Chapter 1
Section 1.1

Warm-up Problem A. Decide whether each of the following is an expression or an equation. How did you decide?

(a) $2(3t-8)-7t$

expression

(b) $-3x+2-4-x=4+2x-9$

equation

Warm-up Problem B. Decide whether the given value for the variable is a solution for the equation. How did you decide?

(a) $3d-5=5(d-3)\ ;\ d=-1$

NO
plug & chug

(b) $3|x+4|=5x;\quad x=6$

yes
plug & chug

Problem 1. Which equations are linear equations in x?

(a) $x^2+3x=5$

no

(b) $3x-2+x=0$

yes

(c) $2(3x-8)=7$

yes

(d) $3x+\frac{8}{x}=-22$

no

Problem 2. Solve each equation. Decide whether there is one solution, infinitely many solutions, or no solutions. If there is one solution, check the solution.

(a) $11x-14x-7+8=4x+5-2$

$-3x+1=4x+3$

$\frac{-2}{7}=x$

1 solution

(c) $4(k-9)=4(k+3)-48$

$4k-24=4k-36$

$0=-12$

no solution

↳ absolute value doesn't fit this scheme

maybe make these their own problem...

48
-12
36
-24
12

(b) $-6x+2x-11=-2(2x-3)+4$

$-4x-11=-4x+10$

$-11=10$

no sol'n

(d) $-9y-(5+y)=-(3y-1)-6$

$-10y-5=-3y-5$

$y=0$

1 sol'n

(e) $\frac{2m-1}{3} - \frac{3m}{4} = \frac{5}{6}$

$8m - 4 - 9m = 10$

$-m - 4 = 10$

$m = -14$

-1 soln

(f) $\frac{1}{3n} - \frac{1}{4n} = \frac{1}{6}$

$4 - 3 = 2n$

$n = \frac{1}{2}$

1 soln

(g) $\frac{1}{n} + \frac{1}{n-3} = \frac{9}{n^2-3n}$

$n(n-3)$

$n - 3 + n = 9$

$2n = 12$

$n = \frac{12}{2}$

1 soln

(h) $\frac{5-12x}{3} - 3x + 11x = \frac{14x-6}{2} + \frac{5}{3}$

$10 - 24x - 18x + 66x = 42x - 18 + 10$

$10 + 24x = 42x - 8$

$-24x \quad -24x$

$18 = 18x$

$x = 1$ 1 soln

(i) $0.02(x+4) = 0.03x - 0.02$

$2x + 8 = 3x - 2$

$x = 10$

1 soln

(j) $|2x| = 4$

$x = \pm 2$

?

make its own section?

(k) $|2x-3| = 4$

$2x - 3 = 4 \rightarrow x = 6$

$2x - 3 = -4 \rightarrow x = \frac{-1}{2}$

(l) $|2x-3| = 4 + x$

$2x - 3 = -4 - x \rightarrow x = \frac{-1}{3}$

$2x - 3 = 4 + x \rightarrow x = 7$

Additional Problems

EP 1. Solve each equation. Decide whether there is one solution, infinitely many solutions, or no solutions. If there is one solution, check the solution.

(a) $4(2x+7) = 2x+25+3(2x+1)$

$8x+28 = 2x+25+6x+3$

$8x+28 = 8x+28$

infinite Solutions

(b) $\frac{3}{11}x = -2$

$x = \frac{-22}{3}$

1-solution

(c) $2\left(-(t-1)+4\right) = 5+\left(-(6t-7)+9t\right)$

$-2t+2+8 = 5-6t+7+9t$

$-2t+10 = 12+3t$

$t = 2$ 1-soln

(d) $\frac{8x}{3} - \frac{x}{2} = 4$

$16x - 3x = 24$

$x = \frac{24}{13}$

1-soln

(e) $\frac{2x+5}{5} = \frac{3x+1}{2} + \frac{-x+8}{16}$ (8, 2)

$32x+40 = 120x+40-5x+40$

$83x = -40$

$x = \frac{-40}{83}$

1-Soln

(f) $0.05x + 0.08 + 0.06x = 0.07x + 0.68$

$5x+8+6x = 7x+68$

$11x+8 = 7x+68$

$3x = 60$

$x = 20$ 1-soln

(g) $6(3-4x)+10 = -15x+3(2-3x)$

$18-24x+10 = -15x+6-9x$

$-24x+18 = -24x+6$

$18 = 6$

No Soln