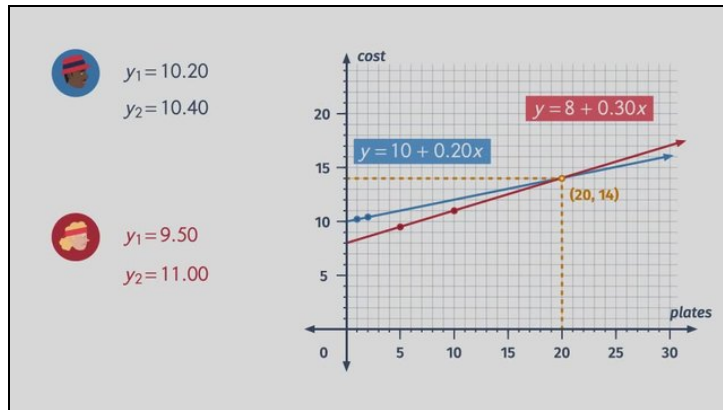




Printable Worksheets from [sofatutor.com](https://www.sofatutor.com)

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.

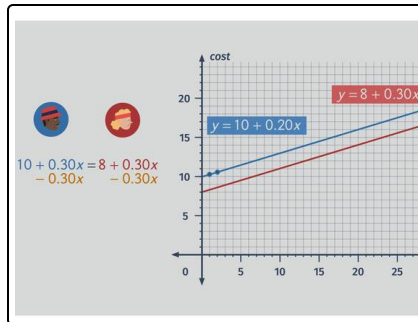


The complete package, including all problems, hints, answers, and detailed answer explanations is available for all [sofatutor.com](https://www.sofatutor.com) subscribers.



Identify which statements are true.

Choose the correct statements.



- If two lines have the same slope, they are either identical or parallel. **A**
- Two lines with different slopes but the same y-intercepts are parallel. **B**
- Two lines with different slopes but the same y-intercepts have just one point in common. **C**
- Lines with differing slopes have one point in common. **D**
- Parallel lines have no points in common. They have the same slopes but different y-intercepts. **E**
- Parallel lines have infinitely many points in common. They have the same slopes but different y-intercepts. **F**

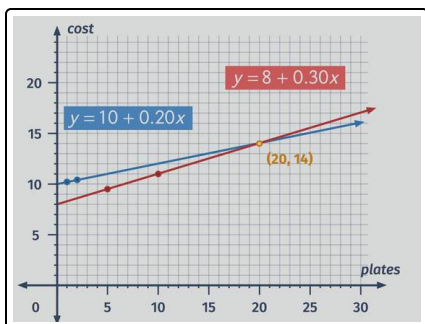


Hints for solving these problems

1
of 6

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

$$y = m_1x + b_1 \text{ and}$$

$$y = m_2x + b_2$$

First let's have a look at the slope of the lines:

- $m_1 \neq m_2 \rightarrow$ the lines have **one point** in common independently on the y-intercept.
- $m_1 = m_2$

Here we can differentiate between two cases:

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