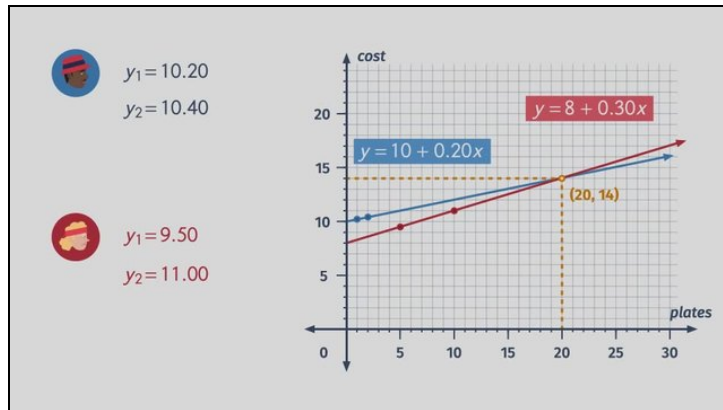Printable Worksheets from sofatutor.com

Nature of Solutions of a System of Linear Equations

1 **Identify which statements are true.**

2 Explain how to find the solution to the system of equations.

3 Find the graph which corresponds to the system of equations.

4 Determine which systems of equations have one, infinitely many, or no solutions.

5 Graph the system of equations and find the solution(s), if any exist.

6 Find the solution(s), if any exist, to the system of equations.

+ with lots of tips, answer keys, and detailed answer explanations for all of the problems.
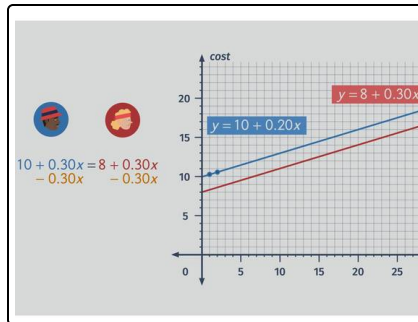
⚠ The complete package, **including all problems, hints, answers, and detailed answer explanations** is available for all sofatutor.com subscribers.

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Worksheet: Nature of Solutions of a System of Linear Equations
Mathematics / Middle School / Linear Equations / Systems of Linear Equations and Their Solutions/ Nature of Solutions of a System of Linear Equations

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of 6

Identify which statements are true.

Choose the correct statements.

A If two lines have the same slope, they are either identical or parallel.

B Two lines with different slopes but the same y-intercepts are parallel.

C Two lines with different slopes but the same y-intercepts have just one point in common.

D Lines with differing slopes have one point in common.

E Parallel lines have no points in common. They have the same slopes but different y-intercepts.

F Parallel lines have infinitely many points in common. They have the same slopes but different y-intercepts.

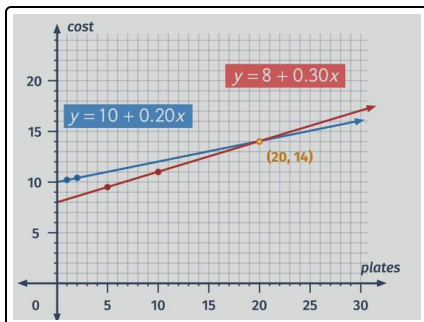sofatutor.com

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Linear Equations

Hints for solving these problems

Identify which statements are true.

Hint #1

Here you see two lines with different slopes and different y-intercepts.

Hint #2

Any two given lines have either **one point**, **no points** or **infinitely many points** in common.

Answers and detailed answer explanations for these problems

1
of 6

Identify which statements are true.

Answer key: A, C, D, E

The type of solutions to systems of linear equations depends on the slope as well as the y-intercept of the equations:

Let's have two equations

$y = m_1 x + b_1$ and

$y = m_2 x + b_2$

First let's have a look at the slope of the lines:
- $m_1 \neq m_2$ →the lines have **one point** in common independently on the y-intercept.
- $m_1 = m_2$

Here we can differentiate between two cases:

- $b_1 = b_2$ →the lines are identical and thus have **infinitely many points** in common.
- $b_1 \neq b_2$ →the lines are parallel and never meet. They have **no points** in common.

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