

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. $\frac{(7-6.35) \div 6.5 + 9.9}{(1.2 \div 36 + 1.2 \div 0.25 - 1\frac{5}{16}) \div \frac{169}{24}}$; (Answer is 20)

b. $\left(\left(\frac{7}{9} - \frac{47}{72}\right) \div 1.25 + \left(\frac{6}{7} - \frac{17}{28}\right) \div (0.358 - 0.108)\right) \cdot 1.6 - \frac{19}{25}$; (Answer is 1)

2. Simplify the following expressions (each expression is a product of two monomials, find this product):

Example:

$$\frac{1}{2}ck^2 \cdot \frac{2}{3}ck = \frac{1}{2} \cdot \frac{2}{3}cck^2k = \frac{2}{6}2^2k^3$$

a. $1\frac{1}{5}a^2b^3 \cdot 1\frac{1}{9}ab^2$;

e. $\left(-1\frac{2}{3}\right)b^2c^3 \cdot \left(-\frac{2}{15}\right)b^2c^2$;

b. $\frac{1}{2}ck^2 \cdot \frac{2}{3}ck$;

f. $1\frac{2}{3}k^3p^2 \cdot \left(-1\frac{1}{5}\right)kp^2$;

c. $\left(-2\frac{1}{4}\right)p^2x^2 \cdot 1\frac{1}{3}px^3$;

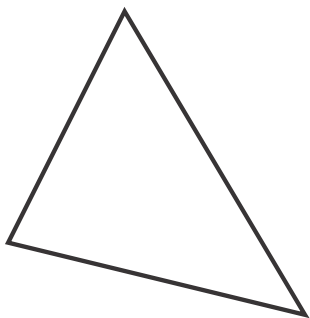
g. $\left(-\frac{9}{11}\right)x^2y^3 \cdot \left(-1\frac{2}{9}\right)xy$;

d. $\left(-1\frac{2}{3}\right)a^2x^3 \cdot \left(-\frac{3}{5}\right)a^2x^4$;

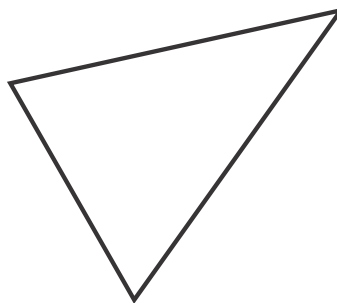
h. $\left(-2\frac{5}{6}\right)a^3c^2 \cdot 1\frac{2}{3}ac^2$.

3. In triangle 1 draw three bisectors, in triangle 2 draw three altitudes, in triangle 3 draw three medians.

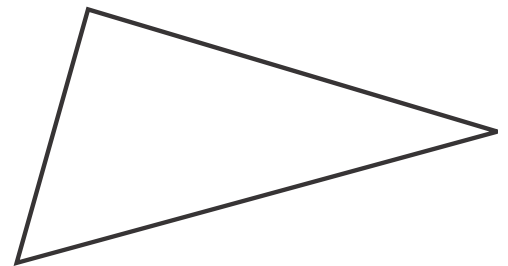
(Draw schematically, use ruler for measurement, this is not the construction problem, you don't have to use compass)



1



2



3

4. In your notebook, draw a segment 8 cm long, using compass and a strait edge (ruler without scale), divide it by half.
5. In your notebook, draw a triangle with sides 4, 7, and 7 cm. Using compass and ruler draw three altitudes.
6. On the island of knights and knaves, you meet two inhabitants: Zoey and Mel. Zoey tells you that Mel is a knave. Mel says, "Neither Zoey nor I are knaves." So, who is a knight and who is a knave? (Knights always tell the truth, and knaves always lie).
7. Do the multiplication of one expression by another:

Example: $(1 - a)(2 + a) = (1 - a) \cdot 2 + (1 - a) \cdot a = 2 - 2a + a - a^2 = 2 - a - a^2$

- a. $(2 + x)(x + 3)$;
- b. $(y - 1)(y - 2 + x)$;