IES MURILLO

Maths 1º ESO

ALGEBRA

*Name:*_____

1) Write an equation for each sentence: (2 points)

a. Five subtracted from four times a number is equal to nine.
b. Twenty-two is twice a number increased by eight.
c. The difference between a number and eleven is equal to five squared.
d. Half a number minus six is equal to thirteen.

2) Collect like terms: (1 point)

a. (3x – 2) – (5x – 4) =

b. 11a – 2b - (a – b) – 7a =

c. 3x – 5 – 2(4 + 3x) =

d. (a + b) - (-3a + 2b) =

3) Work out and simplify: (2 points)

a) $\frac{8}{5}-\frac{1}{2}\times\frac{4}{5}+\frac{3}{10}=$

b) $\frac{3}{11}-\left(\frac{5}{11}-\frac{3}{4}\right)+\frac{3}{2}\div\frac{11}{3}=$

4) Solve each equation and check: (4 points)

a. $5x - 6 = 3x - 8$

b. $\frac{8+x}{5}=7$

c. $2x-3(x+1)=9+5x$

d. $3x-(1-4x)-2x=3+x$

e. $-x-2(1-x)=10+5x$

f. $x-(2x+5)+(x-3)=2x-10$

SOLUTIONS

1) Write an equation for each sentence:

a. Five subtracted from four times a number is equal to nine. $4x-5=9$

b. Twenty-two is twice a number increased by eight. $22=2x+8$

c. The difference between a number and eleven is equal to five squared.

$x-11=5^2 \rightarrow x-11=25$

d. Half a number minus six is equal to thirteen. $\frac{x}{2}-6=13$

2) Collect like terms:

a. (3x – 2) – (5x – 4) = 3x – 2 – 5x + 4 = -2x + 2

b. 11a – 2b - (a – b) – 7a = 11a – 2b – a + b – 7a = 3a - b

c. 3x – 5 – 2(4 + 3x) = 3x – 5 – 8 – 6x = -3x - 13

d. (a + b) - (-3a + 2b) = a + b + 3a – 2b = 4a - b

3) Work out and simplify:

a) $\frac{8}{5}-\frac{1}{2}\times\frac{4}{5}+\frac{3}{10}=\frac{8}{5}-\frac{4}{10}+\frac{3}{10}=\frac{16-4+3}{10}=\frac{15}{10}=\frac{3}{2}$

b) $\frac{3}{11}-\left(\frac{5}{11}-\frac{3}{4}\right)+\frac{3}{2}\div\frac{11}{3}=\frac{3}{11}-\frac{20-33}{44}+\frac{9}{22}=\frac{3}{11}+\frac{13}{44}+\frac{9}{22}=$

$=\frac{12}{44}+\frac{13}{44}+\frac{18}{44}=\frac{43}{44}$

4) Solve each equation and check:

a. 5x - 6 = 3x – 8 $\rightarrow$ 5x – 3x = -8 + 6 $\rightarrow 2x = -2 \rightarrow x = -1$

Checking: $5\cdot(-1)-6=3\cdot(-1)-8 \rightarrow -5-6=-3-8 \rightarrow -11=-11$

b. $\frac{8+x}{5}=7 \rightarrow 8+x=35 \rightarrow x=35-8 \rightarrow x=27$

Checking: $\frac{8+27}{5}=7 \rightarrow \frac{35}{5}=7 \rightarrow 7=7$

c. $2x-3(x+1)=9+5x \rightarrow 2x-3x-3=9+5x \rightarrow 2x-3x-5x=9+3$

$-6x = 12 \rightarrow x = \frac{12}{-6} \rightarrow x = -2$

Checking: $2 \cdot (-2) - 3(-2+1) = 9 + 5 \cdot (-2) \rightarrow -4 - 3 \cdot (-1) = 9 - 10$

$-4 + 3 = 9 - 10 \rightarrow -1 = -1$

d. $3x - (1 - 4x) - 2x = 3 + x \rightarrow 3x + 4x - 5 - 2x = 3 + x \rightarrow 3x + 4x - 2x - x = 3 + 1$

$4x = 4 \rightarrow x = 1$

Checking: $3 \cdot 1 - (1 - 4 \cdot 1) - 2 \cdot 1 = 3 + 1 \rightarrow 3 - (1 - 4) - 2 = 4$

e. $-x - 2(1 - x) = 10 + 5x \rightarrow -x - 2 + 2x = 10 + 5x \rightarrow -2 - 10 = 5x + x - 2x$

$-12 = 4x \rightarrow x = -\frac{12}{4} \rightarrow x = -3$

Checking: $-(-3) - 2 \cdot (1 - (-3)) = 10 + 5 \cdot (-3) \rightarrow 3 - 2 \cdot (1 + 3) = 10 - 15$

$3 - 2 \cdot 4 = -5 \rightarrow 3 - 8 = -5 \rightarrow -5 = -5$

f. $x - (2x + 5) + (x - 3) = 2x - 10 \rightarrow x - 2x - 5 + x - 3 = 2x - 10$

$x - 2x + x - 2x = -10 + 5 + 3 \rightarrow -2x = -2 \rightarrow x = \frac{-2}{-2} \rightarrow x = 1$

Checking: $1 - (2 \cdot 1 + 5) + (1 - 3) = 2 \cdot 1 - 10 \rightarrow 1 - 7 - 2 = 2 - 10 \rightarrow -8 = -8$