Math 5e, Fall 2024 Homework 3

Homework #3 due October 9

Instructions: Some of the problems we solved in class are new. Please do as many as you can and show your work. Write on separate sheets of paper, not between the lines of this handout!

1. Compute the following operations with fractions:

(a) $1\frac{7}{8} \times \frac{18}{5}$ (b) $2\frac{4}{7} \div \frac{4}{21}$ (c) $\frac{13}{7} - \frac{7}{13}$

2. Find the values of these algebraic expressions:

(a) $a + b + c$ for $a = 17, b = -2\frac{1}{4}, c = -17$;

(b) $34 - a - 72 + a + 12 + a$ for $a = -54$, and then for $a = 11$;

3. Rewrite each of the expressions below in the simplest possible form by collecting the like terms

(a) $2x + 7 + 5x + 2 + 3x$

(b) $3x + 9 + 5xy + 2xy + 3$

(c) $2x + 16 - 5x(2y + 1) + 3$

(d) $2a + 1 + 3(a - 2)$

4. Solve the following equations

(a) $2 + x - 40 = 30$

(b) $-5x = 4 - 6x$

(c) $2x = 96$

(d) $3x + 2 = 44$

(e) $5(x + 4) = 45$

5. Rewrite the expression as fractions

(a) $a \div 4 + 2 + 1 \div (1 + y) =$

(b) $(y + c \div d) - (b \div d) =$

(c) $a \div (4 - 5 + b) =$

(d) $a \div (4 - 5 + b) \div c =$

6. Can you divide (draw with a rule) a triangle into 4 new triangles in such a way that any two new triangles have a common boundary (not just a point, but share a line segment!).

7. Below are some examples from a multiplication table in an unknown language. All of the products are numbers less than or equal to 20.

pe×nei = nei la nei
nei×hato = liomu la pe
hato×hato = nei la tano
pe×pe = nei
pe×tano = liomu
hato×* = liomu la tano
*×pe = liomu la nei

What numbers should be there in place of *?