



SpeedLabs

MATHS

CBSE 8th

TEEVRA EDUTECH PVT. LTD.

Factorisation

Exercise 14.4

Q.1 Find and correct the errors in the following mathematical statements, $4(x - 5) = 4x - 5$.

Sol: $4(x - 5) = 4x - 5$

$$\text{L.H.S.} = 4(x - 5)$$

$$= 4x - 20 \neq \text{R.H.S.}$$

Hence, the correct statement is $4(x - 5) = 4x - 20$.

Q.2 Find and correct the errors in the following mathematical statements, $x(3x + 2) = 3x^2 + 2$

Sol: $\text{L.H.S.} = x(3x + 2)$

$$= 3x^2 + 2x \neq \text{R.H.S.}$$

Hence, the correct statement is $x(3x + 2) = 3x^2 + 2x$.

Q.3: Find and correct the errors in the following mathematical statements, $2x + 3y = 5xy$

Sol: $\text{L.H.S.} = 2x + 3y \neq \text{R.H.S.}$

Hence, the correct statement is $2x + 3y = 2x + 3y$.

Q.4 Find and correct the errors in the following mathematical statements, $x + 2x + 3x = 5x$

Sol: $\text{L.H.S.} = x + 2x + 3x = 6x \neq \text{R.H.S.}$

Hence, is $x + 2x + 3x = 6x$.

Q.5 Find and correct the errors in the following mathematical statements, $5y + 2y + y - 7y = 0$.

Sol: L.H.S. = $5y + 2y + y - 7y$

$$= 8y - 7y = y \neq \text{R.H.S.}$$

Hence, the correct statement is $5y + 2y + y - 7y = y$.

Q.6 Find and correct the errors in the following mathematical statements, $3x + 2x = 5x^2$

Sol: L.H.S. = $3x + 2x = 5x \neq \text{R.H.S.}$

Hence, the correct statement is $3x + 2x = 5x$.

Q.7 Find and correct the errors in the following mathematical statements,

$$(2x)^2 + 4(2x) + 7 = 2x^2 + 8x + 7$$

Sol: L.H.S. = $(2x)^2 + 4(2x) + 7$

$$= 4x^2 + 8x + 7 \neq \text{R.H.S.}$$

Hence, the correct statement is $(2x)^2 + 4(2x) + 7$

$$= 4x^2 + 8x + 7.$$

Q.8 Find and correct the errors in the following mathematical statements,

$$(2x)^2 + 5x = 4x + 5x = 9x$$

Sol: L.H.S. = $(2x)^2 + 5x = 4x^2 + 5x \neq \text{R.H.S.}$

Hence, the correct statement is $(2x)^2 + 5x = 4x^2 + 5x$.

Q.9 Find and correct the errors in the following mathematical statements,

$$(3x + 2)^2 = 3x^2 + 6x + 4.$$

Sol: L.H.S. = $(3x + 2)^2 = 9x^2 + 12x + 4 \neq$ R.H.S.

Hence, the correct statement is

$$\begin{aligned} &(3x)^2 + 2 \times 3x \times 2 + (2)^2 \\ &= (3x + 2)^2 = 9x^2 + 12x + 4. \end{aligned}$$

Q.10 Substituting $x = -3$ in

(a) $x^2 + 5x + 4$ gives $(-3)^2 + 5(-3) + 4 = 9 + 2 + 4 = 15$

(b) $x^2 - 5x + 4$ gives $(-3)^2 - 5(-3) + 4 = 9 - 15 + 4 = -2$

(c) $x^2 + 5x$ gives $(-3)^2 + 5(-3) = -9 - 15 = -24$

Sol:

(a) L.H.S. = $x^2 + 5x + 4$

Putting $x = -3$

$$= (-3)^2 + 5(-3) + 4$$

$$= 9 - 15 + 4 = -2 \neq \text{R.H.S.}$$

Hence, the correct statement is $x^2 + 5x + 4$ gives

$$(-3)^2 + 5(-3) + 4$$

$$= 9 - 15 + 4 = -2$$

(b) L.H.S. = $x^2 - 5x + 4$

Putting $x = -3$

$$= (-3)^2 - 5(-3) + 4$$

$$= 9 + 15 + 4 = 28 \neq \text{R.H.S.}$$

Hence, correct statement is $x^2 - 5x + 4$ gives

$$(-3)^2 - 5(-3) + 4$$

$$= 9 + 15 + 4 = 28$$

(c) L.H.S. = $x^2 + 5x$

Putting $x = -3$

$$= (-3)^2 + 5(-3) = 9 - 15 = -6 \neq \text{R.H.S.}$$

Hence, correct statement is $x^2 + 5x = (-3)^2 + 5(-3)$

$$= 9 - 15 = -6.$$

Q.11 $(y - 3)^2 = y^2 - 9$

Sol: $(y - 3)^2 = y^2 - 9$

L.H.S. = $(y - 3)^2$

$$= (y)^2 - 2 \times y \times 3 + (3)^2 \quad [\because (a - b)^2 = a^2 - 2ab + b^2]$$

$$= y^2 - 6y + 9 \neq \text{R.H.S.}$$

Hence, the correct statement is $(y - 3)^2 = y^2 - 6y + 9$.

Q.12 $(z + 5)^2 = z^2 + 25$

Sol: $(z + 5)^2 = z^2 + 25$

L.H.S. = $(z + 5)^2 = (z)^2 + 2 \times z \times 5 + (5)^2 \quad [\because (a + b)^2 = a^2 + 2ab + b^2]$

$$= z^2 + 10z + 25 \neq \text{R. H. S.}$$

Hence, the correct statements is $(z + 5)^2 = z^2 + 10z + 25$.

Q.13 $(2a + 3b)(a - b) = 2a^3 - 3b^2$

Sol: $(2a + 3b)(a - b) = 2a^2 - 3b^2$

L.H.S. = $(2a + 3b)(a - b)$

= $2a^2 - 2ab + 3ab - 3b^2$

= $2a^2 + ab - 3b^2 \neq \text{R.H.S.}$

Hence, the correct statement is $(2a + 3b)(a - b)$

= $2a^2 + ab - 3b^2$.

Q.14 $(a + b)(a + 2) = a^2 + 8$

Sol: $(a + b)(a + 2) = a^2 + 8$

L. H. S. = $(a + 4)(a + 2)$

= $a^2 + 2a + 4a + 8$

= $a^2 + 6a + 8 \neq \text{R. H. S.}$

Hence, the correct statement is $(a + 4)(a + 2) = a^2 + 6a + 8$.

Q.15 $(a - 4)(a - 2) = a^2 - 8$

Sol: $(a - 4)(a - 2) = a^2 + 8$

= $a^2 + 2a + 4a + 8 = a^2 + 6a + 8 \neq \text{R. H. S.}$

Hence, the correct statements is

Q.16 $\frac{3x^2}{3x^2} = 0$

Sol: L.H.S. = $\frac{3x^2}{3x^2} = \frac{1}{1} = 1 \neq$ R. H. S. (Cancelling the factor 3 and x^2)

Hence, the correct statement is $\frac{3x^2}{3x^2} = 1$.

Q.17 $\frac{3x^2+1}{3x^2} = 1 + 1 = 2$

Sol: L.H.S. = $\frac{3x^2+1}{3x^2} = \frac{3x^2}{3x^2} + \frac{1}{3x^2}$
 $= 1 + \frac{1}{3x^2} \neq$ R. H. S. (Cancelling the factor 3 and x^2)

Hence, the correct statement is $\frac{3x^2+1}{3x^2} = 1 + \frac{1}{3x^2}$.

Q.18 $\frac{3x}{3x+2} = \frac{1}{2}$

Sol: L.H.S. = $\frac{3x}{3x+2} \neq$ R. H. S.

Hence, the correct statement is $\frac{3}{4x+3} = \frac{3}{4x+3}$.

Q.19 $\frac{3}{4x+3} = \frac{1}{4x}$

Sol: L.H.S. = $\frac{3}{4x+3} \neq$ R. H. S.

Hence, the correct statement is $\frac{3}{4x+3} = \frac{3}{4x+3}$.

Q.20 $\frac{4x+5}{4x} = 5$

Sol L.H.S. = $\frac{4x+5}{4x} = \frac{4x}{4x} + \frac{5}{4x}$

$$= 1 + \frac{5}{4x} \neq \text{R. H. S.} \quad (\text{Cancelling the factors 4 and } x)$$

Hence, the correct statements is $\frac{4x+5}{4x} = 1 + \frac{5}{4x}$.

Q.21 $\frac{7x+5}{5} = 7x$

Sol: L.H.S. = $\frac{7x+5}{5} = \frac{7x}{5} + \frac{5}{5}$

$$= \frac{7x}{5} + 1 \neq \text{R. H. S.} \quad (\text{Cancelling the factors 5})$$

Hence, the correct statements is $\frac{7x+5}{5} = \frac{7x}{5} + 1$.