

# INDIAN SCHOOL AL WADI AL KABIR

**Class X**, Mathematics

## *Worksheet-Real Numbers, Linear Equations in Two Variables*

**19-04-2023**

**Q. No.**

### Case Study Based

I.

Reading comprehension encompasses a variety of skills that can permeate all aspects of life. Having strong reading abilities can enable you to interpret and find meaning in all that you read, and when you continuously improve these skills, you can develop your ability to communicate effectively through writing.

To enhance the reading skills of grade X students, the school seeks your help to set up a class library. There are two sections- section A and section B of grade X. There are 40 students in section A and 42 students in section B.



Based on the above information answer the following questions.

1	Express 42 as the product of its prime factors.	1m
2	If $p$ and $q$ are positive integers such that $p = ab^2$ and $q = a^2b$ , where $a, b$ are prime numbers, then find the LCM ( $p, q$ ).	1m
3	What is the minimum number of books you will acquire for the class library, so that they can be distributed equally among students of Section A or Section B?	2m
4	If the students in each section are to be arranged in rows in the library so that students are equally distributed in a row, what is the maximum number of students in a row?	2m

II

In a school Independence Day parade, a group of 594 students need to march behind a band of 189 members. The two groups have to march in the same number of columns. Apart from spreading the spirit of the day, this activity also teaches children the importance of working together as a team.



Based on the above information answer the following questions.

5.	Find the sum of the powers of prime factors of 594.	1m
6.	Find the number of students in each column.	1m
7.	What is the maximum number of columns in which 594 students can march?	2m
8.	What is the maximum number of columns in which the band members can march?	2m

III

A part of monthly hostel charges is fixed and the remaining depends on the number of days one has taken food in the mess. When a student A takes food for 25 days she has to pay ₹4500 as hostel charges whereas a student B, who takes food for 30 days pays ₹ 5200 as hostel charges. Considering the fixed charge per month by ₹x and cost of food per day by ₹y, answer the following questions:

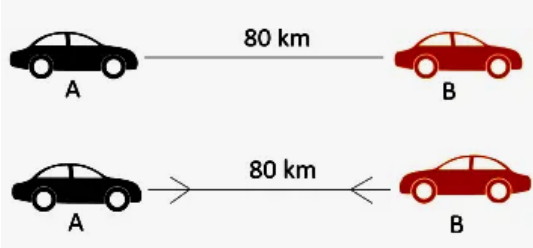


9.	Represent the hostel charges of Student A and Student B as a pair of linear equations in 2 variables.	1m
10.	Find the number of solutions of the pair of linear equations representing the above situation.	1m
11.	Find the fixed charges and the cost of food per day.	2m

IV

Places A and B are 80 km apart from each other on a highway. A car starts from A and another from B at the same time. If they move in same direction they meet in 8 hours and if they move towards each other they meet in 1 hour 20 minutes.

Based on the above information answer the following questions




12.	Represent the above situation as a pair of linear equation in two variables.	1m
13.	Are the linear equations representing the above situation consistent or inconsistent?	1m
14.	Find the speed of cars.	2m

V

From a shop Sudhir bought 2 books of Mathematics and 3 books of Physics of class X for ₹850 and Suman bought 3 books of Mathematics and 2 books of Physics of class X for ₹900.

Considering the price of one Mathematics book and that of one Physics book be ₹x and ₹y respectively, answer the following questions.



15.	Represent the above situation algebraically as a pair of linear equation in two variables.	1m
16.	Find the number of solutions for the pair of equations representing the above situation.	1m
17.	Find the cost of one Physics book and one Mathematics book.	2m

<b>Answers</b>									
<b>Answers</b>	1	$2 \times 3 \times 7$	2	$a^2b^2$	3	840	4	2	
	5	5	6	27	7	22	8	7	
	9	$x + 2y = 4500;$ $x + 30y = 5200$	10	unique	11	₹1000, ₹140	12	$x - y = 10;$ $x + y = 60$	
	13	consistent	14	35km/hr, 25km/hr	15	$2x + 3y = 850;$ $3x + 2y = 900$	16	1	17