

✔ Congratulations! You passed!

Grade received 100% To pass 78% or higher

Go to next item

This is an **ungraded quiz**. This means that, even though you will get a grade for the quiz, the **quiz score will not count in your final grade**.

1. A scientist has 6 weights, three of type X, and three of type Y. She wants to determine the weight of each type since the labels have worn off, but she has a problem. Her scale lacks sufficient precision for objects weighing less than 1000 grams.

1 / 1 point

Initially, the scientist placed all three X weights on the scale and received the message "Insufficient weight for an accurate measurement." The same happened with the three Y weights. Therefore, the scientist decided to perform two weighings:

- She weighed the 3 X weights together with 1 Y weight and obtained a total weight of 1100 grams.
- She weighed the 3 Y weights together with 1 X weight and obtained a total weight of 1050 grams.

Assuming X weight weighs  $x$  grams and Y weight weighs  $y$  grams, the best linear system that describes the experiment is:

☐ 
$$\begin{cases} 3x + y = 1050 \\ x + 3y = 1100 \end{cases}$$

☐ 
$$\begin{cases} 3x + 3y = 1100 \\ 3x + 3y = 1050 \end{cases}$$

☐ 
$$\begin{cases} 3x = 1100 \\ 3y = 1050 \end{cases}$$

☒ 
$$\begin{cases} 3x + y = 1100 \\ x + 3y = 1050 \end{cases}$$

✔ Correct

You've successfully translated the story into a linear system!

2. Which of the following matrices can be used to determine the singularity of the system of equations below?

1 / 1 point

$$\begin{cases} 2x + 3y = 15 \\ 2x + 4y = 16 \end{cases}$$

☐ 
$$\begin{bmatrix} 3 & 15 \\ 4 & 16 \end{bmatrix}$$

☐ 
$$\begin{bmatrix} 2 & 15 \\ 2 & 16 \end{bmatrix}$$

☒ 
$$\begin{bmatrix} 2 & 3 \\ 2 & 4 \end{bmatrix}$$

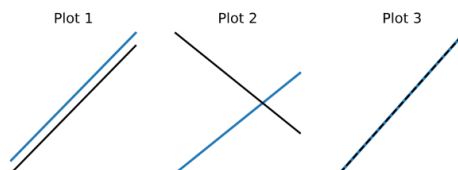
☐ 
$$\begin{bmatrix} 2 & 2 \\ 3 & 4 \end{bmatrix}$$

✔ Correct

This is the correct representation of the system of equations in matrix form. The coefficients in the first row are the coefficients of  $x$  and  $y$  in the first equation and the same logic applies to the second row and second equation.

3. Consider the next three plots below.

1 / 1 point



Now, consider the next three system of equations below.

System 1

$$\begin{cases} 3x - 2y = 1 \\ x + y = 3 \end{cases}$$

System 2

$$\begin{cases} 3x + 3y = 2 \\ 9x + 9y = 6 \end{cases}$$

System 3

$$\begin{cases} x + 3y = 4 \\ x + 3y = 3 \end{cases}$$

Each plot represents one of the systems described. Choose the correct option.

⌵

- ☐
  - Plot 1 represents System 1
  - Plot 2 represents System 2
  - Plot 3 represents System 3
- ☐
  - Plot 1 represents System 3
  - Plot 2 represents System 2
  - Plot 3 represents System 1
- ☐
  - Plot 1 represents System 1
  - Plot 2 represents System 3
  - Plot 3 represents System 2
- ☒
  - Plot 1 represents System 3
  - Plot 2 represents System 1
  - Plot 3 represents System 2
- ☐
  - Plot 1 represents System 2
  - Plot 2 represents System 1
  - Plot 3 represents System 3

 **Correct**

Well done! Plot 1 represents two parallel and distinct lines, so it must represent a **contradictory** system, which is System 3, since it assigns two distinct values ( $4$  and  $3$ ) to the same quantity ( $x + 3y$ ).

Plot 2 represents two lines that intersect in one point, so it must represent a system with a single solution. Note that System 2 has the second line as two times the first one ( $9x + 9y = 6$  is equivalent to  $3 \cdot (3x + 3y) = 3 \cdot 2$ ), so it can't be System 2, remaining only System 1. It can also be noted that the equations in System 1 are not a multiple of each other.

Finally, Plot 3 represents two identical lines, so it must represent a redundant system. As discussed above, it is System 2.