Accelerated math. Homework 13.

Problems marked with * are more difficult.

1. Rewrite without parenthesis:

$Example: a-(b-d+c)=a-b+d-c$

a. $a+(b-c+d)$;
b. $a-(b-c-d)$;
c. $a-(b+c+d)$;
d. $a+(b+c-d)$;
e. $(a-b)+(c-d)$;
f. $(x+y)-(z+t)$;
g. $(a-b)-(c-d)$;
h. $(a+b)+(-c-d)$;

2. Simplify the following fractions, factories nominator and/or denominator first:

a. $\frac{6a+6b}{9a}$;
b. $\frac{8y}{4x-4y}$;
c. $\frac{ab-ad}{abd}$;
d. $\frac{xyz}{xz-yz}$;
e. $\frac{ax-ay}{ax+ay}$;
f. $\frac{3cd+3d}{6cd-3d}$;

3. Write the definitions of median, altitude, and bisector in a triangle.
Median in a triangle is a segment connecting …
Altitude in a triangle is ….
Bisector in a triangle is ….

4. Draw three arbitrary triangles (use ruler). In one tringle show three medians, in the second triangle draw three altitudes, in the third one draw three bisectors.

5. Simplify the following expressions:
Example:

$$\left(\frac{4}{5}abc^2-\frac{5}{8}ab^2c+5abc\right)-\left(\frac{14}{25}abc^2-\frac{18}{32}ab^2c+3abc\right)$$
$$=\frac{4}{5}abc^2-\frac{5}{8}ab^2c+5abc-\frac{14}{25}abc^2+\frac{18}{32}ab^2c-3abc=$$
$$=\frac{4}{5}abc^2-\frac{14}{25}abc^2-\frac{5}{8}ab^2c+\frac{18}{32}ab^2c+5abc-3abc=$$
$$=\frac{20}{25}abc^2-\frac{14}{25}abc^2-\frac{20}{32}ab^2c+\frac{18}{32}ab^2c+5abc-3abc=$$
$$=\frac{6}{25}abc^2-\frac{2}{32}ab^2c+2abc=\frac{6}{25}abc^2-\frac{1}{16}ab^2c+2abc$$

a. $\left(\frac{2}{7}xy^2 - \frac{4}{15}x^2y + \frac{5}{12}x^2yz\right) - \left(\frac{3}{14}xy^2 - \frac{2}{5}x^2y + \frac{1}{4}x^2yz\right)$;

b. $\left(\frac{1}{2}a - \frac{1}{3}b + \frac{1}{5}c\right) + \left(\frac{3}{4}a - \frac{2}{9}b - \frac{3}{25}c\right) - \left(\frac{5}{8}a - \frac{4}{27}b + \frac{9}{125}c\right)$;

c. $\left(3\frac{1}{6}mn - 2\frac{1}{3}m\right) - \left(\frac{2}{9}mn - 5\frac{1}{15}m\right) - \left(3\frac{5}{18}mn + 3\frac{8}{45}m\right)$

6. Which expression should be placed instead of A to make the equality true.

   Example: $c^5 \cdot A = c^7,\ \ A = c^2,\ \ c^5 \cdot c^2 = c^{5+2} = c^7$

   a. $a^2 \cdot A = a^5$;

   b. $A \cdot b^7 = b^{11}$;

   c. $c^{35} \cdot A = c^{70}$;

   d. $A \cdot d^{348} = d^{412}$;

7. Segments AB and CD intersect at a point O. Point O is a midpoint of both segments. What is the distance of the segment BD, if the distance of the segment AC=10 cm? Draw a picture, write solution.