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Your Personal Exams Guide



NDA



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SSC CGL



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CTET



MPSC



AFCAT



CSIR UDC NET



IBPS PO



UP POLICE



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SBI PO



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UPTET



IBPS RRB



IBPS CLERK



IES



UPSC CAPF



SSC Stenogr..



RRB NTPC



SSC GD



RBI GRADE B



RBI Assistant



DSSSB

RRB Group D 2018 Prev. Yr. Paper (17 Sept 2018) (Shift 1)

Total Time: 1 Hour : 30 Minute

Total Marks: 100

Instructions

Sl No.	Section Name	No. of Question	Maximum Marks	Negative Marks	Positive Marks
1	CBT	100	100	0.33	1

- 1.) A total of 90 minutes is allotted for the examination.
- 2.) The server will set your clock for you. In the top right corner of your screen, a countdown timer will display the remaining time for you to complete the exam. Once the timer reaches zero, the examination will end automatically. The paper need not be submitted when your timer reaches zero.
- 3.) There will, however, be sectional timing for this exam. You will have to complete each section within the specified time limit. Before moving on to the next section, you must complete the current one within the time limits.

Your Personal Exams Guide

CBT

1. Rs. 720 was divided among A, B, C, D, E. The sum received by them was in ascending order and in arithmetic progression. E received Rs. 40 more than A. How much did B receive? **(+1, -0.33)**
- a. Rs. 134
 - b. Rs. 154
 - c. Rs. 144
 - d. Rs. 124
-
2. Who portrayed the character of Allauddin Khilji in the controversial movie 'Padmavat'? **(+1, -0.33)**
- a. Shahid Kapoor
 - b. Ranveer Singh
 - c. Ranbir Kapoor
 - d. Rana Daggubati
-
3. How many medals did India win in the US Open Karate Championship held in Las Vegas in April 2017? **(+1, -0.33)**
- a. 17
 - b. 16
 - c. 12
 - d. 15

4. Dayanand Saraswati was the founder of which of the following missions? (+1, -0.33)

- a. Brahmo Samaj
- b. Chinmaya Mission
- c. Arya Samaj
- d. Prarthana Samaj

5. The mass of the Earth is _____ . (+1, -0.33)

- a. 6×10^{-23} kg
- b. 6×10^{23} kg
- c. 6×10^{-24} kg
- d. 6×10^{24} kg

6. Find the next term in the following series. (+1, -0.33)

5I, 7J, 11L, 17O, ?

- a. 25S
- b. 25Y
- c. 20P
- d. 18C

7. Which of the given assumptions are implied from the below statement? (+1, -0.33)

Statement:

"I need your notes to study," said student 1 to student 2.

Assumptions:

1. Student 2 has prepared notes.
2. Student 1 wants to verify his understanding.

- a. Only I is implicit
- b. Both I and II are implicit
- c. Neither I nor II is implicit
- d. Only II is implicit

8. Two trains, one 152.5 m long and the other 157.5 m long, coming from opposite directions crossed each other in 9.3 seconds. The combined speed of the two trains every hour would then be: (+1, -0.33)

- a. 130 km/hr
- b. 125 km/hr
- c. 115 km/hr
- d. 120 km/hr

9. In the modern periodic table, which group elements have a complete outer shell? (+1, -0.33)

- a. 15th
- b. 18th

c. 16th

d. 17th

10. What is the next term in this series?

(+1, -0.33)

B25Y, D23W, F21U, _____.

a. I19V

b. H19S

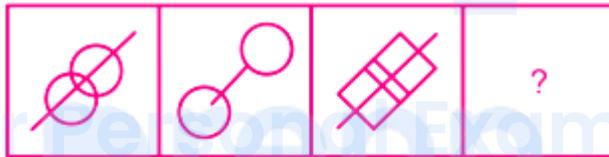
c. I20T

d. H20V

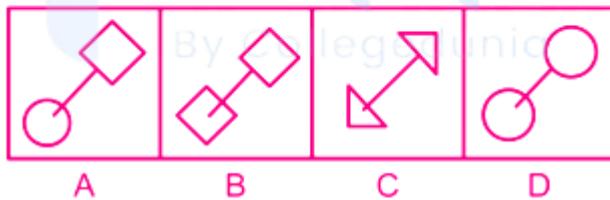
11. Which answer figure will come next in the given problem figure series?

(+1, -0.33)

Problem Figure:



Answer Figures:



a. D

b. B

c. C

d. A

12. The ratio of the mass of hydrogen to the mass of oxygen in water is always ----- (+1, -0.33)

- a. 2 : 1
- b. 1 : 8
- c. 8 : 1
- d. 1 : 2

13. Which of the following is a warm-blooded? (+1, -0.33)

- a. Pigeon
- b. Crocodile
- c. Toad
- d. Fish

14. Which of the following country hosts the Academy (Oscar) Awards for excellence in the cinema every year? (+1, -0.33)

- a. France
- b. UK
- c. Canada
- d. USA

15. Find which of the following are twin Primes. (+1, -0.33)

- a. (37, 41)
 - b. (3, 7)
 - c. (43, 47)
 - d. (71, 73)
-

16. How many water molecules are present in one molecule of washing soda? (+1, -0.33)

- a. 8
 - b. 5
 - c. 7
 - d. 10
-

17. Which of the following sports is Satyawart Kadiyan related to? (+1, -0.33)

- a. Hockey
 - b. Kabaddi
 - c. Wrestling
 - d. Football
-

18. Which of the following metals reacts with steam to form a metal oxide and hydrogen? (+1, -0.33)

- a. Copper

- b. Silver
 - c. Lead
 - d. Aluminium
-

19. The area of the triangle whose vertices are given by the coordinates $(1, 2)$, $(+1, -0.33)$, $(-4, -3)$ and $(4, 1)$ is:
- a. 7 sq. units
 - b. 20 sq. units
 - c. 10 sq. units
 - d. 14 sq. units
-

20. **Direction:** Given is a statement followed by two assumptions numbered I and II. Consider the statement and the following assumptions and decide which of the assumptions is/are implicit in the statement. (+1, -0.33)

Statement: Making homes energy efficient is important for sustainable development.

Assumptions:

- I. Replacement of incandescent light bulbs with energy-efficient compact fluorescent lamps (CFLs) at home is advisable.
 - II. Plant shade trees and shrubs around your house. Good landscaping (particularly deciduous trees) is auspicious, especially if planted on the house's west side.
- a. Neither assumption I nor II is implicit
 - b. Only assumption II is implicit

- c. Only assumption I is implicit
 - d. Both assumptions I and II are implicit.
-

21. President Ram Nath Kovind has felicitated _____ exceptional women achievers at Rashtrapati Bhawan in New Delhi. These 'FIRST LADIES' are those who are first to set a milestone of achievement in their respective fields. (+1, -0.33)

- a. 111
 - b. 112
 - c. 114
 - d. 113
-

22. The HCF of two co-prime numbers is: (+1, -0.33)

- a. 2
 - b. 0
 - c. The product of the co-primes
 - d. 1
-

23. The resistance of a conductor does **NOT** depend on which of the following factors? (+1, -0.33)

- a. Length
- b. Area of cross section

- c. Pressure
- d. Material

24. $(\cos^2 \theta + 1/\operatorname{cosec}^2 \theta) + 17 = x$. What is the value of x ? (+1, -0.33)

- a. 18
- b. 324
- c. 256
- d. 16

25. The force of gravity acting on an object is also known as ----- (+1, -0.33)

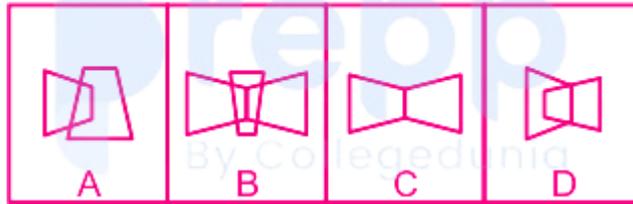
- a. Impulse
- b. Mass
- c. Acceleration
- d. Weight

26. Which of the option figures bears the closest resemblance to the question figure? (+1, -0.33)

Problem figure:



Answer figure:

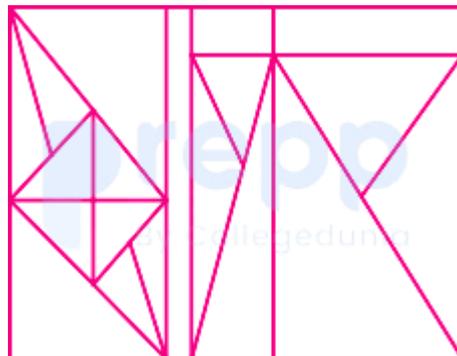


- a. B
- b. D
- c. C
- d. A

27. What was the theme of the 2016 Indian Film Festival of Melbourne (IFFM) at which Sonam Kapoor won the Best Actress Award for her performance in Neerja Bhanot's biopic 'Neerja'? (+1, -0.33)

- a. Enrichment of Women Status
- b. Female Empowerment
- c. Beti Bachao
- d. Celebration of Life

28. How many triangles are there in the following figure? (+1, -0.33)



- a. 25
- b. 23
- c. 24
- d. 27

29. Name the badminton player who won his maiden Super Series title in Singapore in April 2017? (+1, -0.33)

- a. Sai Praneeth
- b. Srikanth Kidambi
- c. Prannoy Kumar
- d. Parupalli Kashyap

30. You are given a question and two statements. Identify which of the statements is/are necessary/sufficient to answer the question. (+1, -0.33)

What is the total weight of 20 boxes of Vegetables? Each of them weighs equal.

Statements:

1. Of the first 10 boxes, one-third of each box weighs 10 kg
 2. The total weight of 6 boxes is 40 kg more than the total weight of 4 boxes
- a. Both Statements 1 and 2 alone are sufficient
 - b. Statement 2 alone is sufficient

- c. Statement 1 alone is sufficient
 - d. Statement 1 and 2 are not sufficient
-

31. In which of the following processes is oxygen released into the air? (+1, -0.33)

- a. Photosynthesis
 - b. Respiration
 - c. Transpiration
 - d. Excretion
-

32. In which of the following media does sound travel the fastest? (+1, -0.33)

- a. Gases
 - b. Vacuum
 - c. Liquids
 - d. Solids
-

33. Which of the following is true? (+1, -0.33)

- a. $9/16 < 13/24$
 - b. $9/16 = 13/24$
 - c. $9/16 > 13/24$
 - d. $9/16 \leq 13/24$
-

34. "In physics work done is defined as:" (+1, -0.33)

1. "A force acts on an object without causing any displacement."
2. Only when an object is displaced.
3. "Only when a force acts on the object."
4. Any of the above

- a. None of the Above
- b. A and B are correct
- c. A and C are correct
- d. B and C are correct

35. Which of the following illustrates Newton's third law of motion? (+1, -0.33)

- a. When a bus starts suddenly, the passengers receive a backward jerk.
- b. While catching a fast-moving cricket ball, the fielder gradually pulls his hand backwards with the moving ball.
- c. The launching of a rocket.
- d. When we stop pedalling, the bicycle slows down.

36. A committee under the chairmanship of Uday Kotak was constituted in 2017 to improve efficiency in _____ (+1, -0.33)

- a. Customer satisfaction
- b. Labour management relations
- c. Government policies

d. Corporate governance

37. The fertilised egg, the zygote, gets implanted in the _____ . (+1, -0.33)

- a. cervix
 - b. ovary
 - c. vagina
 - d. uterus
-

38. When a body moves on a circular path, the force that acts on the revolving body towards the centre is called _____ . (+1, -0.33)

- a. simple force
 - b. gravitational force
 - c. centripetal force
 - d. angular force
-

39. $56 \div \left[\frac{1}{3} \{ 15 + 12 - (9 + 6 - \overline{5 + 7}) \} \right] = ?$ (+1, -0.33)

- a. 12
 - b. 4032
 - c. 7
 - d. 448
-

40. Name the first city in India to use a robot to control traffic. (+1, -0.33)

- a. Kochi
- b. Indore
- c. Varanasi
- d. Jaipur

41. Read the given statement (s) and conclusions carefully and select which of the conclusions logically follow(s) from the statement(s). (+1, -0.33)

Statement:

- All petals are flowers.
- Some petals are yellow.
- All yellows are flowers.

Conclusions:

1. All flowers are yellow.
2. All yellows are petals.

- a. None of the conclusions follows
- b. Only conclusion 2 follows
- c. Only conclusion 1 follows
- d. Both the conclusions follow

42. Which is the second company to hit \$900 billion market capitalization after Apple? (+1, -0.33)

- a. Google
 - b. Walmart
 - c. Amazon
 - d. Facebook
-

43. Which union minister has launched PowerTax India scheme to boost power loom sector? (+1, -0.33)

- a. Smriti Irani
 - b. Maneka Gandhi
 - c. Nitin Gadkari
 - d. Ravi Shankar Prasad
-

44. Which of the following state governments launched the 'Quit India 2-from Swaraaj to Surraaj' initiative at the historic August Kranti Maidan in August 2016? (+1, -0.33)

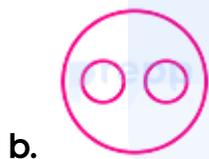
- a. Haryana
 - b. Maharashtra
 - c. Madhya Pradesh
 - d. West Bengal
-

45. Who has been chosen for the RedInk Award for Lifetime Achievement in Journalism for 2018? (+1, -0.33)

- a. Mark Tully
- b. Arun Shourie
- c. Barkha Dutt
- d. N. Ram

46. Choose the most suitable Venn diagram for the following words. (+1, -0.33)

Horse, Monkey, Tiger



47. Rohan and Rohit together can do a certain job in 10 days while Rohan alone can do the same job in 15 days. How many days Rohit alone will do the same job? (+1, -0.33)

- a. 25 days

- b. 32 days
- c. 35 days
- d. 30 days

48. The compound interest on Rs. 1,60,000 for 2 years at 10% per annum when compounded semi-annually is: (+1, -0.33)

- a. Rs. 34,400
- b. Rs. 34,481
- c. Rs. 30,000
- d. Rs. 34,480

49. **Direction:** Consider the statement given to be true even if it seems to be at variance with the commonly known facts and decide which of the given conclusions logically follow (s) from the statement. (+1, -0.33)

Statement: All that glitters is not gold.

Conclusions:

I. Things that appear good from outside are not probably good from inside.

II. We cannot imagine the inner truth behind the glossy outlook of anything or any person from far.

- a. Only conclusion II follows
- b. Both conclusions I and II follow.
- c. Only conclusion I follows

d. Neither conclusion I nor II follows

50. A force increases the speed of a 1.0 kg object from 4 m/s to 8 m/s. The work done by the force will be ----- (+1, -0.33)

a. 8 J

b. 32 J

c. 24 J

d. 16 J

51. As long as an unbalanced force is applied to a body, there is a continuous change in its: (+1, -0.33)

a. Weight

b. mass

c. speed

d. shape

52. Which of the following options is an example of salt gives an aqueous solution of pH less than 7? (+1, -0.33)

a. Sodium carbonate

b. Sodium chloride

c. Ammonium chloride

d. Sodium bicarbonate

53. _____ is the amount of work done in carrying a charge of 4C across two points having a potential different of 18 V. (+1, -0.33)

- a. 24 J
 - b. 72 J
 - c. 7.2 J
 - d. 4.5 J
-

54. Which of the following is known as 'the Princess of Hill Stations'? (+1, -0.33)

- a. Dehradun
 - b. Kodaikanal
 - c. Darjeeling
 - d. Ooty
-

55. Identify the award which recognises workers for their distinguished performance, innovative ability, and outstanding contribution in the field of productivity and exhibition of exceptional courage and presence of mind. (+1, -0.33)

- a. Krishi Award
 - b. Shram Award
 - c. Padma Award
 - d. Dronacharya Award
-

56. A TV set is being sold for Rs. X in Delhi. A dealer went to Chandigarh and bought the TV at 20% discount (from the price of Delhi). He spends Rs. 600 on transport. Thus, he sold the set in Delhi for Rs. X making $(100/7)$ % profit what is the value of X? (+1, -0.33)
- a. Rs. 7200
 - b. Rs. 8000
 - c. Rs. 8800
 - d. Rs. 9600

57. If $\sec^4\theta - \sec^2\theta = 3$ then the value of $\tan^4\theta + \tan^2\theta$ is: (+1, -0.33)
- a. 8
 - b. 4
 - c. 6
 - d. 3

58. Read the statement and conclusions below (+1, -0.33)

Statements:

- No cows are cats
- All cats have mustache

Conclusions:

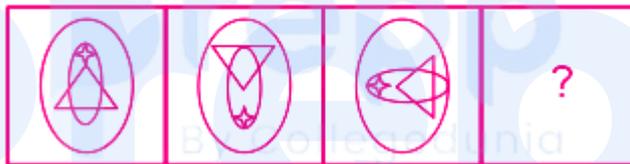
1. Some cows are cats
2. Some cows have mustache

Which conclusion(s) follow(s) the given statement?

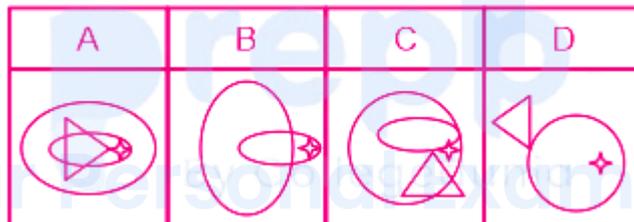
- a. Only conclusion 2 follows
- b. No conclusion follows
- c. All the conclusions follow
- d. Only conclusion 1 follow

59. Select the option that can replace the question mark (?) in the following series. (+1, -0.33)

Problem Figure :



Answer Figures :



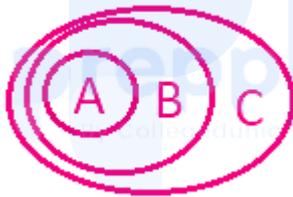
- a. A
- b. B
- c. D
- d. C

60. Which of the following is known as the Upper house of the Indian Parliament? (+1, -0.33)

- a. Supreme Court
- b. PMO
- c. Rajya Sabha
- d. Lok Sabha

61. Choose the most suitable Venn diagram for the following words. (+1, -0.33)

- A. Whales
- B. Ships
- C. Oceans



62. Consider the given statement to be true even if they seem to be at variance with the commonly known facts and decide which of the given conclusions logically follow(s) from the statements. (+1, -0.33)

Statements:

1. Some metals are iron.
2. Some iron are heavy.

Conclusion:

1. All iron are metals.
 2. All heavy are metals.
- a. Only conclusion 2 follows
 - b. No conclusions follow
 - c. All the conclusions follow
 - d. Only conclusion 1 follows

63. What is "Hausala 2017", which was celebrated from 16th November to 20th November 2017? (+1, -0.33)

- a. Celebration of transgender rights
- b. Celebration of women's rights
- c. Celebration of children's rights
- d. Celebration of senior citizen's rights

64. A cake is shared among 5 friends. Four friends take $\frac{1}{8}$, $\frac{1}{6}$, $\frac{5}{12}$, $\frac{1}{12}$ part of the cake, respectively. How much part of the cake does the fifth friend get? (+1, -0.33)

- a. $\frac{5}{24}$

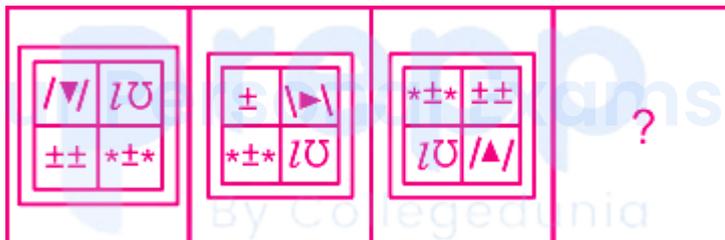
- b. 3/8
- c. 1/6
- d. 1/4

65. Which of the following can exist in solid, liquid and gaseous forms? (+1, -0.33)

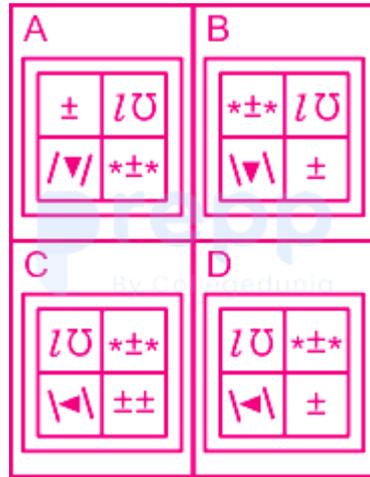
- a. Metalloids
- b. Inert elements
- c. Non-metals
- d. Metals

66. Which of the option figures comes next? (+1, -0.33)

Problem Figure:



Answer Figures:



- a. B
- b. C
- c. D
- d. A

67. Read the given statement(s) and conclusions carefully and select which of the conclusion logically follow(s) from the statement(s). (+1, -0.33)

Statement:

- 1. All cars are Jeeps
- 2. All Jeeps are four-wheelers.

Conclusions:

- 1. All four-wheelers are cars.
- 2. Some four-wheelers are Jeeps.

- a. Neither conclusion follows
- b. All the conclusion follows
- c. Only conclusion 1 follows

d. Only conclusion 2 follows

68. A clock is fixed on a horizontal table. At 3 pm its minute hand is pointing towards North. At 3.40 pm, the minute hand will point towards? (+1, -0.33)

- a. 60° south of west
 - b. South-east
 - c. 60° west of south
 - d. South-west
-

69. A, B and C are three pipes connected to a tank. A and B together fill the tank in 6 hrs. B and C together fill the tank in 10 hrs. A and C together fill the tank in 7.5 hours. In how much time will A alone fill the tank? (+1, -0.33)

- a. 11 hours
 - b. 10 hours
 - c. 13 hours
 - d. 12 hours
-

70. Consider the given statement and decide which of the following assumptions is/are implicit in the statement (+1, -0.33)

Statement:

“Every city must house an ecological park”, says the Mayor to his secretary.

Assumptions:

- I. Ecological parks improve green cover.
 II. Ecological parks help reduce air pollution.
- Neither I nor II is implicit
 - Only II is implicit
 - Both I and II are implicit
 - Only I is implicit

71. Find the odd one out.

(+1, -0.33)



- C
- A
- D
- B

72. $\frac{\sin A + \sin B}{\cos A - \cos B} + \frac{\cos A + \cos B}{\sin A - \sin B} = ?$

(+1, -0.33)

- $\sin A \cos B$
- $\tan A \tan B$
- 0
- $\cos A \cos B$

73. The chemical symbol of which of the following elements is derived from Latin? (+1, -0.33)

- a. Chlorine
- b. Carbon
- c. Iron
- d. Aluminium

74. What is the value of the expression? (+1, -0.33)

$$\frac{(a-b)^3 + (b-c)^3 + (c-a)^3}{3(a-b)(b-c)(c-a)} = ?$$

- a. 4
- b. 1
- c. 2
- d. 0

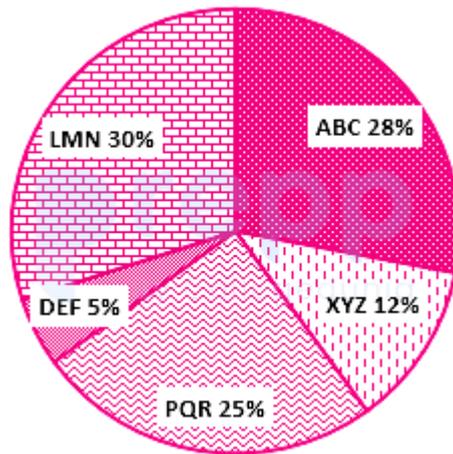
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75. If a driver drives a car at 15 m/s then how much distance is covered by him in 3 hours 20 mins? (+1, -0.33)

- a. 200 km
- b. 165 km
- c. 150 km
- d. 180 km

76. **Directions:** The given pie chart shows information about the mobile phone manufacturing companies in India. The total number of mobile phone units manufactured is 12,40,000.

(+1, -0.33)



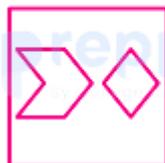
How many units of mobile phones were manufactured by company 'LMN'?

- a. 3,72,000
- b. 6,20,000
- c. 12,40,000
- d. 6,12,000

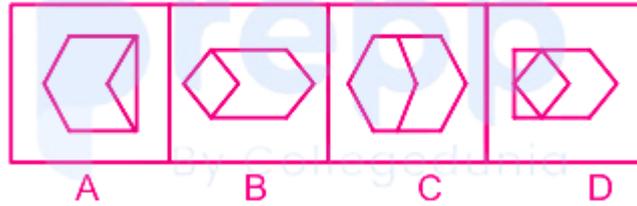
77. Which of the following figures is formed from the two shapes gives the problem figure?

(+1, -0.33)

Problem Figure



Answer Figures



- a. C
- b. A
- c. D
- d. B

78. It was Monday on 1st January 2018. What was the day of the week on 1st January 2010? (+1, -0.33)

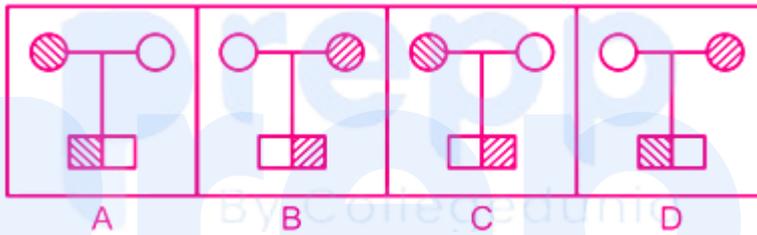
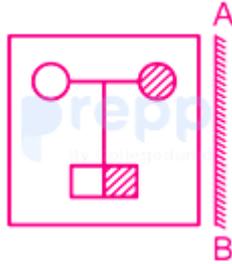
- a. Tuesday
- b. Thursday
- c. Friday
- d. Monday

79. A person opens a tea shop with an initial investment of Rs. 25,000. He spends 30% of his money in furnishing his shop and 20% in bringing other necessary things. How much money is he left with for purchasing inventory for his business? (+1, -0.33)

- a. Rs. 12,500
- b. Rs. 20,000
- c. Rs. 12,000

d. Rs. 5,000

80. Choose the mirror image for the following figure when the mirror is kept at the AB line. (+1, -0.33)
at the AB line.



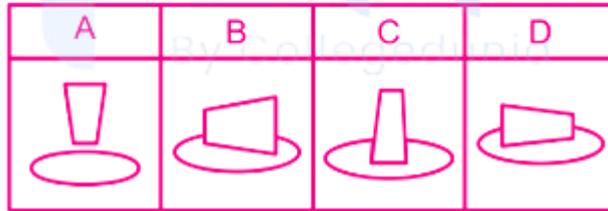
- a. A
- b. D
- c. B
- d. C

81. Which pattern resembles closer to? (+1, -0.33)

Problem Figure:



Answer Figures:



- a. C
- b. D
- c. B
- d. A

82. If the number $x4461$ is divisible by 11, what is the face value of x ? (+1, -0.33)

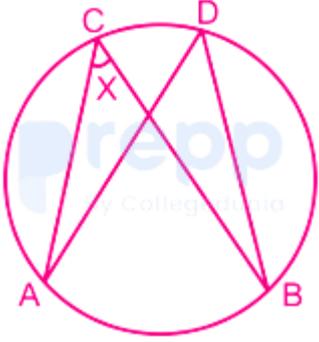
- a. 5
- b. 2
- c. 3
- d. 4

83. Read the given question and decide which of the following information is sufficient to answer the question. (+1, -0.33)

What is the value of $\angle ACB$?

What is the value of $\angle ACB$?

Informations

1	
2	$\angle D = 60^\circ$

- a. Only 2 is sufficient
- b. Both 1 and 2 are sufficient
- c. Only 1 is sufficient
- d. Either 1 or 2 is sufficient.

84. Which of the following animals can produce ultrasound? (+1, -0.33)

- a. Moths
- b. Porpoises
- c. Shark
- d. Elephant

85. Anurag loses one-seventh of the cost by selling a pen for Rs. 144. If the pen is sold for Rs. 189, what is the gain percent? (+1, -0.33)

- a. 11%
- b. 12.5%

c. 11.5%

d. 14%

86. The HCF of $\frac{2}{3}$, $\frac{8}{9}$, $\frac{10}{27}$, $\frac{32}{81}$ is: (+1, -0.33)

a. $\frac{160}{81}$

b. $\frac{160}{3}$

c. $\frac{2}{3}$

d. $\frac{2}{81}$

87. Choose the person who does NOT belong to the group. (+1, -0.33)

a. Alexander Graham Bell

b. Albert Einstein

c. Thomas A Edison

d. Virat Kohli

88. Which of the following countries has the longest coastline in the world? (+1, -0.33)

a. Australia

b. Norway

c. Canada

d. Indonesia

89. If South becomes South-West, then what will North become? (+1, -0.33)
- a. South-West
 - b. North-West
 - c. North-East
 - d. South-East
-

90. On what dates of March 2005 did Friday fall? (+1, -0.33)
- a. 5, 12, 19 and 26
 - b. 3, 10, 17 and 24
 - c. 4, 11, 18 and 25
 - d. 6, 13, 20 and 27
-

91. The Hundred Year's war was fought between which two countries? (+1, -0.33)
- a. England and France
 - b. England and Italy
 - c. England and Germany
 - d. Germany and France
-

92. The flexibility in plants is due to _____ tissue. (+1, -0.33)
- a. Xylem

- b. Phloem
 - c. Sclerenchyma
 - d. Collenchyma
-

93. Which of the following is a perfect cube? (+1, -0.33)

- a. 8261
 - b. 9000
 - c. 8000
 - d. 9999
-

94. Generally, the valency of electropositive elements is ----- (+1, -0.33)

- a. 2, 1, 0
 - b. 4, 3, 2
 - c. 1, 2, 3
 - d. 0, 1, 2
-

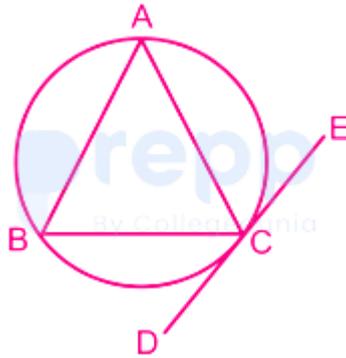
95. If PIPE is written as 169165, then what is the last digit of SWAN? (+1, -0.33)

- a. 5
- b. 6
- c. 4

d. 3

96. Refer to the given figure and answer the question that follows.

(+1, -0.33)



If AB is parallel to EC and $\angle BCD = 72^\circ$, then, what is the value of $\angle BAC$?

- a. 75°
- b. 73°
- c. 72°
- d. 67°

prepp

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97. A type of reproduction in which a part of a plant body develops into a new individual is called _____.

(+1, -0.33)

- a. fission
- b. regeneration
- c. vegetative propagation
- d. sexual propagation

98. Find the next letter in the following series.

(+1, -0.33)

C, D, F, I

a. M

b. G

c. N

d. P

99. Two inlet pipes, A and B, can fill an empty cistern in 22 and 33 hours, respectively. They were opened at the same time, but pipe A had to be closed 3 hours before the cistern was full. How many hours in total did it take the two pipes to fill the cistern?

(+1, -0.33)

a. 15

b. 16.2

c. 14.2

d. 16

100. What will be the direction of the magnetic field at a point directly below a horizontal power line with the current flowing from east to west when viewed from the west end?

(+1, -0.33)

a. Anticlockwise

b. Clockwise

c. Parallel to the flow of the current

d. Perpendicular to the flow of the current

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Answers

1. Answer: a

Explanation:

Let A receive Rs. a and let the difference between each consecutive person be Rs. d .

$$\Rightarrow \text{Amount received by E} = a + 4d$$

According to question,

$$\Rightarrow \text{Amount received by E} = \text{Amount received by A} + 40$$

$$\Rightarrow a + 4d = a + 40$$

$$\Rightarrow 4d = 40$$

$$\Rightarrow d = 10$$

Also,

$$\Rightarrow \text{Total amount} = a + (a + d) + (a + 2d) + (a + 3d) + (a + 4d)$$

$$\Rightarrow 720 = 5a + 10d$$

$$\Rightarrow 720 = 5a + 100$$

$$\Rightarrow a = 124$$

$$\Rightarrow \text{Amount received by B} = a + d = 124 + 10 = \text{Rs. } 134$$

★ Alternate Method

Calculation:

A, B, C, D and E

As the amount received is in AP,

Difference in an amount of two consecutive members is the same.

$$\Rightarrow B - A = C - B = D - C = E - D$$

We have $E - A = 40$,

$$\Rightarrow B - A = 10, C - B = 10, D - C = 10, E - D = 10,$$

Let say A received Rs. x ,

Then B, C, D and E will receive,

$$\Rightarrow x + 10, x + 20, x + 30, x + 40$$

According to the question,

$$\Rightarrow x + x + 10 + x + 20 + x + 30 + x + 40 = 720$$

$$\Rightarrow 5x + 100 = 720$$

$$\Rightarrow 5x = 620$$

$$\Rightarrow x = 124$$

$$\text{B will receive} = x + 10 = 124 + 10 = 134$$

\therefore B will receive amount of Rs. 134

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2. Answer: b

Explanation:

- Ranveer Singh portrayed the character of Allauddin Khilji in the controversial movie 'Padmavat'.
- Ranveer Singh got the Filmfare Critics Award for the Best Actor in the year 2019 for portray of his role as Allauddin Khilji.

3. Answer: b

Explanation:

- India won 16 medals in US Open Karate Championship held in Las Vegas held April in the year 2017.
- India won three golds, two silver and 11 bronze medals in the championship.

4. Answer: c

Explanation:

The correct answer is **Arya Samaj**.

★ Key Points

- Swami Dayanand Saraswati founded the Arya Samaj.
- Arya Samaj was founded by Swami Dayananda Saraswati in 1875.
- He translated the Vedas and wrote three books named Satyarth Prakash, Veda Bhasya Bhumika, and Veda Bhasya.
- He gave the slogan "Go back to Vedas".
- Dayananda Anglo Vedic (D.A.V) schools were established based on his philosophy and teachings.

★ Additional Information

Mission	Founder
Brahmo Samaj	Raja Ram Mohan Roy
Chinmaya Mission	Chinmayananda Saraswati
Prarthana Samaj	Atmaram Pandurang

5. Answer: d

Explanation:

- Let the mass of the earth be M.
- Mass of the other object on earth is m.
- We know the value of Gravitational Constant (G) = $6.67259 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$.
- We know the formula for the force between two objects (F) = $G \frac{m^1 m^2}{r^2}$.
- Now the radius of the earth (r) = $6.3781 \times 10^6 \text{ m}$.
- We know that $F = mg$
- Now by substituting the values, we get $mg = G \frac{M m}{r^2}$.

$$M = g r^2 / G$$

$$M = (9.81) (6.3781 \times 10^6)^2 / 6.67259 \times 10^{-11}$$

$$M = 6 \times 10^{24} \text{ kg.}$$

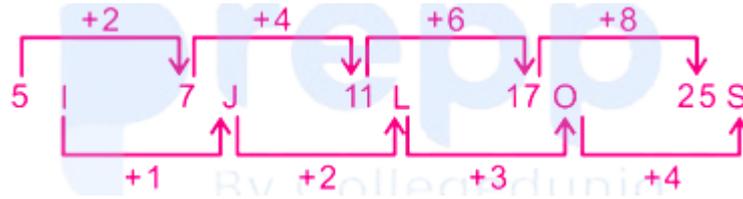
The mass of the earth (M) is $6 \times 10^{24} \text{ kg}$.

6. Answer: a

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The pattern followed here is as follows:



Hence, "25S" is the correct answer.

7. Answer: a

Explanation:

- In the statement student 1 is asking for notes prepared by student 2 for studying, thus we can assume that student 2 "has prepared the notes".
- The statement clearly mentions that student 1 wants the notes "to study", hence we cannot assume that he "wants to verify his understanding".
- Therefore, only assumption I is implicit.

8. Answer: d

Explanation:

⇒ Total distance to be covered = total length of both the trains = $152.5 + 157.5 = 310$ m

⇒ Total time taken = 9.3 sec

⇒ Speed = distance/time = $(310/9.3)$ m/sec = $(310/9.3) \times (18/5) = 120$ km/hr

∴ The combined speed of the two trains every hour would then be 120 km/hr.

9. Answer: b

Explanation:

★ Key Points

- The elements in 18 group of the periodic table have a complete Outer Shell.
- In the 18th group of the modern periodic table, the noble gases placed.

Table: Modern Periodic table

GROUP NUMBER

1 2

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Alkali metals

Alkaline Earth Metals

Transition Metals

Halogens

Nobel gases

The zig zag line separates the metals from the non metals

	1	2	Transition Metals										13	14	15	16	17	18	
	1	2											5	6	7	8	9	10	
	2	3	4											13	14	15	16	17	18
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			
PERIODS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	
	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	
	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
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	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	
	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	
	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	
	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	
	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	
	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	
	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	
	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	
	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	
	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	
	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	
	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	
	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	
	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	
	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	
	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	
	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	
	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	
	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	
	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	
	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	
	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	
	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	
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	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	
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	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	
	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	
	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	
	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	
	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	
	74	75	76	77	78	79	8												

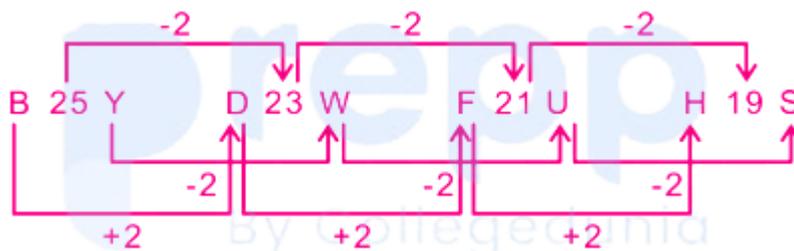
Group number	Common name	Number of electrons for bonding
1	Alkali metals	1
2	Alkaline earth metals	2
14	Crystallogens	4
15	Pnictogens	5
16	Chalcogens	6
17	Halogens	7
18	Noble gases	8

10. Answer: b

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The pattern followed here is as follows,



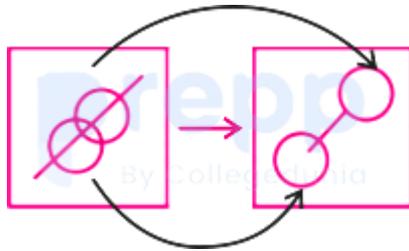
Hence, "H19S" is the correct answer.

11. Answer: b

Explanation:

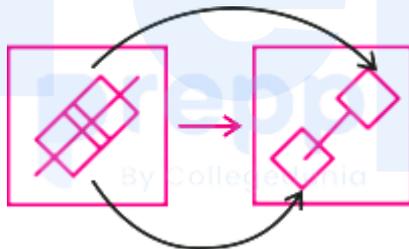
As per the given pattern figure B is the most possible correct answer.

From 1st figure to 2nd figure:



Similarly,

From 3rd figure to 4th figure:



Hence, "B" is the correct answer.

12. Answer: b

Explanation:

★ Key Points

- Atomic Mass of the Hydrogen = 1
- Atomic Mass of the oxygen = 16

Explanation:

1 mole of hydrogen = 1gm

1 mole of oxygen = 16gm

Water (H₂O) = 2 Hydrogen atoms + 1 Oxygen atom

2 mole of hydrogen = 2gm

1 mole of oxygen = 16 gm

The ratio of the mass of Hydrogen: Ratio of mass of Oxygen = $\frac{2}{16} = \frac{1}{8}$

The ratio of the mass of Hydrogen to the mass of Oxygen in water is always 1:8.

13. **Answer: a**

Explanation:

Animals from class Aves are warm-blooded.

- Aves class represents birds and their characteristic features are feathers, a beak, and the forelimbs are modified into wings.
- They are warm-blooded animals i.e. they will be able to maintain constant body temperature.

Pisces	These are the gill-bearing vertebrates which lack limbs with digits. They are the aquatic craniate animals generally called fishes.
Reptilia	These are the tetrapod vertebrates which may either have four-limbs or they are descended from four-limb ancestors like snakes.
Amphibia	Amphibians can live in aquatic as well as in terrestrial habitats and most of them have two pairs of limbs.

14. Answer: d

Explanation:

- The United States of America (USA) host the Academy (Oscars) Awards for excellence in the cinema every year.
- The 91st Academy Awards were presented at the Dolby Theatre in Los Angeles, California.
- Best Picture – Green Book.
- Best Actor in a Leading Role – Rami Malek for Bohemian Rhapsody.
- Best Actress in a Leading Role – Olivia Colman for The Favourite.
- Best Directing – Alfonso Cuarón for Roma.
- Best Supporting Actor – Mahershala Ali for Green Book.

15. Answer: d

Explanation:

Concept used:

A twin prime is a prime number that is either 2 less or 2 more than another prime number.

The difference between the twin prime number is always two.

In twin prime number, both the number should be the prime number.

Calculation:

Twin primes are pairs of successive primes that differ by two.

The primes from 1 to 100 are 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97

Options:

(37, 41) - Difference between them is 4.

(3, 7) - The difference between them is 4.

(43, 47) - Difference between them is 4.

(71, 73) - Difference between them is 2.

Here, in the given option (71 and 73) are prime numbers and their difference is '2'.

16. **Answer: d**

Explanation:

- The number of water molecules present in washing soda is 10.
 - We know the molecular formula for Washing Soda is $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$.
 - Recrystallisation of Sodium Carbonate (Na_2CO_3) gives washing soda.
 - In a Washing soda, water is present in the form of crystals.
-

17. **Answer: c**

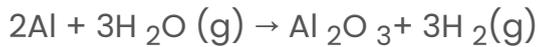
Explanation:

- Satyawart Kadiyan is related to Wrestling sport.
 - He was given Arjuna Award in 2017.
 - He was married to Olympic bronze medallist Sakshi Malik in 2017.
-

18. **Answer: d**

Explanation:

- Aluminium(Al) metal reacts with steam to form a metal oxide and hydrogen.
- This reaction can be given as



- Other metals of this type are Iron (Fe) and Zinc (Zn).
- But these metals do not react with either hot or cold water.

Silver, Lead and Copper do not react with water whether the water is in the form of liquid or gas.

19. Answer: c

Explanation:

Formula Used:

Area of triangle whose vertices are (x_1, y_1) , (x_2, y_2) and $(x_3, y_3) = \frac{1}{2} [x_1 (y_2 - y_3) + x_2 (y_3 - y_1) + x_3 (y_1 - y_2)]$

Calculation:

$$\Rightarrow \text{Area of triangle} = (1/2) \times [1(-3 - 1) + (-4)(1 - 2) + 4\{2 - (-3)\}] = (1/2) \times \{(-4) + 4 + 20\} = 20/2 = 10 \text{ sq. units}$$

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20. Answer: c

Explanation:

Here, the objective is to make homes energy efficient for sustainable development.

- Replacing incandescent light bulbs with energy-efficient compact fluorescent lamps (CFLs) is suggested considering the statement says that making homes energy-efficient is important for sustainable development.

Therefore, assumption I is implicit in the statement.

- One cannot relate the auspiciousness of good landscaping around one's house on the west side with efficient energy consumption at home using the

information from the statement.

Therefore, assumption II is not implicit

Hence, only assumption I is implicit.

21. Answer: b

Explanation:

- The honourable President of India, Ram Nath Kovind felicitated 112 exceptional woman achievers and titled them as "First Ladies" of the country.
 - Those included Miss World 1994 Aishwarya Rai Bachchan and Miss Earth 2010 Nicole Faria.
 - The award ceremony was hosted by Minister of Women and Child Development, Shri Maneka Sanjay Gandhi, who felicitated and congratulated the women achievers.
-

22. Answer: d

Explanation:

The HCF of two co- prime numbers is 1

★ Additional Information

A Co-prime number is a set of numbers or integers which have only 1 as their common factor i.e. their highest common factor (HCF) will be 1. Co-prime numbers are also known as relatively prime or mutually prime numbers. It is important that there should be two numbers in order to form co-primes.

23. Answer: c

Explanation:

- The resistance of a conductor does not depend upon pressure.
- The type of material defines an element as either Conductor or Insulator or semiconductor.
- We know the formula Resistance (R) = $\rho L/A$.
- Where ρ is resistivity, L is the length and A is Area of Cross section.

24. Answer: b

Explanation:

Formula Used:

$$1/\text{Cosec } \theta = \sin \theta$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

Calculation:

$$\cos 2\theta + 1/\text{Cosec } 2\theta + 17 = x$$

$$\Rightarrow \cos 2\theta + \sin 2\theta + 17 = x$$

$$\Rightarrow 1 + 17 = x$$

$$\Rightarrow x^2 = 324$$

\therefore The value of x^2 is 324.

25. Answer: d

Explanation:

- **Weight** is a measure of the force of gravity acting on an object.

Concept:

<u>Unit</u>	<u>Definition</u>
Weight	It is a product of mass and acceleration due to gravity
Acceleration	Acceleration is defined as the rate of change of velocity
Momentum	Momentum is defined as the product of mass and velocity
Impulse	The product of force and time is defined as the impulse.

Explanation:

From the above explanation, we can see that

The gravitational pull by the earth is equal to the weight of the object.

Weight of any object on the planet is given by:

$$\text{Weight (W)} = m g = \text{Force due to gravity}$$

Where

m is mass

g is acceleration due acceleration of the planet.

26. Answer: a

Explanation:

- The Figure A, C, and D have the 2 Trapezium but Problem Figure has 3 Trapezums.

In Problem Figure:



In Figure B:



Here, figure B has the closest resemblance to the question figure.

Hence, "B" is the correct answer.

27. Answer: b

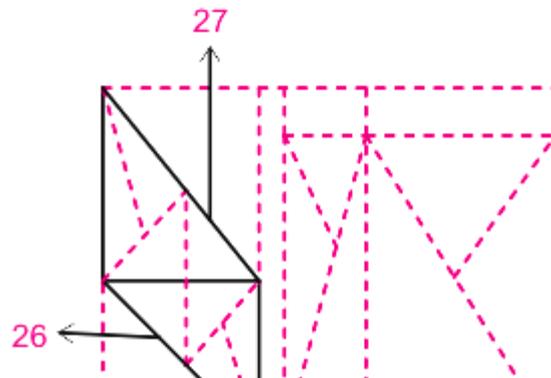
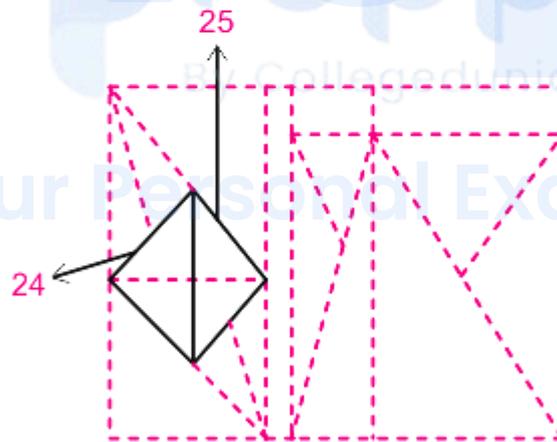
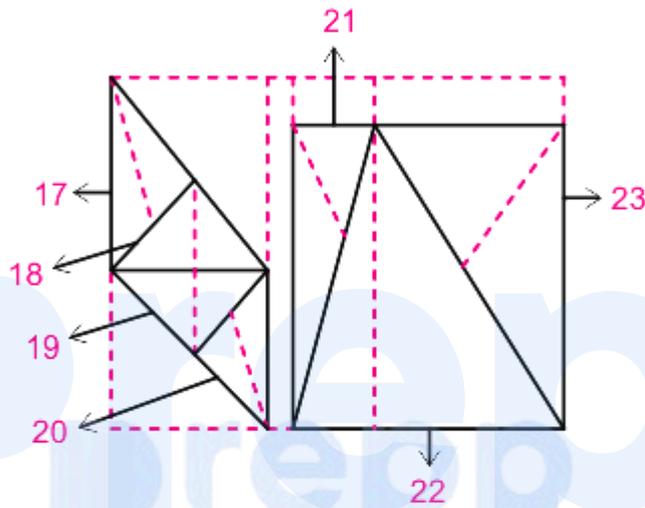
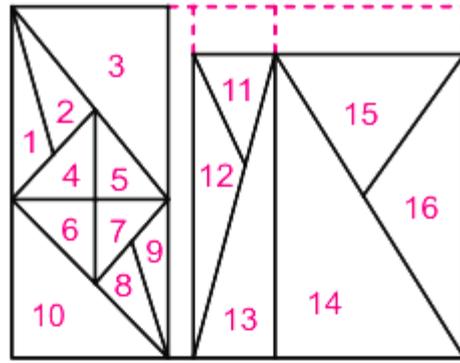
Explanation:

- The theme of the 2016 Indian Film Festival of Melbourne (IFFM) was 'Female Empowerment'.
- Along with Sonam Kapoor, Nawazuddin Siddiqui won the Best Actor (Male) award.
- IFFM is presented by the State Government of Victoria to foster close ties between India and Australia film industries.

28. Answer: d

Explanation:

We can count triangles in the given figure as follows,



prepp
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Clearly, we can say that there are "27" triangles in the given figure.

29. Answer: a

Explanation:

- Sai Praneeth was the badminton player that won his maiden Super Series title in Singapore in April 2017.
 - Sai Praneeth beat fellow Indian Kidami Srikanth to win his first maiden Super Series title.
-

30. Answer: a

Explanation:

Let the weight of each box be x .

Statement 1:

$$\Rightarrow (1/3) \times x = 10$$

$$\Rightarrow x = 30 \text{ kg}$$

As, each box weighs the same, total weight of 20 boxes can be calculated

\therefore Statement 1 alone is sufficient

Statement 2:

$$\Rightarrow \text{Weight of 6 boxes} = \text{weight of 4 boxes} + 40$$

$$\Rightarrow 6x = 4x + 40$$

$$\Rightarrow 2x = 40$$

$\Rightarrow x = 20$

As, each box weighs the same, total weight of 20 boxes can be calculated

\therefore Statement 2 alone is also sufficient

31. Answer: a

Explanation:

- Oxygen is liberated during Photosynthesis.
- Photosynthesis is the process through which green plants manufacture food by converting solar energy into chemical energy.
- In this process, water and carbon dioxide react in the presence of sunlight to give off oxygen and form glucose molecules.
- Photolysis of water is the source of oxygen liberated in photosynthesis.

Type	Process
Respiration	Intake of air
Transpiration	Evaporation of water through stomata of leaves
Excretion	Process of removal of waste from the organism.

32. Answer: d

Explanation:

CONCEPT:

- Sound: A local disturbance whose propagation is facilitated by the collisions between particles this disturbance propagates in a longitudinal wave, imagine one molecule hitting the next molecule, and then that molecule hitting the next, and so forth.
 - It is a mechanical wave that needs a medium to travel.
 - The speed of sound is maximum in solid then it is in liquid and slowest in gases.
 - Speed of sound: The distance traveled per unit time by sound waves as it propagates through an elastic medium.

The velocity of sound in a gaseous medium is given by:

$$\Rightarrow v = \sqrt{\frac{\gamma P}{\rho}}$$

Where P = pressure, ρ = density, and γ = ratio of two principal specific heats of the gas

- The speed of sound remains almost the same for all frequencies in a given medium under the same physical conditions.
- A state of matter is one of the distinct forms in which matter can exist.
 - The four fundamental states of matters are - solids, liquids, gases, and plasma .

EXPLANATION:

- Solid-state is one of the four fundamental states of matter, in which the constituent particles (ions, atoms, etc) are closely packed together.
- The speed of sound is maximum in solids and least in gases. So option 4 is correct.

EXTRA POINTS

Speed of sound in different media at 25 °C		
State	Medium	Speed of sound (m/s)
Solid	Solids Aluminium	6420
	Nickel	6040
	Steel	5960
	Iron	5950
	Brass	4700
	Glass (Flint)	3980
liquid	Liquids Water (Sea)	1531
	Water (distilled)	1498
	Ethanol 1207	1207
	Methanol	1103
gas	Gases Hydrogen	1284
	Helium	965
	Air	346
	Oxygen	316
	Sulfur dioxide	213

<https://ncert.nic.in/ncerts/l/iesc112.pdf>

33. Answer: c

Explanation:

Concept Used:

a/b and c/d are two numbers,

then $(a \times d)$ and $(b \times c)$ are need to be compared.

Calculation:

We have, $9/16$ and $13/24$

$$\Rightarrow 9 \times 24 = 216$$

$$\Rightarrow 13 \times 16 = 208$$

$$\Rightarrow 216 > 208$$

$$\Rightarrow 9/16 > 13/24.$$

\therefore Option 3 is correct.

34. Answer: d

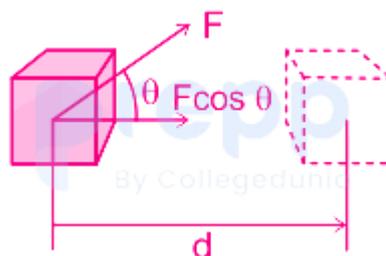
Explanation:

Concept:

Work done:

Work is said to be done when a force applied on the body displaces the body through a certain distance in the direction of a force.

- $Work\ done\ (W) = \vec{F} \cdot \vec{s} \cos \theta = F s \cos \theta$
- Where F = force, s = distance, and $\cos \theta$ = angle between F and s .
- The SI unit of work done is N-m or Joule (J) .





Key Points

Work is done whenever the given condition is satisfied:

- (i) A force should act on an object
- (ii) There is a displacement of the body caused by the applied force along the direction of the applied force.

Explanation:

Here,

1. A force has acted on an object without causing any displacement of it. - **Doesn't satisfy the condition.**
2. Only when an object is displaced. - **Doesn't satisfy the condition.**
3. Only when force has acted on the object. - **Doesn't satisfy the condition.**
4. Any of the above - **Doesn't satisfy the condition.**

So the correct option is b & c

It will only be true when force is applied and displacement is in the direction of the force.

(The original question has been asked in Railways Group D but due to discrepancy, the question has been rejected. we have updated the question to make it correct)

35. Answer: c

Explanation:

- The launching of a rocket illustrates Newton's third law of motion.
- Newton's Third Law of Motion states that 'To every action, there is an equal and opposite reaction'.
- When the rocket is ignited, it releases gases from its thrusters thereby creating a force that will push rocket upwards.
- A fielder pulling his hand back while catching a ball is an application of Newton's second law of motion.
- Newton's Second Law of motion states that the rate of change of momentum of an object is proportional to the applied force in the direction of the force. i.e. $F=ma$. Where F is the force applied, m is the mass of the body, and a is the acceleration produced.

- When a bus starts suddenly, the passengers receive a backward jerk an application of Newton's first law of motion.
- Newton First law states that Every object remains in uniform motion in a straight line unless compelled to change its state by the action of an external force.
- When we stop pedalling, the bicycle slows down due to the frictional force acting on the bicycle.

36. Answer: d

Explanation:

- A committee under the chairmanship of Uday Kotak was constituted in 2017 to improve efficiency in Corporate Governance.
- SEBI has set up a committee under the chairmanship of Uday Kotak, executive vice chairman and managing director of Kotak Mahindra Bank Ltd, to advise it on issues relating to corporate governance in Indian firms.
- The 21-member panel includes representatives from other companies, stock exchanges, professional bodies, investor groups, law firms, academicians, research professionals and SEBI officials.

★ Important Points

- About SEBI: As of May 2022
 - Chairman - Madhabi Puri Buch
 - Founded - 1992
 - Headquarters - Mumbai Maharashtra

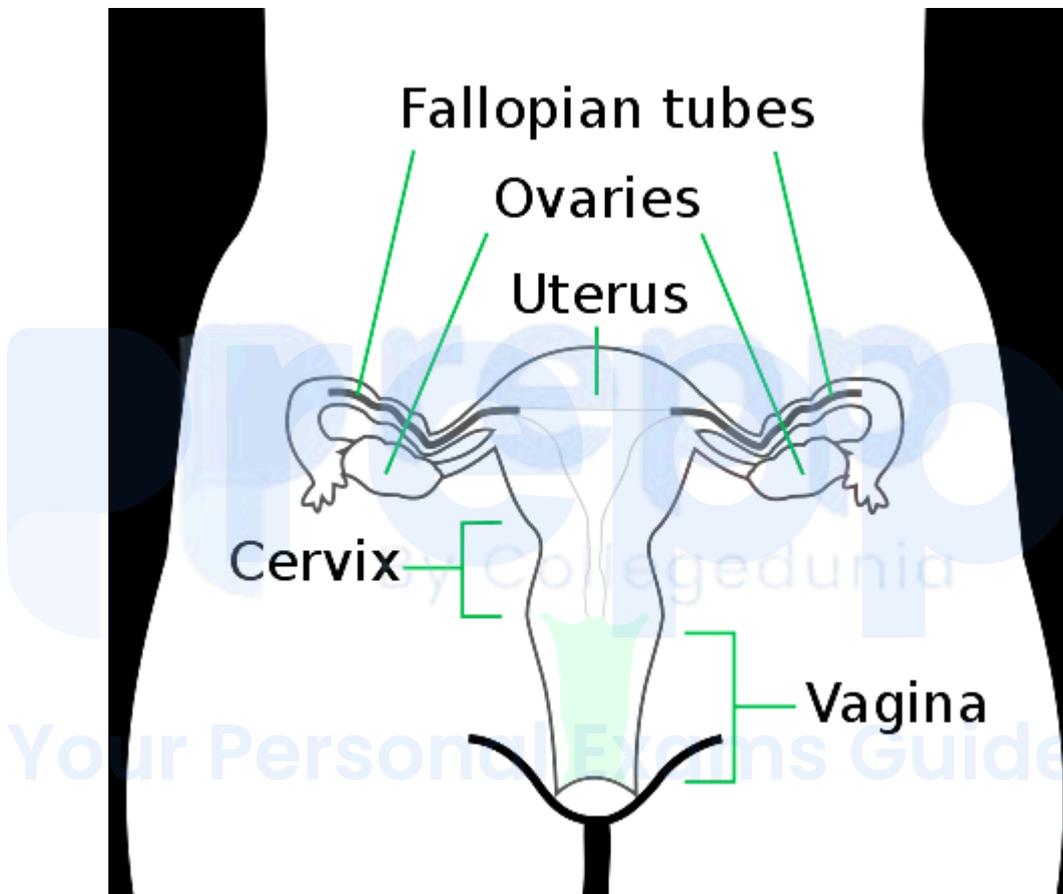
37. Answer: d

Explanation:

The correct answer is the **uterus** .

★ Key Points

- The fertilised egg, the zygote, gets implanted in the uterus.
- The egg is fertilized up in the fallopian tube then travels to the uterus and it implants in the tissue lining the uterus.
- When the fertilized egg pushes itself into the tissue on the wall of the uterus, it is called implantation



★ Additional Information

Organ	Function
Cervix	It is a narrow tube that connects the vagina to Uterus.
Ovary	They are primary female sex organs and they produce female gamete (Ovum) and ovarian hormones.
Vagina	Vagina, also known as 'birth canal', is a canal that joins the lower part of the uterus called cervix to the outside.

38. Answer: c

Explanation:

- When a body moves on a circular path, the force that acts on the revolving body towards the centre is called centripetal force.
- The Centripetal force is required to maintain a body in Uniform Circular Motion.
- Centripetal Force acts when a body moves around in a circular path, the force that causes this acceleration and keeps the body moving along a circular path is acting towards the centre

Force	Definition
Simple Force	It defined as a pull or push on an object which tends to displace an object form its position.
Gravitational Force	It is defined as the force of attraction between two objects is directly proportional to the product of masses of the objects and inversely proportional to the square of the distance between them.

39. Answer: c

Explanation:

Concept used:

B	Brackets in order {}, {}, []	ब्रैकेट {}, {}, [] क्रम में
O	of	का
D	Division (÷)	विभाजन (÷)
M	Multiplication (×)	गुणा (×)
A	Addition (+)	जोड़ (+)
S	Subtraction (-)	घटाव (-)

Calculation:

$$56 \div \left[\frac{1}{3} \{ 15 + 12 - (9 + 6 - \overline{5 + 7}) \} \right] = ?$$

$$\Rightarrow 56 \div \left[\left(\frac{1}{3} \right) \{ 15 + 12 - (9 + 6 - 12) \} \right]$$

$$\Rightarrow 56 \div \left[\left(\frac{1}{3} \right) \{ 15 + 12 - (15 - 12) \} \right]$$

$$\Rightarrow 56 \div \left[\left(\frac{1}{3} \right) \{ 15 + 12 - 3 \} \right]$$

$$\Rightarrow 56 \div \left[\left(\frac{1}{3} \right) \{ 27 - 3 \} \right]$$

$$\Rightarrow 56 \div \left[\left(\frac{1}{3} \right) (24) \right]$$

$$\Rightarrow 56 \div 8$$

$$\Rightarrow 7$$

$$\therefore ? = 7$$

★ Important Points

If in any simplification problem there is ($\bar{\quad}$) bar sign above any operation then we should perform the operation at the beginning, whatever the operation is. Then we will follow the chart given above.

40. Answer: b

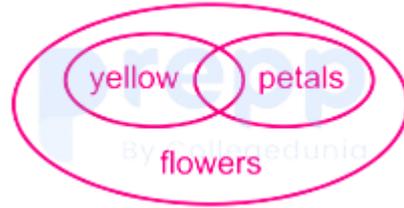
Explanation:

- Indore was the first city in India to use a robot for traffic control.
- It is a 14-foot-tall robot that has an inbuilt public address system and has cameras.
- It can also issue challans to traffic offenders.

41. Answer: a

Explanation:

Venn diagram:



Conclusions:

I. All flowers are yellow → False (it is possible but not definite)

II. All yellows are petals → False (it is possible but not definite)

Hence, none of the conclusion follows.

42. Answer: c

Explanation:

- Amazon became the second to hit \$900 billion market capitalisation after Apple.
- Amazon is an e-Commerce company based in Seattle in the United State of America.
- Its founder Jeff Bezos is the richest person on the earth.

43. Answer: a

Explanation:

- The Union Textiles Minister Smriti Irani has launched PowerTax India Scheme to boost power loom sector.
- It was launched by her in Bhiwandi, Thane district, Maharashtra.
- It also launched simultaneously across 43 location across in India.
- **The comprehensive scheme has the following components**
 - In-situ Upgradation of Plain Powerlooms.
 - Group Workshed Scheme (GWS).

- Yarn Bank Scheme.
 - Common Facility Centre (CFC).
 - Pradhan Mantri Credit Scheme for Powerloom Weavers.
 - Solar Energy Scheme for Powerlooms.
 - Facilitation, IT, Awareness, Market Development and Publicity for Powerloom Schemes.
 - Tex Venture Capital Fund.
 - Grant-in-Aid and Modernisation & Upgradation of Powerloom Service Centres (PSCs).
-

44. Answer: b

Explanation:

- The State Government of Maharashtra launched the 'Quit India movement 2 from Swaraj to Suraaj initiative at the historic August Kranti Maidan in August 2016.
 - It was launched to against various social evils to commemorate the Platinum Jubilee Anniversary of the Quit India movement launched in August Kranti Maidan in 1942.
-

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45. Answer: a

Explanation:

- British journalist and former BBC India correspondent **Sir William Mark Tully** had been awarded for 2018 RedInk award for lifetime achievement in journalism.
 - Tully worked with the BBC for 30 years before resigning in July 1994. He held the position of Chief of Bureau, BBC, Delhi, for 20 years.
 - The RedInk awards for excellence in journalism are given by the Mumbai Press Club.
-

46. Answer: a

Explanation:

Here, horse, monkey and tiger all are animals but there is no connection between them.



Therefore, "option 1" is the best suitable venn diagram.

47. Answer: d

Explanation:

Concept Used:

Working efficiency is the work done by an individual in one day.

Efficiency is inversely proportional to the number of days to complete work.

Formula Used:

$$\text{Working Efficiency} = (\text{Work Done}) / (\text{Time taken})$$

$$\Rightarrow \text{Efficiency of Rohan} = 1/15$$

$$\Rightarrow \text{Efficiency of Rohit} + \text{Efficiency of Rohan} = 1/10$$

$$\Rightarrow \text{Efficiency of Rohit} = (1/10) - (1/15) = 1/30$$

\therefore Rohit alone can do the same job in 30 days

48. Answer: b

Explanation:

Given:

Principal = Rs 1,60,000

Time = 2 years

Rate of interest = 10% p.a compounded semi-annually

Concept used:

$$\text{Amount} = P \times (1 + r/100)^t$$

When compounded semi-annually,

Rate becomes half i.e $R = 10\%/2 = 5\%$

And time becomes double

New time $T = 2 \times 2 = 4$ years

Calculation:

Now, According to the formula used

$$A = P \times (1 + R/100)^T$$

$$\Rightarrow A = 1,60,000 (1 + 5/100)^4$$

$$\Rightarrow A = 194481$$

So, Compound Interest = Amount - Principal

$$\Rightarrow \text{Compound Interest} = 194481 - 160000$$

$$\Rightarrow \text{Compound Interest} = 34,481$$

\therefore The required compound interest is Rs. 34481.

49. Answer: b

Explanation:

The given statement is a proverb which means that everything which looks attractive need not be valuable or the appearance of a person need not be a good indicator of his/her nature.

Clearly, both the given conclusions have comprehended the meaning properly.

Hence, both conclusions I and II follow.

50. Answer: c

Explanation:

CONCEPT:

- Work-energy theorem: It states that the sum of work done by all the forces acting on a body is equal to the change in the kinetic energy of the body i.e.,

Work done by all the forces = $K_f - K_i$

$$W = \frac{1}{2}mv^2 - \frac{1}{2}mu^2 = \Delta K$$

Where v = final velocity, u = initial velocity and m = mass of the body

EXPLANATION:

Given that:

- Mass of the Object (m) = 1 kg
- Initial velocity of the object (u) = 4m/s
- Final velocity of the object (v) = 8m/s
- Total net work is done $W_{(net)} = \text{Kinetic energy (During final velocity)} - \text{Kinetic Energy (During Initial Velocity)}$.

- Now by substituting the values in the above equation, we get

$$W_{\text{(net)}} = \frac{1}{2}mv^2 - \frac{1}{2}mu^2$$

$$= \frac{1}{2}(1) \times (8)^2 - \frac{1}{2}(1) \times (4)^2$$

$$= 32 - 8 \text{ Joule}$$

$$= \underline{\underline{24 \text{ Joules.}}}$$

- Therefore, the total work done by the force is 24 J.

51. Answer: c

Explanation:

- As long as an unbalanced force is applied to a body, there is a continuous change in its speed.
- Newton's Second Law of motion states that the rate of change of momentum of an object is proportional to the applied force in the direction of the force. i.e. $F=ma$. Where F is the force applied, m is the mass of the body, and a is the acceleration produced.
- As the rate of change of speed is acceleration and hence, when an unbalanced force acts on an object it speeds changes accordingly.

52. Answer: c

Explanation:

- Ammonium Chloride is an example of a salt gives an aqueous solution of pH less than 7.
- We know the reaction between Ammonium Chloride (NH_4Cl)
- $\text{NH}_4\text{Cl} + \text{H}_2\text{O} \rightarrow \text{NH}_4\text{OH} + \text{HCl}$

All the other salts when mixed with water give basic solution.

53. Answer: b

Explanation:

- The amount of charge (q) = 4 C
- Potential difference between two points (v) = 18 v
- Now work done (w) = $q v$
- Now by substituting the value, we get

$$w = (4) (18)$$

$$= 72 \text{ Joules}$$

- The total amount of work done is 72 J.
-

54. Answer: b

Explanation:

The correct answer is Kodaikanal

★ Key Points

- Kodaikanal is known as the Princess of the Hill Stations with an elevation of 2100 mt.
- It is in the state of Tamil Nadu and located in Palani Hills (Part of Western Ghats).

★ Additional Information

Hill Station	Place sobriquets
Dehradun	Capital of Uttarakhand.
Darjeeling	Famous for its UNESCO World Heritage site, the Darjeeling Himalayan Railway.

55. Answer: b

Explanation:

- **Shram Award** is given to recognises workers for their distinguished performance, innovative ability, and outstanding contribution in the field of productivity and exhibition of exceptional courage and presence of mind.
- Prime Minister Shram Awards were instituted in 1985 to recognize the contributions made by workers as defined in the Industrial Disputes Act, 1947.

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56. Answer: b

Explanation:

Given :

A TV set selling price in Delhi = Rs. X

The discount is given on TV set in Chandigarh = 20%

Profit % = $100/7\% = 14\frac{2}{7}\%$

Transportation cost = Rs. 600

Formula Used:

$$\text{Selling price} = \text{Cost Price} \times (100 + P\%) / 100$$

Calculation:

$$\text{CP} = 80\% \text{ of } X = 0.8X$$

According to the question

$$\Rightarrow X = \frac{0.8X + 600(100 + \frac{100}{7})}{100}$$

$$\Rightarrow X = \frac{0.8X + 600(\frac{800}{7})}{100}$$

$$\Rightarrow 100X = \frac{(0.8X + 600)(800)}{7}$$

$$\Rightarrow 700X = (0.8X + 600)(800)$$

$$\Rightarrow 700X = 640X + 48000$$

$$\Rightarrow 60X = 48000$$

$$\Rightarrow X = 8000$$

∴ The value of X is Rs.8000

 Alternate Method Exams Guide

$$\Rightarrow \text{Selling Price of TV in Chandigarh} = X - 20\% \text{ of } X = \text{Rs. } 0.8X$$

$$\Rightarrow \text{Total cost price of TV in Delhi} = 0.8X + 600$$

$$\Rightarrow \text{Selling Price} = \text{Rs. } X$$

$$\Rightarrow \text{Profit\%} = \{(X - 0.8X - 600) / (0.8X + 600)\} \times 100$$

$$\Rightarrow 100/7 = \{(0.2X - 600) / (0.8x + 600)\} \times 100$$

$$\Rightarrow 0.8X + 600 = 1.4X - 4200$$

$$\Rightarrow X = 8000$$

57. Answer: d

Explanation:

As,

$$\Rightarrow \sec^2 \theta = 1 + \tan^2 \theta$$

We have,

$$\Rightarrow (\sec^2 \theta)^2 - \sec^2 \theta = 3$$

$$\Rightarrow (1 + \tan^2 \theta)^2 - (1 + \tan^2 \theta) = 3$$

$$\Rightarrow (1 + \tan^4 \theta + 2 \tan^2 \theta) - (1 + \tan^2 \theta) = 3$$

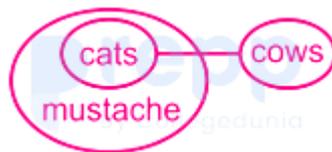
$$\Rightarrow 1 + \tan^4 \theta + 2 \tan^2 \theta - 1 - \tan^2 \theta = 3$$

$$\Rightarrow \tan^4 \theta + \tan^2 \theta = 3$$

58. Answer: b

Explanation: Your Personal Exams Guide

The minimum possible Venn diagram of the given statements,



Conclusions:

I. Some cows are cats → False

II. Some cows have mustache → False (it is possible but not definite)

Hence, no conclusion follows.

59. Answer: a

Explanation:

Figure 1 to Figure 2:

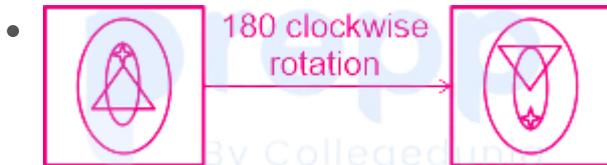


Figure 3 to Figure 4:



Hence, "A" is the correct answer.

60. Answer: c

Explanation:

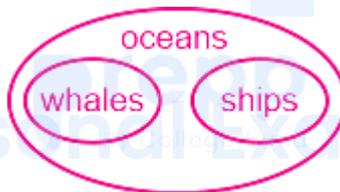
- Rajya Sabha is known as the Upper house of the Indian Parliament.
- Article 80 of the Indian Constitution lays down the maximum strength of Rajya Sabha as 250, out of which 12 members are nominated by the President and 238 are representatives of the States and of the two Union Territories.
- Vice President of India will act as Ex-Officio chairman of Rajya Sabha.

	Lok Sabha	Rajya Sabha
Total Members	543	245(at present)
Elected	543	233
Nominated	0	12

61. Answer: b

Explanation:

- We know that ships travel on the oceans
- Similarly, whales live in the ocean. But we can not relate ships and whales.



Hence, the most suitable venn diagram is "option 2".

62. Answer: b

Explanation:

The minimum possible Venn diagram of the given statements,



Conclusions:

1. All iron are metals → False (it is possible but not definite)
2. All heavy are metals → False (it is possible but not definite)

Hence, no conclusion follows.

63. Answer: c

Explanation:

- 'Hausala 2017' is the celebration of Children's rights.
 - It was held from 16th November to 20th November 2017 by the Ministry of Women and Child Development and celebrated as child Rights Week.
-

64. Answer: a

Explanation:

⇒ Part of cake left with 5th friend = $1 - \left\{ \left(\frac{1}{8} \right) + \left(\frac{1}{6} \right) + \left(\frac{5}{12} \right) + \left(\frac{1}{12} \right) \right\} = 1 - \left\{ \left(\frac{3 + 4 + 10 + 2}{24} \right) \right\} = 1 - \left(\frac{19}{24} \right) = \frac{5}{24}$

65. Answer: c

Explanation:

- Non-Metals can exist in solid, liquid and gaseous forms.
- Physical Properties of non-metals:
 - Density: Non-metals have low densities.
 - Lustre: Non-metals do not have lustre, except diamond and iodine crystals.

- Brittleness: Solid non-metals are brittle, and some non-metals are soft. Diamond (an allotrope of carbon) is an exception, which is the hardest natural substance.
- Ductility & Malleability: Non-metals are neither ductile nor malleable.
- Conduction of Heat & Electricity: Non-metals are bad conductors of heat and electricity except graphite.
- Physical State: At ordinary temperature non-metals occur as solids, liquids, and gases.

For example, Solids: Carbon, Sulphur, Phosphorus, Liquids: Bromine

Gases: Hydrogen, Nitrogen.

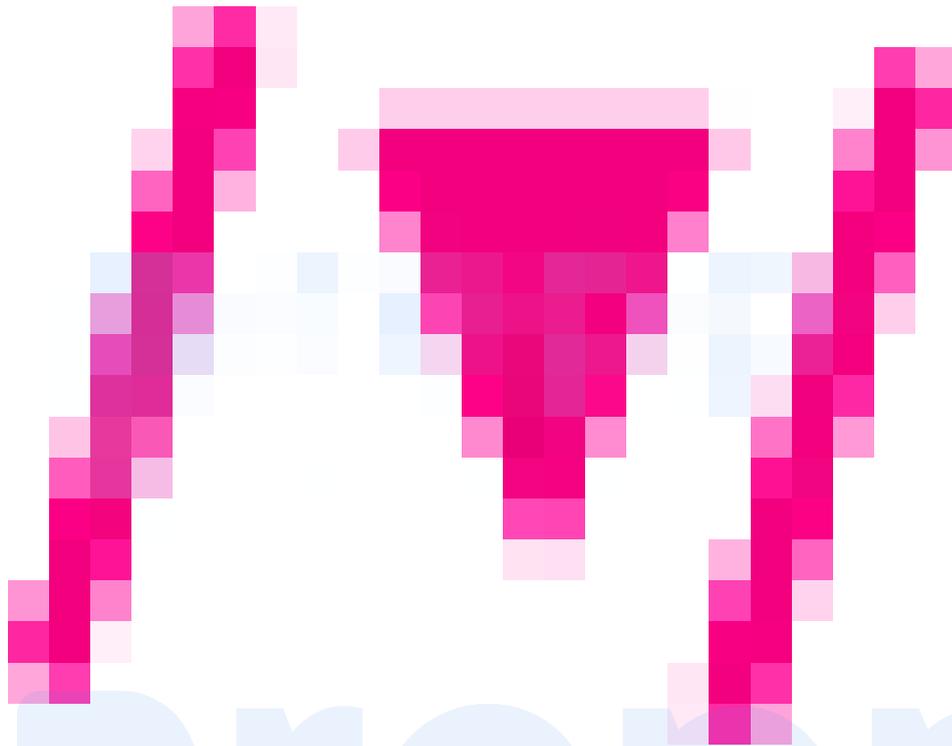
66. Answer: c

Explanation:

The logic followed here is:-

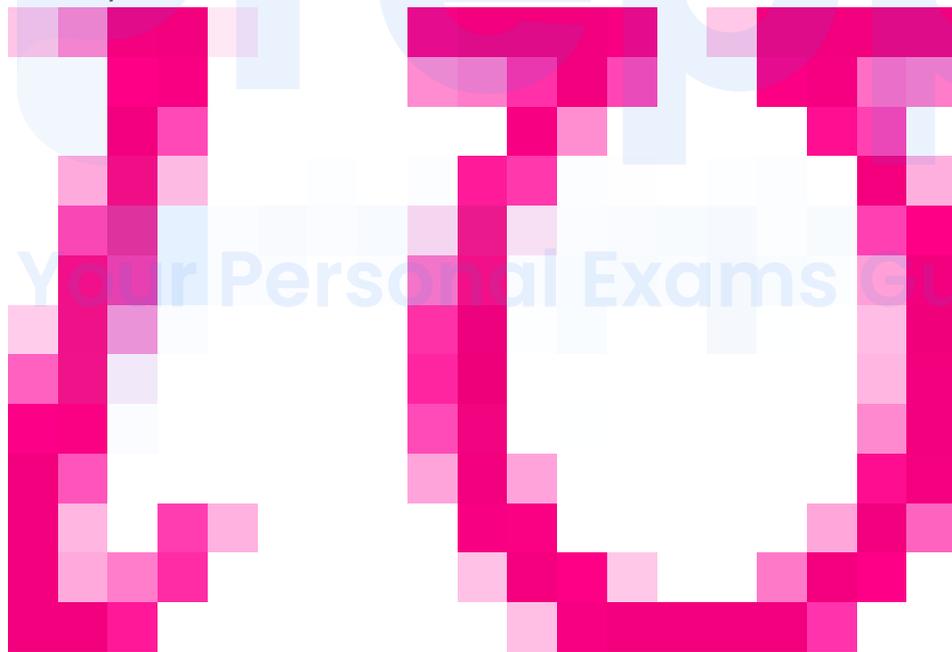
- All the symbols are moving clockwise one behind the other.
- Triangle (

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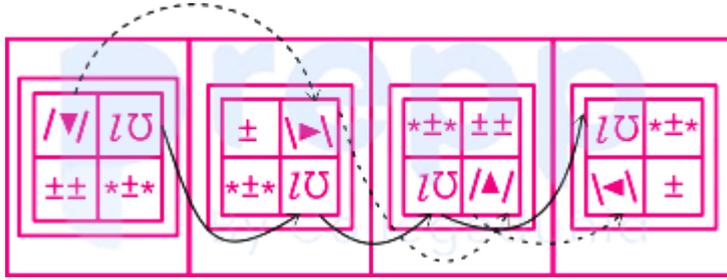


) rotates 90 0 anticlockwise directions in each step.

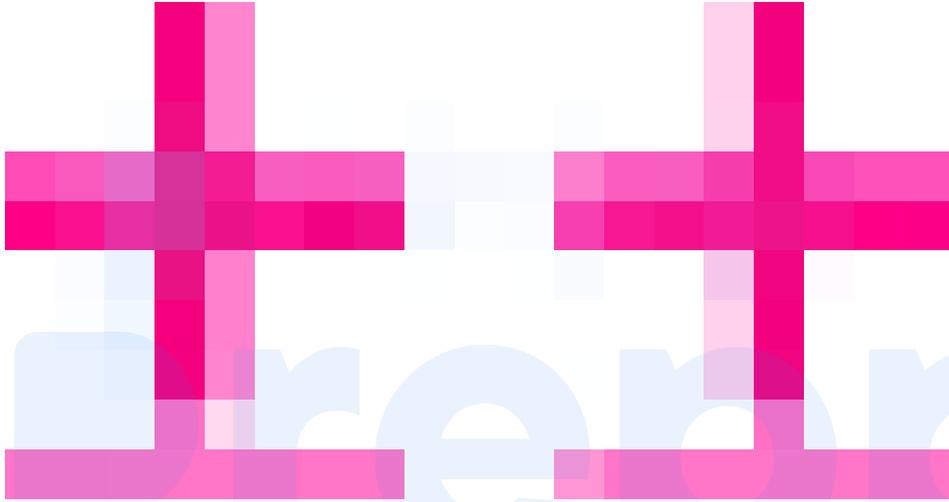
- Both symbols



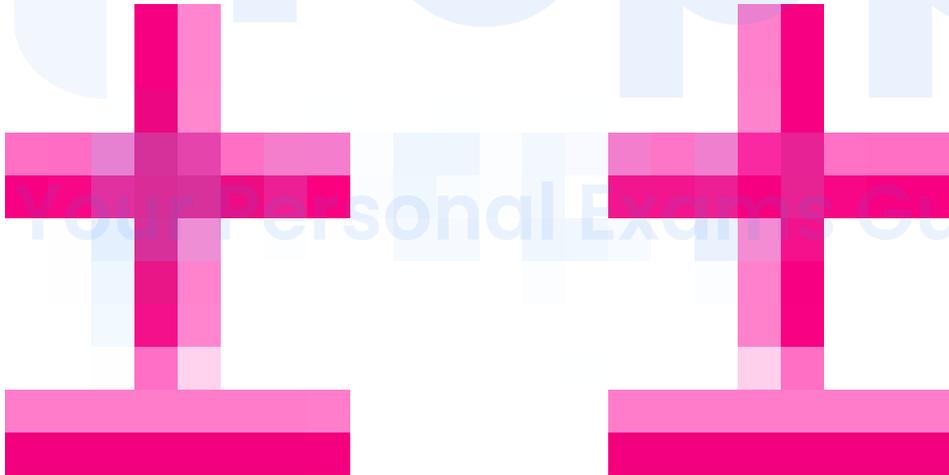
rotate one place in the clockwise direction in each step.



- Symbols (

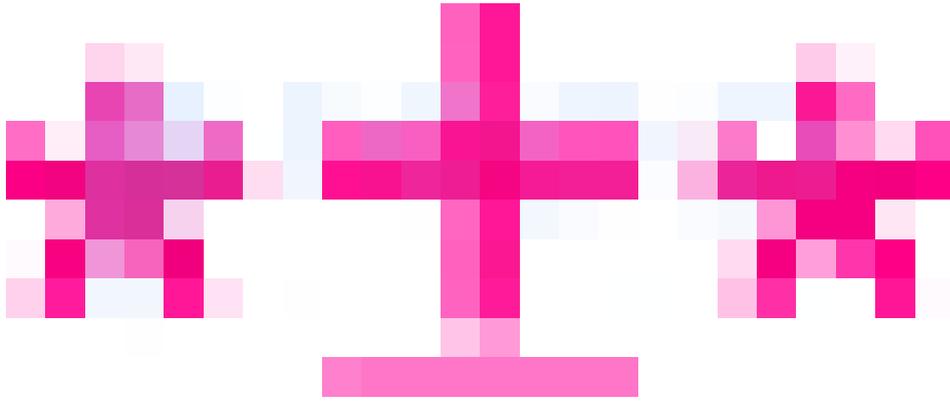


) rotate in the clockwise direction in each step and symbol

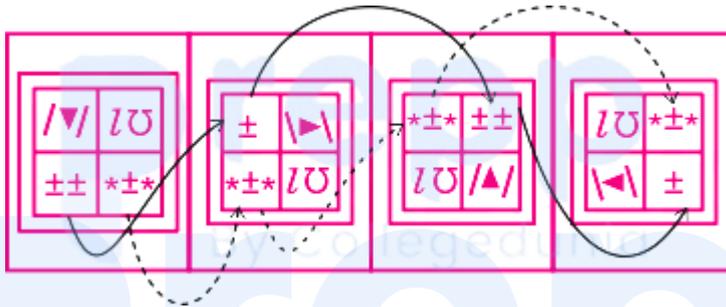


changes to symbol \pm in alternate steps.

- The symbol



rotates in the clockwise direction in each step.



So, the next image of the given series is figure D.

Hence, "Option 3" is the correct answer.

67. Answer: d

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Explanation:

The minimum possible Venn diagram of the given statements,



Conclusions:

1. All four-wheelers are cars → False (Because all jeeps are four-wheelers so some four-wheelers can be jeeps but all four-wheelers is definitely false)

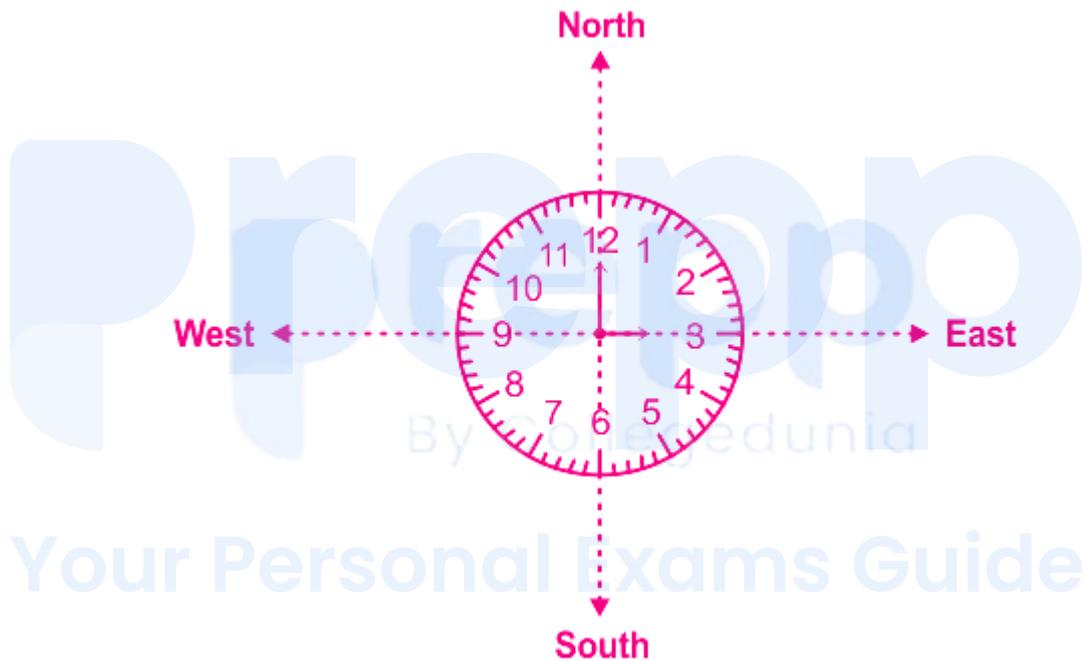
2. Some four-wheelers are Jeeps → True (Because all jeeps are four-wheelers so some four-wheelers can be jeeps, it is definitely true)

Hence, Only conclusion 2 follows.

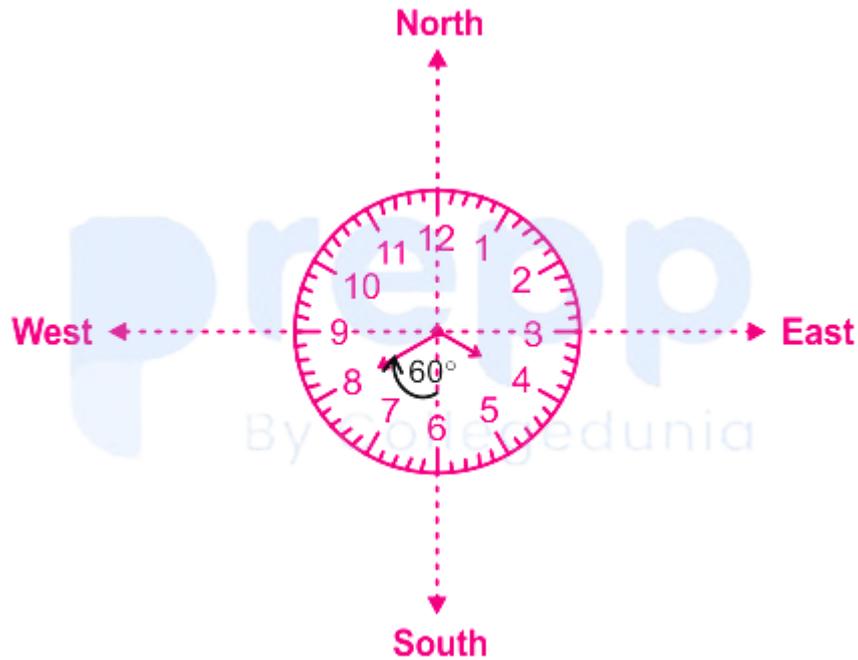
68. Answer: c

Explanation:

Given, at 3 pm



Now at 3.40 pm



In every 5 minutes movement minute hand will make an angle of 30° , thus between 3.30 pm and 3.40 pm it will make an angle of 60° (5 min. + 5 min. = $30^\circ + 30^\circ$)

Therefore minute hand is pointing 60° west (9) of the south (6).

Hence, " 60° west of south" is the correct answer.

69. Answer: b

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Explanation:

Let the efficiency of A, B and C be a , b and c .

According to question,

$$\Rightarrow a + b = 1/6 \quad \text{----(1)}$$

$$\Rightarrow b + c = 1/10 \quad \text{----(2)}$$

$$\Rightarrow a + c = 2/15 \quad \text{----(3)}$$

Adding all the equation above we get,

$$\Rightarrow 2(a + b + c) = (1/6) + (1/10) + (2/15)$$

$$\Rightarrow 2\{a + (1/10)\} = (5 + 3 + 4)/30 [\because \text{equation (2)}]$$

$$\Rightarrow 2a + (1/5) = 2/5$$

$$\Rightarrow a = 1/10$$

\therefore A alone can fill the tank in 10 hours

70. Answer: c

Explanation:

The Mayor is promoting to keep his city clean, pollution-free, beautiful, and green. As we know that ecological park has trees and diverse ecological systems, we can say "ecological parks improve green cover".

And since we know that trees absorb Carbon dioxide, it can be safely assumed that having an ecological park in the city will "reduce air pollution".

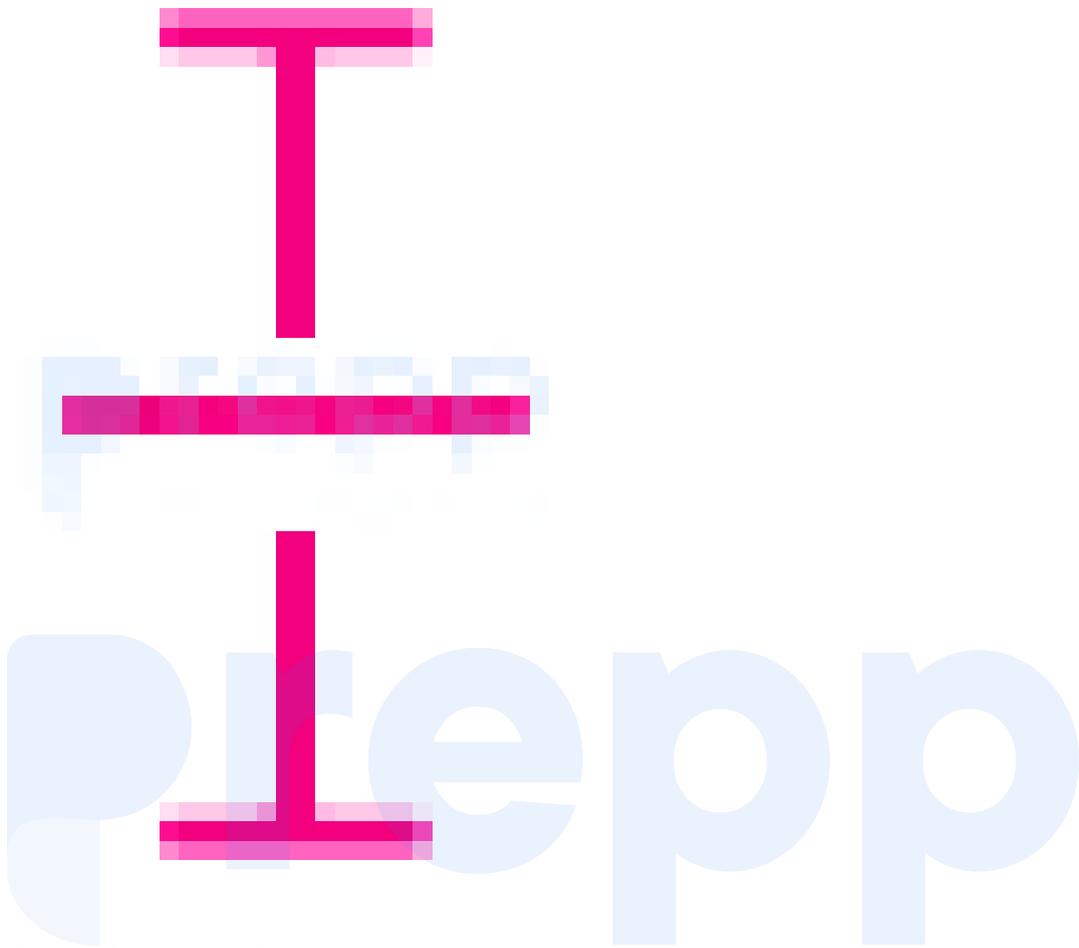
Thus, both the assumption can be implicit from the given statement.

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71. Answer: a

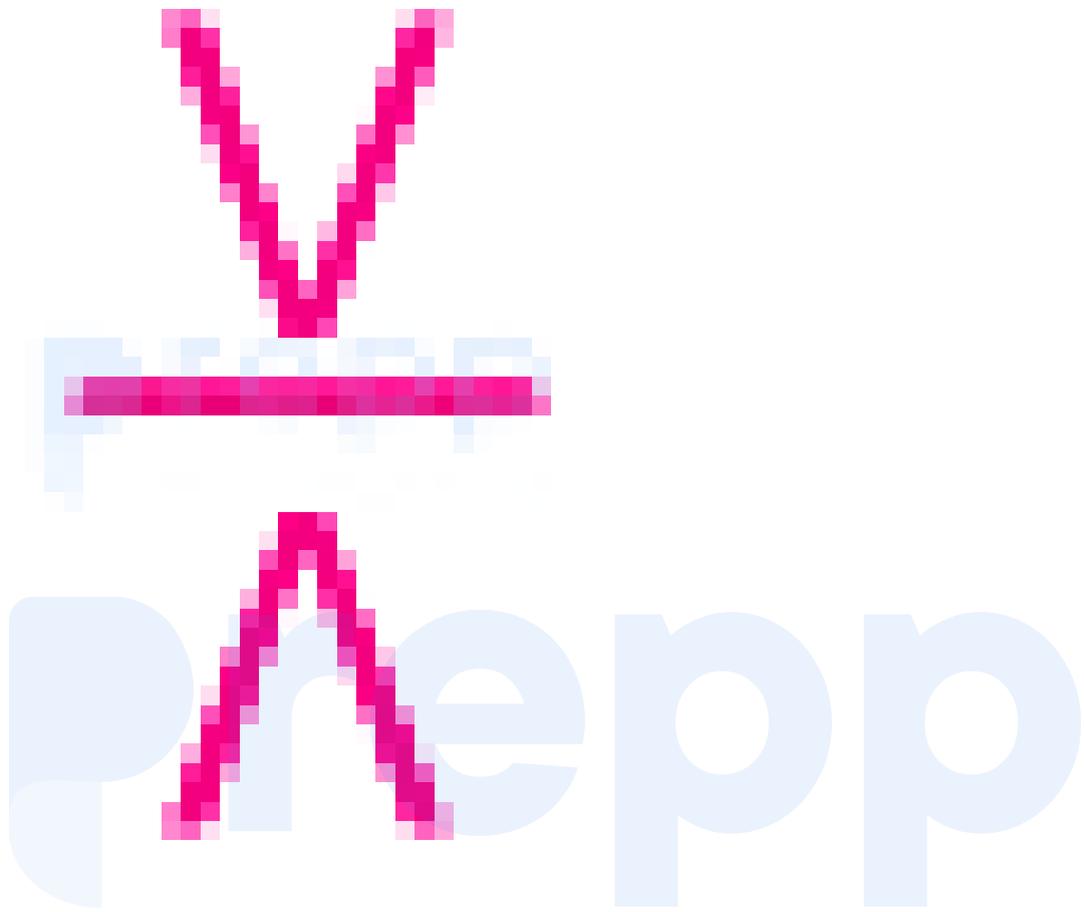
Explanation:

The pattern followed here is:



1. - T and its water image

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2. - V and its water image

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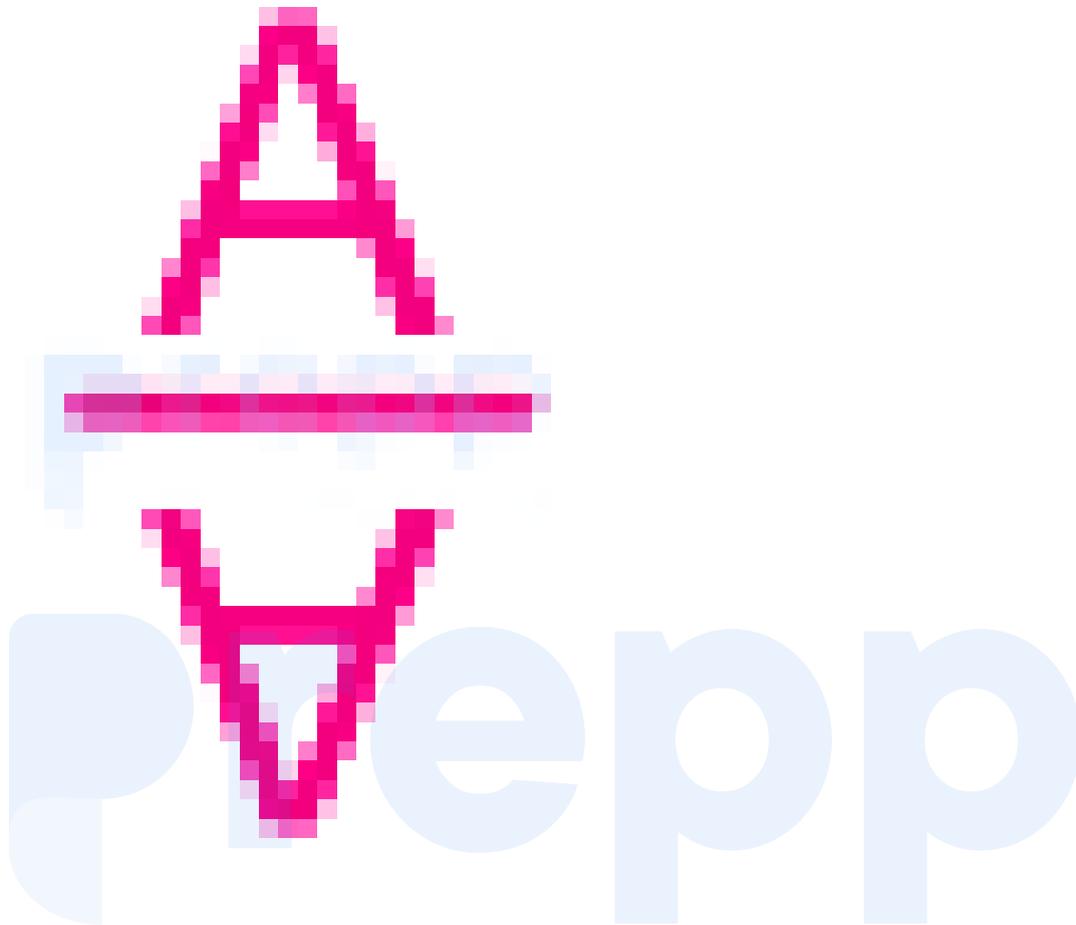


- 3. - not the water image of N.
 - o Water image of N will be as follows:

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4. - A and its water image

Hence, "C" is the correct answer.

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72. Answer: c

Explanation:

$$\begin{aligned} &\Rightarrow \frac{\sin A + \sin B}{\cos A - \cos B} + \frac{\cos A + \cos B}{\sin A - \sin B} \\ &\Rightarrow \frac{(\sin A + \sin B)(\sin A - \sin B) + (\cos A + \cos B)(\cos A - \cos B)}{(\cos A - \cos B)(\sin A - \sin B)} \\ &\Rightarrow \frac{(\sin^2 A - \sin^2 B) + (\cos^2 A - \cos^2 B)}{(\cos A - \cos B)(\sin A - \sin B)} \\ &\Rightarrow \frac{(\sin^2 A + \cos^2 A) - (\sin^2 B + \cos^2 B)}{(\cos A - \cos B)(\sin A - \sin B)} \end{aligned}$$

$$\Rightarrow \frac{1-1}{(\cos A - \cos B)(\sin A - \sin B)}$$

$$\Rightarrow 0$$

73. Answer: c

Explanation:

- The element Iron (26) has the chemical symbol that is derived from Latin.
- It's chemical symbol is **Fe** which is derived from Iron's Latin name **Ferrous**.

Element	Atomic Number
Chlorine (Cl)	17
Carbon (C)	6
Aluminium (Al)	13



74. Answer: b

Explanation:

Formula Used:

$$x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$$

$$x^3 + y^3 + z^3 = 3xyz, \text{ when } x + y + z = 0$$

Calculation:

Let $x = a - b$, $y = b - c$ and $z = c - a$

Now,

$$\Rightarrow x + y + z = a - b + b - c + c - a$$

$$\Rightarrow x + y + z = 0$$

$$\Rightarrow x^3 + y^3 + z^3 = 3xyz$$

$$\Rightarrow \frac{(a-b)^3 + (b-c)^3 + (c-a)^3}{3(a-b)(b-c)(c-a)} = \frac{3(a-b)(b-c)(c-a)}{3(a-b)(b-c)(c-a)} = 1$$

\therefore The value of the $\frac{(a-b)^3 + (b-c)^3 + (c-a)^3}{3(a-b)(b-c)(c-a)}$ is 1.

75. Answer: d

Explanation:

Given:

Speed = 15 m/sec, Time = 3 hr 20 mins

Formula Used:

Distance = Speed \times Time

Calculation:

Speed = 15 m/sec

Time = 3 hours 20 mins = $(3 \times 60 \times 60) + (20 \times 60) = 12000$ sec

Now, Distance = speed \times time = $15 \times 12000 = 180000$ m = 180 km

\therefore The required distance is 180 km.

76. Answer: a

Explanation:

⇒ Mobile phone manufactured by LMN = 30% of total mobile = 30% of 1240000 = 372000

77. Answer: d

Explanation:

Given,



By combining in best possible way.



Hence, image "B" is formed from the two shapes gives the problem figure.

78. Answer: c

Explanation:

Total no. of years difference between 2010 – 2018 = 8

Number of leap years till 2018 = 2 (2012 and 2016)

Number of ordinary years till 2018 = 6

Number of odd days till 2018 = 6 + (2 × 2) = 6 + 4 = 10 odd days

Total number of odd days till 1st January 2018 = 10 odd days = 3 odd days

So, we have move 3 days backward from Monday i.e., Friday.

Hence, "Friday" is the correct answer.

79. Answer: a

Explanation:

Given:

A person opens a tea shop with an initial investment of Rs. 25,000. He spends 30% of his money in furnishing his shop and 20% in bringing other necessary things

Calculation:

Initial investment = Rs. 25000

Amount spent on furnishing = 30% of 25000 = Rs. 7500

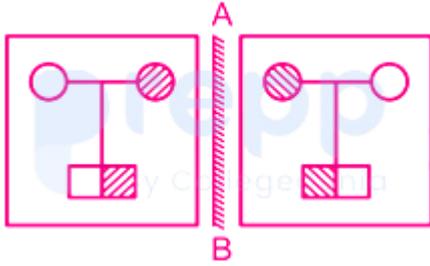
Amount spent on bringing other necessary things = 20% of 25000 = Rs. 5000

Amount left for purchasing inventory = Rs. (25000 – 7500 – 5000) = Rs. 12500

∴ Nowhere in the question mentioned that he would spend from the remaining money.

80. Answer: a

Explanation:



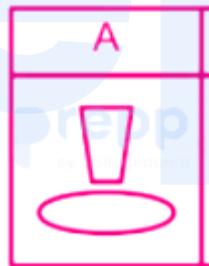
Clearly, figure "A" is the correct answer.

81. Answer: d

Explanation:

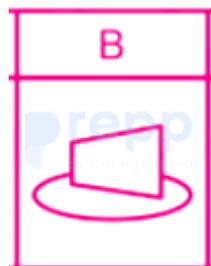
The pattern followed here is:

A)



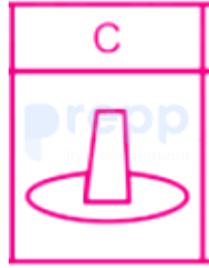
- The orientation of trapezium and oval is resembles closet to the question figure.

B)

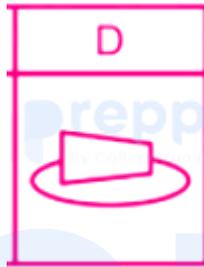


- The orientation of trapezium is not correct as per the given question figure.

C)



- The orientation of trapezium is not correct as per the given question figure.
D)



- The orientation of trapezium is not correct as per the given question figure.
Hence, the correct answer is "Option 4".

82. Answer: a

Explanation:

According to divisibility rule of 11, $x4461$ is divisible by 11 if

\Rightarrow (Sum of odd place number) – (Sum of even place number) is divisible by 11

$\Rightarrow (x + 4 + 1) - (4 + 6) = x + 5 - 10 = x - 5$ is divisible by 11

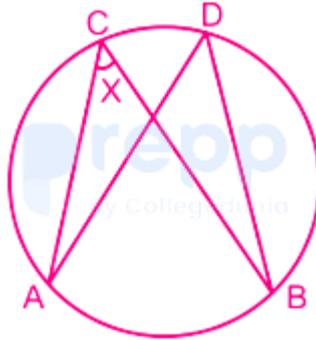
$\Rightarrow x = 5$

83. Answer: b

Explanation:

Calculation:

Since angles by a chord on two different points on the same segment of a circle are equal.



$$\therefore \angle D = 60^\circ$$

$$\text{So, } \angle ACB = \angle D = 60^\circ$$

Hence, Both 1 and 2 are sufficient (**Option 2 is correct**)

84. Answer: b

Explanation:

- Porpoises can produce ultrasound.
- Sound waves with a frequency greater than 20 kHz are called ultrasound
- Bats, mice, dolphins, etc, can also produce ultrasound.

The various applications of ultrasonic sound waves are:

- For cleaning aeroplanes and machinery parts of clocks.
- For measurement of the depth of the sea.
- It is used in ultrasonography.

85. Answer: b

Explanation:

Let the cost price be Rs. x

$$\Rightarrow \text{Loss} = x/7$$

$$\Rightarrow \text{Selling price} = x - (x/7)$$

$$\Rightarrow 144 = 6x/7$$

$$\Rightarrow x = 168$$

$$\Rightarrow \text{New selling price} = \text{Rs. } 189$$

$$\Rightarrow \text{Gain \%} = \{(189 - 168)/168\} \times 100 = 12.5\%$$

86. Answer: d

Explanation:

\Rightarrow HCF of fractions = HCF of numerators/LCM of denominators

So,

$$\Rightarrow \text{Required HCF} = \text{HCF of } (2, 8, 10, 32) / \text{LCM of } (3, 9, 27, 81) = 2/81$$

87. Answer: d

Explanation:

Here, Virat kohli is a cricketer (a sports person) and all the others are inventers.

Hence, "Virat kohli" is the correct answer.

88. Answer: c

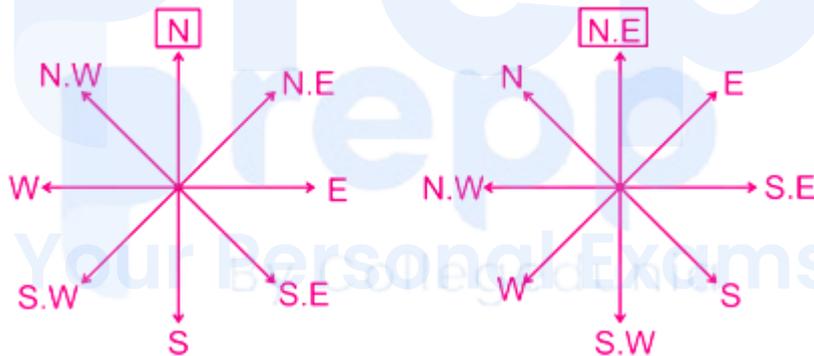
Explanation:

- Canada has the longest coastline (202, 080 km) in the world.
- The currency of Canada is Canadian dollar and its Prime Minister is Justin Trudeau.
- Canada is the second largest country in the world after Russia.
- Indonesia is the largest archipelago in the world.
- Australia is the Sixth largest country in the world.
- Norway ranked as number 1 in 'World Happiness Report' in the Year 2017.

89. Answer: c

Explanation:

We can draw diagram from the given information as follows,



Hence, "North-East" is the correct answer.

90. Answer: c

Explanation:

The logic followed here is:

No. of Odd days	Simple Year	Leap Year
	$365 \div 7 = 52 \text{ weeks} + 1 \text{ odd day}$	$366 \div 7 = 52 \text{ weeks} + 2 \text{ odd day}$

Years	No. of odd days
100 years	5
200 years	3
300 years	1
400 years	0

Code for weekdays:

No. of odd days	Day
0	Sunday
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday

Note : Multiple of 400 years i.e. 800, 1200, 1600, 2000 have 0 odd days .

Calculating leap year: For Finding the number of leap year (1 - 99) years, divide the number of years by 4 and the quotient will be the number of leap years.

We will find the day on 1st March 2005 = (2000 years + Period from 1.1.2005 to 1.3.2005)

As mentioned above:

- Odd days in 1600 years = 0
- Odd days in 400 years = 0
- Number of **leap years till 2004** = 1 (in 2004) = **2 odd days**
- Number of **ordinary years till 2004** = 3 (2001, 2002, 2003) = **3 odd days**
- Now number of odd days in:
 - Jan, Feb, and March
 - $(31 + 28 + 1) = 60$ days = **4 odd days**
 - Total number of odd days = $(0 + 0 + 2 + 3 + 4) = 9$ days = 2 odd days

Since 2 is the code for Tuesday

- So on 1st March, 2005 it was Tuesday.

Therefore, Friday = 1st March + 3 days = 4th March.

- Friday will repeat after 7 days.
- \Rightarrow 4th March + 7 = 11th March.
- Thus, in March, 2005 Friday falls on 4th, 11th, 18th and 25th.

Hence, the correct answer is "Option 3".

91. Answer: a

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Explanation:

- The struggle between France and England called the Hundred Years' War was the longest war in recorded history.
- It lasted, with some interruptions, through the reigns of five English kings (Edward III to Henry V) and five French kings (Philip VI to Charles VII).

92. Answer: d

Explanation:

- **Collenchyma** consists of living cells and is characterised by the presence of cellulose.
- **Collenchyma** is a mechanical tissue in young dicotyledonous stems and provides mechanical support and elasticity.
- It provides great tensile strength with flexibility to those organs in which it is found. It allows easy bending in various parts of a plant mainly young growing stem without breaking them.

Type of cell	Function
Xylem	Xylem is the tissue which carries water from roots to the leaves in a plant.
Phloem	Phloem is a transport tissue found in vascular plants which are responsible for transporting food in plants.
Sclerenchyma	Sclerenchyma is usually dead cells and they provide structural support to plant.

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93. Answer: c

Explanation:

Correct answer 8000



Key Points:

$$\Rightarrow 8000 = 20^3$$

\therefore 8000 is a perfect cube

94. Answer: c

Explanation:

- The general valency of electropositive elements is 1, 2, 3.
- Atoms which tend to donate electrons and converts into a positive ion (M^+) are called Electropositive atoms.
- The atoms which have 1, 2, or 3 electrons in their valence shells will lose their electrons to attain a stable electronic configuration.
- Some examples are Sodium, Magnesium, and Aluminium. These 3 elements will lose electrons to attain the configuration of the noble gas Neon.

95. Answer: c

Explanation:

We know that,

A (1)	B (2)	C (3)	D (4)	E (5)	F (6)	G (7)	H (8)	I (9)	J (10)	K (11)	L (12)	M (13)
Z (26)	Y (25)	X (24)	W (23)	V (22)	U (21)	T (20)	S (19)	R (18)	Q (17)	P (16)	O (15)	N (14)

The pattern followed here is as follows,

P	I	P	E
16	9	16	5

Similarly,



Thus SWAN is written as 1923114.

Hence, "4" is the last digit of SWAN.

96. Answer: c

Explanation:

Given:

$$\angle BCD = 72^\circ$$

AB is parallel to EC

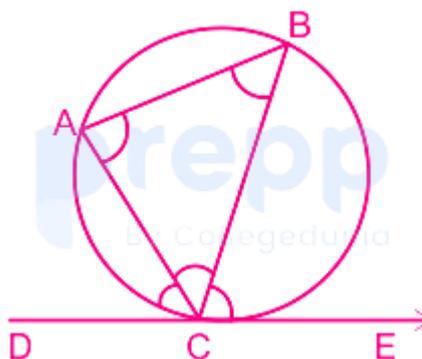
Concept used:

1) Alternate segment theorem:

According to this theorem, the angle formed between the tangent and the chord through one of the end

points is equal to the measure of the angle opposite in the alternate segment.

Example of Alternate segment theorem:

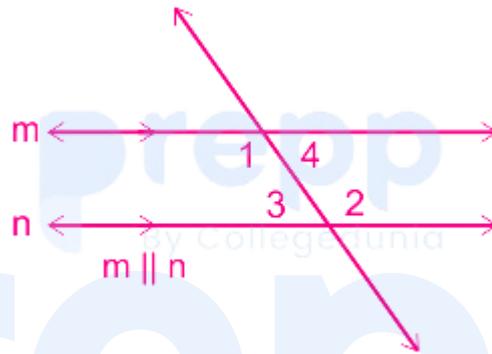


In which DE is the tangent and BC is a chord.

$\angle BCE$ is made by the tangent and chord BC. This is equal to $\angle BAC$ in the alternate segment.

$\angle ACD$ is made by the tangent DE and chord AC. This is equal to $\angle ABC$ in the alternate segment.

2) Alternate interior angles:

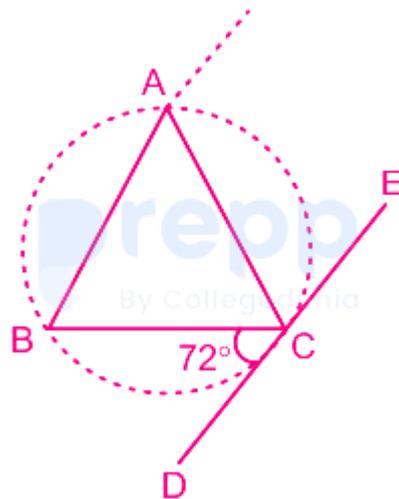


Since, the given lines m and n are parallel, therefore the alternate interior angles will be congruent.

$$\angle 1 = \angle 2 \text{ and } \angle 3 = \angle 4.$$

Calculation:

According to the question,



Since AB is parallel to EC, alternate interior angles are $\angle ABC = \angle BCD$

By alternate angle theorem,

$$\Rightarrow \angle ABC = \angle BCD = 72^\circ$$

By using Alternate segment theorem,

$$\Rightarrow \angle ABC = \angle ACE = 72^\circ$$

By using Alternate interior angles theorem

$$\Rightarrow \angle BAC = \angle ACE = 72^\circ$$

\therefore The required answer will be 72° .

97. Answer: c

Explanation:

- Vegetative reproduction is the type of reproduction in which a part of a plant body develops into a new individual.
- Vegetative propagation is a type of asexual reproduction in which new plants are produced from roots, stems, leaves and buds.
- As new offspring comes from the vegetative part of the plant, hence the name Vegetative propagation.

Type	Definition
Fission	It is a type of asexual reproduction in which a single cell divides into two or more cells
Regeneration	It is a type of asexual reproduction. It is the ability of a simple organism to re-grow its lost parts.
Sexual Propagation	Genes of two different parent cell come together to form a new individual.

98. Answer: a

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The pattern followed here is as follows,



Hence, "M" is the correct answer.

99. Answer: a

Explanation:

Let the cistern be filled in x hours

$$\Rightarrow \text{Efficiency of Pipe A} = 1/22$$

$$\Rightarrow \text{Efficiency of pipe B} = 1/33$$

According to question,

$$\Rightarrow \{(x - 3)/22\} + (x/33) = 1$$

$$\Rightarrow (3x - 9 + 2x)/66 = 1$$

$$\Rightarrow 5x - 9 = 66$$

$$\Rightarrow x = 15$$

\therefore Cistern gets filled in 15 hours.

 **Shortcut Trick**

A alone can fill it in 22 hours

B alone can fill it in 33 hours

Total work = LCM of (22, 33) = 66 unit

As in question it is given that A will leave the work 3 hours before so if A doesn't leave then they will complete the total work = $66 + 3 \times 3 = 75$ unit

\therefore Time taken = $75/(3 + 2) = 15$ hours

100. **Answer: a**

Explanation:

- **Anticlockwise** will be the direction of the magnetic field at a point directly below a horizontal power line with the current flowing from east to west when viewed from the west end.
- According to ampere's right-hand thumb rule when a current carrying conductor is placed in the right hand with thumb showing the direction of current and all other fingers are enclosed around the conductor will show the direction of the magnetic field.
- When we place our hand on a conductor that is flowing with the current in the east to the west direction the enclosed fingers show the anti-clockwise direction of current when viewed from the west.

