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## Solving System of Equations by Substitution

For questions (1-5), solve the following pair of linear equations using the substitution method:

1)  $y = \frac{1}{2}x$   
 $3x + 4y = 20$

2)  $2x + 3y = 5$   
 $x - 2y - 3 = 0$

3)  $2m + n = -8$   
 $-4m + n = 40$

4)  $9p + 8q - 22 = 0$   
 $3p + 2q = 7$

5)  $x + y = 11$   
 $-x + y = 9$

- 6) The pair of equation  $-5r + 7s = 14$  and  $10r - 14s = -28$  have
- A. a unique solution
  - B. exactly two solutions
  - C. infinitely many solutions
  - D. no solution

7) The father's age is eight times his son's age. After seven years, the age of the father will be one less than four times his son's age. Find the present age of the father and the son.

8) The angles of a triangle are  $a$ ,  $b$ , and  $29^\circ$ . The angle  $a$  is more than the angle  $b$  by  $53^\circ$ . Find  $a$  and  $b$ .

- 9) In an examination, 3 marks are awarded for every correct answer and 1 mark is deducted for every wrong answer. Lucas answered 88 questions and got 232 marks. Find the number of questions that he got correct.
- 10) The cost of **2lbs** apples and **1lb** strawberries was found to be **\$96** and the cost of **1lb** apples and **2lbs** strawberries was found to be **\$81**. Find the cost of **1lb** apples and **1lb** strawberries.



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## Why choose Cuemath?

"Cuemath is a valuable addition to our family. We love solving puzzle cards. My daughter is now visualizing maths and solving problems effectively!"

- Gary Schwartz

"Cuemath is great because my son has a one-on-one interaction with the teacher. The instructor has developed his confidence and I can see progress in his work. One-on-one interaction is perfect and a great bonus."

- Kirk Riley

"I appreciate the effort that miss Nitya puts in to help my daughter understand the best methods and to explain why she got a problem incorrect. She is extremely patient and generous with Miranda."

- Barbara Cabrera

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**ANSWERS**

1)	$x = 4$ $y = 2$
2)	$x = \frac{19}{7}$ $y = \frac{-1}{7}$
3)	$m = -8$ $n = 8$
4)	$p = 2$ $q = \frac{1}{2}$
5)	$x = 1$ $y = 10$
6)	(C)

7)	40 years, 5 years
8)	$a = 49^\circ$ $b = 102^\circ$
9)	56
10)	Cost of <b>1lb</b> apple = \$37 Cost of <b>1lb</b> strawberry = \$22

## FUN FACT

1. Using the substitution method, we find the solution (value of the variable) in a linear pair of equation of the form  $ax + by + c = 0$ , where  $x$  and  $y$  are the variables.
2. Each solution  $(x, y)$  corresponds to the point on the line representing the equation.
3.  $(x, y)$  can have unique, infinite or no solutions for a pair of linear

