

Chapter 3 Class 10 Linear Equations In Two Variables - Case Based Question Worksheet 2 by *teachoo*

Chapter: [Chapter 10 Class 3 Maths – Linear Equations In Two Variables](#)

Name: _____

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Case Study 1: The Delivery Service



A courier company uses two types of trucks. Truck Type X has a capacity of 100 small boxes and 200 large boxes. Truck Type Y has a capacity of 300 small boxes and 100 large boxes. They need to transport a consignment of 900 small boxes and 800 large boxes.

1. Let x be the number of Type X trucks and y be the number of Type Y trucks. Form a pair of linear equations based on the number of small and large boxes.
2. Solve the system to find the number of each type of truck required to transport the consignment exactly.
3. If the cost of one trip for Truck X is ₹5000 and for Truck Y is ₹4500, what will be the total cost?
4. Is it possible to fulfill the order using only Truck Type X ? Explain why or why not based on the system of equations.

Case Study 2: The Chemical Mixture



A lab technician is mixing two acid solutions. Solution A is 20% acid by volume, and Solution B is 50% acid by volume. She needs to create a 6 – liter mixture that is 40% acid by volume.

1. Let a be the volume (in liters) of Solution A and b be the volume of Solution B .
Set up an equation for the total volume of the mixture.
2. Set up an equation for the total amount of acid in the mixture. (Hint: Amount of acid from A is $0.20a$).
3. How many liters of each solution (A and B) are needed to create the desired mixture?

4. If she only had 1 liter of Solution A, would it be possible to make the required 6 - liter, 40% acid mixture?

Case Study 3: Hiking Trails



A map of a nature reserve is laid out on a coordinate grid, where each unit represents 1 kilometer. A diagram showing two intersecting trails on a coordinate grid is provided.

The "River Trail" follows a straight path given by the equation $y = \frac{1}{2}x + 1$.

The "Ridge Trail" follows a straight path given by the equation $y = -x + 7$.

1. A scenic viewpoint is located at the intersection of the River Trail and the Ridge Trail. Find the coordinates of the viewpoint by solving the system of equations.
2. How far is the viewpoint from the park entrance at the origin (0,0), measured in a straight line? (Hint: Use the distance formula).

3. A new "Shortcut Trail" is being built. It will be a straight line, parallel to the River Trail, and will pass through the point (0,4). What is the equation of the Shortcut Trail?
4. Will the Shortcut Trail ever intersect with the Ridge Trail? Justify your answer, and if so, find the coordinates of their intersection.

Important links

- Answer of this worksheet - <https://www.teachoo.com/25595/5363/Case-Based-Questions---Worksheet-2/category/Teachoo-Questions---Case-Based/>
- Full Chapter with Explanation, Activity, Worksheets and more – <https://www.teachoo.com/subjects/cbse-maths/class-10th/ch3-10th-pair-of-linear-equations-in-two-variables/>
- Science Class 10– <https://www.teachoo.com/subjects/science/class-10/>
- Maths Class 10- <https://www.teachoo.com/subjects/cbse-maths/class-10th/>

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