



National Analytical Brains Competition 2023

NAB Competition 2023 - Grade 06

Mathematical Ability

All questions are mandatory. Please note there is no negative marking:

Q 1: Aftaab multiplied 100 by 89 instead of multiplying by 79. How much was his answer greater than correct answer?

- 100
- 89
- 10
- 1000

Q 2: The length and breadth of a rectangle are 24 cm and 8 cm respectively. If its length is doubled and breadth is halved, then what is its new area?

- 192 sq cm
- 48 sq cm
- 96 sq cm
- Can't say



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Q 3: What do you mean by:

$$4 \div \frac{1}{5}$$

- How many groups of 4 are there in $\frac{1}{5}$?
- How many groups of $\frac{1}{5}$ are there in 4?
- What is $\frac{1}{5}$ of 4?
- None of these

Q 4: A carpenter is cutting a wooden board for windows. He wants to cut the largest possible squares with the least amount of wasted wood. The piece he is working on measures 60 inches by 75 inches. How many equal square pieces can he cut from this piece of wood?

- 15
- 20
- 180
- 30

Q 5: Arrange in decreasing order: 13, -21, -17, 15, 0, -15, 10

- 15, 13, 10, 0, -15, -17, -21
- 15, 13, 10, 0, -21, -17, -15
- 21, -17, -15, 15, 13, 10, 0
- 21, -17, -15, 0, 10, 13, 15



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Q 6: Each day, Aarav cycles 3 km on a bicycle trail. The equation $3d = 36$ represents how many days it will take him to cycle 36 km. How many days (d) will it take him to cycle 36 km?

- 10
- 9
- 8
- 12

Q 7: Find the value of below expression:

$$7614 + 832 \times 48 \div 16 - 8$$

- 10104
- 10102
- 101010
- 25330
- None of these

Q 8:

Add 5 to additive inverse of (-12)

- 7
- 7
- 17
- 17



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Q 9:

Which of the following pair of numbers are co-prime?

(30,415), (17,68), (16,81), (9,81)

- (17,68)
- (30,415)
- (9,81)
- (16,81)
- None of these

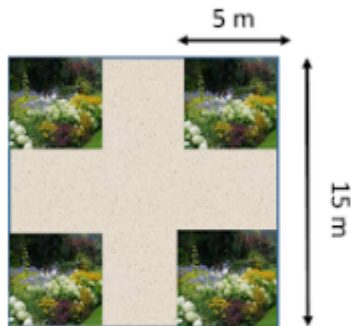
Q 10: In a class test containing 20 questions 5 marks, are given for every correct answer, (-1) marks is given every incorrect answer and 0 marks for every attempted question. Reema gets 4 correct and 4 incorrect answers. Find her score?

- 0 marks
- 16 marks
- 8 marks
- None of These



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Q 11: In a square park of side 15 m, four flower beds each of side 5 m are to be made as in shown in figure. What is the area of remaining part of the park without flower beds?



- 100 sq m
- 120 sq m
- 115 sq m
- 125 sq m

Q 12: In Delhi, 0.45 of voters are graduates. In Mumbai, 48% of voters are graduates. In which city is there a greater portion of graduate Voters?

- Delhi
- Mumbai
- Cannot say, as information is insufficient

Q 13: If the area of two squares is 36 sq. cm and 64 sq. cm respectively. What will be the side of the square whose perimeter is equal to the sum of the perimeters of these two squares?

- 42 cm
- 28 cm
- 96 cm
- 14 cm



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Q 14: A bathtub is being filled with water. After 5 minutes, $\frac{1}{5}$ of the bathtub is filled. How much longer will it take to completely fill the bathtub assuming the water rate is constant?

- 25 minutes
- 20 minutes
- 5 minutes
- 15 minutes

Q15: Varsha wants to find the volume of her lunchbox. Which of these units should she use?

- cubic feet
- cubic inches
- cubic yards
- cubic gram

Q 16: Which least number should be added to 356 to make it exactly divisible by 5?

- 14
- 4
- 10
- None of these



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Q 17: Garvit has 2 boxes that contain 24 straws each and 3 boxes that contain 15 cups each. Which expression cannot be used to find the total number of items he has?

- $2(24) + 3(15)$
- $3 \times 15 + 2 \times 24$
- $5 \times (24 + 15)$
- $15 + 15 + 15 + 24 + 24$

Q 18: A set of toys can be separated into six equal piles, and can also be divided into 15 equal piles. What is the smallest number of toys in the set?

- 15
- 30
- 21
- 9
- None of these

Q.19: What least value should be given to * so that the number $915*26$ is divisible by 9?

- 0
- 4
- 5
- None of these



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Q20: An insect crawls up 10 cm every second on a 90 cm vertical rod and then falls down 4 cm over the next second. How many seconds will it take to climb the rod?

- 30 seconds
- 31 seconds
- 29 seconds
- None of these



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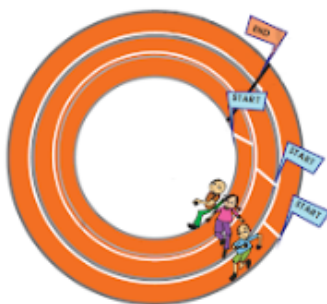
Q 21: Panshul cycles to reach market. From there, he turns his left and drives again. In which direction is he driving now?

- East
- West
- Noth
- Cannot be determined
- South

Q 22: If following jumbled words are rearranged to make a meaningful word, then which one is related to measurement of time?

- acedn
- csnodes
- roactr
- eahrt

Q 23: You might have seen race tracks where runners start from different places – like in this picture. Can you tell why?

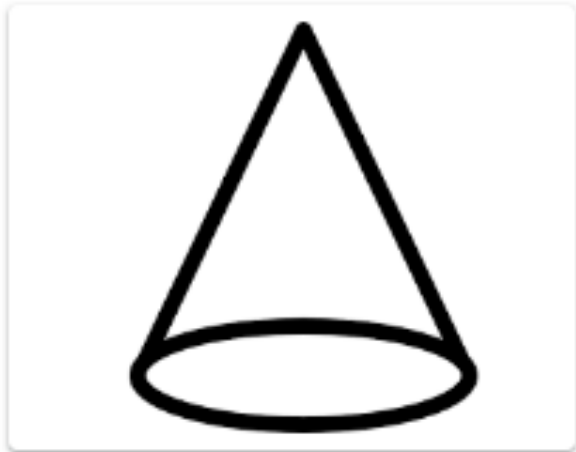


- So that runners donot fight with each other
- Slowest runner is given the innermost circle, so that he can also win.
- Due to lack of space on track.
- To make the running length equal for all participants.



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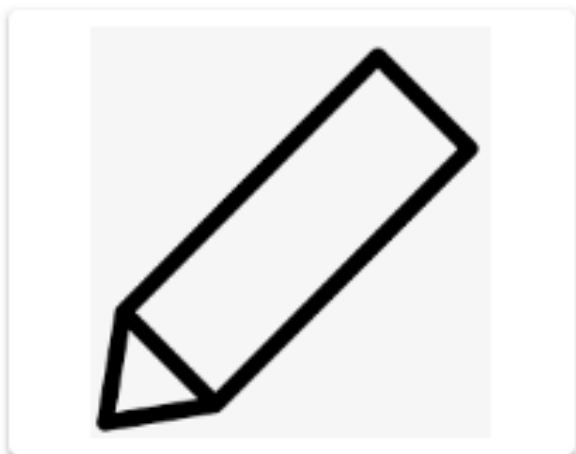
Q 24: What Shape we can make by folding below paper:



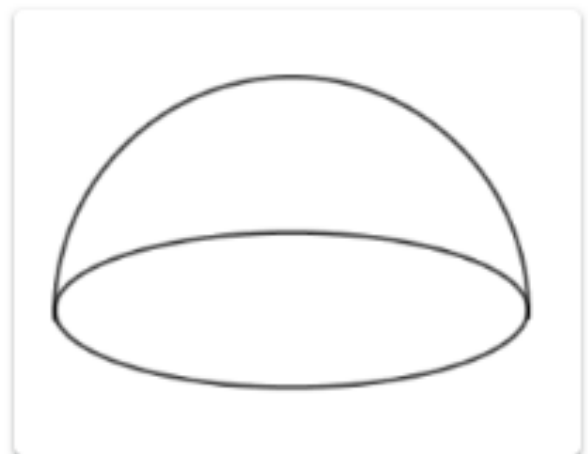
Option 1



Option 2



Option 3



Option 4



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x

Q25: What will come next in the below series?



Option 1



Option 2



Option 3



Option 4



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Q 26: D is A's Son. C is mother of P and wife of D. How is C related to A?

- Father
- Uncle
- Daughter-in-law
- Daughter

Q 27: Some of the letters are missing in the below series. Find those letter.

a _ b a _ b _ b _ a _ b

- abaab
- abbab
- aabba
- bbabb

Q 28: Which set of numbers is similar to the given set:

(52, 26, 13)

- 42, 16, 8
- 42, 22, 11
- 36, 18, 9
- 54, 28, 14

Q 29: If APPLE is coded as 11616125, then what would be the code for GRAPPLE ?

- 7811616125
- 7181616125
- 71811616125
- 71711616125



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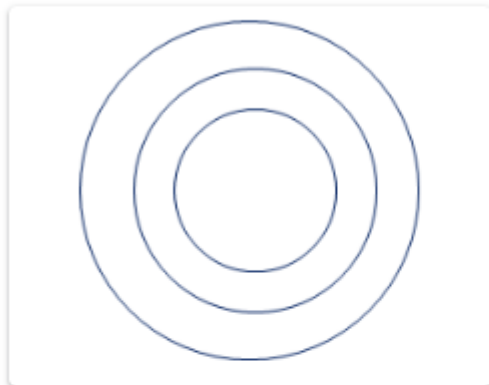
Q 30: If 'room' is called 'bed', 'bed' is called 'table', 'table' is called 'flower', 'flower' is called 'bag'.

Then on what a person will sleep?

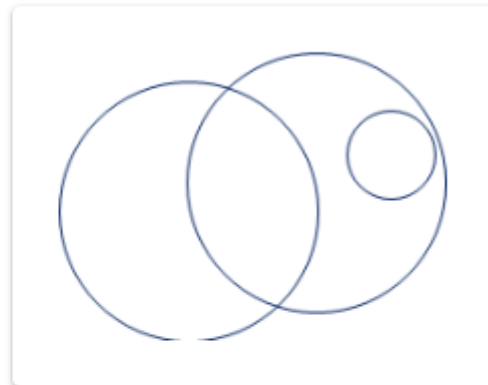
- Room
- Bed
- Table
- Flower

Q 31: Which one of the following is the most appropriate description of the below three items:

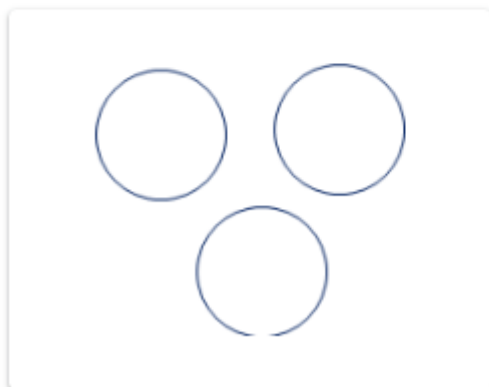
Apple, Golden Apple, Fruits



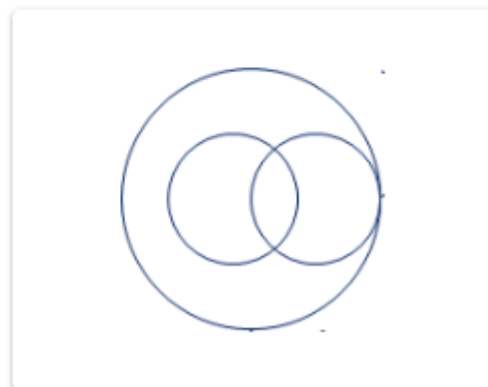
Option 1



Option 2



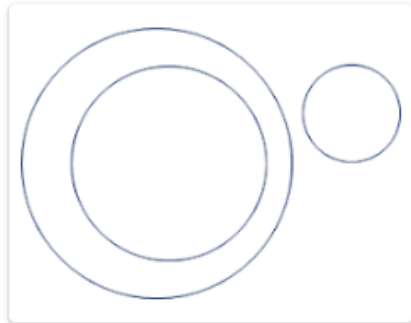
Option 3



Option 4



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Option 5

Q 32: One term in the below series is wrong. Find that out.

2, 5, 10, 17, 26, 37, 50, 64

- 17
- 37
- 26
- 64

Q 33: If 1st October is Sunday, then 1st November will be:

- Monday
- Tuesday
- Wednesday
- Thursday

Q 34: Four are alike in some manner and the one is different, find that odd one.

- Lion
- Tiger
- Jackal
- Deer
- Fox



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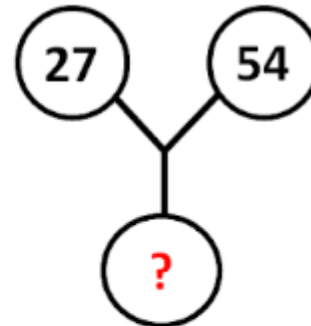
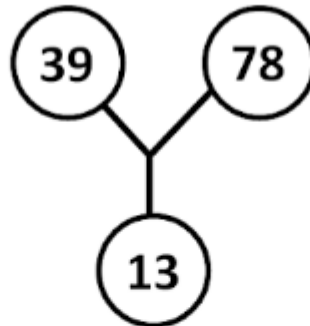
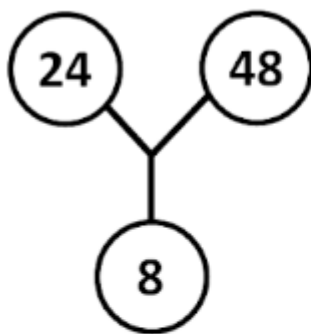
Q 35: Arrange the following in a meaningful sequence:

1. Phrase
2. Letter
3. Word
4. Sentence

- 1,2,3,4
- 1,3,2,4
- 2,3,1,4
- 2,3,4,1

Q 36. Find the missing number in the below series"

1 point



- 15
- 11
- 9
- 7



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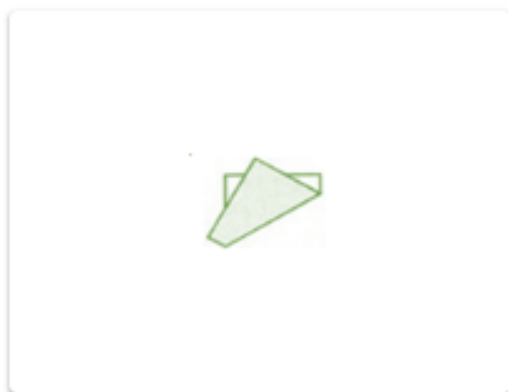
Q 37: How many Rhombuses are there in the give figure?



- 8
- 11
- 5
- 7

Q 38: Identify the figure obtained by folding the shaded part of the given figure.

1 point



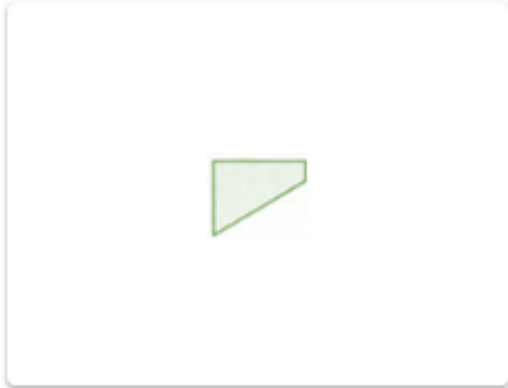
A



B



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C



D

Q 39: Select the letter group that has similar relation as in the given pair.

JK : LM

AC : DE

GH : JK

DE : FG

RS : TV

Q 40: Which picture is breaking the pattern?

1 point



A

C

D

B

F



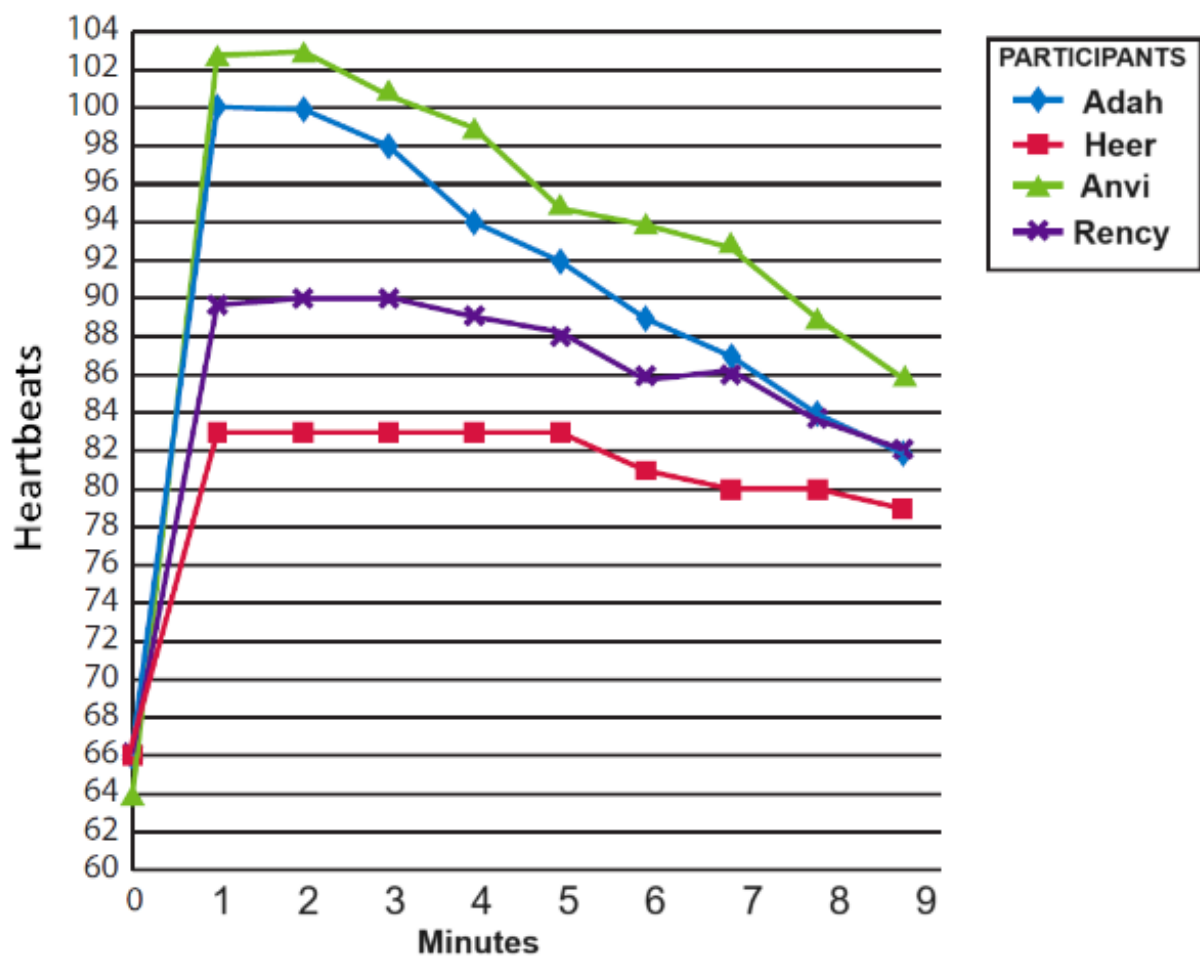
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Real Life Problems

Questions from 41 to 45 are correlated:

A Doctor's team conducted an experiment to test the heartbeat of players. After 100-meter sprint, four players were asked to sit on chairs and their heart beat readings were taken after every minute. The graph below shows their results. [0 minute shows reading at start of race and 1 minute indicate reading just after race]

Heartbeat graph of participants





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Q 41: Whose heartbeat was highest after the race?

- Adah
- Heer
- Anvi
- Rency

Q 42: Whose heartbeat was recorded lowest after the experiment ?

- Adah
- Heer
- Anvi
- Rency

Q 43: Who experienced the lowest speed of drop down of heartbeat?

- Heer
- Adah
- Anvi
- Rency



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Q 44: At the start of race, whose heartbeat was lowest?

- Adah
- Heer
- Anvi
- Rency

Q 45: What was approximate change in heartbeat of Rency after the race and after last minute reading?

- 6
- 12
- 10
- 8

Q 46: In a Football tournament, 64 teams played in the first round. Then there are 32 teams left to play in the second round, 16 teams left to play in the third round, and so on. How many rounds does it take to determine a winner?

- 5
- 6
- 7
- 8



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Q 47: During an Exam it takes 30 minutes for you to revise a lesson, how many lessons would you revise between 8:00 A.M. and noon?

- 6
- 7
- 8
- 10

Q 48: As on 8th Oct, 2023 Your weight is 33 kg. As per prediction it will increase as an average 3 kg per year. In which year your weight become more than 50 kg?

- 2029
- 2030
- 2028
- 2027

Q 49: Ishan is buying a video game station, two controllers, and 4 new video games. What is the total money he need to pay?

Item Unit	Cost per Quantity
game station	₹1150
controller	₹100
game	₹50

- ₹1300
- ₹1150
- ₹1550
- ₹1400



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Q 50: For your birthday party you need 44 hot dog buns. A grocery store sells hot dog buns in packages of 8 and 12. How many 8-packs and 12-packs should you buy?

- Two- 12 Packs and Three - 8 Packs
- Two- 12 Packs and Two- 8 Packs
- Three - 12 Packs and Two- 8 Packs
- Three - 12 Packs and One - 8 Packs