STUDENT COPY

IBA

Name :	Batch:

MATH LECTURE - 05

PART I: CLASS PRACTICE

GROUP 1: SPEED, DISTANCE, TIME

1. A bus went 300 miles from Dhaka to Khulna at an average rate of 80 mph. At what speed did it travel on the way back if its average speed for the whole trip was 100 mph?

   a. 120 mph b. 125 mph c. $133\frac{1}{3}$ mph d. $137\frac{1}{2}$ mph e. 150 mph

2. Ahnaf started walking at 2:25 pm. He walked down the road for half an hour at an average speed of 3 miles per hour. He waited 10 minutes for a bus there, which brought him back to his starting point at 3:15 the same afternoon. What was the average speed of the bus?

   a. 1.5 miles per hour b. 3 miles per hour c. 4.5 miles per hour
   d. 6 miles per hour e. 9 miles per hour

3. A motorboat travels twice as fast when empty as when it is full. It travels 20 miles north with a cargo, spends half an hour for unloading, and returns to its original port empty, taking 8 hours to complete the entire trip. What is the speed of the motorboat when it is empty?

   a. 3.75 mph b. 4 mph c. 7.5 mph d. 8 mph e. None of these

4. One third of a certain journey was covered at the speed of 20 km per hour, one fourth at the rate of 30 km per hour and the rest at the rate of 50 km per hour. Find the average speed (per hour) of the whole journey?

   a. 28 km/hr b. 30 km/hr c. $33\frac{1}{3}$ km/hr d. 40 km/hr e. None of these

5. A hiker walked up a mountain path from a way station to an observation point and back to the way station by the same route. His average speed for the ascent was 2 miles per hour, and his average speed for the descent was 4 miles per hour. If the observation point is exactly 3 miles from the way station, what was the hiker"s average speed, in miles per hour, for the entire trip?

   a. $2\frac{2}{5}$ b. $2\frac{2}{3}$ c. 3 d. $3\frac{1}{3}$ e. $3\frac{3}{5}$

6. Trisha walks 15 blocks to work every morning at a rate of 2 miles per hour. If there are 20 blocks in a mile, how long does it take her to walk to work?

   a. 12.5 minutes b. 15 minutes c. 22.5 minutes d. 37.5 minutes e. 45 minutes

7. A certain 90-mile trip took 2 hours. Exactly 1/3 of the distance traveled was by rail, and this part of the trip took 1/5 of the travel time. What was the average rate, in miles per hour, of the rail portion of the trip?

   a. 12 mph b. 30 mph c. 45 mph d. 60 mph e. 75 mph

GROUP 2: ROWING BOAT, CURRENT & SPEED

8. A man rowed 3 miles upstream in 90 minutes. If the river flowed with a current of 2 miles per hour, how long did the man's return trip take?

   a. 20 minutes b. 30 minutes c. 45 minutes d. 60 minutes e. 80 minutes

9. A certain river has a current of 3 miles per hour. A boat takes twice as long to travel upstream between two points as it does to travel downstream between the same two points. What is the speed of the boat in still water?

   a. 3 mph b. 6 mph c. 9 mph d. 12 mph e. Cannot be determined

10. A boat sailing against the current takes 8 hours to travel 32 km. If it had been sailing with the current the time taken would have been only 4 hours. What is the speed of current?

    a. 3 km/hr b. 2.5 km/hr c. 2 km/hr d. 1 km/hr e. None of these

11. A boat travels for three hours with a current of 3 mph and then returns the same distance against the current in 4 hours. What is the boat's speed in calm water?

a. 18 mph b. 21 mph c. 24 mph d. 27 mph e. 30 mph

12. With the wind, an airplane travels 1120 miles in seven hours. Against the wind, however, it takes eight hours. Find the velocity of the wind.

a. 20 mph b. 140 mph c. 12 mph d. 10 mph e. 160 mph

13. Ahmed can row 5 km/h in still water. The current in the river is running at 1 km/h. If it takes him 75 minutes to row to a place and back, how far is the place?

a. 3 km b. 2.5 km c. 4 km d. 5 km e. None of these

14. A motorboat, whose speed is 15 km/hr in still water goes 30 km downstream and comes back in a total of 4 hours 30 minutes. The speed of the stream (in km/hr) is:

a. 4 b. 5 c. 6 d. 10 e. None

GROUP 3: TRAIN & SPEED

15. A train running at the speed of 45 km/hr took 12 seconds to pass a certain point. What was the length of the train?

a. 90 m b. 120 m c. 150 m d. 540 m e. None of these

16. A train 100 meters long, travelling at 48 km/h, completely crosses a bridge in 30 seconds. How long is the bridge?

a. 100 m b. 150 m c. 200 m d. 300 m e. 500 m

17. Two trains are running on the same route at the rate of 25 and 30 miles per hour. If the first train starts out an hour earlier, how long will it take the second train to catch up with it?

a. 5 hrs b. 4 hrs c. 3 hrs d. 2 hrs e. None of these

18. A train 270 meters long is moving at a speed of 25 km/hr. How long will it take to cross a man coming from the opposite direction at a speed of 2 km/hr?

a. 36 sec b. 32 sec c. 28 sec d. 24 sec e. 16 sec

19. A motorist travels x miles in y hours and z minutes. What is his average speed in miles per hour?

a. x/(y+60z) b. (60y+z)/x c. 60x/(y+z) d. 60x/(60y+z) e. 1 none of these

20. Two trains running in the same direction at 40 km/hr and 22 km/hr completely pass one another in 1 minute. If the length of the first train is 125 meters, what is the length of the second train?

a. 125 m b. 150 m c. 200 m d. 175 m e. 133 m

21. Two trains are running on parallel lines in the same direction at a speed of 50 km/hr and 30 km/hr respectively. The faster train crosses a man sitting in the slower train in 18 seconds. What is the length of the faster train?

a. 170 m b. 100 m c. 98 m d. 85 m e. 64 m

GROUP 5: COMPARING TRAVELED DISTANCES

22. Two cities are 800 miles apart. At 3:00 P.M., plane *A* leaves one city traveling toward the other city at a speed of 600 miles per hour. At 4:00 the same afternoon, plane *B* leaves the first city, traveling in the same direction at a rate of 800 miles per hour. Which of the following answers represents the actual result?

a. Plane A arrives first, by exactly an hour
b. Plane A arrives first, by less than an hour
c. The two planes arrive at exactly the same time
d. Plane A arrives after plane B, by less than an hour
e. Plane A arrives first, by more than an hour

23. Rokon can travel 120 miles in either of two ways. He can travel at a constant rate of 40 miles per hour, or he can travel half way at 50 miles per hour, then slow down to 30 miles per hour for the second half. Which way is faster, and by how much?

a. The constant rate is faster by 10 minutes or more
b. The constant rate is faster by less than 10 minutes
c. The two ways take exactly the same time
d. The constant rate is slower by less than 10 minutes
e. The constant rate is slower by 10 minutes or more

24. Arefin and Hussham agreed to race across a 50-foot pool and back again. They started together, but Arefin finished 10 feet ahead of Hussham. If their rates were constant, and Arefin finished the race in 27 seconds, how long did Hussham take to finish it?

a. 28 seconds b. 30 seconds c. 33 seconds d. 35 seconds e. 37 seconds

25. One hour after Turab started walking from Dhaka to Narayanganj, a distance of 45 miles, Saif started walking along the same road from Narayanganj to Dhaka. If Turab"s speed was 3 miles per hour and Saif"s was 4 miles per hour, how many miles had Turab walked when they met?

a. 24 b. 23 c. 22 d. 21 e. 19.5

PART II: TAKE-HOME ASSIGNMENT

1. Ahona walked from point P to point Q and backed again, a total distance of 2 miles. If she averaged 4 miles per hour on the trip from P to Q and 5 miles per hour on her return trip, what was her average walking speed for the entire trip?

   a. $2\frac{2}{9}$ mph b. 4 mph c. $4\frac{4}{9}$ mph d. $4\frac{1}{2}$ mph e. 5 mph

2. A certain 90-mile trip took 2 hours. Exactly $\frac{1}{3}$ of the distance traveled was by rail, and this part of the trip took $\frac{1}{2}$ of the travel time. What was the average rate, in miles per hour, of the rail portion of the trip?

   a. 24 mph b. 30 mph c. 45 mph d. 60 mph e. 75 mph

3. Walking at a constant rate of 4 miles per hour, it takes Disha exactly one hour to walk home from school. If she walks at a constant rate of 5 miles per hour, how many minutes will the trip take?

   a. 36 b. 48 c. 54 d. 72 e. 96

4. A man travels for 8 hours at a rate of 100 miles per hour. If his average speed for the whole trip is 80 miles per hour, then how long does his return trip take?

   a. 8 hours b. 9 hours c. 10 hours d. 12 hours e. 15 hours

5. Mahmud walks a distance of 10 miles at an average rate of 2 miles per hour, and returns on a bicycle at an average rate of 5 miles per hour. How long does the entire trip take him?

   a. 3 hours b. 4 hours c. 5 hours d. 6 hours e. 7 hours

6. A man travels for 6 hours at a rate of 50 miles per hour. His return trip takes him 9 hours. What is his average speed for the whole trip?

   a. 35.5 mph b. 40 mph c. 44.44 mph d. 45 mph e. 50 mph

7. In one hour, a boat goes 11 km/hr along the stream and 5 km/hr against the stream. The speed of the boat in still water (in km/hr) is:

   a. 3 km/hr b. 5 km/hr c. 8 km/hr d. 9 km/hr e. None of these

8. A boat can travel with a speed of 13 km/hr in still water. If the speed of the stream is 4 km/hr, find the time taken by the boat to go 68 km downstream.

   a. 2 hours b. 3 hours c. 4 hours d. 5 hours e. 6 hours

9. A boatman goes 2 km against the current in 1 hour and goes 1 km with the current in 10 minutes. How long will it take to go 5 km in still water?

   a. 45 minute b. 1 hour c. 1 hr 15 min d. 1 hr 30 min e. None

10. The speed of a motor boat itself is 20 km/h and the rate of flow of the river is 4 km/h. Moving with the stream, the boat went 120 km. What distance will the boat cover during the same time going against the stream?

    a. 60 km b. 80 km c. 100 km d. 120 km e. 180 km

11. A train crosses a 400 meter long fly-over in 1 minute and a lamp post in 10 seconds. What is the length of the train?

    a. 50 m b. 60 m c. 80 m d. 100 m e. Cannot be determined

12. A train leaves Omar's house and travels at 50 miles per hour. Two hours later, another train leaves from Omar's house on the track parallel to the first train but it travels at 100 miles per hour. How far away from Omar's house will the faster train pass the other train?

    a. 100 miles b. 150 miles c. 200 miles d. 300 miles e. 500 miles

13. A faster train with a speed of 108 km/h crosses a slower train with a speed of 72 km/h in 15 seconds from the opposite direction. What is the length of the faster train in meters?

    a. 150 m b. 350 m c. 400 m d. 750 m e. Cannot be determined

14. A train traveling at 72 km/h crosses a platform in 30 seconds and a man standing on the platform in 18 seconds. What is the length of the platform in meters?

a. 240 m b. 360 m c. 420 m d. 600 m e. None of these

15. A train 100 meters long moving at a speed of 50 km/hr crosses a train 120 meters long coming from the opposite direction in 6 seconds. What was the speed of the second train?

a. 132 km/hr b. 82 km/hr c. 60 km/hr d. 50 km/hr e. 40 km/hr

16. Saif and Mariha drove from home at an average speed of 30 mph to an airport where a helicopter was waiting. They boarded the helicopter and flew to Vietnam at an average speed of 60 mph. The entire distance was 150 miles; the entire trip took three hours. Find the distance from the airport to Vietnam.

a. 30 miles b. 60 miles c. 90 miles d. 120 miles e. None of these

17. Two cyclists start at the same time from opposite ends of a course that is 45 miles long. One cyclist is riding at 14 mph and the second cyclist is riding at 16 mph. How long after they begin will they meet?

a. 30 minutes b. 54 minutes c. 60 minutes d. 90 minutes e. None of these

18. Jawad travels to IBA from Uttara by car at a speed of 40 km per hour and returns to Uttara at a speed of 30 km per hour by an auto rickshaw. What is his average speed in the entire journey in km/hour?

a. 35 b. 34.3 c. 37.5 d. 35.3 e. 36

19. Mr. X and Mr. Y started from point A and reached point B in 10 minutes and 9 minutes respectively. If the traveling speed of Mr. X was 2 km/hr less than that of Mr. Y, what was the distance between A and B in kms?

a. 6 b. 4.6 c. 4 d. 3 e. None of these

20. Akib usually walks to his office from his house at a speed of 8 km per hour. It takes him 10 minutes longer to walk the same distance at 6 km per hour. What is the distance (in km) between his house and office?

a. 7 b. 6 c. 5 d. 4 e. None of these

21. A tub is shaped like a rectangular solid, with internal measurements of 2 feet x 2 feet x 5 feet. If two faucets, each with an output of 2 cubic feet of water per minute pour water into the tub simultaneously, how many minutes does it take to fill the tub completely?

a. Less than 3 minutes
b. Less than 4 minutes, but not less than 3
c. Less than 5 minutes, but not less than 4
d. Less than 6 minutes but not less than 5
e. More than 6 minutes

22. Naabil can run 10 miles per hour, while Samer can run only 8 miles per hour. If they start at the same time from the same point, and run in opposite direction, how far apart will they be after 10 minutes?

a.1 mile b. 2 miles c. 3 miles d. 4 miles e. 5 miles

23. On a certain trip, a motorist drove 10 miles at 30 miles per hour, 10 miles at 40 miles per hour, and 10 miles at 50 miles per hour. What portion of her total driving time was spent driving 50 miles per hour?

a. $\frac{5}{7}$ b. $\frac{5}{12}$ c. $\frac{1}{3}$ d. $\frac{13}{51}$ e. $\frac{12}{47}$

24. Town A & B are 400 miles apart. If a train leaves A in the direction of B, at 50 miles per hour, how long will it take before that train meets another train, going from B to A, at a speed of 30 miles per hour?

a. 4 hours b. 4.33 hours c. 5 hours d. 5.67 hours e. 6.67 hours

25. A and B can run 200 meters in 22 and 25 seconds respectively. How far is B from the finishing line when A reaches it?

a. 16 meters b. 24 meters c. 20 meters d. 12 meters e. 8 meters

PART III: REVIEW LESSON FOR THE NEXT LECTURE

Finding a Specific Value

Example: If a fence is 120 feet long and post are set 5 feet apart, how many posts are needed?
Solution: Divide the length by the distance between two posts, i.e. 120/5 = 24,
Then add 1 with that, i.e. 24+1 = 25 posts
Note: If the fence is open on both sides, you have to add 1 with the division result.

Example: If a triangular garden has a perimeter of 120 feet and has a fence around it, how many post are required if they are set 5 feet apart?
Solution: Divide the perimeter of the garden by the distance between two posts, i.e. 120/5 = 24 posts,
It"s the answer in this case.
Note: If the fence is around an enclosed area, like: triangular/ circular/ rectangular garden, you don"t need to add anything with the division result.

Different Rate Problems:

Rate Problems concern a special type of relationship which is very common.
Rate × Input = Output. This results from the definition of rate as the ratio between output and input. In these problems, input may represent any type of "investment," but the most frequent quantities used as inputs are time, work, and money. Output is usually distance traveled, work done, or money spent.

Note: The word "per", as used in rates, signifies a ratio. Thus, a rate of 25 taka per hour signifies the ratio between an output of 25 taka and an input of 1 hour. Frequently, the word "per" will be represented by the fraction sign.

Example: Sayem earns 25 taka in 1 hour from his work for the first 4 hours and 30 taka for each additional hour. How many hours did he work if he earned taka 160 altogether in a particular day?
Solution: For first 4 hours of work, he got (25 x 4 = 100 taka). Excess amount he earned = 160−100 = 60 taka. So his additional hour of work is, 60/30 = 2 hr. Altogether on that day he worked, 4+2= 6 hours.

Set Problems:

Set is one of the most fundamental concepts of mathematics and you can expect some questions in the Admission test that test your knowledge of sets. Set is a mathematical way to describe a collection of distinct objects, such as a list of numbers, a group of students studying the same subject etc. The individual objects in a set are referred to as elements or members of the set. The elements or members of a set can be anything: numbers, people, letters of the alphabet, other sets and so on. Sets are conventionally denoted with capital letters.

Unions:

When you combine the elements of two or more sets, you are finding the union of the sets. The symbol for union is U.

Intersections:

When you find the elements that two or more sets have in common, you are finding the intersection of the set. The symbol for intersection is ∩.

Formula for finding out the number of elements in the intersection or union of more than two sets:

If the number of elements in set A, set B, intersection of sets A & B and union of sets A & B are denoted by n(A), n(B), n(A∩B) and n(AUB) respectively, then

$$n(AUB) = n(A) + n(B) - n(A \cap B)$$

Example:

In a summer camp, there are a total of 28 students out of which 7 play hockey, 20 play tennis and 6 students play neither tennis nor hockey. How many students play both tennis and hockey?

Solution: Here,
n(A) = Number of students who play hockey = 7
n(B) = Number of students who play tennis = 20
n(AUB) = Number of total students – Number of students who play neither tennis nor hockey = 28 – 6 = 22
Therefore, 22 = 7 + 20 – **n(A∩B)**
⇨ n(A∩B) = 5

Permutation and Combination:

Counting problems involve figuring out how many ways you select or arrange members of groups, such as letter of the alphabet, numbers, or menu selections.

Fundamental Counting Principle:
The Fundamental Counting Principle is the guiding rule for finding the number of ways to accomplish two tasks.
If there are m ways to do one thing, and n ways to do another, then there are m×n ways of doing both.
For example:

- Let's say that you want to flip a coin and roll a dice. There are 2 ways that you can flip a coin and 6 ways that you can roll a dice. There are then 2x6=12 ways that you can flip a coin *and* roll a dice.
- If you want to draw 2 cards from a standard deck of 52 cards without replacing them, then there are 52 ways to draw the first and 51 ways to draw the second, so there are a total of 52×51 = 2652 ways to draw the two cards.

Sample Spaces:
A listing of all the possible outcomes is called the sample space and is denoted by the capital letter S. The sample space for the experiments of flipping a coin and rolling a dice are S = {H1, H2, H3, H4, H5, H6, T1, T2, T3, T4, T5, T6}. Sure enough, there are twelve possible ways. The fundamental counting principle allows us to figure out that there are twelve ways without having to list them all out.

Permutations:
A permutation is an arrangement of objects, without repetition, and order being important. Another definition of permutation is the number of such arrangements that are possible.

$${}^{n}P_r = P(n, r) = \frac{n!}{(n-r)!}$$

Since a permutation is the number of ways you can arrange objects, it will always be a whole number. The denominator in the formula will always divide evenly into the numerator. The *n* value is the total number of objects to choose from. The *r* is the number of objects you are actually using.

The two key things to notice about permutations are that:

i. Repetition of objects is not allowed.
ii. Order / arrangement is important.

Example 1: List all permutations of the letters A, B, C, D

ABCD	BACD	CABD	DABC
ABDC	BADC	CADB	DACB
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Now, if you didn't actually need a listing of all the permutations, you could use the formula for the number of permutations. There are 4 objects and you're taking 4 at a time. $^{4}P_4 = \frac{4!}{(4-4)!} = \frac{4!}{0!} = \frac{24}{1} = 24.$

This also gives us another definition of permutations. A permutation when you include all n objects is *n*!. That is, P(*n*,*n*) = *n*!

Combinations:

A combination is an arrangement of objects, without repetition, and order not being important. Another definition of combination is the number of such arrangements that are possible.

$${}^{n}C_{r} = C(n, r) = \frac{n!}{(n-r)!\,r!}$$

The *n* and *r* in the formula stand for the total number of objects to choose from and the number of objects in the arrangement, respectively.

The two key things to notice about combinations are that:

i. *Repetition of objects is not allowed.*
ii. *Order / arrangement is not important.*

Example 1: List all combinations of the letters A, B, C, D in groups of 3

There are only four combinations (ABC, ABD, ACD, and BCD). Listed below each of those combinations are the six permutations that are equivalent as combinations.

ABC	**ABD**	**ACD**	**BCD**
ABC	ABD	ACD	BCD
ACB	ADB	ADC	BDC
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Probability

Probability indicates the chance that a particular event will occur. Probabilities are expressed as fractions.

$$\text{Probability of an event} = \frac{\text{number of favorable outcomes}}{\text{total number of possible outcomes}}$$

The value of the probability has a range between 0 and 1. If an event is certain to occur, its probability is 1. If an event is certain *not* to occur, its probability is 0.

Example: If a box contains 9 white marbles, 5 green marbles and 3 black marbles, what is the probability of selecting a green marble from the box without looking?

Solution: Here, probability $= \frac{\text{number of green marbles}}{\text{total number of marbles}}$

$$= \frac{5}{9+5+3}$$

$$= \frac{5}{17}$$

Therefore, the probability of selecting a green marble from the box is $\frac{5}{17}$

Independent Events:

If two events occur simultaneously and the first event does not affect the probability of the second event, then the events are said to be independent of each other. For two independent events A and B, the probability of A and B both occurring is the product of the probability of A and the probability of B, that is, P(A and B) = P(A) × P(B)

Example: If someone draws a card at random from a deck, and then, without replacing the first card, draws a second card, what is the probability that both cards will be aces?

Solution: In a deck, there are 52 cards. Among them, 4 are aces. The probability that the first card is an ace is $P(A) = \frac{4}{52}$

Since the first ace has been drawn, there are now 3 aces in a deck of 51 cards. Thus, the probability that the second card is an ace is $P(B) = \frac{3}{51}$

Therefore, the probability that both cards are aces is P (A and B) = P (A) × P (B)

$$= \frac{4}{52} \times \frac{3}{51} = \frac{1}{13} \times \frac{1}{17} = \frac{1}{221}$$

Mutually Exclusive Events:
Two events are said to be mutually exclusive, if it is impossible for both to occur simultaneously. For example, boys cannot be chosen from a group of girls and girls cannot be chosen from a group of boys. Hence, choosing boys and choosing girls are said to be mutually exclusive.
For two mutually exclusive events A or B, the probability that either of them will occur is
P (A or B) = P(A) + P(B)

Example: What is the probability of rolling a dice and getting either a 1 or 6?
Solution: Since it is impossible to get both a 1 and a 6, these two events are mutually exclusive. Therefore,

P (1 or 6) = P(1) + P(6) $= \frac{1}{6} + \frac{1}{6} = \frac{1}{3}$

Note that, the probability of happening an event + the probability of not happening that event = 1

Work-Done Problems

Example: Jack can chop down 20 trees in 1 hour, while it takes Ted $1\frac{1}{2}$ hours to chop down 18 trees. If the two of them work together, how long will it take both of them together to chop down 48 trees?

Rate × Time = Work

	trees/hr.	Hours	Trees
1. Jack	20	1	20
2. Ted	12	$1\frac{1}{2}$	18
3. Jack	20		
4. Ted	12		

We represent the time that it takes Jack by x in line 3. Since we have the relationship that Rate × Time = Work, we see that in line 3 the work done is 20x. Since the two boys work together (therefore, for the same amount of time), the time in line 4 must be x and the work must be 12x. Now, we see that the total work is 48 trees. From lines 3 and 4, 20x + 12x = 48. Solving for x gives us x = $1\frac{1}{2}$. We are asked to find the number of hours needed by the boys to chop down the 48 trees together, and we see that this time is x, or $1\frac{1}{2}$ hours.

Name……

Review Test on Lecture 4
10 Marks, 10 minutes

Batch……

1. How many pounds of a $2.40 per pound nut mixture must be mixed with 20 pounds of a $1.80 per pound mixture to produce a mixture that sells for $2.00 per pound?
   a. 10 b. 20 c. 30 d. 35 e. 40

2. A 30% solution of barium chloride is mixed with 10 grams of water to form a 20% solution. How many grams of the original solution did we start with?
   a. 10 b. 15 c. 20 d. 25 e. 30

3. Elizabeth and Scott each received a share of a lottery prize that is to be paid in 12 equal monthly installments. If the amount paid to Elizabeth in the first three months is equal to the amount paid to Scott in the first nine months, what is the ratio of the dollar value of Scott"s prize to the dollar value of Elizabeth"s prize?
   a. 1:3 b. 3:1 c. 1:9 d. 9:1 e. 3:4

4. If it takes Adrito twice as long to earn $6.00 as it takes Mezbah to earn $4.00, what is the ratio of Adrito"s pay per hour to Mezbah"s pay per hour?
   a. 2:1 b. 3:1 c. 3:2 d. 3:4 e. 4:3

5. If one star equals four circles and three circles equal four diamonds, what is the ratio of star to diamond?
   a. 3:16 b. 1:3 c. 3:5 d. 3:1 e. 16:3

6. The average of the first 3 of 4 numbers is 16 and that of the last 3 is 15. If the sum of the first and last numbers is 13, what is the last number?
   a. 6 b. 5 c. 8 d. 4 e. 3

7. If 6 workers can complete 9 identical jobs in 3 days, how long will it take 4 workers to complete 10 such jobs?
   a. 3 days b. 4 days c. 5 days d. 6 days e. 8 days

8. Afifa puts taka 2000 into a bank which gives 20% interest compounded annually. At the end of the two years, what will be her balance?
   a. Tk. 2200 b. Tk. 2440 c. Tk. 2800 d. Tk. 2880 e. None of these

9. Which of the following CANNOT be the average (arithmetic mean) of four positive even integers?
   a. 1 b. 2 c. 6 d. 9 e. 12

10. At a certain firm, „d" gallons of fuel are needed per day for each truck. At this rate, „g" gallons of fuel will supply „t" trucks for how many days?
    a. $\frac{dt}{g}$ b. $\frac{gt}{d}$ c. dgt d. $\frac{t}{dg}$ e. $\frac{g}{dt}$

Answer Sheet

1. ☐ ☐ ☐ ☐ ☐
2. ☐ ☐ ☐ ☐ ☐
3. ☐ ☐ ☐ ☐ ☐
4. ☐ ☐ ☐ ☐ ☐
5. ☐ ☐ ☐ ☐ ☐
6. ☐ ☐ ☐ ☐ ☐
7. ☐ ☐ ☐ ☐ ☐
8. ☐ ☐ ☐ ☐ ☐
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SCORE……..

REMARKS