Exercise 14.4

Question 1:

Find and correct the errors in the following mathematical statement: $4(x-5)=4x-5$

Answer 1:

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

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

Question 2:

Find and correct the errors in the following mathematical statement: $x(3x+2)=3x^2+2$

Answer 2:

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

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

Question 3:

Find and correct the errors in the following mathematical statement: $2x+3y=5xy$

Answer 3:

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

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

Question 4:

Find and correct the errors in the following mathematical statement: $x+2x+3x=5x$

Answer 4:

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

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

Question 5:

Find and correct the errors in the following mathematical statement: $5y+2y+y-7y=0$

Answer 5:

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

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

Question 6:

Find and correct the errors in the following mathematical statement: $3x+2x=5x^2$

Answer 6:

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

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

Question 7:

Find and correct the errors in the following mathematical statement:

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

Answer 7:

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

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

Question 8:

Find and correct the errors in the following mathematical statement:

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

Answer 8:

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

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

Question 9:

Find and correct the errors in the following mathematical statement:

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

Answer 9:

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 $(3x+2)^2=9x^2+12x+4$.

Question 10:

Find and correct the errors in the following mathematical statements:

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

Answer 10:

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

Putting $x=-3$ in given expression,

= $(-3)^2+5(-3)+4=9-15+4=-2 \neq$ 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,

= $(-3)^2-5(-3)+4=9+15+4=28 \neq$ 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,

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

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

Question 11:

Find and correct the errors in the following mathematical statement: $(y-3)^2 = y^2 - 9$

Answer 11:

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

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

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

Question 12:

Find and correct the errors in the following mathematical statement: $(z+5)^2 = z^2 + 25$

Answer 12:

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

$= z^2 + 10z + 25$

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

Question 13:

Find and correct the errors in the following mathematical statement:
$(2a+3b)(a-b) = 2a^2 - 3b^2$

Answer 13:

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

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

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

Question 14:

Find and correct the errors in the following mathematical statement:
$(a+b)(a+2) = a^2 + 8$

Answer14:

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

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

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

Question 15:

Find and correct the errors in the following mathematical statement:
$(a-4)(a-2) = a^2 - 8$

Answer 15:

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

$= a^2 - 2a - 4a + 8 = a^2 - 6a + 8 \neq$ R.H.S.

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

Question 16:

Find and correct the errors in the following mathematical statement: $\frac{3x^2}{3x^2}=0$

Answer 16:

L.H.S. = $\frac{3x^2}{3x^2}=\frac{1}{1}=1\neq$ R.H.S. Hence, the correct statement is $\frac{3x^2}{3x^2}=1$.

Question 17:

Find and correct the errors in the following mathematical statement: $\frac{3x^2+1}{3x^2}=1+1=2$

Answer 17:

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

Question 18:

Find and correct the errors in the following mathematical statement: $\frac{3x}{3x+2}=\frac{1}{2}$

Answer 18:

L.H.S. = $\frac{3x}{3x+2}\neq$ R.H.S. Hence, the correct statement is $\frac{3x}{3x+2}=\frac{3x}{3x+2}$.

Question 19:

Find and correct the errors in the following mathematical statement: $\frac{3}{4x+3}=\frac{1}{4x}$

Answer 19:

L.H.S. = $\frac{3}{4x+3}\neq$ R.H.S. Hence, the correct statement is $\frac{3}{4x+3}=\frac{3}{4x+3}$.

Question 20:

Find and correct the errors in the following mathematical statement: $\frac{4x+5}{4x}=5$

Answer 20:

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

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

Question 21:

Find and correct the errors in the following mathematical statement: $\frac{7x+5}{5}=7x$

Answer 21:

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

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