SSC CHSL Exam Quantitative Aptitude Question & Answers PDF

1. The average age of fifteen persons is 32 years. If two more persons are added then the average is increased by 3 years. The new persons have an age difference of 11 years between them. The age (in years) of the younger among the new persons is:
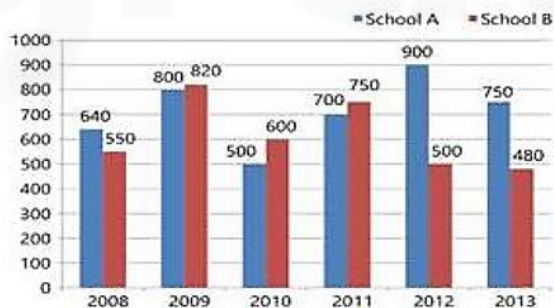A. 63
B. 52
C. 50
D. 58

2. If $a^3 - b^3 = 899$ and $a - b = 29$, then $(a - b)^2 + 3ab$ is equal to:
A. 35
B. 29
C. 16
D. 31

3. If the seven-digit number 54x29y6 (x > y) is divisible by 72, what is the value of (2x + 3y)?
A. 32
B. 13
C. 38
D. 23

4. The given Bar Graph presents the number of students of two schools for six years.

What is the ratio of the number of students taken together for the years 2008. 2012 and 2013 in School A to the number of students taken together for the years 2008. 2012 and 2013 in school B?
A. 229: 153
B. 101 : 117
C. 153 : 229
D. 117: 101

5. The given Bar Graph presents the number of students of two schools for six years.
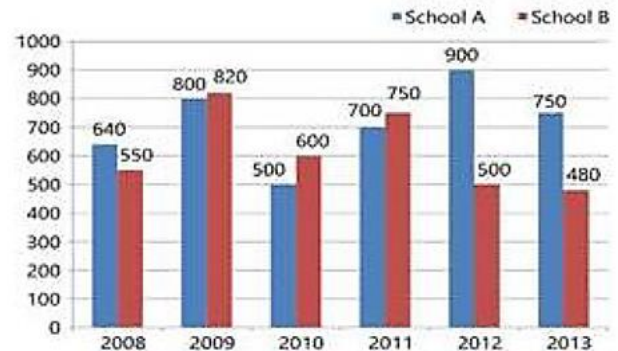
What is the average (Correct to two decimal places) of total students in schools A and B taken together during the six year period?
A. 1221. 67
B. 1122. 57
C. 1331. 67
D. 1132. 57

6. In ΔABC, the bisectors of ∠B and ∠C meet at O. inside the triangle. If ∠BOC = 106°, then the measure of ∠A is:
A. 16°
B. 106°
C. 32°
D. 84°

7. If $a^3 + b^3 = 1344$ and $a + b = 28$, then $(a + b)^2 - 3ab$ is equal to:
A. 24
B. 16
C. 32
D. 48

8. A dealer buys an article marked at Rs.20000 with two successive discounts of 20% and 5%. He spends Rs.1800 on repairs and sells it for Rs.20000, what is his profit/loss percent (correct to one decimal place)?
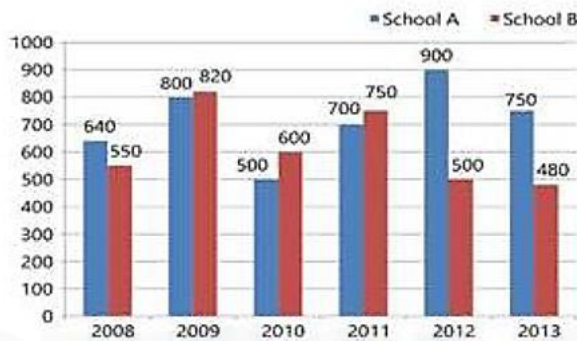A. 23. 46% profit
B. 17.65% profit
C. 17.65% loss
D. 23. 64% loss

9. A and B can complete a piece of work in 15 days and 10 days respectively. They got a contract to complete the work for Rs.75000. The share of B (in Rs.) in the contracted money will be:
A. 35,000
B. 40,000
C. 45,000
D. 30,000

10. The given Bar Graph presents the number of students of two schools for six years.

In which year the sum of the students in two schools is the highest?
A. 2009
B. 2012
C. 2011
D. 2008

11. PA and PB are the tangents to a circle with centre O. from a point P outside the circle. A and B are the points on the circle. If ∠APB = 72° then ∠OAB is equal to:
A. 72°
B. 24°
C. 18°
D. 36°

12. If $x = 2 + \sqrt{5}$ then the value of $(x^3 - x^{-3})$ is:
A. -52
B. 52
C. 76
D. -76

13. Let ΔABC ~ ΔQPR and $\dfrac{ar(\Delta ABC)}{ar(\Delta PQR)} = \dfrac{4}{25}$ If AB = cm. BC = 8 cm and AC = 8 cm, then PR is equal to:
A. 17.5
B. 20
C. 18
D. 15

14. If cotθ = 5x and $\cos ec\theta = \dfrac{5}{x}$), (x≠0) then the value of 5 $(x^2 - \dfrac{1}{x^2})$ is:

A. $\dfrac{1}{5}$

B. $\dfrac{1}{2}$

C. $-\dfrac{1}{5}$

D. $-\dfrac{1}{4}$

15. If 4 (cosec² 65° — tan² 25°) — sin90° — tan² 63° y tan² 27° = $\dfrac{y}{2}$, then the value of y is:
A. $\dfrac{-1}{2}$
B. 2
C. —1
D. 1

16. If each side of a rectangle is decreased by 13%, then its area will decrease by:
A. 26%
B. 21. 69%
C. 13%
D. 24. 31%

17. If x⁴ + x⁻⁴ = 47, (x > 0), then the value of (2x — 3)² is:
A. 2
B. 3
C. 5
D. 4

18. The compound interest on a certain sum of money at 21% for 2 years is Rs.9.282. Its simple interest (in Rs.) at the same rate and for the same period is:
A. 8,750
B. 8.400
C. 8,000
D. 8.500

19. The average age of fifteen persons is 32 years. If two more persons are added then the average is increased by 3 years. The new persons have an age difference of 9 years between them. The age (in years) of the elder among the new persons is:
A. 62
B. 50
C. 53
D. 58

20. A earns Rs.640 per day and works for 8 hours. B earns Rs.360 per day and works for 6 hours. The ratio of per day wages of A to that of B is:
A. 5 : 4
B. 9 : 16
C. 16 : 9
D. 4 : 5

21. The compound interest on a certain sum of money at 21% for 2 years is Rs.6,961.5. Its simple interest (in Rs.) at the same rate and for the same period is:
A. Rs.6,300
B. Rs.6,500
C. Rs.6,000
D. Rs.6,750

22. The given Bar Graph presents the results in terms of the number of students in a school for the five academic years, 2013-2014 to 2017-2018.
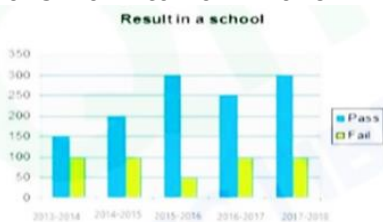
In which academic year the difference between the number of students passed and that of those failed is the lowest?
A. 2013-2014
B. 2014-2015
C. 2016-2017
D. 2015-2016

23. The distance between the centres of two circles of radius 2.5 cm each is 13 cm. The length (in cm) of a transverse common tangent is
A. 6
B. 12
C. 8
D. 10

24. The given Bar Graph presents the results in terms of the number of students in a school for the five academic years, 2013-2014 to 2017-2018.
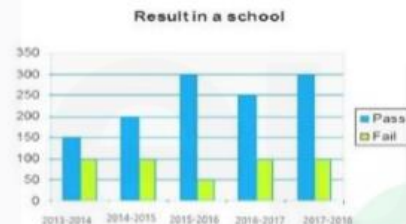

In which year the percentage increase in total number of students is the lowest in comparison to its previous academic year?
A. 2016-2017
B. 2017-2018
C. 2015-2016
D. 2014-2015

25. If cos θ = 4x and $\sin\theta = \dfrac{4}{x}$ (x ≠ 0), then the value of $\left(x^2 + \dfrac{1}{x^2} \right)$ is:

A. $\dfrac{1}{4}$

B. $\dfrac{1}{3}$

C. $\dfrac{1}{2}$

D. $\dfrac{1}{16}$

###ANSWERS###

1. Ans. B.
Let the age of fifteen persons be $x_1, x_2, \ldots\ldots, x_{15}$
Average of fifteen persons = 32 yrs.

$$\Rightarrow \frac{x_1 + x_2 + \ldots .x_{15}}{15} = 32$$

$$\Rightarrow x_1 + x_2 + \ldots .x_{15} = 480$$

Let the age of two people be x , x + 11
When two more people are added then average = 32 + 3 = 35 yrs

$$= \frac{x_1 + x_2 + x_3 + x_4 + \ldots\ldots + x_{15} + x + x + 11}{17} = 35$$

$$= \frac{480 + 2x + 11}{17} = 35$$

$$= 2x + 491 = 595$$

$$= x = 52$$

Hence the age of younger person = 52 yrs

2. Ans. D.
Here
$a^3 - b^3 = 899$ and $a - b = 31$
$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$
$a^3 - b^3 = (a-b)(a^2 + ab + b^2 - 2ab + 2ab)$
$a^3 - b^3 = (a-b)((a-b)^2 + 3ab)$
$899 = 29((a-b)^2 + 3ab)$
$31 = ((a-b)^2 + 3ab)$

3. Ans. D.
For a number to be divisible by 72, it has to be divisible by 8 and 9 both
For the given number to be divisible by 8, 9y6 i.e. the **last 3 digits of the number should be divisible by 8.**
S we can see that the digit 3 when replaces y satisfies the condition.
Hence y=3
And to make the number divisible by 9
The sum of digits of the number should be divisible by 9.
So 5+4+x+2+9+3+6 should be divisible by 9
29+x should be divisible by 9
We can see that x can be equal to 7 to give sum as 36
Hence the expression 2x+3y = 2 x 7+3 x 3
=23

4. Ans. A.

$$\text{Ratio} = \frac{640 + 900 + 750}{550 + 500 + 480}$$
= 2290/1530
=229:153

5. Ans. C.
As we have to find the average of total students, we will find the sum of students in two schools in each year and divide it by 6 as under
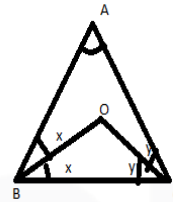
Average =
$$\frac{(1190 + 1620 + 1100 + 1450 + 1400 + 1230)}{6}$$
= 1331.66

6. Ans. C.
As shown in the fig below

In triangle OBC
106º+ x+ y = 180º
X + y = 74º
Hence 2x+2y = 148º
Now
In triangle ABC
A+2x+2y=180º
A+148º=180º
A=32º

7. Ans. D.
$A^3 + b^3 = (a+b)(a^2 + b^2 - ab)$
Since $a^2 + b^2 - ab = (a+b)^2 - 3ab$
1344 = 28* [(a+b)² – 3ab]
Hence the value of the expression will be = 1344/28
= 48

8. Ans. B.
Cost Price for the dealer after discounts=
20000 x 80/100 x 95/100
= 15200
CP after the repairs = 15200+ 1800 = 17000
Profit = 20000-17000 = 3000
Profit% = 3000/17000 x 100
= 17.65%

9. Ans. C.
Ratio of work done by A:B = 1/15 : 1/10
= 2:3
So share earned by B = 3/5 x 75000
=45000
10. Ans. A.
Sum of students in 2008 = 1190
Sum of students in 2009 = 1620
Sum of students in 2010 = 1100
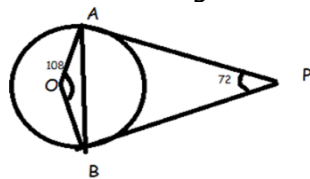Sum of students in 2011 = 1450
Sum of students in 2012 = 1400
Sum of students in 2013 = 1230
As can be seen from the values max students were in the year 2009.
11. Ans. D.
As from the figure:

In Quadrilateral AOBP, ANGLES
∠A + ∠O + ∠B + ∠P = 360º …………(1)
Since AP and BP are tangents, angles A and B =90º
And ∠P is given to be 72º.
Putting values in (1)
∠O = 108º
Now In triangle AOB
Since OA=OB (radius of the circle)
Hence, ∠O + ∠OAB + ∠OBA = 180º
108+ 2 x∠ OAB = 180º
∠OAB = 36º
12. Ans. C.
$(2+ \sqrt5)^3 = 8 + 5 \sqrt5 + 12 \sqrt5 + 30$
$= 38+ 17 \sqrt5$
So $1/x^3 = 1/(38 + 17 \sqrt5)$
Rationalizing
We get $1/x^3 = 1/(38 + 17 \sqrt5)$ x $(38 – 17 \sqrt5) / (38 – 17 \sqrt5)$
$= 38- 17 \sqrt5$
Hence the answer will be = $(38 + 17 \sqrt5) + (38 – 17 \sqrt5)$
= 76
13. Ans. B.
Ratio of areas of two similar triangles = 4:25
Hence the ratio of their sides = 2:5
So

AC/ PR= 8/PR= 2/5
Hence PR = 20
14. Ans. C.
X = cot θ / 5 and x = 5/ cosec θ
Putting values in question
$5\{ cot^2 θ/25- cosec^2 θ/25\}$
$= 5/25 \{cot^2 θ – cosec^2 θ\}$
= -1/5
15. Ans. B.
Tan θ = cot (90-θ)
Hence the equation in question can be written as
4 ($cosec^2$ 65° — cot^2 65°) — sin90° — tan^2
63° y cot^2 63° = $\dfrac{y}{2}$

hence, 4-1-y = $\dfrac{y}{2}$
3 = 3y/2
or y = 2
16. Ans. D.
Let length of rectangle be L and breadth be B
Then after reduction, new length= 0.87L
New breadth = 0.87 B
So new area = 0.87L* 0.87B
= 0.7569LB
Hence reduction in area =100- 75.69
= 24.31%
17. Ans. C.
Given that, $X^4 + 1/x^4 = 47$
Adding 2 on both sides:
⇒ $X^4 + 1/x^4 +2 = 49$
⇒ $(X^2 + 1/x^2)^2 = 7^2$
Or $x^2 + 1/x^2 = 7$
Adding 2 on both sides again
$(x + 1/x)^2 = 3^2$
Or x+ 1/x = 3
On solving $x^2 + 1 – 3x = 0$
Multiplying the eq by 4:
⇒ $4x^2 + 4 – 12x = 0$
Adding 5 on both sides:
⇒ $4x^2 – 12x + 9 = 5$
⇒ $(2x)^2 + (3)^2 – 2(2x)(3) = 5$
⇒ $(2x - 3)^2 = 5$
18. Ans. B.
Since CI=P[$(1+r/100)^2$ -1]
9.282=P[1+441/10000+42/100 -1]
9.282=P*4641/10000

P=20
So SI on same P= 20*2*21/100
SI=8.4
19. Ans. A.
Let age of younger person who joined the group be a
Then that of elder one will be a+9
From the question
32*15 + a + (a+9) = 17*35
480+2a+9 = 595
So, 2a= 106
a=53
Hence age of older person be 53+9=62
20. Ans. C.
Per day wage of A = 640
Per day wage of B = 360
Hence ratio of per day wage of A:B= 640/360
=16:9
21. Ans. A.
Let the Principal amount be Rs P
Then amount = Rs 6961.5 + P
$A = P \times (1+r/100)^n$
$6961.5 + P = P \times (1+21/100)^2$
$6961.5 + P = P \times (121/100)^2$
$6961.5 = P \times (0.4641)$
P = 15,000

S.I. = (P×R×T)/100
= (15000×21×2)/100
= 6300
Simple interest = Rs 6300
22. Ans. A.
The difference between the number of students who passed and those who failed :

In 2013 – 14 = 150 – 100 = 50
In 2014 – 15 = 200 – 100 = 100
In 2015 – 16 = 300 – 50 = 250
In 2016 – 17 = 250 – 100 = 150
In 2017 – 18 = 300 – 100 = 200
In 2013 – 14, the difference is the lowest.
23. Ans. B.
Length of transverse tangent :
$$\sqrt{(distance \ between \ the \ centres)^2 - (r_1 + r_2)^2}$$
$$= \sqrt{(13)^2 - (2.5 + 2.5)^2}$$
$$= \sqrt{12^2}$$
$$= 12\,cm$$
24. Ans. A.
Total number of students in 2015 – 16 = 300 + 50 = 350
Total number of students in 2016 – 17 = 250 + 100 = 350
Since the number of students in both the years are same
So the percentage increase In total number of students is the lowest in 2016 – 2017 .
25. Ans. D.
$$cos^2 \theta + sin^2 \theta = 1$$
$$(4x)^2 + \left(\frac{4}{x}\right)^2 = 1$$
$$16\left(x^2 + \frac{1}{x^2}\right) = 1$$
$$\left(x^2 + \frac{1}{x^2}\right) = \frac{1}{16}$$

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