

Math 6d: Homework 1**Due September 23**

Attach lined paper showing your solutions neatly.

If your work is not organized, it will not be reviewed!

1. A boy had a bag of apples. He gave $\frac{1}{2}$ of them to his parents, $\frac{1}{5}$ to his brother, $\frac{1}{4}$ to his sister and the last apple he ate himself. How many apples did he originally have?

2. Simplify the following expressions

(a) $x + 4(1 - x)$

(b) $2 + 5x - 4(3 - x)$

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

(d) $(2x + 5y)(3x + y + 2)$

Hint: Use the distributive property of multiplication: $a(b+c) = ab+ac$

Example: $(x+y)(z+d) = x(z+d) + y(z+d)$

3. Two secretaries, Barbara and Mary, need to type a 100-page document. Barbara can type it in 4 hours; Mary types slower, so it would take her 5 hours to do this. How fast can they type it together if they divide the work between two of them in the most efficient way?

4. Simplify the following expression:

$$\frac{(x^2y^2) \cdot x^3}{x^2y^5}$$

5. Let $a = 2 \cdot 10^8$, $b = 10^5$. Compute $a^2 \cdot b$, $\frac{a}{b}$, $a^2 \div b^3$

6. If $a = 2^{-13}3^9$, $b = 2^{11}3^{-7}$ what is the value of ab ? of a/b ?

7. If, in a right triangle, one leg has length 1 and the hypotenuse has length 2, what is the other leg?

8. Simplify: $(\sqrt{17})^2$, $(13)^4$, $(\sqrt{11})^3$, $\sqrt{2^43^6}$, $\sqrt{2^43^5}$