Book For

Central Reserve Police Force

CRPF SI Maths Sample Paper

(1)
$\frac{\log\ 8}{\log 8}$ is equal to:

[A]
$\frac{1}{8}$

[B]
$\frac{1}{4}$

[C]
$\frac{1}{2}$

[D]
$\frac{1}{8}$

Answer : [C]

Explanation:

$\frac{\log\ 8}{\log 8} = \frac{\log (8)^{1/2}}{\log 8} = \frac{\frac{1}{2}\log 8}{\log 8} = \frac{1}{2}.$

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(2) If $\log_{10} 2 = 0.3010$, the value of $\log_{10} 80$ is:

[A] 1.6020

[B] 1.9030

[C] 3.9030

[D] None of these

Answer : [B]

Explanation:
$\log_{10} 80 = \log_{10} (8 \times 10)$

$= \log_{10} 8 + \log_{10} 10$

$= \log_{10} (2^3) + 1$

$= 3 \log_{10} 2 + 1$

$= (3 \times 0.3010) + 1$

$= 1.9030.$

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(3) If $\log_{10} 5 + \log_{10} (5x + 1) = \log_{10} (x + 5) + 1$, then x is equal to:

[A] 1

[B] 3

[C] 5

[D] 10

Answer : [B]

Explanation:
$\log_{10} 5 + \log_{10} (5x + 1) = \log_{10} (x + 5) + 1$
$\Rightarrow \log_{10} 5 + \log_{10} (5x + 1) = \log_{10} (x + 5) + \log_{10} 10$
$\Rightarrow \log_{10} [5 (5x + 1)] = \log_{10} [10(x + 5)]$
$\Rightarrow 5(5x + 1) = 10(x + 5)$
$\Rightarrow 5x + 1 = 2x + 10$
$\Rightarrow 3x = 9$
$\Rightarrow x = 3.$

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(4) The value of $\log_2 16$ is:

[A] $\frac{1}{8}$

[B] 4

[C] 8

[D] 16

Answer : [B]

Explanation:
Let $\log_2 16 = n$.
Then, $2^n = 16 = 2^4 \quad \Rightarrow \quad n = 4.$
$\because \log_2 16 = 4.$

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(5) 9548 + 7314 = 8362 + (?)

[A] 8230

[B] 8410

[C] 8500

[D] 8600

[E] None of these

Answer : [C]

Explanation:

9548 16862 = 8362 + x + 7314 x = 16862 - 8362 ----- = 8500 16862 -----

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(6) 35 + 15 x 1.5 = ?

[A] 85

[B] 51.5

[C] 57.5

[D] 5.25

[E] None of these

Answer : [C]

Explanation:

Given Exp. = $35 + 15 \times \frac{3}{2} = 35 + \frac{45}{2} = 35 + 22.5 = 57.5$

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(7) Which one of the following can't be the square of natural number ?

[A] 32761

[B] 81225

[C] 42437

[D] 20164

[E] None of these

Answer : [C]

Explanation:
The square of a natural number never ends in 7.
∴ 42437 is not the square of a natural number.

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(8) 3 + 33 + 333 + 3.33 = ?

[A] 362.3

[B] 372.33

[C] 702.33

[D] 702

[E] None of these

Answer : [B]

Explanation:

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3 +  33 + 333 +   3.33   ------   372.33   ------
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(9) Which one of the following can't be the square of natural number ?

[A] 30976

[B] 75625

[C] 28561

[D] 143642

[E] None of these

Answer : [D]

Explanation:
The square of a natural number nerver ends in 2.
∴ 143642 is not the square of natural number.

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(10) A watch which gains 5 seconds in 3 minutes was set right at 7 a.m. In the afternoon of the same day, when the watch indicated quarter past 4 o'clock, the true time is:

[A]
$59\frac{7}{12}$ min. past 3

[B] 4 p.m.

[C]
$58\frac{7}{11}$ min. past 3

[D]
$2\frac{3}{11}$ min. past 4

Answer : [B]

Explanation:

Time from 7 a.m. to 4.15 p.m. = 9 hrs 15 min. = $\frac{37}{4}$ hrs.

3 min. 5 sec. of this clock = 3 min. of the correct clock.

$\Rightarrow \frac{37}{720}$ hrs of this clock = $\frac{1}{20}$ hrs of the correct clock.

$\Rightarrow \frac{37}{4}$ hrs of this clock = $\left(\frac{1}{20} \times \frac{720}{37} \times \frac{37}{4}\right)$ hrs of the correct clock.

= 9 hrs of the correct clock.

$\therefore$ The correct time is 9 hrs after 7 a.m. *i.e.,* 4 p.m.

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(11) At what angle the hands of a clock are inclined at 15 minutes past 5?

[A]
$58\ \frac{1?}{2}$

[B] 64?

[C]
$67\ \frac{1?}{2}$

[D]
$72\ \frac{1?}{2}$

Answer : [C]

Explanation:

Angle traced by hour hand in $\frac{21}{4}$ hrs = $\left(\frac{360}{12} \times \frac{21}{4}\right)? = 157\frac{1?}{2}$

Angle traced by min. hand in 15 min. = $\left(\frac{360}{60} \times 15\right)? = 90?$.

$\therefore$ Required angle = $\left(157\frac{1}{2}\right)? - 90? = 67\frac{1?}{2}$

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(12) The angle between the minute hand and the hour hand of a clock when the time is 4.20, is:

[A] 0?

[B] 10?

[C] 5?

[D] 20?

Answer : [B]

Explanation:

Angle traced by hour hand in $\frac{13}{3}$ hrs = $\left(\frac{360}{12} \times \frac{13}{3}\right)^{?}$ = 130?.

Angle traced by min. hand in 20 min. = $\left(\frac{360}{60} \times 20\right)^{?}$ = 120?.

∴ Required angle = (130 - 120)? = 10?.

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(13) At what time between 9 and 10 o'clock will the hands of a watch be together?

[A] 45 min. past 9

[B] 50 min. past 9

[C]
$49\frac{1}{11}$ min. past 9

[D]
$48\frac{2}{11}$ min. past 9

Answer : [C]

Explanation:

To be together between 9 and 10 o'clock, the minute hand has to gain 45 min. spaces.
55 min. spaces gained in 60 min.
45 min. spaces are gained in $\left(\frac{60}{55} \times 45\right)_{\text{min or } 49\frac{1}{11}}$ min.

∴ The hands are together at $49\frac{1}{11}$ min. past 9.

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(14) At what time, in minutes, between 3 o'clock and 4 o'clock, both the needles will coincide each other?

[A]
$5\frac{1}{11}''$

[B]
$12\frac{4}{11}''$

[C]
$13\frac{4}{11}''$

[D]
$16\frac{4}{11}''$

Answer : [D]

Explanation:

At 3 o'clock, the minute hand is 15 min. spaces apart from the hour hand.

To be coincident, it must gain 15 min. spaces.
55 min. are gained in 60 min.
15 min. are gained in $\left(\frac{60}{55} \times 15\right)_{min} = 16\frac{4}{11}$ min.

$\therefore$ The hands are coincident at $16\frac{4}{11}$ min. past 3.

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(15) How many times in a day, the hands of a clock are straight?

[A] 22

[B] 24

[C] 44

[D] 48

Answer : [C]

Explanation:
In 12 hours, the hands coincide or are in opposite direction 22 times.
$\therefore$ In 24 hours, the hands coincide or are in opposite direction 44 times a day.

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(16) A sum fetched a total simple interest of Rs. 4016.25 at the rate of 9 p.c.p.a. in 5 years. What is the sum?

[A] Rs. 4462.50

[B] Rs. 8032.50

[C] Rs. 8900

[D] Rs. 8925

[E] None of these

Answer : [D]

Explanation:
Principal $= \text{Rs.} \left(\frac{100 \times 4016.25}{9 \times 5}\right)$

$= \text{Rs.} \left(\frac{401625}{45}\right)$

$= \text{Rs. } 8925.$

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(17) A sum of Rs. 12,500 amounts to Rs. 15,500 in 4 years at the rate of simple interest. What is the rate of interest?

[A] 3%

[B] 4%

[C] 5%

[D] 6%

[E] None of these

Answer : [D]

Explanation:
S.I. = Rs. (15500 - 12500) = Rs. 3000.
Rate = $\left(\frac{100 \times 3000}{12500 \times 4}\right)\%$ = 6%

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(18) A lent Rs. 5000 to B for 2 years and Rs. 3000 to C for 4 years on simple interest at the same rate of interest and received Rs. 2200 in all from both of them as interest. The rate of interest per annum is:

[A] 5%

[B] 7%

[C]
$7\frac{1}{8}\%$

[D] 10%

Answer : [D]

Explanation:
Let the rate be R% p.a.
Then, $\left(\frac{5000 \times R \times 2}{100}\right) + \left(\frac{3000 \times R \times 4}{100}\right) = 2200.$

$\Rightarrow 100R + 120R = 2200$
$\Rightarrow R = \left(\frac{2200}{220}\right) = 10.$

$\therefore$ Rate = 10%.

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(19) A person borrows Rs. 5000 for 2 years at 4% p.a. simple interest. He immediately lends it to another person at $6\frac{1}{4}$ p.a for 2 years. Find his gain in the transaction per year.

[A] Rs. 112.50

[B] Rs. 125

[C] Rs. 150

[D] Rs. 167.50

Answer : [A]

Explanation:
Gain in 2 years = Rs. $\left[\left(5000 \times \frac{25}{4} \times \frac{2}{100}\right) - \left(\frac{5000 \times 4 \times 2}{100}\right)\right]$

= Rs. (625 - 400)

= Rs. 225.

$\therefore$ Gain in 1 year = Rs. $\left(\frac{225}{2}\right)$ = Rs. 112.50

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(20) A certain amount earns simple interest of Rs. 1750 after 7 years. Had the interest been 2% more, how much more interest would it have earned?

[A] Rs. 35

[B] Rs. 245

[C] Rs. 350

[D] Cannot be determined

[E] None of these

Answer : [D]

Explanation:
We need to know the S.I., principal and time to find the rate.
Since the principal is not given, so data is inadequate.
