] 20.46

[C] 21.66

[D] 22.35

Answer : [D]

Explanation:
3 $\ 5 +$ $\ 125 = 17.88$
$\Rightarrow 3 \ \ 5 + \ \ 25 \times 5 = 17.88$
$\Rightarrow 3 \ \ 5 + 5 \ \ 5 = 17.88$
$\Rightarrow 8 \ \ 5 = 17.88$
$\Rightarrow \ \ 5 = 2.235$
$\therefore \ \ 80 + 6 \ \ 5 = \ \ 16 \times 5 + 6 \ \ 5$
$= 4 \ \ 5 + 6 \ \ 5$
$= 10 \ \ 5 = (10 \times 2.235) = 22.35$

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(10) The cube root of .000216 is:

[A] .6

[B] .06

[C] 77

[D] 87

Answer : [B]

Explanation:

$$(.000216)^{1/3} = \left(\frac{216}{10^6}\right)^{1/3}$$

$$= \left(\frac{6 \times 6 \times 6}{10^2 \times 10^2 \times 10^2}\right)^{1/3}$$

$$= \frac{6}{10^2}$$

$$= \frac{6}{100}$$

$= 0.06$

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(11)
$\left(\frac{625}{11} \times \frac{14}{25} \times \frac{11}{196}\right)$ is equal to:

[A] 5

[B] 6

[C] 8

[D] 11

Answer : [A]

Explanation:
Given Expression = $\frac{25}{11} \times \frac{14}{5} \times \frac{11}{14} = 5$.

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(12) 0.0169 x ? = 1.3

[A] 10

[B] 100

[C] 1000

[D] None of these

Answer : [B]

Explanation:
Let $0.0169 \times x = 1.3$.
Then, $0.0169x = (1.3)^2 = 1.69$
$\Rightarrow x = \frac{1.69}{0.0169} = 100$

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(13) What percentage of numbers from 1 to 70 have 1 or 9 in the unit's digit?

[A] 1

[B] 14

[C] 20

[D] 21

Answer : [C]

Explanation:
Clearly, the numbers which have 1 or 9 in the unit's digit, have squares that end in the digit 1. Such numbers from 1 to 70 are 1, 9, 11, 19, 21, 29, 31, 39, 41, 49, 51, 59, 61, 69.
Number of such number =14
$\therefore$ Required percentage = $\left(\frac{14}{70} \times 100\right)\% = 20\%$.

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(14) A batsman scored 110 runs which included 3 boundaries and 8 sixes. What percent of his total score did he make by running between the wickets?

[A] 45%

[B]
$45\frac{5}{11}\%$

[C]

$54\frac{6}{11}\%$

[D] 55%

Answer : [B]

Explanation:
Number of runs made by running = 110 - (3 x 4 + 8 x 6)
= 110 - (60)
= 50.
∴ Required percentage = $\left(\frac{50}{110} \times 100\right)\% = 45\frac{5}{11}\%$

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(15) In an election between two candidates, one got 55% of the total valid votes, 20% of the votes were invalid. If the total number of votes was 7500, the number of valid votes that the other candidate got, was:

[A] 2700

[B] 2900

[C] 3000

[D] 3100

Answer : [A]

Explanation:
Number of valid votes = 80% of 7500 = 6000.
∴ Valid votes polled by other candidate = 45% of 6000
$= \left(\frac{45}{100} \times 6000\right) = 2700.$

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(16) The population of a town increased from 1,75,000 to 2,62,500 in a decade. The average percent increase of population per year is:

[A] 4.37%

[B] 5%

[C] 6%

[D] 8.75%

Answer : [B]

Explanation:
Increase in 10 years = (262500 - 175000) = 87500.
Increase% = $\left(\frac{87500}{175000} \times 100\right)\% = 50\%.$

∴ Required average = $\left(\frac{50}{10}\right)\% = 5\%.$

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(17) What is the difference between the compound interests on Rs. 5000 for $1\frac{1}{2}$ years at 4% per annum compounded yearly and half-yearly?

[A] Rs. 2.04

[B] Rs. 3.06

[C] Rs. 4.80

[D] Rs. 8.30

Answer : [A]

Explanation:

$$= \text{Rs. } 5000 \times 1 + 4 \times 1 + \frac{1}{2} \times 4$$

C.I. when interest compounded yearly $= \left[\quad \left(\quad \frac{}{100} \right) \quad \left(\quad \frac{}{100} \right) \right]$

$= \text{Rs.} \left(5000 \times \frac{26}{25} \times \frac{51}{50} \right)$

$= \text{Rs. } 5304.$

C.I. when interest is compounded half-yearly $= \text{Rs.} \left[5000 \times \left(1 + \frac{2}{100} \right)^3 \right]$

$= \text{Rs.} \left(5000 \times \frac{51}{50} \times \frac{51}{50} \times \frac{51}{50} \right)$

$= \text{Rs. } 5306.04$

$\therefore$ Difference = Rs. (5306.04 - 5304) = Rs. 2.04

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(18) A bank offers 5% compound interest calculated on half-yearly basis. A customer deposits Rs. 1600 each on 1st January and 1st July of a year. At the end of the year, the amount he would have gained by way of interest is:

[A] Rs. 120

[B] Rs. 121

[C] Rs. 122

[D] Rs. 123

Answer : [B]

Explanation:

Amount $= \text{Rs.} \left[1600 \times \left(1 + \frac{5}{2 \times 100} \right)^2 + 1600 \times \left(1 + \frac{5}{2 \times 100} \right) \right]$

$= \text{Rs.} \left[1600 \times \frac{41}{40} \times \frac{41}{40} + 1600 \times \frac{41}{40} \right]$

$= \text{Rs.} \left[1600 \times \frac{41}{40} \left(\frac{41}{40} + 1 \right) \right]$

$= \text{Rs.} \left[\frac{1600 \times 41 \times 81}{40 \times 40} \right]$

$= \text{Rs. } 3321.$

$\therefore$ C.I. = Rs. (3321 - 3200) = Rs. 121

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(19) The least number of complete years in which a sum of money put out at 20% compound interest will be more than doubled is:

[A] 3

[B] 4

[C] 5

[D] 6

Answer : [B]

Explanation:

$P \left(1 + \frac{20}{100} \right)^n > 2P \quad \Rightarrow \quad \left(\frac{6}{5} \right)^n > 2.$

Now, $\left(\frac{6}{5} \times \frac{6}{5} \times \frac{6}{5} \times \frac{6}{5} \right) > 2.$

So, $n = 4$ years.

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(20) The difference between compound interest and simple interest on an amount of Rs. 15,000 for 2 years is Rs. 96. What is the rate of interest per annum?

[A] 8

[B] 10

[C] 12

[D] Cannot be determined

[E] None of these

Answer : [A]

Explanation:

$$\left[15000 \times \left(1 + \frac{R}{100}\right)^2 - 15000\right] - \left(\frac{15000 \times R \times 2}{100}\right) = 96$$

$$\Rightarrow 15000 \left[\left(1 + \frac{R}{100}\right)^2 - 1 - \frac{2R}{100}\right] = 96$$

$$\Rightarrow 15000 \left[\frac{(100 + R)^2 - 10000 - (200 \times R)}{10000}\right] = 96$$

$$\Rightarrow R^2 = \left(\frac{96 \times 2}{3}\right) = 64$$

$\Rightarrow$ R = 8.
$\therefore$ Rate = 8%.