Please do not write on this sheet PS G, problem 3.4

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A1.

$5x + 10 = 20$ $-10 \quad -10$ $5x \quad = 10$ $\frac{5x}{5} = \frac{10}{5}$ $x = 2$	Check: 5(2)+10=20 10+10=20 20=20 ☺

A2:

$5x - 10 = 20$ $+10 \quad +10$ $5x \quad = 30$ $\frac{5x}{5} = \frac{30}{5}$ $x = 6$	Check: 5(6)-10=20 30-10=20 20=20 ☺

A3

$5x + 10 = -20$ $-10 \quad -10$ $5x \quad = -30$ $\frac{5x}{5} = \frac{-30}{5}$ $x = -6$	Check: 5(-6) +10= -20 -30 +10= -20 -20= -20 ☺

A4:

$5x - 10 = -20$ $+10 \quad +10$ $5x \quad = -10$ $\frac{5x}{5} = \frac{-10}{5}$ $x = -2$	Check: 5(-2) - 10= -20- -10 -10= -20 -20= -20 ☺

B1

$10 - 5x = 20$ $-10 \quad -10$ $-5x = 10$ $\frac{-5x}{-5} = \frac{10}{-5}$ $x = -2$	Check: 10 –5(-2)=20 10 – (-10) = 20 20 = 20 ☺

B2

$10 - 5x = -20$ $-10 \quad -10$ $-5x = -30$ $\frac{-5x}{-5} = \frac{-30}{-5}$ $x = 6$	Check: 10 –5(6)=-20 10 – 30) = -20 -20 = -20 ☺

C1

$4x + 9 = 7x$ $-4x \quad -4x$ $9 = 3x$ $\frac{9}{3} = \frac{3x}{3}$ $3 = x$	Check: 4(3)+9=7(3) 12+9=21 21=21 ☺

C2

$4x + 9 = 7x + 3$ $-4x \quad -4x$ $9 = 3x + 3$ $-3 \quad -3$ $6 = 3x$ $\frac{6}{3} = \frac{3x}{3}$ $2 = x$	Check: 4(2)+9=7(2)+3 8+9=14+3 17=17 ☺

C3

$4x - 9 = 7x$ $-4x \quad -4x$ $-9 = 3x$ $\frac{-9}{3} = \frac{3x}{3}$ $-3 = x$	Check: 4(-3)-9=7(-3) -12-9 =-21 -21 = -21 ☺

C4

$4x - 9 = -7x + 13$ $+9 \quad +9$ $4x = -7x + 22$ $+7x \quad +7x$ $11x = 22$ $\frac{11x}{11} = \frac{22}{11}$ $x = 2$	Check: 4(2)-9=-7(2)+13 8-9= -14 + 13 -1 = -1 ☺

D1

$3(x + 2) = 21$ $3x + 6 = 21$ $-6 \quad -6$ $\frac{3x}{3} = \frac{15}{3}$ $x = 5$	Check: 3(5+2) = 21 3(7) = 21 21 = 21 ☺

D2

$-3(x - 5) = 2x$ $-3x - (-15) = 2x$ $-3x + 15 = 2x$ $+3x \quad +3x$ $15 = 5x$ $\frac{15}{5} = \frac{5x}{5}$ $3 = x$	Check: -3(3-5)=2(3) -3(3) – (-3(5) = 6 -9 – (-15) = 6 -9 + 15 = 6 6 = 6 ☺

D3

$5(x + 2) = 6x + 3$ $5x + 10 = 6x + 3$ $-3 \quad -3$ $5x + 7 = 6x$ $-5x \quad -5x$ $7 = x$	Check: 5(7+2)=6(7)+3 35+10 = 42 + 3 45 = 45☺

E1

$5x + 10 = 19$ $-10 \quad -10$ $5x = 9$ $\frac{5x}{5} = \frac{9}{5}$ $x = 1.8$	Check: 5(1.8) + 10 = 19 9+10 = 19 19 = 19 ☺

E2

$5x + 10 = 9x$ $-5x \quad -5x$ $10 = 4x$ $\frac{10}{4} = \frac{4x}{4}$ $2.5 = x$	Check: 5(2.5)+10=9(2.5) 12.5+10= 22.5 22.5 = 22.5 ☺

E3

$5x - 10 = -19$ $+10 \quad +10$ $5x = -9$ $\frac{5x}{5} = \frac{-9}{5}$ $x = -1.8$	Check: 5(-1.8) –10 = -19 -9 – 10 = -19 -19 = -19 ☺

E4

$5x - 10 = -7x + 1$ $+7x \quad +7x$ $12x - 10 = 1$ $+10 \quad +10$ $12x = 11$ $\frac{12x}{12} = \frac{11}{12}$ $x = \frac{11}{12}$	Check: $5\left(\frac{11}{12}\right) - 10 = -7\left(\frac{11}{12}\right) + 1$ $\frac{55}{12} - \frac{120}{12} = -\frac{77}{12} + \frac{12}{12}$ $-\frac{65}{12} = -\frac{65}{12}$ ☺

F1. You could graph the equation 5x+10=y, and then look for the point on the graph where y= -20 and find the corresponding x value.
On a table, you could make a table with different values of x and look on the table where y is –20 (you would have to use negative values for x).

F2. It makes no difference what the variable is named. In any case, you solve the equation the same way.