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G.D.GOENKA PUBLIC SCHOOL

Subject: Mathematics (7th)

Date: 09-11-2021

Chapter 8 (Linear Equations)

Exercise 8.2

(2) Find the value of x in the given equations.

(i) $2x-13=5$

$2x-13=5$

$2x=5+13$ (transposing 13 to RHS)

$2x=18$

$x=\frac{18}{2}$ (transposing 2 to RHS)

$=9$

Thus, the value of x is 9.

(ii) $7x+10=-60-2x$

$7x+10=(-60)-2x$

$7x+2x+10=(-60)$ (transposing $2x$ to LHS)

$9x+10=(-60)$

$9x=(-60)-10$ (transposing 10 to RHS)

$9x=(-70)$

$x=\frac{(-70)}{9}$ (transposing 9 to RHS)

$x=\left(-7\frac{7}{9}\right)$

Thus, the value of x is $-7\frac{7}{9}$.

(iii) $0.3x+0.05x=0.1x+2$

$0.3x+0.05x=0.1x+2$

$0.3x+0.05x-0.1x=2$ (transposing $0.1x$ to LHS)

$0.25x=2$

$x=\frac{2}{0.25}$ (transposing 0.25 to RHS)

$=8$

Thus, the value of x is 8.

(iv) $5x+11+4x-5=3x+24$

$5x+11+4x-5=3x+24$

$5x+11+4x-5-3x=24$ (transposing $3x$ to LHS)

$6x=24-11+5$ (transposing 11 and -5 to RHS)

$6x=18$

$x=\frac{18}{6}$ (transposing 6 to RHS)

$=3$

Thus, the value of x is 3.

(3) Solve the given equations and verify your answers by substitution.

(i) $7(x-2)=2(x-4)$

$$7(x-2)=2(x-4)$$
$$7x-14=2x-8$$
$$7x-2x-14=(-8)\text{(transposing } 2x \text{ to LHS)}$$
$$5x=(-8)+14\text{(transposing } -14 \text{ to RHS)}$$
$$5x=6$$
$$x=\frac{6}{5}\text{(transposing 5 to RHS)}$$
$$=1\frac{1}{5}$$

Thus, the value of x is $1\frac{1}{5}$.

Check:

Substituting $x=1\frac{1}{5}$ in $7(x-2)=2(x-4)$, we get

$$7\left(\frac{6}{5}-2\right)=2\left(\frac{6}{5}-4\right)$$
$$7\left(\frac{-4}{5}\right)=2\left(\frac{-14}{5}\right)$$
$$\frac{-28}{5}=\frac{(-28)}{5}.$$

So, LHS = RHS. Thus, $x=1\frac{1}{5}$ is the solution of the given equation.

(ii) $2(x-5)+3(x-2)=8+7(x-4)$

$$2(x-5)+3(x-2)=8+7(x-4)$$
$$2x-10+3x-6=8+7x-28$$
$$2x-10+3x-6-7x=8-28 \quad \text{(transposing } -7x \text{ to LHS)}$$
$$-16-2x=(-20)$$
$$-2x=(-20)+16 \text{ (transposing } -16 \text{ to RHS)}$$
$$-2x=(-4)$$
$$x=\left(\frac{-4}{-2}\right)\text{(transposing } -2 \text{ to RHS)}$$
$$=2$$

Thus, the value of x is 2.

Check:

Substituting $x=2$ in $2(x-5)+3(x-2)=8+7(x-4)$, we get

LHS: $2(2-5)+3(2-2)=2(-3)+3(0)=(-6)+0=(-6)$

RHS: $8+7(2-4)=8+7(-2)=8-14=(-6)$

So, LHS = RHS. Therefore, $x=2$ is the solution of the given equation.

(iii) $65-5(4x-3)=0$

$65-5(4x-3)=0$

$65-20x+15=0$

$80-20x=0$

$-20x=(-80)$ (transposing 80 to RHS)

$x=\left(\frac{-80}{-20}\right)$ (transposing -20 to RHS)

$=4$

Thus, the value of x is 4.

Check:

Substituting $x=4$ in $65-5(4x-3)=0$, we get

LHS $=65-5(4(4)-3)=65-5(16-3)=65-5(13)=65-65=0=$ RHS

So, LHS = RHS. Therefore, $x = 4$ is the solution of the given equation.

(iv) $8(2x-1)=3(4x+8)+4$

$8(2x-1)=3(4x+8)+4$

$16x-8=12x+24+4$

$16x-12x-8=24+4$ (transposing $12x$ to LHS)

$4x-8=28$

$4x=28+8$ (transposing -8 to RHS)

$4x=36$

$x=\frac{36}{4}$ (transposing 4 to RHS)

$=9$

Thus, the value of x is 9.

Check:

Substituting $x=9$ in $8(2x-1)=3(4x+8)+4$, we get

LHS: $8(2x-1)=8(2(9)-1)=8(18-1)=8\times17=136$

RHS: $3(4x+8)+4=3(4(9)+8)+4=3(36+8)+4=3(44)+4=132+4=136$

As LHS = RHS, $x = 9$ is the solution of the equation.

(v) $50-6(x+1)=22-10(1-x)$

$50-6(x+1)=22-10(1-x)$

$50-6x-6=22-10+10x$

$44-6x=12+10x$

$44-6x-10x=12$ (transposing $10x$ to LHS)

$44-16x=12$

$-16x=12-44$ (transposing 44 to RHS)

$-16x=(-32)$

$x=\left(\frac{-32}{-16}\right)$ (transposing -16 to RHS)

$=2$

Thus, the value of x is 2.

Check:

Substituting $x = 2$ in $50-6(x+1)=22-10(1-x)$, we get

LHS: $50-6(2+1)=50-6(3)=50-18=32$

RHS: $22-10(1-2)=22-10(-1)=22+10=32$

As LHS = RHS, $x = 2$ is the solution of the equation.

Write Q2 and Q3 in your mathematics notebook.