Accelerated math. Homework 15.



Problems marked with * are more difficult.

1. Evaluate the following expressions (hint: try to use the most efficient way to do it, do some steps using decimals and other using normal fraction):

a.
$$\frac{\left(3\frac{1}{3}:10+2\frac{1}{6}:3.25\right):0.125}{\frac{2}{13}:5.2+3\cdot\frac{2}{13}+4.8\frac{2}{13}};$$
 (Answer is 4)
b.
$$\frac{1\frac{3}{7}-\frac{1}{3}:2.8\cdot3\frac{3}{5}}{\left(2.375-\frac{1}{3}+1\frac{1}{12}\right)\cdot0.8};$$
 (Answer is 0.4)

- 2. Simplify the following expressions (rewrite the expressions without parenthesis and combine like terms)
 - a. 7a + (2a + 3b);
 - b. (5x + 7a) + 4a;
 - c. 3m (5n + 2m);
 - d. 6p (5p 3a);
 - e. 48a (2a 2b) (14b 28a) + (24b 18a);
 - f. 5 7a (8 6a) + (5 + a);
- 3. Among 100 university students 48 are studying English, 26 are studying French, 28 are studying German, 8 are studying English and German, 8 are studying English and French, 13 are studying French and German, 24 are not studying any language. How many students are studying all three languages?



6. In the triangle DAC, |DE| = |EC|, what is the measure of the angle $\angle FEC$, if the angle $\angle DEC = 104^{\circ}$



7. Rewrite without parentheses.

Example: $(b+2)(2b+3) = (b+2) \cdot 2b + (b+2) \cdot 3 = b \cdot 2b + 2 \cdot 2b + 3 \cdot b + 3 \cdot 2 = 2b^2 + 4b + 3b + 6 = 2b^2 + 7b + 6$

- a. (a+1)(a+1);
- b. (2+y)(y+3);
- c. (1+x)(1-x);
- d. (x y)(x + y);
- e. (2a+b)(a+2b);