

## Math 5e, Fall 2025 Homework 4

Homework #4 is due October 13

**Instructions:** Some of the problems we solved in class, and some are new. Please try to solve all problems, do your best, and show your work. **Write on separate sheets of paper, not between the lines of this handout!**

1. Simplify the following expressions:

(a)  $3(2x - 1)$

(b)  $2 - (1 - x)$

(c)  $7x - (3x + 15)$

(d)  $\frac{3}{5}(x - 5 + 6)$

(e)  $3(2x - 1) + x$

(f)  $2a(a - 2) - a(a - 1)$

(g)  $(2x - 1)(x - 1)$

(h)  $x - \frac{2}{5}x - (5 + \frac{2}{7}x - 8)$

2. Solve the equations:

(a)  $14x + 8 = 12 - 10x$

(b)  $\frac{3}{4}x = \frac{3}{5}x + 3$

(c)  $3(3x - 1) = 2(2x + 11)$

(d)  $5(x - 2) = 3x + 20$

3. A father is twice as old as his son. The sum of their ages is 48 years. How old is each of them?

4. (a) Show that  $(a + 1)(a - 1) = a \cdot a - 1$  Hint: use  $(a + 1) = y$ , then substitute back y with  $(a + 1)$

(b) Without a calculator, calculate  $199999 \times 200001$

5. An orange costs 2 cents more than an apple. A grapefruit costs as much as 3 oranges. A fruit basket consists of 10 apples, 5 oranges, and a grapefruit.

(a) If the price of an apple is  $a$ , what is the price of an orange? A grapefruit? Simplify your expressions

(b) If the fruit basket costs \$1.96, how much does each fruit cost?

6. The list below shows some dates written in Swahili:

tarehe tatu Disemba jumamosi

tarehe pili Aprili jumanne

tarehe nne Aprili jumanne

tarehe tano Octoba jumapili

tarehe tano Octoba jumatatu

tarehe tano Octoba jumatano

Here are their English translations (in a different order!):

October 5, Monday

April 2, Tuesday

October 5, Wednesday

October 5, Sunday

December 3, Saturday

April 4, Tuesday

Write the following dates in Swahili:

April 3, Wednesday; December 2, Sunday; December 5, Monday.

7. Fill in the missing numbers in the square when you know that the sum of the numbers in each row, column, and diagonal is 30.

11		
	15	-7