

Questions on Standard Form - Worksheet

- I. Express the following linear equation in the form of $ax + by + c = 0$ and indicate the values of a , b and c in each case.

- a) $\frac{x}{5} - \frac{y}{7} = 1$
- b) $x = -3y$
- c) $x - \sqrt{5} = 0$
- d) $\frac{x}{9} = 1$

- II. Express the following statements as a linear equation in two variables and express the equation in the standard form.

- a) I am 10 years older than twice the age of my cousin brother.
- b) The sum of a two digit number and the number obtained by reversing the order of its digits is 176.
- c) When 3 is added to the numerator and 1 is subtracted from the denominator, the fraction becomes 1.

- III. Frame a situation for each of the following equations.

- a) $x = 3y$
- b) $p + q = 29$

- IV. Choose the correct option in the following examples.

1. Linear equation in two variables:

- a) $5x - 6y = 4x - 6y + 2$
- b) $2x = 7 - 3y$
- c) $s + 4t = s - 4t$
- d) $2(p - q) = 2p(p - q)$

2. Which situation/s can NOT be represented by the equation $2x + y = 63$, where x and y are the unknown quantities? Give reason for your answer.

- a) The sum of a number and twice of another is 63.
- b) The total number of two pens and coloured pencils is 63.
- c) Mother is twice as old as her son and the sum of their ages is 63 years.
- d) Cost of two pens and a note book is 63.

3. The equation $4 = x$ can be written in the standard form of linear equation in two variables as:

- a) $1x + 1y = 4$
- b) $1x + 0y = 4$
- c) $0x + 0y - 4 = 0$
- d) $1x + 0y - 4 = 0$

KEY to QA_ Questions on Standard Form

- I. Express the following linear equation in the form of $ax + by + c = 0$ and indicate the values of a , b and c in each case.

a) $\frac{x}{5} - \frac{y}{7} = 1$

Answer: Standard form: $\frac{x}{5} - \frac{y}{7} - 1 = 0$

$a = \frac{1}{5}$, $b = -\frac{1}{7}$ and $c = -1$

b) $x = -3y$

Answer: Standard form: $1x + 3y + 0 = 0$

$a = 1$, $b = 3$ and $c = 0$

c) $x - \sqrt{5} = 0$

Answer: Standard form: $1x + 0y - \sqrt{5} = 0$

$a = 1$, $b = 0$ and $c = -\sqrt{5}$

d) $\frac{x}{9} = 1$

Answer: Standard form: $\frac{x}{9} + 0y - 1 = 0$ or $x + 0y - 9 = 0$

$a = \frac{1}{9}$, $b = 0$ and $c = -1$ or, $a = 1$, $b = 0$ and $c = -9$

- II. Express the following statements as a linear equation in two variables and express the equation in the standard form.

a) I am 10 years older than twice the age of my cousin brother.

Answer: Let my age be ' u ' and the age of my cousin be ' v '

Equation: $u = 2v + 10$

Standard form: $1u - 2v - 10 = 0$

b) The sum of a two digit number and the number obtained by reversing the order of its digits is 176.

Answer: Let the digits in units and ten's place are ' x ' and ' y ' respectively.

The number is $x + 10y$

The number obtained by reversing the order of its digits is $10x + y$

Sum of the numbers = $x + 10y + 10x + y = 176$

$\Rightarrow 11x + 11y = 176$

$\Rightarrow x + y = 16$

(Dividing the equation by 11 on both the sides)

Required equation is $x + y = 16$

Standard form: $x + y - 16 = 0$

- c) When 3 is added to the numerator and 1 is subtracted from the denominator, the fraction becomes 1.

Answer: Let the numerator be ' x ' and the denominator be ' y '

$$\text{The fraction} = \frac{x+3}{y-1} = 1$$

$$\Rightarrow x + 3 = y - 1$$

$\Rightarrow x - y + 4 = 0$ is the required equation in the standard form.

III. Frame a situation for each of the following equations.

a) $x = 3y$

Answer: Situation: You have three times as much money as I have.

Here, the amount money that you have is ' x ' and the amount that I have is ' y '

b) $p + q = 29$

Answer: Situation: Sum of two numbers is 29.

The variables ' p ' and ' q ' respectively denote the two numbers.

IV Choose the correct option in the following examples.

1. Linear equation in two variables:

a) $5x - 6y = 4x - 6y + 2$

b) $2x = 7 - 3y$

c) $s + 4t = s - 4t$

d) $2(p - q) = 2p(p - q)$

Answer: (b) $2x = 7 - 3y$ is the correct option.

The others are incorrect because on simplification they can be reduced to:

a) Linear equation in one variable $x = 2$

c) Linear equation in one variable $8t = 0$

d) $2p - 2q = 2p^2 - 2pq$, which is not a linear equation.

2. Which situation/s can NOT be represented by the equation $2x + y = 63$, where ' x ' and ' y ' are the unknown quantities? Give reason for your answer.

a) The sum of a number and twice of another is 63.

b) The total number of two pens and coloured pencils is 63.

c) Mother is twice as old as her son and the sum of their ages is 63 years.

d) Cost of two pens and a note book is Rs. 63.

Answer: a) and d) are correct options.

The other options are incorrect because:

In part b), the number of coloured pencils is the only unknown quantity, the number of pens is known to be 2.



In part c), the age of the mother is twice the age of her son. So, the only unknown quantity is the age of the son.

This will give a linear equation in one variable as $x + 2x = 63$ or $3x = 63$.

3. The equation $4 = x$ can be written in the standard form of linear equation in two variables as:

- a) $1x + 1y = 4$
- b) $1x + 0y = 4$
- c) $0x + 0y - 4 = 0$
- d) $1x + 0y - 4 = 0$

Answer: The correct option is d) $1x + 0y - 4 = 0$

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