

QUANTITATIVE ABILITY HANDOUT
(A.M.A)

Ref: QAHO1031308

Directions for questions 1 to 20: Select the correct alternative from the given choices.

Handwritten notes at top right:

$$\begin{array}{r} 3x \\ 2x \\ 5x \\ 4x \\ 2x \\ 3x \end{array}$$

$$\begin{array}{r} 3x \\ 2x+5 \\ x=6 \end{array}$$

1. The average per day rainfall for a 15-day period at a hill station is 125 mm per day. If every day from the second day, there is an increase of 5 mm in the rainfall over the previous day, what is the rainfall on the first day of this period? *907*
 (A) 95 mm (B) 110 mm (C) 90 mm (D) 105 mm
2. The number of students attending class from Monday to Saturday in a particular week were consecutive integers in increasing order. The average number of students attending the class from Monday to Thursday was 33.5. Find the average daily attendance in the class from Tuesday to Saturday.
 $A+B+C+D+E+F=60$
 $A+x=462$
 $B+x=378$
 (A) 34 (B) 35 (C) 36 (D) 37
3. In an examination conducted among 13 students, the average of their scores was 60. The top 7 scores have an average of 66 whereas the least 7 scores have an average of 54. Find the 7th highest score.
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 (A) 52 (B) 55 (C) 59 (D) 60
4. The average age of the students in a class is 21 years. If the teacher's age is also included, the average age goes up by 2 years. Find the number of students in the class, if the teacher was 47 years old.
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 (A) 9 (B) 12 (C) 14 (D) 18
5. The average age of a group of people was calculated as 28 years. This was 2 years more than the correct average as there was an error in noting the age of two persons as 32 years and 36 years instead of 21 years and 23 years. How many persons were there in the group?
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 (A) 8 (B) 10 (C) 15 (D) 12
6. In a class, the average weight of the girls is 35 kg and the average weight of the boys is 42 kg. If the ratio of boys to girls is 4 : 3, then find the average weight of the students in the class. (in kg.)
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 (A) 35.5 (B) 32 (C) 40 (D) 39
7. In a get together, there were a certain number of gentlemen and a certain number of ladies. The average height of the gentlemen was 187 cm whereas the average height of the ladies was 153 cm. If the average height of all the persons in the party was 165 cm and there were 66 gentlemen in the party, then how many ladies were there in the party?
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 (A) 120 (B) 124 (C) 136 (D) 121
8. A group of 19 boys went to a restaurant. 18 boys paid ₹8 each. The 19th boy paid ₹36 more than the average bill of all the 19 boys. What is the amount paid by the 19th boy?
 (A) 15 (B) 46 (C) 56 (D) 50
9. A vessel contains milk and water in the ratio of 3 : 2. If 15 litres of water is added to it, the vessel would have milk and water in the reverse ratio. Find the initial quantity of mixture in the vessel. (in litres)
 (A) 15 (B) 30 (C) 31 (D) 35
10. A, B and C are three vessels having mixtures of wine and water. A contains 30% wine, B contains 40% wine and C contains 45% wine. If 4 litres from A, 3 litres from B and 5 litres from C are mixed, find the concentration of wine in the final mixture.
 (A) $35\frac{5}{12}\%$ (B) $38\frac{3}{4}\%$ (C) $39\frac{7}{12}\%$ (D) 40%
11. Salt priced at ₹8 per kg is mixed with salt priced at ₹41 per kg to obtain a mixture priced at ₹25 per kg. Find the ratio in which the cheaper and dearer varieties of salts are mixed.
 (A) 1 : 2 (B) 3 : 4 (C) 7 : 5 (D) 8 : 9
12. How many kilograms of rice costing ₹18 per kg must be mixed with 24 kg of rice costing ₹15 per kg, so that by selling the resultant mixture at ₹20 per kg there is a profit of 25%.
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 (A) 12 (B) 15 (C) 21 (D) 24
13. A total of 300 chocolates were distributed among 120 children. The number of chocolates received by each boy was 2 and the number of chocolates received by each girl was 3. Find the number of boys in the group.
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 (A) 90 (B) 60 (C) 40 (D) 35
14. A sum of ₹10,000 is lent in two different parts. One part is lent at 7% p.a simple interest and the other is lent at 10% p.a simple interest. The total interest at the end of the year is ₹760. Find the ratio of the amounts lent at the given rates respectively.
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 (A) 4 : 5 (B) 4 : 1 (C) 2 : 3 (D) 1 : 5
15. A test consists of 50 questions. Each correct answer fetches 1 mark. For each wrong answer $\frac{1}{2}$ mark is deducted. A candidate who wrote this test attempted all the questions. He scored 41 marks. Find the number of questions he correctly answered.
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 $A+B+C+D+E+F+G=792$
 (A) 46 (B) 42 (C) 48 (D) 44

16. Fresh grapes contain 85% water; whereas dry grapes contain 20% water. How many kgs of dry grapes can be obtained from 64 kg of fresh grapes?
(A) 8 (B) 12 (C) 15 (D) 24

17. The average score of 40 students in a Mathematics test is 50. If the highest and the lowest scores were excluded, the average score of the class would decrease by 1. If the difference of these 2 scores is 60, find the highest score.
(A) 84 (B) 95
(C) 99 (D) 115

18. Abhishek bought milk at ₹20 per litre. He mixed it with water and then sold the mixture at his cost price and made a profit of 25%. Find the quantity of water mixed with each litre of milk?
(A) 0.30 (B) 0.15
(C) 0.20 (D) 0.25

19. A vessel of capacity 100 litres is fully filled with pure milk. Ten litres of milk is replaced with water. Now, 10 litres of the solution is replaced with 10 litres of water. Find the quantity of the pure milk in the resulting solution.
(A) 72 litres (B) 81 litres
(C) 90 litres (D) 80 litres

20. Alloy A contains copper and zinc in the ratio of 2 : 3 whereas alloy B contains copper and tin in the ratio of 4 : 5. Equal weights of the two alloys are melted and mixed to form a third alloy. Find the weight of copper in 1kg of the third alloy. (in kg)
(A) $\frac{17}{50}$ (B) $\frac{18}{45}$
(C) $\frac{19}{45}$ (D) $\frac{21}{40}$

$kg = \frac{\text{sum of ot}}{\text{no of ot}}$ ~~trick~~ if ot = 10, 20, 30, 40, 50.

what is it?

if $A=50$ or $A=50$
 $B=100$ or $B=50$
 $C=0$ or $C=50$

avg = 50

Avg is just equal distribution

i.e has Arithmetic progression

one = $\frac{\text{1st term} + \text{last term}}{2}$

$= \frac{10 + 50}{2} = 30$

avg = $\frac{aA + bB}{a+b}$

$a \rightarrow$ no of stud in A

$b \rightarrow$ no of stud in B

$A \rightarrow$ avg marks scored by A

$B \rightarrow$ avg marks scored by B

19) find quantity of milk =

$Q \left(1 - \frac{R}{Q}\right)^N$

$Q \rightarrow$ original qt

$R \rightarrow$ Represent qt

$N \rightarrow$ No of times process is done

find qt of milk = $100 \left(1 - \frac{10}{100}\right)^2$
 $= 81L$

LOGICAL ABILITY HANDOUT

(Analytical Puzzles - Binary Logic and QBR)

Ref: LAHO1031310

Directions for questions 1 to 5: Select the correct alternative from the given choices.

1. Two boys A and B made the following statements regarding their heights

- A: My height in inches numerically is neither a perfect square nor a perfect cube. My height is more than 80 inches.
 B: I am not shorter than A. The digits used to express the height of A (in inches) are not the same as those used to express my height in inches.

Find the heights of A and B respectively in inches, if it is known that all the statements of A and B are false.

- (A) A - 72, B - 27 (B) A - 64, B - 46
 (C) A - 36, B - 63 (D) A - 27, B - 72

2. When three suspects of a theft were interrogated, they replied as follows. Each of them belongs to a unique category among truth tellers (who always speak truth), liars (who always lie) and alternators (who alternate between truth and lie, in any order).

They replied as follows:

- Karan: 1. I am not the thief.
 2. Sharukh is the liar.
 Johar: 1. Karan is the thief.
 2. I am a liar.
 Sharukh: 1. Karan is the liar.
 2. Johar is not the thief.

Who is the truth teller?

- (A) Karan (B) Johar
 (C) Sharukh (D) Cannot be determined

3. A police officer asked each of the three persons A, B and C about a car that passed by. They made the following statements.

- A: The car is black in colour. It went towards North.
 B: The car is white in colour. It went towards South.
 C: The car is white in colour. It went towards North.
 It is known that one of them is a truth teller (always speaks truth), one is a liar (always lies) and the third one is an alternator (always alternates between a true statement and a false statement in any order).

Which of the following is not possible?

- (A) The car is white in colour and went towards South.
 (B) The car is black in colour and went towards North.
 (C) The car is black in colour and did not go towards South.
 (D) The car is white in colour and went towards North.

4. The people of the "Bolo-Kaun" tribe always make two statements while replying to any question. Amar, Akbar and Anthony belong to "Bolo-Kaun" tribe. One among the three always speaks truth and is known as Truth-teller, one always tells lies and is known as a liar and one always alternates between the truth and lie in any order and is known as an alternator. When a police asked them, "Who among you is the murderer?", their replies were as follows.

- Amar: I am the murderer.
 Akbar is a liar.
 Akbar: I am the murderer.
 Anthony is a liar.
 Anthony: Akbar is the murderer.
 Amar is a liar.

It is known that only one among Amar, Akbar and Anthony is the murderer. Who is the murderer?

- (A) Amar (B) Akbar
 (C) Anthony (D) Cannot be determined

5. The persons who belong to the "Sahi-nahi" tribe always make two statements while replying to any question, one of which is always true and the other one is always false. Tarun while walking on the road reached a point where the road splits into two roads, one towards east and the other towards west. One of the two roads leads to the stadium. Tarun met three persons Rajesh, Sudheer and Praveen, who belong to the "Sahi-nahi" tribe. Tarun got the following replies when he asked, "Which road leads to the stadium?"

- Rajesh: I am taller than Sudheer.
 Go towards west to reach the stadium.
 Sudheer: Rajesh is not shorter than me.
 Praveen is the tallest.
 Praveen: Both the statements of Rajesh are true.
 I am the tallest.

Which of the following statements is true?

- (A) The east ward road leads to the beach.
 (B) Praveen is not the tallest.
 (C) Sudheer is the shortest.
 (D) None of these

Directions for questions 6 and 7: These questions are based on the following data.

In a class Pratap, Rajesh and Mitra are the top three rankers. Each person among them gives two replies to any question, one of which is true and the other is false (in any order). When asked about their ranks in the class their replies are as follows.

- Pratap: (I) I did not get the first rank.
 (II) Mitra got the first rank.
 Rajesh: (I) I did not get the first rank.
 (II) Pratap got the third rank.
 Mitra: (I) I did not get the first rank.
 (II) Rajesh did not get the first rank.

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(C) A - 36, B - 63 (D) A - 27, B - 72

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2. I am a liar.
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Which of the following is not possible?

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Akbar: I am the murderer.
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Anthony: Akbar is the murderer.
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- Pratap: (I) I did not get the first rank.
(II) Mitra got the first rank.
Rajesh: (I) I did not get the first rank.
(II) Pratap got the third rank.
Mitra: (I) I did not get the first rank.
(II) Rajesh did not get the first rank.

6. Who got the first rank?
(A) Rajesh
(C) Pratep

- (B) Mitra
(D) Cannot be determined

7. What is Mitra's rank?
(A) First
(C) Third

- (B) Second
(D) Cannot be determined

Directions for questions 8 to 10: These questions are based on the following data.

Four persons – Pramod, Pranav, Prashant and Prabha play a different game among Basketball, Football, Volleyball and Cricket. These four persons make two statements each. Of these four one person is a truth teller, who always speaks truth; one person is a liar, who always lies; and two of them are alternators who make a true statement followed by a false statement. The following are the statements made by the four players.

Pramod: Prabhu plays volleyball.
Prashant does not play football.

Pranav: I play basketball.
Prashant plays football.

Prashant: Prabhu does not play volleyball.
Pranav does not play Basketball.

Prabhu: Pramod plays cricket
Prashant plays volleyball

8. Who is the truth teller?

- (A) Pramod (B) Pranav
(C) Prashant (D) Prabhu

9. Who plays cricket?

- (A) Pramod (B) Prashant
(C) Pranav (D) Prabhu

10. Prashant is a _____

- (A) Truth teller (B) Liar
(C) Alternater (D) Cannot be determined

Directions for questions 11 to 14: Select the correct alternative from the given choices.

11. There are six boxes. In each box two balls are placed of two different colours among the available four coloured balls—red, yellow, green and blue, such that each box has a different combination of colours. Each box is labelled, (giving the information about the colours of the balls in the box). A mistake is made while labelling, such that no label represents even one colour in the box properly. What is the minimum number of boxes one should open to relabel them correctly?

- (A) 1 (B) 2
(C) 3 (D) None of these

12. In the following multiplication problem each of P, Q, R, S and T represents five different digits from 1 to 9, then what is the value of $P + Q + R + S + T$?

$$\begin{array}{r} P \ Q \ R \ S \ T \\ \times \quad 4 \\ \hline T \ S \ R \ Q \ P \end{array}$$

- (A) 20 (B) 34
(C) 27 (D) Cannot be determined

13. Mr. Jacob has eight children each of a different age. The sum of the ages of his children is 85 and the youngest among them is 7 years old. What is the age of the eldest child?
(A) 14 (B) 15 (C) 13 (D) 16

14. Mr. Choochoo went to a five star hotel. To dine in the inner hall of the hotel one has to cross 10 gates, each one guarded by a different guard. People are allowed to take chocolates with them to the inner hall, provided one chocolate per box of chocolates being carried is given to each guard. Mr. Choochoo was carrying 10 boxes with 10 chocolates in each box. Not more than ten chocolates can be placed in one box. What is the maximum number of chocolates that remain with Mr. Choochoo after crossing all the 10 gates?
(A) 10 (B) 17 (C) 26 (D) 32

Directions for questions 15 and 16: These questions are based on the following data.

P, Q, R and S are 4 people, playing a betting game. In any match, one of the persons will be the loser and the loser has to double the amounts of others. They bet on four matches and the loser in the first, second, third and fourth matches are R, Q, P and S respectively. At the end of the four matches each of them had ₹25600.

15. Who among the following started with the second lowest amount?

- (A) P (B) Q
(C) R (D) S

16. How much did P win or lose?

- (A) Lost ₹1600 (B) Lost ₹27200
(C) Won ₹11200 (D) Won ₹17600

Directions for questions 17 to 20: Select the correct alternative from the following given choices.

17. A monkey is at the centre of a rope tied between two poles A and B which are 14 feet apart. The monkey can cover a distance of exactly 3 feet towards pole A and exactly 1 foot towards pole B in one jump. If it has to reach one of the ends after exactly 31 jumps, on which pole will it end up?
(A) at pole A
(B) at pole B
(C) at either of the pole A or pole B
(D) Cannot be determined

18. Mr. Abracadabra, a magician, has a magical box named "uberasing". If he puts a one rupee coin in it today, it doubles by tomorrow and becomes 4 times by the day after tomorrow, and so on. If the "uberasing" is full on the last day of February 2009, then when was it $1/4^{\text{th}}$ full?

- (A) 27th February (B) 28th February
(C) 26th February (D) 25th February

19. Each of the alphabets given below takes a different value among 2 to 8. Also, $G + C + E = A + D + G = F + B + D = 15$. Find the value of A.
(A) 5 (B) 6 (C) 7 (D) 8

20. The maximum possible number of squares that can be formed using 10 straight lines is _____
(A) 30 (B) 100 (C) 25 (D) 16