

CBSE Class –VIII Mathematics
NCERT Solutions
CHAPTER - 14
Factorisation (Ex. 14.4)

Find and correct the errors in the following mathematical statements:

1. $4(x-5) = 4x-5$

Ans. L.H.S. = $4(x-5) = 4x-20 \neq$ R.H.S.

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

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

Ans. L.H.S. = $x(3x+2) = 3x^2 + 2x \neq$ R.H.S.

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

3. $2x+3y = 5xy$

Ans. L.H.S. = $2x+3y \neq$ R.H.S.

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

4. $x+2x+3x = 5x$

Ans. L.H.S. = $x+2x+3x = 6x \neq$ R.H.S.

Hence the correct mathematical statement is $x+2x+3x = 6x$.

5. $5y+2y+y-7y = 0$

Ans. L.H.S. = $5y+2y+y-7y = 8y-7y = y \neq$ R.H.S.

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

6. $3x + 2x = 5x^2$

Ans. L.H.S. = $3x + 2x = 5x \neq$ R.H.S.

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

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

Ans. L.H.S. = $(2x)^2 + 4(2x) + 7 = 4x^2 + 8x + 7 \neq$ R.H.S.

Hence the correct mathematical statement is $(2x)^2 + 4(2x) + 7 = 4x^2 + 8x + 7$.

8. $(2x)^2 + 5x = 4x + 5x = 9x$

Ans. L.H.S. = $(2x)^2 + 5x = 4x^2 + 5x \neq$ R.H.S.

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

9. $(3x+2)^2 = 3x^2 + 6x + 4$

Ans.

L.H.S. = $(3x+2)^2 = (3x)^2 + 2 \times 3x \times 2 + (2)^2$.

$= 9x^2 + 12x + 4 \neq R.H.S$

Hence the correct mathematical statements is $(3x+2)^2 = 9x^2 + 12x + 4$.

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

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

Putting $x = -3$ in given expression,

$$= (-3)^2 + 5(-3) + 4 = 9 - 15 + 4 = -2 \neq \text{R.H.S.}$$

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

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

Putting $x = -3$ in given expression,

$$= (-3)^2 - 5(-3) + 4 = 9 + 15 + 4 = 28 \neq \text{R.H.S.}$$

Hence $x^2 - 5x + 4$ gives $(-3)^2 - 5(-3) + 4 = 9 + 15 + 4 = 28$.

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

Putting $x = -3$ in given expression,

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

Hence $x^2 + 5x$ gives $(-3)^2 + 5(-3) = 9 - 15 = -6$.

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

Ans. L.H.S. = $(y-3)^2 = y^2 - 2 \times y \times 3 + (3)^2 \quad \left[\because (a-b)^2 = a^2 - 2ab + b^2 \right]$

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

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

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

Ans. L.H.S. = $(z+5)^2 = z^2 + 2 \times z \times 5 + (5)^2$
 $= z^2 + 10z + 25 \left[\because (a+b)^2 = a^2 + 2ab + b^2 \right]$

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

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

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

Hence the correct statement is $(2a+3b)(a-b) = 2a^2 + ab - 3b^2$.

14. $(a+4)(a+2) = a^2 + 8$

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

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

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

Ans. L.H.S. = $(a-4)(a-2) = a(a-2) - 4(a-2)$
 $= a^2 - 2a - 4a + 8 = a^2 - 6a + 8 \neq \text{R.H.S.}$

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

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

Ans. L.H.S. = $\frac{3x^2}{3x^2} = \frac{1}{1} = 1 \neq$ R.H.S.

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

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

Ans. 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.

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

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

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

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

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

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

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

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

Ans. L.H.S. = $\frac{4x+5}{4x} = \frac{4x}{4x} + \frac{5}{4x} = 1 + \frac{5}{4x} \neq \text{R.H.S.}$

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

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

Ans. L.H.S. = $\frac{7x+5}{5} = \frac{7x}{5} + \frac{5}{5} = \frac{7x}{5} + 1 \neq \text{R.H.S.}$

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