RRB NTPC 16 Jan 2021 Shift 2 Solution

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1. Select the option that is related to the third term in the same way as the second term is related to the first term.
Assam : Tezpur :: Kerala : ?
a. Jeypore
b. Midnapore
c. Thenzawl
d. Kochi

Ans. d
Explanation:
The logic followed here is:-
Tezpur is a city located in Assam.
Similarly, Kochi is a city located in the state of Kerala.
Hence, ' option 4' is the correct answer.

2. A train covers a certain distance at a speed of 240 km/h in 5 hours. If a flight has to cover the same distance in 45 mins, it must travel at a speed of:
a. 1600 km/h
b. 1200 km/h
c. 1440 km/h
d. 1250 km/h

Ans. a

Explanation:
Given
Speed of train = 240 km/h
Time = 5 hours
Formula used
Speed = Distance/Time
1 Km = 1000 m
1 hour = 60 minutes
Calculation
Distance cover by train in 1 hour = 240 km
Distance cover by train in 5 hour = 240 × 5 km
⇒ 1200 km
Time taken by flight to cover 1200 km = 45/60
⇒ 3/4 hour

speed of flight = 1200/(3/4)
⇒ (1200/1) × (4/3)
⇒ 1600 km/h
∴ A flight has to cover the same distance in 45 mins, it must travel at a speed of 1600 km/h

3. The area of a square field is 7200 m ^{2}. How long will a cycle take to cross the field diagonally at a constant rate of 4 km/h?
a. 5 minutes
b.9 minutes
c. 30 minutes
d. 25 minutes

Ans. b

Explanation:
Given
area of a square field = 7200 m 2
Formula used
Area of square = $(side)^2$
Diagonal of square = $\sqrt{(side)^2 + (side)^2}$
Time = Distance/speed
Calculation
Distance cover = √7200 + 7200
⇒ √14400
⇒ 120 m
Speed of cycle = 4 km/h
⇒ (4 × 1000)/60
⇒ 400/6
⇒ (200/3) m/min
Time taken by cycle to cover 120 m = 120/(200/3)
⇒ (120/1) × (3/200)
⇒ 360/200
⇒ 9/5 minutes
∴ 9/5 minutes will a cycle take to cross the field diagonally at a constant rate of 4 km/h

4. The sum of the interior angles of a polygon measure 3240°. How many sides does the polygon have?
a. 10
b. 15
c. 20
d. 5
Ans. c

Explanation:
Given
sum of the interior angles of a polygon = 3240°
Concept used
Sum of the interior angles of a polygon = (n - 2) × 180°
where n is the number of sides of a polygon
Calculation
3240 = (n - 2) × 180
⇒(n - 2) = 3240/180
⇒ n - 2 = 18
⇒ n = 18 + 2
⇒ n = 20
∴ Polygon have 20 sides.

5. The value of x, if 3x + 4 × 8 ÷ 9 = x ÷ 3 – 1, is:

a. $-\frac{41}{24}$

b. $\frac{21}{24}$

c. 2

d. 1

Ans. a

Explanation:
Given
3x + 4 × 8 ÷ 9 = x ÷ 3 – 1
Concept
3x + 4 × 8 ×$\frac{1}{9}$ = x ×$\frac{1}{3}$ - 1
⇒ 3x + 32/9 = x/3 - 1
⇒ 3x - (x/3) = - 1- (32/9)
⇒ (9x - x)/3 = (-9 - 32)/9
⇒ 8x/3 = -41/9
⇒ x = (-41/9) × (3/8)
⇒ x = -41/24
∴ The value of x is - 41/24

6. ISRO launched India's first lunar probe mission in October 2008. Who was the Chairman of ISRO at that time?

a. APJ Abdul Kalam

b. A S Kiran Kumar

c. G Madhavan Nair

d. K Kasturirangan

Ans. c
Explanation:
The correct answer is G Madhavan Nair.
G Madhavan Nair was the chairman of ISRO when ISRO launched India's first lunar probe mission in October 2008.

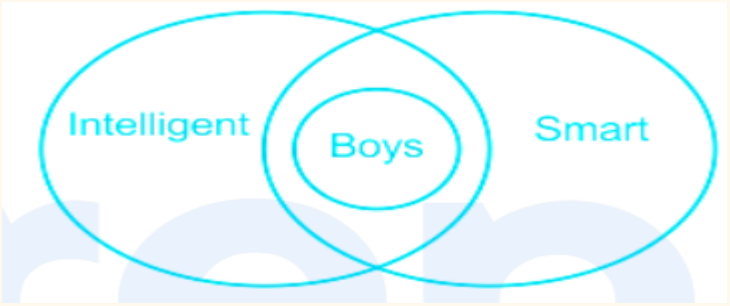
7. The value of 180 ÷ 20 {(15 – 6) + (24 – 18)} is:
a. 110
b. 135
c. $\frac{9}{15}$
d. 180

Ans. c
Explanation:
Given
180 ÷ 20 {(15 – 6) + (24 – 18)}
Concept
BODMAS
Calculation
180 ÷ 20 {(15 – 6) + (24 – 18)} is
180 ÷ 20 {(9 + 6)}
⇒ 180 ÷ 20 (15)
⇒ 180 ÷ 300
⇒ 180 × (1/300)
⇒ 18/30
⇒ 9/15
∴ The value of 180 ÷ 20 {(15 – 6) + (24 – 18)} is 9/15.

8. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) is logically TRUE.
Statements:
A. All boys are intelligent.
B. All boys are smart.
Conclusion:
1. Some boys are smart and intelligent.
2. All intelligent people are smart.
a. Neither conclusion 1 nor 2 is true.
b. Only conclusion 2 is true.
c. Both conclusions 1 and 2 are true.
d. Only conclusion 1 is true.

Ans. d

Explanation: The least possible Venn Diagram is as follows:-



Conclusions:

1. Some boys are smart and intelligent.→ True (Using the Venn diagram, we can see that all boys are smart and intelligent then some boys are smart and intelligent is definite true.)

Note: All A are B means Some A are B.

2. All intelligent are smart.→ False (it is possible but not definite)

Hence, 'option 4' is the correct answer.

9. If $x^2 + 1 = 2x$, then find $x - \frac{1}{x}$

a. 4

b. 12

c. 0

d. 2

Ans. c

Explanation:

Given

$x^2 + 1 = 2x$

Calculation

$x^2 + 1 = 2x$

$\Rightarrow x^2 - 2x + 1 = 0$

$\Rightarrow x^2 - x - x + 1 = 0$

$\Rightarrow x(x - 1) - 1(x - 1) = 0$

$\Rightarrow (x - 1)(x - 1) = 0$

$\Rightarrow x = 1$ and $x = 1$

Value of $x - (\frac{1}{x})$

$\Rightarrow 1 - (1/1)$

$\Rightarrow 1 - 1$

$\Rightarrow 0$

$\therefore$ $x - (1/x)$ is 0.

10. The value of [3 ÷ 5 – 8 of 4 + 3 × {8 ÷ 2 – (4 + 3)}] is:

a. $-\frac{202}{10}$

b. $\frac{101}{5}$

c. $\frac{201}{5}$

d. $-\frac{202}{5}$

Ans. d

Explanation:

Given

[3 ÷ 5 – 8 of 4 + 3 × {8 ÷ 2 – (4 + 3)}]

Concept

BODMAS

[3 ÷ 5 – 8 of 4 + 3 × {8 ÷ 2 – (4 + 3)}]

⇒ [3 × (1/5) - 8 × 4 + 3 × {8 × (1/2) - (7)}

⇒ [(3/5) - 32 + 3 × {4 - 7}

⇒ [(3/5) - 32 + 3 × (-3)

⇒ [(3/5) - 32 - 9]

⇒ (3 - 160 - 45)/5

⇒ - 202/5

∴ The value of [3 ÷ 5 – 8 of 4 + 3 × {8 ÷ 2 – (4 + 3)}] is -202/5

11. What will be the smallest number, which on adding 25 to it, is exactly divisible by 25, 36 and 40?

a. 3725

b. 1775

c. 2225

Ans. b

Explanation:

Concept

First taken the L.C.M of the given numbers and then subtract 25 from the L.C.M.

Calculation

Factors of 25 = 5 × 5

Factors of 36 = 2 × 2 × 3 × 3

Factors of 40 = 2 × 2 × 2 × 5

L.C.M of 25, 36 and 40 = 2 × 2 × 2 × 3 × 3 × 5 × 5

⇒ 1800

Subtract 25 from the L.C.M, then we will get the smallest number on which we add 25, then the number will be exactly divisible by 25, 36 and 40.

⇒ 1800 - 25

⇒ 1775

∴ 1775 will be smallest number, which on adding 25 to it, is exactly divisible by 25, 36 and 40

12. Who among the following got elected as the Head of the State for four times?
a. Viktor Zubkov
b. Boris Yeltsin
c. Vladimir Putin
d. Dmitry Medvedev

Ans. c
Explanation:
The correct answer is Vladimir Putin.
Vladimir Putin got elected as the Head of the State four times.

13. Factors that make a person's place of origin seem less attractive for reasons such as unemployment, poor living conditions and unpleasant climate are called _____ factors.
a. climatic
b. push
c. pull
d. negative

Ans. b
Explanation:
The correct answer is push.
People migrate for a better economic and social life. There are two sets of factors that influence migration.
The Push factors make the place of origin seem less attractive for reasons like unemployment, poor living conditions, political turmoil, unpleasant climate, natural disasters, epidemics and socio-economic backwardness. The Pull factors make the place of destination seem more attractive than the place of origin for reasons like better job opportunities and living conditions, peace and stability, security of life and property, and a pleasant climate.

14. E and C mutually like to work with each other. A likes to work with C and H. H and L do not like to work with anyone. Who is isolated in the office?
a. L
b. A
c. Both H and L
d. H

Ans. a
Explanation:
According to the given information
Name of persons- A, E, C, H and L
A likes to work with → C and H

E likes to work with → C
C likes to work with → E
Also, H and L does not like to work with anyone.
Clearly, L is left isolated as he does not like to work with anyone and no one likes to work with L..
Hence, 'option 1' is the correct answer.

15. _____ is NOT an example of an insulator.
a. Human body
b. Diamond
c. Rubber
d. Glass

Ans. a
Explanation:
The correct answer isHuman Body.
The human body is NOT an example of an insulator.

16. A person crosses a 500 m long street in 10 minutes. What will the person's speed be in kilometers per hour?
a. 8 km/h
b. 3 km/h
c. 5 km/h
d. 7 km/h

Ans. b
Explanation:
Given
Distance = 500 m
Time = 10 minutes
Formula used
Speed = Distance/time
1 Hour = 60 minutes
1 km= 1000 m
Calculation
Distance = (500/1000)km
⇒ 1/2 km
Time = (10/60)hours
Speed = (1/2)/(10/60)
⇒ (1/2) × (60/10)
⇒ 3 km/h
∴ The person's speed be in kilometers per hour is 3 km/h

17. Read the given statement and conclusions carefully. Assuming that the information given in the statement is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.
Statement:
Driving on wrong side has become a common practice these days, Conclusions:
I. Drivers do not know which side they are supposed to drive. II. Chances of accidents increase.
a. Only II follows
b. Either I or II follows
c. Only I follows
d. Neither I nor II follows.

Ans. a
Explanation:
The statement highlights the problem that a lot of people drive on the wrong side of the road. From the statement, we cannot conclude that drivers do not know which side they are supposed to drive because the statement has used the words 'wrong' and "these days". It means that the drivers know they are driving on the wrong
side but still, they are practicing it and they have started doing it these days. If people drive on the wrong side of the road, it is obvious that the possibility of accidents will be high. Thus, conclusion II follows.
Hence the correct answer is option 1 .

18. The value of =$\sqrt{\frac{1+cos\ 2A}{1-cos\ 2A}}$? (Note: A is non zero)
a. cos A
b. cot A
c. tan A
d. sin A

Ans. b
Explanation:
Given
$\sqrt{(1 + \cos 2A)/(1 - \cos 2A)}$
Formula used
$\cos 2A = \cos^2 A - \sin^2 A$
$\sin 2A = 2 \sin A \cos A$
$\cos^2 A + \sin^2 A = 1$
Calculation
$\sqrt{\frac{1+cos\ 2A}{1-cos\ 2A}}$
$\Rightarrow \sqrt{(1 + \cos 2A) \times (1 + \cos 2A)/(1 - \cos 2A)\ (1 + \cos 2A)} \Rightarrow \sqrt{(1 + \cos 2A)^2/[(1)^2 - (\cos^2 2A)}$

⇒ (1 + cos 2A)/ sin 2A
⇒ ($\cos^2$ A + $\sin^2$ A + $\cos^2$ A - $\sin^2$ A)/sin 2A ⇒ 2 $\cos^2$ A /2 sin A cos A
⇒ cos A/sin A
⇒ cot A
1+cos 2A
∴ The value of is $\sqrt{\frac{1+cos\ 2A}{1-cos\ 2A}}$ cot A.

19. The internet works by using a protocol called TCP/IP. What is the full form of TCP/IP?
a. Transmission Computer Programme/Internet Protocol
b. Transmission Control Protocol/Internet Protocol
c. Temporary Computer Protocol/Internet Protocol
d. Tele Computer Protocol/Internet Protocol

Ans. b
Explanation:
The correct answer is Transmission Control Protocol/Internet Protocol. TCP/IP stands for Transmission Control Protocol/Internet Protocol.
TCP/IP is a set of standardized rules that allow computers to communicate on a network such as an internet.

20. The cost price of 120 pens is the same as the selling price of x pens. If the profit is 25%, then the value of x is

a. 96
b. 95
c. 91
d. 90

Ans. a
Explanation:
Given
Cost price of 120 pens = selling price of x pens
Concept
Profit and loss
Formula used
selling price = cost price + Profit
Calculation
let the cost price of 120 pens = Rs.100
cost price of 1 pen = (100/120)
cost price of x pens = 100x/120

selling price of x pens = Rs. 100
Selling price = cost price + 25% of profit
100 = 100x/120 + 25% of (100x/120)
⇒ 100 = (100x/120) + (25x/120)
⇒ 100 = (100x + 25x)/120
⇒ 100 = 125x/120
⇒ x = (100 × 120)/125
⇒ x = 96
∴ The value of x is 96.

21. If x cos 45º sin 120° + sin 60 º = –x sin 90° + 1, then the value of x is:

a. $\frac{(2-\sqrt{3})}{(\sqrt{2}+\sqrt{3})}$
b. $\frac{2\sqrt{2}-\sqrt{6}}{2\sqrt{2}-\sqrt{3}}$
c. $\frac{(2+\sqrt{3})}{(\sqrt{2}+\sqrt{3})}$
d. $\frac{(2-\sqrt{3})}{(2\sqrt{2}+\sqrt{3})}$

Ans. b
Explanation:
Given
x cos 45º sin 120° + sin 60 º = –x sin 90° + 1
identities
cos 45° = 1/√2
sin 120° = √3/2
sin 60° = √3/2
sin 90° = 1
Calculation
x cos 45º sin 120° + sin 60 º = –x sin 90° + 1
x ×(1/√2) × (√3/2) + (√3/2) = -x × 1 + 1
⇒ (√3x/2√2)+ √3/2 = - x + 1
⇒ (√3x/2√ 2) + x = 1 - (√3/2)
⇒ (√3x + 2√2x)/2√ 2 = (2 -√ 3)/2
⇒ x(√3 + 2√2)/√2 = (2 - √ 3)
⇒ x = √2 (2 - √3)/(√3 + 2√2)
⇒ x = (2√2 - √6)/(2√2 + √ 3)
∴ x is (2√2 - √6)/(2√2 + √ 3)

22. Kidney failure is treated periodically on a kidney machine. The process is known as _____.
a. Excretion
b. Metabolism

c. Hemodialysis
d. Circulation

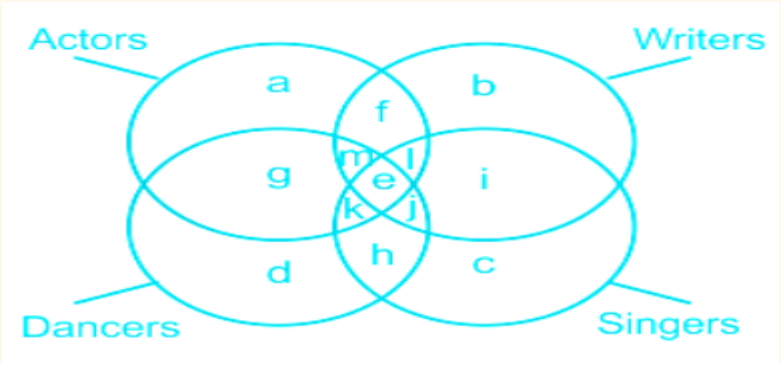
Ans.c
Explanation:
The correct answer is Hemodialysis.
Hemodialysis is a procedure where a dialysis machine and a special filter called an artificial kidney, or a dialyzer, are used to clean your blood.
Dialysis is a procedure to remove waste products and excess fluid from the blood when the kidneys stop working properly.
It often involves diverting blood to a machine to be cleaned.

23. As of 31st October 2020, the United Nation comprises _____ member states.

a. 193
b. 250
c. 150
d. 100

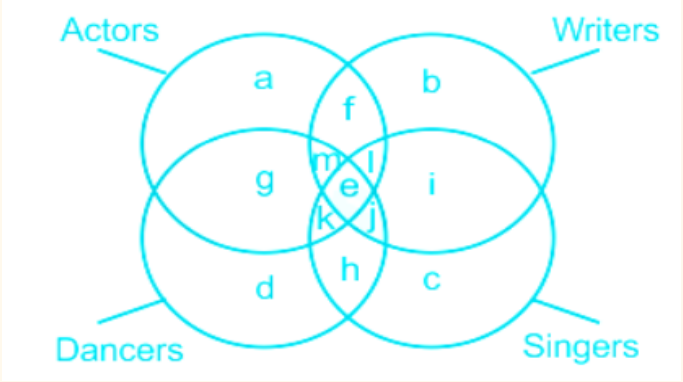
Ans. a
Explanation:
The correct answer is193.
As of 31st October 2020, the United Nation comprises 193 member states.

24. Study the following Venn diagram and find the region representing persons who are writers, singers and dancers, but not actors.

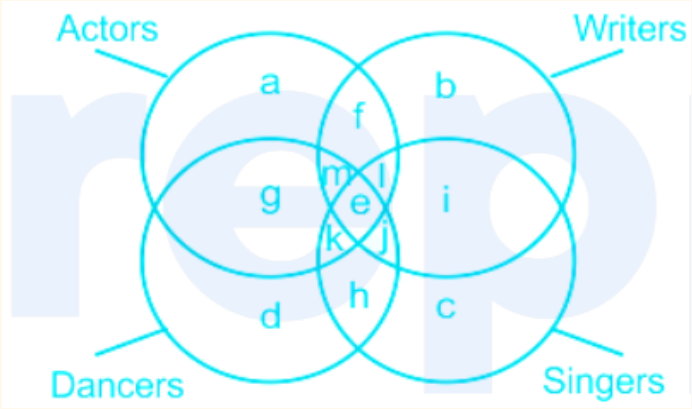


a. k
b. e
c. j
d. f

Ans. c
Explanation:
Region which is common to writers, singers and dancers = e + j



Region that includes writers, singers, and dancers, but not actors is :-

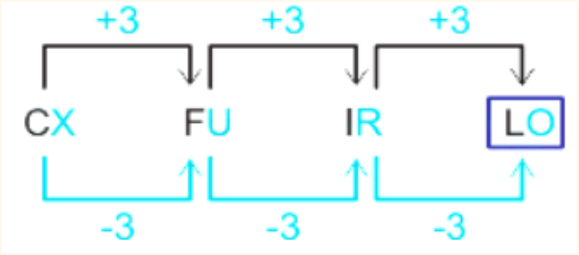


Thus, region 'j' represents writers, singers and dancers but does not include actors. Hence, 'option 3' is the correct answer.

25. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.

CX, FU, IR, (?)
a. HS
b. JQ
c. LO
d. KP

Ans. c
Explanation:
The logic followed here is:



Hence, 'option 3' is the correct answer.

26. Ashoka spends 10% of his monthly income and saves Rs 5,400 every month. What is his monthly income?
a. Rs. 6,400
b. Rs. 6,000
c. Rs. 5,400
d. Rs. 5,000

Ans. b
Explanation:
Given
Spends = 10% of total income
Saving = Rs. 5400
Concept
Income = Expenditure + saving
Calculation
Let the total income is Rs. x
x = 10% of x + 5400
⇒ x - 10% of x = 5400
⇒ 90x/100 = 5400
⇒ x = (5400 × 100)/90
⇒ x = 6000
∴ Ashoka monthly income is Rs. 6000

27. In which year was the 'National Human Rights Commission' established in India?
a. 1950
b. 1993
c. 1857
d. 1947

Ans. b
Explanation:
The correct answer is1993.
The National Human Rights Commission (NHRC) of India was established on 12 October, 1993.

28. Which was the first vehicle to soft-land safely on the surface of the Moon?
a. Apollo 17
b. Sputnik 25
c. Luna 9
d. Ranger 6

Ans. c
Explanation:
The correct answer isLuna 9.
Luna 9 was the first spacecraft to achieve a lunar soft landing and to transmit photographic data from the Moon's surface to Earth, preceding the U.S. Surveyor 1 soft lander by about 4 months.

29. Which of the following films was NOT nominated for an Oscar award?
a. Lagaan
b. Karma
c. Mother India
d. Salaam Bombay

Ans. b
Explanation:
Karmais NOT correct.
As of 2021, apart from Mother India, only two Indian films have been nominated for the Oscars—Salaam Bombay! (1988) and Lagaan (2001).

30. What will be the LCM of 48 and 65?
a. 48
b. 1
c. 3120
d. 65

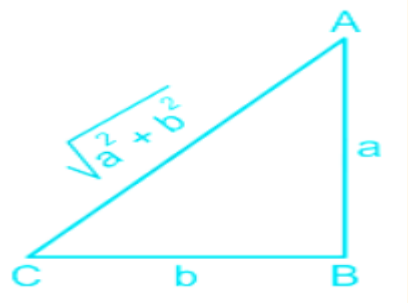
Ans. c
Explanation:
Given
48 and 65
Concept
Find the factors of 45 and 65
Calculation
Factors of 48 = 2 × 2 × 2 × 2 × 3
Factors of 65 = 5 × 13
L.C.M of 48 and 65 = 2 × 2 × 2 × 2 × 3 × 5 × 13
⇒ 3120
∴ The LCM of 48 and 65 is 3120

31. Which of the following sites is NOT a part of the Indus Valley Civilization?
a. Harappa
b. Uruk
c. Mohenjo Daro
d. Lothal

Ans. b
Explanation:
The correct answer is Uruk.
The main sites of the Indus Valley Civilization are Rakhigarhi (first site with genetic testing), Sanauli, Farmana, Kalibangan,Lothal, Dholavira,
Mehrgarh,Harappa, Chanhudaro andMohenjo-Daro.

32. If a cot θ = b, then the value of = ?
a cosθ+b sinθ
a. a – b
b. 2a
c. 0
d. a + b

Ans. c
Explanation:



Given
a cot θ = b
Formula used
cos θ = Side adjacent to θ/Hypotenuse
Calculation
In triangle ABC
$(AC)^2 = AB^2 + BC^2$
$(AC)^2 = a^2 + b^2$
$AC = \sqrt{a^2 + b^2}$
cot θ = b/a
cos θ = BC/AC
$\cos\theta = b/(\sqrt{a^2 + b^2})$
sin θ = AB/AC
$\sin\theta = a/(\sqrt{a^2 + b^2})$
$\frac{a\cos\theta - b\sin\theta}{a\cos\theta + b\sin\theta}$
⇒ [{a × b/(√ a 2 + b 2)} - {b × a/(√a 2 + b 2)}] /[{a × b/(√ a 2 + b 2)} + {b × a/(√a 2 + b 2)}]
⇒ [{ab/(√a 2 + b 2)} - {ab/(√a 2 + b 2)}]/ [a × b/(√ a 2 + b 2) + b × a/(√a 2 + b 2)] ⇒ 0/[a × b/(√ a 2 + b 2) + b × a/(√a 2 + b 2)]
⇒ 0
∴ the value of $\frac{a\cos\theta - b\sin\theta}{a\cos\theta + b\sin\theta}$ is 0

33. Which of the following statements is NOT TRUE about fishes?
a. Fishes have only two chambers to their hearts.
b. Blood goes only once in one cycle through the heart of a fish.
c. Fishes have double circulation.
d. Blood is pumped through the fishes' gills and gets oxygenated.

Ans. c
Explanation:
The correct answer is Fishes have double circulation.
In fish, the system has only one circuit, with the blood being pumped through the capillaries of the gills and onto the capillaries of the body tissues.
This is known as single cycle circulation. Hence, option 3 is incorrect.

34. _____ was the first bank that was established in India in 1770.
a. Bank of Baroda
b. State Bank of India
c. Indian Bank
d. Bank of Hindustan

Ans. d
Explanation:
The correct answer is Bank of Hindustan.
The oldest bank in India is The Madras Bank (1683), followed by the Bank of Bombay, founded in 1720, which is then followed by the Bank of Hindustan, founded in 1770 .

35. The value of 8 +($\frac{1}{2}$+$\frac{1}{4}$) × 16 is:
a. 10
b. 4
c. 35
d. 20

Ans. d
Explanation:
Given
8 + ($\frac{1}{2}$+$\frac{1}{4}$)× 16
Concept:
Calculation
⇒ 8 +$\frac{(2+1)}{4}$ × 16
⇒ 8 +$\frac{3}{4}$ × 16
⇒ 8 + 12

⇒ 20

∴ The value of 8 +($\frac{1}{2}$+$\frac{1}{4}$) × 16 is 20

36. If PI = Y and SD = W, then find GN = ?

a. X

b. Z

c. U

d. V

Ans. c

Explanation:

The logic followed here is:-

P(16) + I(9) = Y(25)

S(19) + D(4) = W(23)

Similarly,

G(7) + N(14) = U(21)

Hence, 'option 3' is the correct answer.

37. Who among the following is NOT related to the Indian Space Program?

a. AS Kiran Kumar

b. Satish Dhawan

c. K Sivan

d. Satyendra Nath Bose

Ans. d

Explanation:

The correct answer is Satyendra Nath Bose.

Satyendra Nath Bose was an Indian mathematician and physicist specializing in theoretical physics. He is best known for his work on quantum mechanics in the early 1920s, collaborating with Albert Einstein in developing the foundations of Bose Einstein statistics and the theory of the Bose-Einstein condensate.

38. Who among the following was appointed as UNICEF's global Goodwill Ambassador in 2018?

a. Lilly Singh

b. Millie Bobby Brown

c. Novak Djokovic

d. Priyanka Chopra

Ans.b

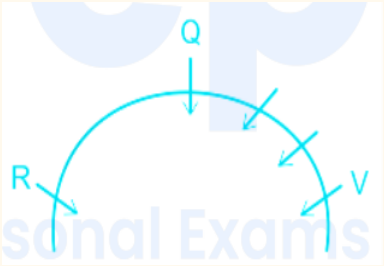
Explanation:

The correct answer is Millie Bobby Brown.
On 20 November 2018, Emmy-nominated actress Millie Bobby Brown has been announced as UNICEF's newest Goodwill Ambassador .
The appointment – marked on World Children's Day at United Nations Headquarters and the Empire State Building in New York – makes the 14- year-old UNICEF's youngest-ever Goodwill Ambassador.

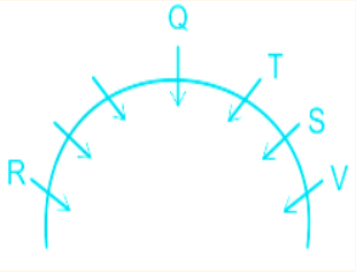
39. Seven friends are sitting in an arch shape facing inwards. R and V are sitting on the corner sides. T says that, "On my right-hand side more than two persons are sitting and R is the last one". Q says that, "On my left-hand side there are three persons sitting in which V is the last one". S and V are sitting beside each other. How many persons are sitting to the left and right side of T respectively?

a. Four and two
b. Three and three
c. One and five
d. Two and four

Ans. d
Explanation:
According to the information given in question,
1. Number of friends = 7
2. Three persons are sitting on the left-hand side of Q, of which V is the last one.
3. R and V are sitting on the corner sides.
So, this can be represented as
Also,



4. S and V are sitting beside each other.
5. More than two persons are sitting on the right-hand side of T, of which R is the last one.
So, the arrangement becomes-



Thus, two persons are sitting to the left of T and four persons are sitting to the right of T.
Hence, 'option 4' is the correct answer.

40. If a : b = √7 : √3 , then the value of (3a + 2b) : (3a – 2b) is equal to:

a. $\frac{2+\sqrt{21}}{2-\sqrt{21}}$

b. $\frac{2+\sqrt{21}}{(-2+\sqrt{21})}$

c. $\frac{2-\sqrt{21}}{2+\sqrt{21}}$

d. $\frac{2+\sqrt{21}}{(-2-\sqrt{21})}$

Ans. b

Explanation:

Given

a : b = √7 : √ 3

Formula used

$(a + b)^2 = a^2 + b^2 + 2ab$

$(a^2 - b^2) = (a + b) (a - b)$

calculation

let a = √7x and b = √3x

(3 × √7x + 2 × √3x)/(3 × √ 7x - 2 × √3x)

[{(3 × √7x + 2 × √3x) × (3 × √ 7x + 2 × √3x)}]/ [{(3 × √7x - 2 × √3x) × (3 × √ 7x + 2 × √3x)}]

$(3\sqrt{7x})^2 + (2\sqrt{3x})^2 + 2 (3\sqrt{7x})(2\sqrt{ 3x})/\{(3\sqrt{7x})^2 - (2\sqrt{3x})^2\}$

$(63x^2 + 12x^2 + 12\sqrt{ 21x^2})/(63x^2 - 12x^2)$

(75 + 12√ 21)/51

(25 + 4√ 21)/1 7

Check option 2

(2 + √21)/(- 2 + √21)

Rationalize multiply (2 + √21) both numerator and denominator

⇒ $(2 + \sqrt{21})^2/(- 2 + \sqrt{21})(2 + \sqrt{21})$

⇒ (25 + 4√ 21)/1 7

∴ The value of (3a + 2b) : (3a – 2b) is equal to $\frac{2+\sqrt{21}}{(-2+\sqrt{21})}$

41. If a = $\frac{3}{7}$b, then the value of $\frac{8a-b}{2a+3b}$ is:

a. $\frac{21}{17}$

b. $\frac{17}{27}$

c.17

d. $\frac{17}{2}$

Ans. b

Explanation:

Given

a = $\frac{3}{7}$b

Calculation

a/b = 3/7

a : b = 3 : 7

let a = 3x and b = 7x

$\frac{8a-b}{2a+3b}$

[(8 × 3x) - 7x]/[(2 × 3x) + (3 × 7x)]

⇒ (24x - 7x)/(6x + 21x)

⇒ 17x/27x

⇒ 17/27

8a−b

∴ The value of $\frac{8a-b}{2a+3b}$ is 17/27

42. If CHARGER is coded as 129 then HINGES will be coded as:

a. 101

b. 99

c. 102

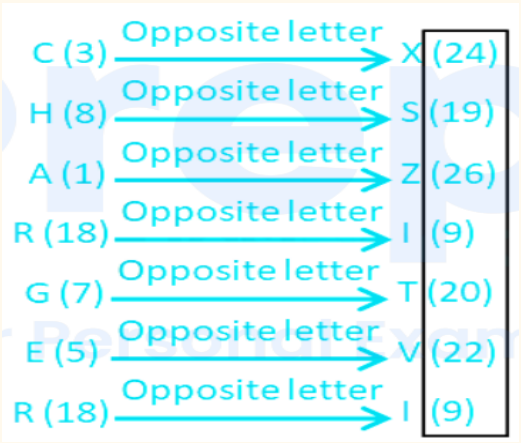
d. 100

Ans.d

Explanation:

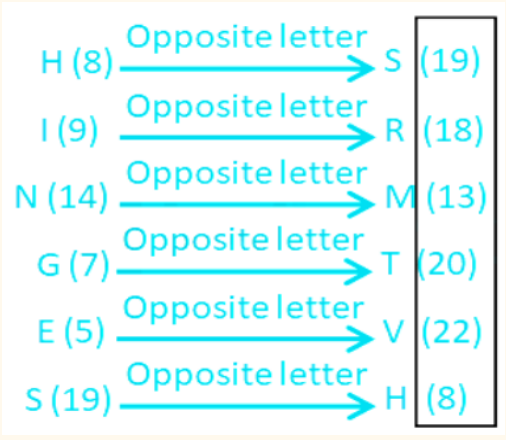
The logic followed here is:-

Alphabets are written as the positional value of the opposite letter.



And sum of 24 + 19 + 26 + 9 + 20 + 22 + 9 = 129

Similarly,



Sum of 19 + 18 + 13 + 20 + 22 + 8 = 100
Hence, 'option 4' is the correct answer

43. A group of workers who are highly qualified, skilled and that do mental work are called:
a. White collar workers
b. Artisans
c. Plumbers
d. Farmers

Ans. a
Explanation: The correct answer is White-collar workers.
White Collar Worker Those group of workers who is highly qualified and skilled and does mental work are called white-collar workers . These workers enjoy a high standard of living and better social status.

44. Which of the following cities is known as “The Queen of the Arabian Sea'?
a. Visakhapatnam
b. Mumbai
c. Kochi
d. Port Blair

Ans. c
Explanation: The correct answer isKochi.
Kochi is known as the 'Queen of the Arabian Sea'.

45. A domain name is a unique name given to each website on the internet. The last part of the domain name is known as a domain extension. Which of the following is a domain extension of any government website?
a. .com
b. .net
c. .gov
d. .mil

Ans. c
Explanation:
The correct answer is.gov.
Domain Name Types: .com – commercial business (the most common TLD) .org – organizations (typically, nonprofit) .gov – government agencies .edu – educational institutions .net – network organizations .mil – military

46. Name the country that has officially proclaimed 'Gross National Happiness (GNH)' as the measure of its progress.
a. India
b. Sri Lanka
c. Nepal
d. Bhutan

Ans. d
Explanation:
The correct answer isBhutan.
Gross national happiness was first coined in 1972 by the fourth King of Bhutan, King Jigme Singye Wangchuck.

47. Vikas buys an old bike for Rs. 30,000 and spends Rs. 5,000 on its repairs. If he sells the bike for Rs. 42,000, his gain percentage is:
a. 18%
b. 19%
c. 20%
d. 17%

Ans. c
Explanation:
Given Selling price of bike = Rs 42,000
Cost price of bike = Rs 30,000 + Rs.5000
Formula used
Profit = Selling Price - Cost Price
Calculation
Cost price = 30,000 + 5,000
⇒ Rs. 35000
Selling price = Rs 42,000
Profit = Rs. (42,000 - 35,000)
⇒ Rs. 7,000
Profit percentage = (7000/35000) × 100
⇒ 20%
∴ Gain percentage is 20%

48. The addition of which of the following adds fizz to soft drinks?
a. Citric acid
b. Carbonic acid
c. Acetic acid
d. Sulphuric acid

Ans. b
Explanation:
The correct answer isCarbonic acid.
Carbon dioxide or CO 2 is filled in beverages like soft drinks to give a fizzy nature to the beverage. The process of adding carbon dioxide gas to a beverage is called Carbonation.

49. Which one of the following is NOT a sub-field of economic geography?
a. Political Geography
b. Geography of Agriculture
c. Geography of Tourism
d. Geography of Resources

Ans. a
Explanation: The correct answer is Political Geography.
Political Geography is NOT a sub-field of economic geography

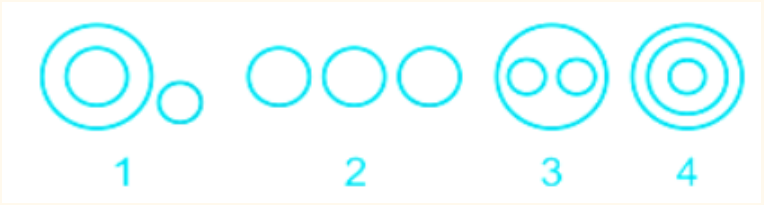
50. If x : y = 2 : 3 then what is the value of (5x + 3y) : (5x – 3y)
a. 19 : 3
b. 9 : 1
c. 19 : 2
d. 19 : 1

Ans. d
Explanation:
Given
x : y = 2 : 3
Calculation
let x = 2a and y = 3a
[(5 × 2a) + (3 × 3a)] ∶ [(5 × 2a) - (3 × 3a)]
⇒ (10a + 9a) ∶ (10a - 9a)
⇒ 19a ∶ a
⇒ 19 ∶ 1
∴ The value of (5x + 3y) : (5x – 3y) is 19 ∶ 1.

51. Swachh Survekshan is an annual survey of cleanliness, hygiene and sanitation in cities and towns across India. Swachh Survekshan 2020 declared _____ as India's cleanest city.
a. Jaipur
b. Mumbai
c. Delhi
d. Indore

Ans. d
Explanation:
The correct answer is Indore.
Swachh Survekshan is an annual survey of cleanliness, hygiene, and sanitation in cities and towns across India.
Swachh Survekshan 2020 declared Indore as India's cleanest city

52. Which of the following Venn diagrams best represents the relationship between Doctors, Engineers and Lawyers.



a. 4
b. 1
c. 2
d. 3

Ans. c
Explanation:
Doctors, engineers and lawyers have no characteristics common to each other. Therefore, the best Venn diagram representation is as follows:-

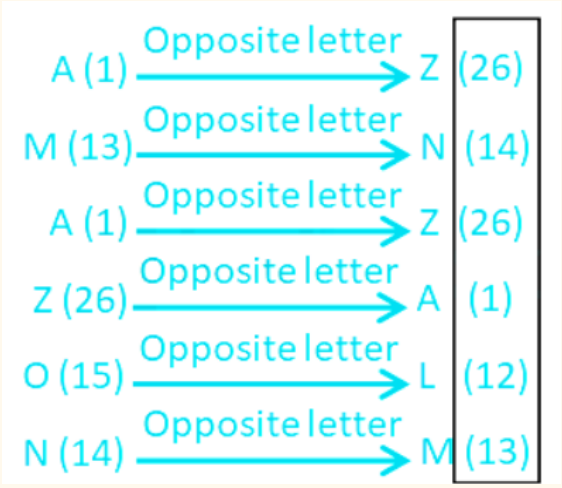
Hence, ' option 3' is the correct answer.

53. Where is Sri Guru Ram Dass Jee International Airport located?
a. Amritsar
b. Bareilly
c. Shimla
d. Chandigarh

Ans. a
Explanation:
The correct answer is Amritsar.
Sri Guru Ram Dass Jee International Airport is located in Amritsar. Sri Guru Ram Das Ji International Airport is an international airport about 11 kilometers northwest of the city of Amritsar, Punjab, India.

54. In a certain code language, A is written as 26 and O is written as 12. How will AMAZON be written as in that language?
a. 26142611213
b. 26152611213
c. 26132611213
d. 26122611213

Ans. a
Explanation:
The logic followed here is:-
Alphabets are assigned the positional value of the opposite letter or in the reverse alphabetical order.
So, AMAZON can be written as:-



Code for AMAZON will be 26142611213.
Hence, ' option 1' is the correct answer.

55. The Vedas are considered the earliest literary record of Indo-Aryan civilization. There are four Vedas: Rigveda, Samaveda, Yajurveda and the fourth one is _____.
a. Dhanurveda
b. Ayurveda
c. Shilpa Veda
d. Atharvaveda

Ans. d
Explanation:
The correct answer is Atharvaveda.
The Vedas are considered the earliest literary record of Indo-Aryan civilization. There are four Vedas: Rigveda, Samaveda, Yajurveda and the fourth one is Atharvaveda.

56. What will be the LCM and HCF of 27 and 81?
a. 81 ; 27
b. 27 ; 81
c. 81 ; 81
d. 27 ; 27

Ans. a
Explanation:
Given 27 and 81 Concept

To find the H.C.F and L.C.M of the numbers, first take factors of the numbers.
Calculation
Factors of 27 = 3 × 3 × 3
Factors of 81 = 3 × 3 × 3 × 3
L.C.M of 27 and 81 = 3 × 3 × 3 × 3 ⇒ 81
H.C.F of 27 and 81 = 3 × 3 × 3
⇒ 27
∴ T he LCM and HCF of 27 and 81 is 81 and 27.

57. A vendor bought toffees at 10 for a rupee. How many for a rupee must he sell to gain 25% ?
a. 6
b. 8
c. 30
d. $\frac{1}{5}$

Ans. b
Explanation:
Given Cost price of 10 toffees = Re. 1
Gain = 25%
Concept
Selling price = cost price + profit
Calculation
cost price of 10 toffee = Re. 1
cost price of 1 toffee = Re. 1/10
Selling price x toffee = Re.1
selling price of 1 toffee = 1/x (1/x) = (1/10) + 25% of (1/10)
⇒ (1/x) = (1/10) + (25/1000)
⇒ (1/x) = (1/10) + (1/40)
⇒ (1/x) = (4 + 1)/40
⇒ (1/x) = (5/40)
⇒ x = 40/5
⇒ x = 8
∴ Vendor should sell 8 toffees for Re1 to gain 25%.

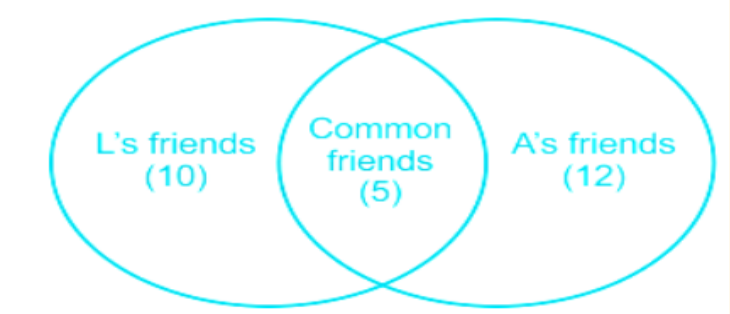
58. In which year was the new currency symbol of the Indian rupee officially adopted?
a. 2018
b. 2000
c. 2010
d. 1995

Ans. c
Explanation:
The correct answer is 2010.

In 2010 the new currency symbol of the Indian rupee was officially adopted. The symbol of the Indian Rupee typifies India's international identity for money transactions and economic strength.

59. L and A are classmates as well as good friends. In a class of 30 students, L has 10 unique friends and 5 friends who are common to A. A has a total of 17 friends in the class. How many students are friends with neither L nor A?
a. 5
b. 3
c. 4
d. 2

Ans. b
Explanation:
The given information can be represented by a Venn diagram as follows:



Total students in class = 30
Total friends of L and A = 10 + 5 + 12 = 27
Number of students who are friends with neither L nor A = 30 - 27 = 3
Hence, 'option 2' is the correct answer.

60. Name the major revolt inspired by Mahatma Gandhi against the forced cultivation of indigo.
a. Munda uprising
b. Champaran Satyagraha
c. Non-Cooperation Movement
d. Dandi March

Ans. b
Explanation:
The correct answer is Champaran Satyagraha.
Champaran Satyagraha wasinspired by Mahatma Gandhi against the forced cultivation of indigo.

61. Who wrote the book, 'Why I am Hindu'?
a. Manmohan Singh
b. Atal Bihari Vajpayee
c. Narendra Modi
d. Shashi Tharoor

Ans. d
Explanation:
The correct answer is Shashi Tharoor.
The book, 'Why I am Hindu' was written by Shashi Tharoor.

62. _____ was the first president of Indian National Congress.
a. Womesh Chandra Banerjee
b. Annie Besant
c. J B Kriplani
d. Jawaharlal Nehru

Ans.a
Explanation:
The correct answer is Womesh Chandra Banerjee.
Womesh Chandra Banerjee was the first president of the Indian National Congress.

63. Vikas can complete a job in 15 days. Bablu can do the same job in 10 days. In how many days can they complete the job if they work together?
a. 9 Days
b. 8 Days
c. 6 Days
d. 5 Days

Ans. c
Explanation:
Given Vikas completes a job = 15 days
Bablu completes a job = 10 days
Concept
first find the total work and then the efficiency of each person.
work = efficiency × time
Calculation
let the total work is 30 units.
L.C.M of 15 and 10
Vikas complete work in one day = 30/15
⇒ 2 units
Bablu complete work in 1 day = 30/10
⇒ 3 units
Vikas and Bablu complete work in 1 day = 2 + 3

⇒ 5 units
Total days taken by Vikas abd Bablu to complete a work = 30/5
⇒ 6 days.
∴ They complete the job in 6 days if work together.

64. Which infantry battalion was involved in the killing of all its white officers in the Revolt of 1857?
a. 21st Native Infantry
b. 41st Native Infantry
c. 20th Native Infantry
d. 1st Native Infantry

Ans. b
Explanation:
The correct answer is 41st Native Infantry.
41st Native Infantry battalion was involved in the killing of all its white officers in the Revolt of 1857.

65. The value of 15 – (6 + 6 × 6) ÷ (2 + 5) is:
a.8
b.5
c.9
d.7

Ans. c
Explanation:
Given 15 – (6 + 6 × 6) ÷ (2 + 5)
Concept
BODMAS
Calculation
15 – (6 + 6 × 6) ÷ (2 + 5)
⇒ 15 - (6 + 36) × (1/7)
⇒ 15 - 42 × (1/7)
⇒ 15 - 6
⇒ 9
∴ The value of 15 – (6 + 6 × 6) ÷ (2 + 5) is 9

66.If x + y = 5 and xy = 6, then find x 3+ y 3
a. 25
b. 55
c. 45
d. 35

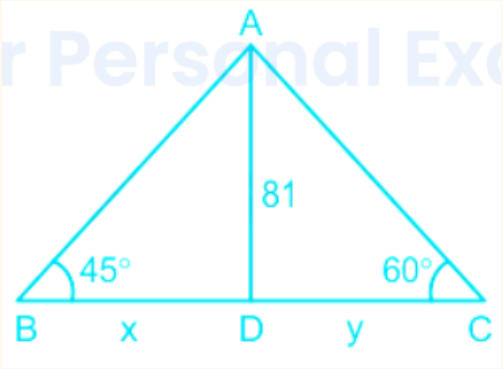
Ans. d
Explanation:
Given
x + y = 5 and xy = 6
Formula used
(x + y) 3 = x 3 + y 3 + 3xy(x + y)
Calculation
x + y = 5 cube on both sides (x + y) 3 = (5) 3
⇒ x 3 + y 3 + 3xy(x + y) = 125
⇒ x 3 + y 3 + 3 × 6 × 5 = 125
⇒ x 3 + y 3 + 90 = 125
⇒ x 3 + y 3 = 125 - 90
⇒ x 3 + y 3 = 35
∴ The value of x 3 + y 3 is 35.

67. Who was the first and only acting PM of India?
a. HD Deve Gowda
b. VP Singh
c. Gulzarilal Nanda
d. I K Gujral

Ans. c
Explanation:
The correct answer is Gulzarilal Nanda.
Gulzarilal Nanda was the first and only acting PM of India.

68. Two ships are sailing in the sea on the two sides of a lighthouse. The angles of elevation of the top of the lighthouse as observed from the ships are 45 ° and 60° respectively. If the lighthouse is 81 m high, then the distance between two ships is:
a. $\frac{(1+\sqrt{3})}{81\sqrt{3}}$**m**
b. $\frac{81(1+\sqrt{3})]}{\sqrt{3}}$**m**
c. $\frac{81}{\sqrt{3}}$**m**
d. $\frac{(1+\sqrt{3})}{\sqrt{3}}$**m**

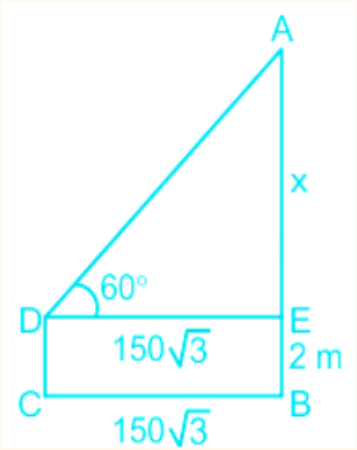
Ans. b
Explanation:



Given
Height of lighthouse = 81 m
Angle of elevation = 45° and 60°
Formula used
tan A = side opposite to A/side adjacent to A
tan 45° = 1
tan 60° = √3
Calculation
let AD is the lighthouse which is 81 m high. ∠B = 45° and ∠C = 60° distance between two ships are (x + y)
In triangle ABD
tan 45° = AD/BD
⇒ 1 = 81/x
⇒ x = 81 tan 60° = 81/y
⇒ √3 = 81/y
⇒ y = 81√ 3 x + y = 81 + (81/√3)
⇒ x + y = (81√ 3 + 81)/(√ 3)
⇒ x + y = 81(√3 + 1)/√ 3
∴ Distance between two ships are 81[(√3 +1)]/√3.

69. An observer 2 m tall is 150 $\sqrt{3}$m away from a tower. The angle of elevation from his eye to the top of the tower is 60°. The height of the tower is:
a. 400 m
b. 450 m
c. 452 m
d. 480 m

Ans. c
Explanation:



Given
Height of observer = 2 m
Distance between observer and tower = 150√3 m
Angle of elevation from the eye of an observer = 60°
Concept
tan A = Side opposite of A/Side adjacent to A
tan 60° = √ 3
Calculation
Let the DC is the height of the observer which is 2 m. AB is the height of the tower. ∠D is the angle of elevation from the eye of the observer towards the top of the tower. BC is the distance between the tower and observer which is 150√3.
In triangle AED tan 60° = AE/DE
⇒ √3 = x/(150√ 3)
⇒ √3 × 150√3 = x
⇒ 150 × 3 = x
⇒ 450 = x AB = AE + EB
⇒ AB = 450 + 2
⇒ AB = 452
∴ The height of the tower is 452 m

70. Which of the following is a pigment present in human blood that carries oxygen from our lungs to all parts of the body?
a. Haemoglobin
b. White blood cells
c. Platelets
d. Lymph

Ans.a
Explanation:
The correct answer is Haemoglobin.
Hemoglobin is a pigment present in human blood that carries oxygen from our lungs to all parts of the body. RBCs contain hemoglobin a protein that carries oxygen

71. In which year was the Railway introduced by the British in India for passengers?
a. 1853
b. 1583
c. 1385
d. 1953

Ans. a
Explanation:
The correct answer is 1853.
In 1853 the Railway was introduced by the British in India for passengers.

72. Which one of the following is NOT a web browser?
a. Opera
b. Wikipedia
c. Google Chrome
d. Mozilla Firefox

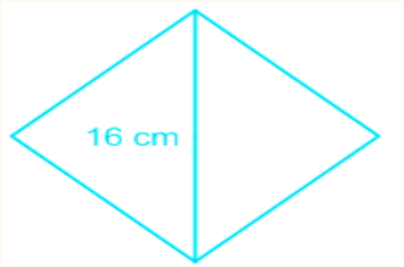
Ans. b
Explanation:
The correct answer is Wikipedia.
Wikipedia is NOT a web browser. Wikipedia is a free online encyclopedia, created and edited by volunteers around the world and hosted by the Wikimedia Foundation.

73. In which year did the East India Company acquire 'Diwani' rights over Bengal and Bihar?
a. 1865
b. 1765
c. 1675
d. 1965

Ans. b
Explanation:
The correct answer is 1765.
In 1765 did the East India Company acquire 'Diwani' rights over Bengal and Bihar.

74. The perimeter of a rhombus is 68 cm and one of its diagonals is 16 cm. Find the area of the rhombus.
a. 200 sq cm
b. 220 sq cm
c. 240 sq cm
d. 320 sq cm

Ans. c
Explanation:



Given
Perimeter of rhombus = 68 cm
One of the diagonal of rhombus = 16 cm
Formula used
Perimeter of rhombus = 2√(diagonal 1) 2 + (diagonal 2) 2
Calculation
68 = 2√(16) 2 + (diagonal 2) 2
⇒ 34 = √256 + (diagonal 2) 2
squaring on both sides
⇒ 1156 = 256 + (diagonal 2) 2
⇒ 1156 - 256 = (diagonal 2) 2
⇒ 900 = (diagonal 2) 2
⇒ 30 = Diagonal 2
Area of rhombus = (1/2) × diagonal 1 × diagonal 2
⇒ (1/2) × 16 × 30
⇒ 16 × 15
⇒ 240 sq cm
∴ Area of rhombus is 240 sq cm.

75. To which country does the famous 'Zulu' tribe belong?
a. India
b. Pakistan
c. South Africa
d. China

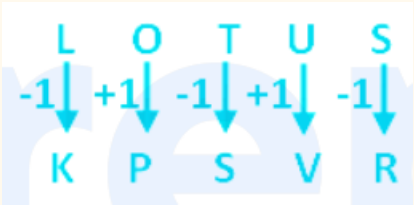
Ans. c
Explanation:
The correct answer is South Africa.
The famous 'Zulu' tribe belongs to South Africa.

76. The value of 4 × 5 ÷ 2 – 8 × 7 + 9 – (3 + 2) is:
a. –42
b. 21
c. 70
d. 35

Ans. a
Explanation:
Given
4 × 5 ÷ 2 – 8 × 7 + 9 – (3 + 2)
Concept
BODMAS
Calculation
4 × 5 ÷ 2 – 8 × 7 + 9 – (3 + 2)
⇒ 4 × 5 × (1/2) - 56 + 9 - 5
⇒ 10 - 56 + 4
⇒ - 46 + 4
⇒ - 42
∴ The value of 4 × 5 ÷ 2 – 8 × 7 + 9 – (3 + 2) is - 42.

77. In a certain code, LOTUS is written as KPSVR. How can WATER be written in that code?
a. VBFSQ
b. UBFSQ
c. VBSFQ
d. UQSGB

Ans. c
Explanation:
The logic followed here is:-



Similarly,

Hence, 'option 3' is the correct answer.

78. If the radius of a cylinder is 5 cm and its vertical height is 172 cm, what will be the volume?

a. 4300 πcm ^{3}

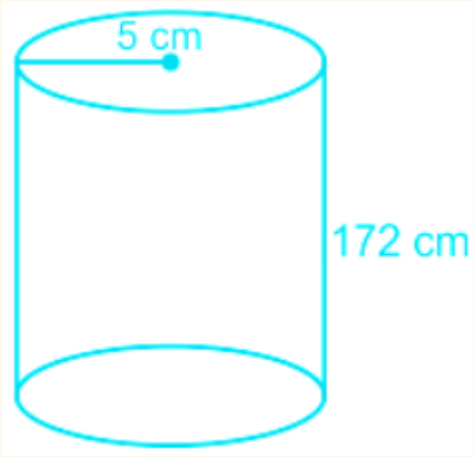
b. 4100 πcm ^{3}

c. 1500 πcm ^{3}

d. 1000 πcm ^{3}

Ans. a

Explanation:



Given

Radius of cylinder, r = 5 cm

Height of cylinder, h = 172 cm

Formula used

Volume of cylinder = πr 2h

where r and h are radius and height of cylinder

Calculation

Volume of cylinder = π × 5 × 5 × 172

⇒ 4300 πcm 3

∴ Volume of cylinder is 4300 πcm 3

79. Which article of the Constitution of India gives the parliament the power to amend the constitution?

a. Article 368

b. Article 356

c. Article 144

d. Article 198

Ans. a

Explanation:

The correct answer isArticle 368.

Article 368 (1) of the Constitution of India grants constituent power to make formal amendments and empowers Parliament to amend the Constitution by way of addition, variation, or repeal of any provision according to the procedure laid down therein, which is different from the procedure for ordinary legislation.

80. When was the National Rural Health Mission launched?
a. 12th April 2005
b. 15th August 2005
c. 30th December 2003
d. 1st January 2000

Ans. a
Explanation:
The correct answer is 12th April 2005.
The National Rural Health Mission (NRHM) was launched by the Hon'ble Prime Minister on12th April 2005, to provide accessible, affordable and quality health care to the rural population, especially the vulnerable groups.

81. _____ is India's first multi-petaflop supercomputer that has been set up at Indian Institute of Tropical Meteorology (IITM), Pune. Developed at a cost of Rs. 450 crore, the supercomputer is used for weather and climate predictions.
a. Pratyaksh
b. Param
c. Aaditya
d. Pratyush

Ans. d
Explanation: The correct answer is Pratyush.
Pratyush is India's first multi-petaflop supercomputer that has been set up at the Indian Institute of Tropical Meteorology (IITM), Pune. Developed at a cost of Rs. 450 crore, the supercomputer is used for weather and climate predictions.

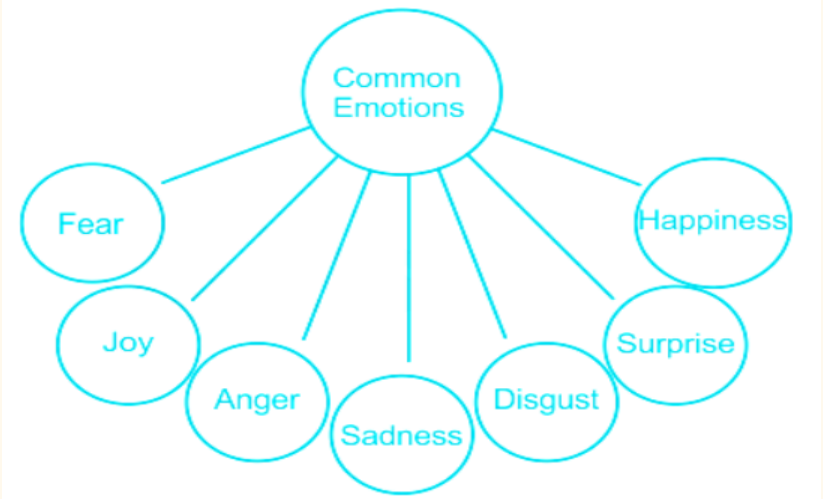
82. _____ is a Serbian Australian motivational speaker born with tetra amelia syndrome, a rare disorder characterized by the absence of all four limbs.
a. Nick Vujicic
b. Lisa Nichols
c. Dave Ramsay
d. Tony Robbins

Ans. a
Explanation:
The correct answer is Nick Vujicic. Key Points Nick Vujicic is a Serbian Australian

motivational speaker born with tetra-amelia syndrome, a rare disorder characterized by the absence of all four limbs.

83. Among the four words listed below, three are alike in some manner and one is different. Select the odd one.
a. Fear
b. Happiness
c. Anger
d. Intelligence

Ans. d
Explanation:
The logic here isFear, happiness and anger are different types of emotions or feelings that are expressed by an individual. Whereas, intelligence is an ability of an individual to acquire and apply knowledge.



Hence, 'option 4' is the correct answer.

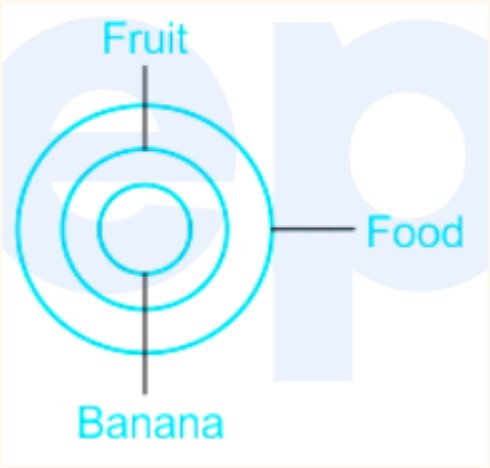
84. The _____ gland, which hangs by a thin stalk from the hypothalamus, is called the master gland of the human body.
a. pancreas
b. thyroid
c. adrenal
d. pituitary

Ans. d
Explanation: The correct answer is pituitary.
The pituitary gland, which hangs by a thin stalk from the hypothalamus, is called the master gland of the human body.

85. Which of the following Venn diagrams best represents the relationship between the classes:
Banana, Food, and Fruit

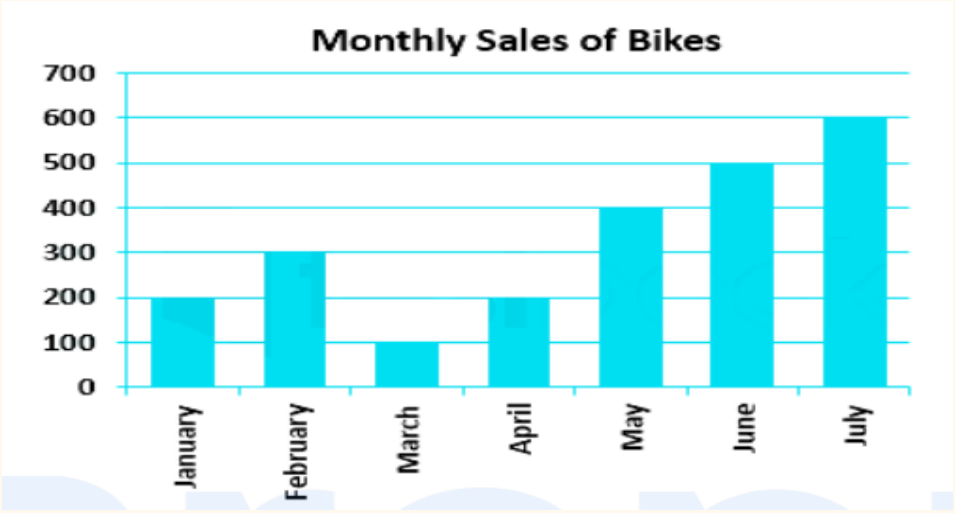
a. 4
b. 1
c. 2
d. 3

Ans. a
Explanation:
Banana, food, and fruit are inter-related as fruits are a type of food item and banana is a type of fruit.
So, banana falls into the category of fruits and fruits come under the category of food items.
Thus, the best Venn diagram representation is as follows:-



Hence, 'option 4' is the correct answer.

86. The graph below represents the number of bikes sold over a period of seven months. Observe the graph and answer the question that follows:



In which of the following months, were the sales nearest to the average sales for the period January to July?

a. May

b. January

c. February

d. April

Ans. c

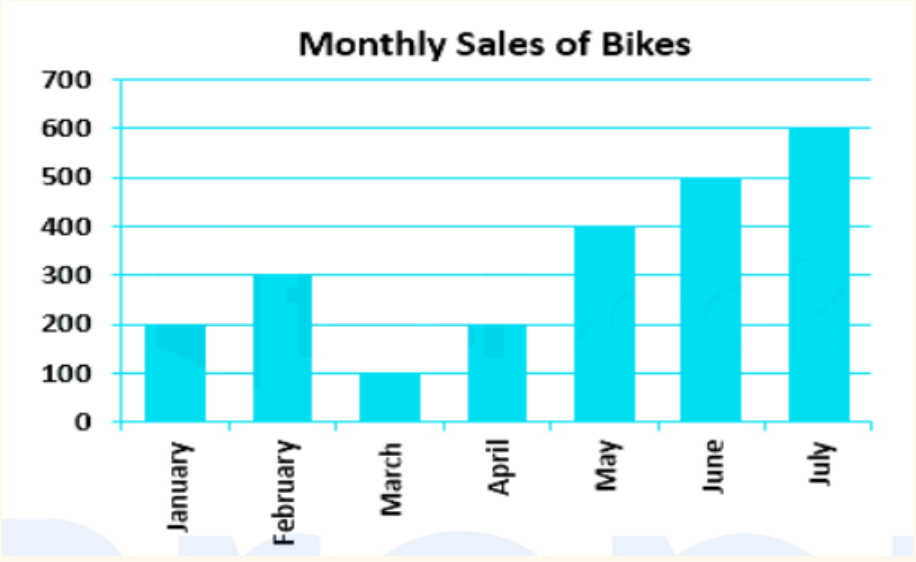
Explanation:

Average sale from January to July = (200 + 300 + 100 + 200 + 400 + 500 + 600)/7 =2300/7 =328

February sales was 300.

∴ The sales nearest to the average sales for the period January to July in the month of February.

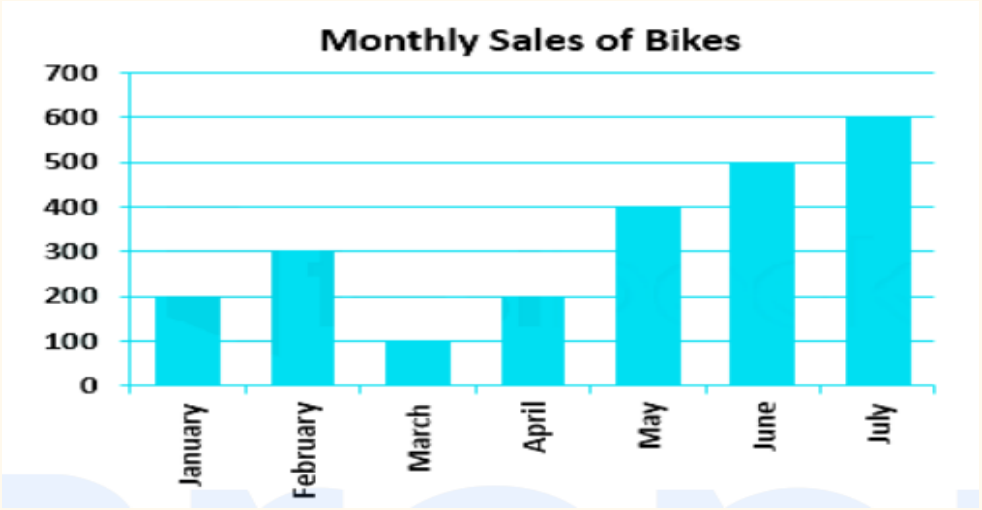
87. The graph below represents the number of bikes sold over a period of seven months. Observe the graph and answer the question that follows:



The sales in July was _____ times the sales in January
a. 2
b. 2.5
c. 3.5
d. 3

Ans. d
Explanation:
January sales is 200 units while July sales is 600 units.
∴ July sales was three times the sales in January.

88. The graph below represents the number of bikes sold over a period of seven months. Observe the graph and answer the question that follows:

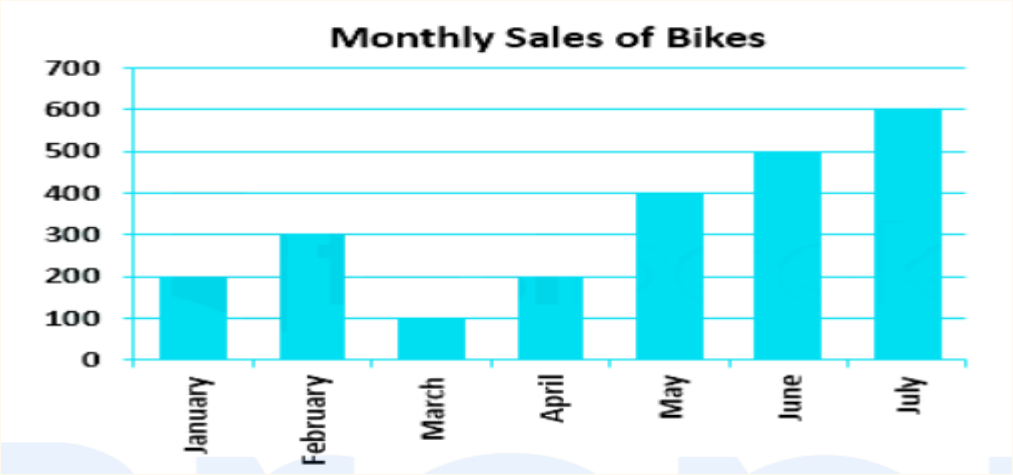


What is the approximate percentage increase in average sales between the period January to March and the period April to June?
a. 83%
b. 91%
c. 71%
d. 17%

Ans. a
Explanation:
Average sale from January to March = (200 + 300 + 100)/3
⇒ 600/3
⇒ 200
Average sales from April to June = (200 + 400 + 500)/3
⇒ 1100/3
⇒ 366.66 or 366
Required percentage = [(366 - 200)/200] × 100

⇒ (166/200)× 100
⇒ 83%
∴ The approximate percentage increase in average sales between the period January to March and the period April to June is 83%

89. The graph below represents number of bikes sold over a period of seven months. Observe the graph and answer the question that follows:

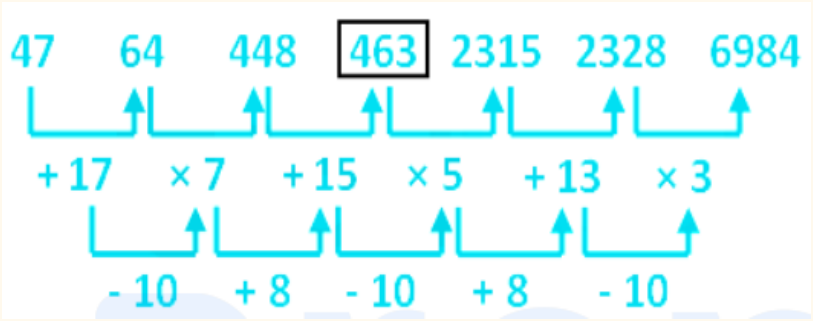


In which month was the percentage sales compared to the previous month, the highest?
a. July
b. May
c. February
d. June

Ans. b
Explanation:
In February = [(300 - 200)/200] × 100
⇒ (100/200) × 100
⇒ 50% In April = [(200 - 100)/100] × 100
⇒ (100/100) × 100
⇒ 100% In May = [(400 - 200)/200] × 100
⇒ (200/200) × 100
⇒ 100% In June = [(500 - 400)/400]× 100
⇒ (100/400) × 100
⇒ 25% In July = [(600 - 500)/500] × 100
⇒ (100/500) × 100
⇒ 20%
∴ In May month was the percentage sales compared to the previous month, the highest.

90. Select the number from among the given options that can replace the question mark (?) in the following series.
47, 64, 448, ?, 2315, 2328, 6984
a. 461
b. 465
c. 463
d. 459

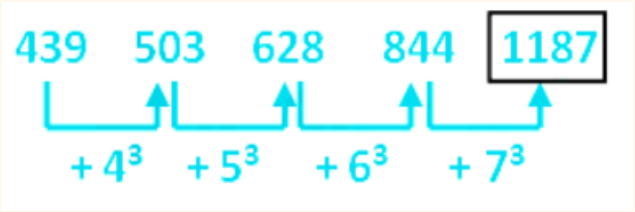
Ans. c
Explanation: The logic followed here is :-



Hence, 'option 3' is the correct answer.

91. Select the number from among the given options that can replace the question mark (?) in the following series.
439, 503, 628, 844, ?
a. 1817
b. 1187
c. 1893
d. 1983

Ans. b
Explanation:
The logic followed here is:-



Here, 4 3 = 64, 5 3 = 125, 6 3 = 216, 7 3 = 343
Hence, 'option 2' is the correct answer.

92. Read the given statement and assumptions carefully. Assuming that the information given in the statement is true, even if it appears to be at variance with commonly known facts, decide which of the given assumptions logically follow(s) from the statement.
Statement:
During exams, invigilators are not supposed to use mobile phones in the examination hall.
Assumptions:
I. Mobile disturbs students during examinations.
II. Keeping mobiles switched off helps to improve their vigilance. a. Only II follows
b. Both I and II follows
c. Only I follows
d. Neither I nor II follows.

Ans. b
Explanation:
The statement tells that invigilators are refrained from using mobile phones during exams. It can be assumed that it is so because mobiles can distract or disturb students who are trying to concentrate during exams. Thus, assumption I is implicit. If the invigilator is using a mobile, they might be unable to be vigilant for that moment. Thus, it is true that keeping the mobile off will improve their vigilance. Thus, assumption II is also implicit.
Hence the correct answer is option 2 .

93. Among the four numerical expressions given below, three are alike in some manner and one is different. Select the odd one.
a. 7 4 9 3 = 23
b. 8 4 3 7 = 22
c. 6 5 8 9 = 28
d. 5 4 2 5 = 51

Ans. d
Explanation:
The logic followed here is:-
Sum of digits of LHS = RHS

1. 7 4 9 3 = 7 + 4 + 9 + 3 = 23

2. 8 4 3 7 = 8 + 4 + 3 + 7 = 22

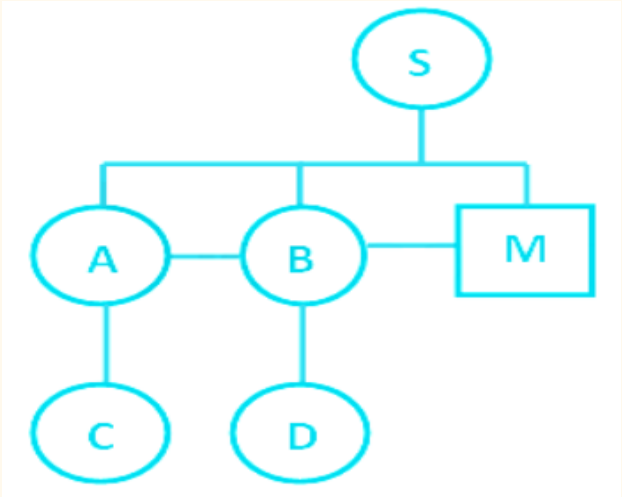
3. 6 5 8 9 = 6 + 5 + 8 + 9 = 28

4. 5 4 2 5 = 5 + 4 + 2 + 5 = 16 ≠ 51

Hence, 'option 4' is the correct answer.

94. S is a female member of a family and has three children. M is the son of S. M is the maternal uncle of two girls who are not sisters, but whose mothers are siblings. Based on the information provided, which of the following statements is most likely to be true?
a. S has one son, one daughter and the third cannot be determined.
b. S has two sons, one daughter.
c. S has one son, two daughters.
d. S has one son, and the other two cannot be determined.

Ans. c
Explanation: Preparing the family tree using the following symbols:
Based on the information given in the question, the family tree will be as follows:



Let C and D be the girls whose maternal uncle is M.
Let A and B be the mothers of C and D respectively.
Thus, S has one son and two daughters.
Hence, 'option 3' is the correct answer.

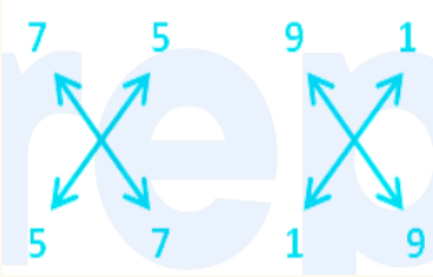
95. As of this year, the average age of a family of 8 members is 39 years. Assuming that after six years the family adopts a new-born baby, what will be the average age of the family 10 years from now?
a. 44 years
b. 46 years 8 Months
c. 49 years 6 Months
d. 49 years

Ans. a
Explanation:
Given
Average age of a family of 8 members is 39 years

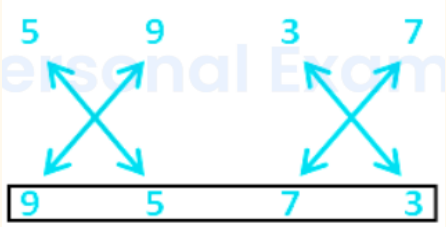
Family adopts new born baby after 6 years
Formula used
Average = Sum of all observation/ Number of observation
Calculation
Sum of the ages of 8 members in a family = 39 × 8
⇒ 312
Age of new born baby would be 4 years, as it was adopted after 6 years of present age.
Sum of Age after 10 years from present age = 312+ (8 × 10) + 4
⇒ 312 + 84
⇒ 396
Now, there will be 9 members in a family.
Average age of 9 members of a family after 10 years from now = 396/9
⇒ 44 years.
∴ The average age of the family 10 years from now is 44 years.

96. Select the option that is related to the third number-cluster in the same way as the second number-cluster is related to the first number-cluster.
7591 : 5719 :: 5937 : ?
a. 5973
b. 3795
c. 9573
d. 9537

Ans. c
Explanation:
The second number-cluster is related to the first number cluster as follows:-



Similarly,



Hence, 'option 3' is the correct answer.

97. There are 100 questions in which each right answer has 1 mark credit. Out of 100 questions 30, 50 and 20 questions are easy, medium and difficult respectively. The question paper covers five abilities with an equal number of questions and similar distribution of difficulty levels for each ability. Sachin has excellent knowledge in three abilities but in the other two abilities he can solve only easy questions. If the evaluator deducts 0.33 marks for each wrong answer and Sachin attempts all questions, which of the following would be his expected score?

a. 62.60

b. 62.98

c. 62.76

d. 62.49

Ans. c

Explanation:

Given

Total number of questions = 100

Marks awarded for right answer = 1

Marks deducted for wrong answer = 0.33

	Ability 1	Ability 2	Ability 3	Ability 4	Ability 5
Easy(30 questions)	6	6	6	6	6
Medium(50 questions)	10	10	10	10	10
Difficult(20 questions)	4	4	4	4	4

Calculation

Sachin answered right in First three abilities and all questions from the easy category.

it means his right answered was (6 × 5) + (10 × 3) + (4 × 3)

⇒ 30 + 30 + 12

⇒ 72

Sachin gave wrong answer to the question of 4 and 5 level from medium and difficult category = (10 × 2) + (4 × 2)

⇒ 20 + 8

⇒ 28

Marks scored by Sachin = 72 × 1 - (28 × 0.33)

⇒ 72 - 9.24

⇒ 62.76

∴ Sachin expected score is 62.76.

98. Among the four numbers given below, three are alike in some manner and one is different. Select the odd one.

a. 187

b. 165

c. 143

d. 159

Ans. d

Explanation:

The logic followed here is:-

First digit + third digit = second digit

1. 187 → 1 + 7 = 8
2. 165 → 1 + 5 = 6
3. 143 → 1 + 3 = 4
4. 159 → 1 + 9 = 10 ≠ 5

Hence, the correct answer is 159 .

99. Select the number from the given options that is related to the third number in the same way as the second number is related to the first number.

18 : 27 :: 28 : ?

a. 42

b. 54

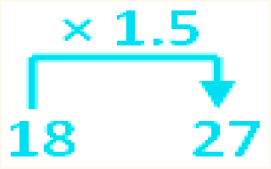
c. 48

d. 36

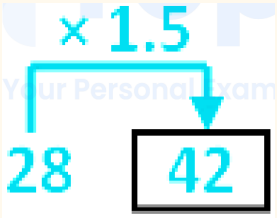
Ans. a

Explanation:

Second number is related to the first number as follows:-



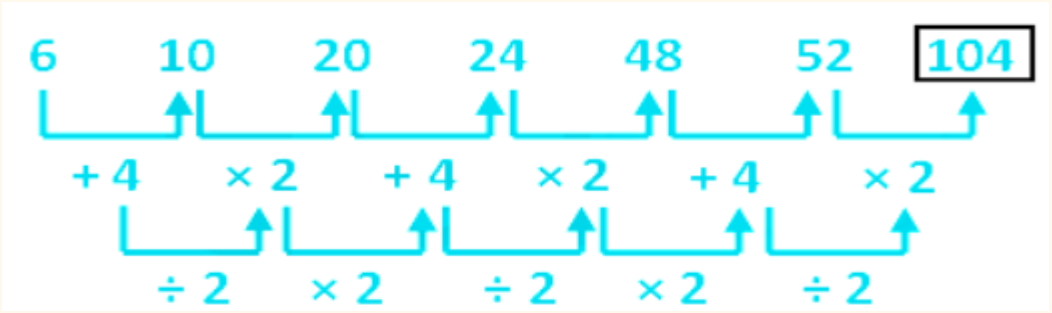
Similarly,



Hence, 'option 1' is the correct answer.

100. Select the number from among the given options that can replace the question mark (?) in the following series.
6, 10, 20, 24, 48, 52, (?)
a. 64
b. 104
c. 100
d. 56

Ans.b
Explanation:
The logic followed here is:-



Hence, 'option 2' is the correct answer.