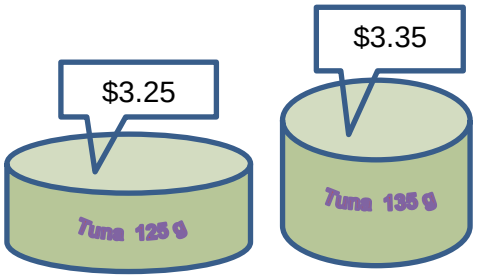
Algebra and Geometry 1. Homework 8.

1. Solve the following equations (hint: use the property of proportions):

$$a.\ \frac{x}{7.2}=\frac{1\frac{1}{9}}{0.25};\qquad b.\ \frac{2\frac{1}{3}}{0.6x}=\frac{2.5}{1\frac{2}{7}};\qquad c.\ \frac{\frac{7}{12}}{0.14}=\frac{50x}{4.8};\qquad d.\ \frac{1\frac{3}{17}}{13.75}=\frac{2\frac{2}{11}}{3x}$$

2. A company packs tuna into 2 different type of cans, 125 g and 135 g. 125 g can costs \$3.25 and 135 g can costs \$3.35. In which can tuna is less expensive?

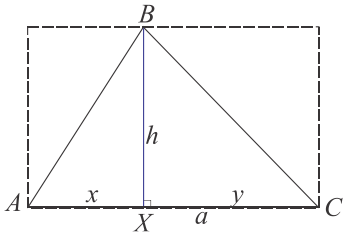


3. John and Robert played basketball. John made 20 throws and hit 15 times. Robert made 27 throws and hit 18 times. Who did better?
4. The ratio of boys to girls in 6th grade is $\frac{9}{11}$. The ratio of girls to boys in 7th grade is $\frac{31}{29}$. There are 100 and 120 students in 6th and 7th grades correspondingly, what is a ratio of boys to girls at the dance for 6 and 7 grade students, if all students came to the dunce.
5. Evaluate:

$$\frac{(2.3+5.8)\cdot 3\frac{5}{7}}{(4.9-2.3):\frac{7}{9}}\ (answer\ is\ 9);\qquad \frac{\frac{1}{8}:\frac{5}{16}+2.25\cdot 0.8}{\left(2\frac{1}{48}-1\frac{55}{72}\right):3\frac{1}{12}}+3\frac{3}{5}\ (answer\ is\ 30)$$

6. Area of a triangle. Read and be able to explain.

The area of a triangle is equal to half of the product of its altitude and the base, corresponding to this altitude.

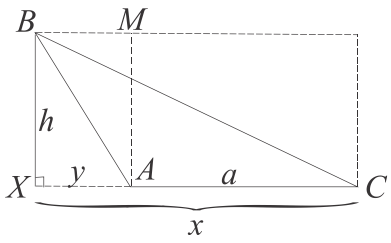


For the acute triangle it is easy to see.

$$S_{rec}=h\times a=x\times h+y\times h$$

$$S_{\Delta ABX}=\frac{1}{2}h\times x,\qquad S_{\Delta XBC}=\frac{1}{2}h\times y,\qquad S_{\Delta ABC}=S_{\Delta ABX}+S_{\Delta XBC}$$

$$S_{\Delta ABC}=\frac{1}{2}h\times x+\frac{1}{2}h\times y=\frac{1}{2}h(x+y)=\frac{1}{2}h\times a$$



For an obtuse triangle it is not so obvious for the altitude drawn from the acute angle vertex.

$$S_{\Delta XBC}=\frac{1}{2}h\times x,\qquad S_{\Delta XBA}=\frac{1}{2}h\times y$$

$$S_{\Delta ABC} = S_{\Delta XBC} - S_{\Delta XBA} = \frac{1}{2}h \times x - \frac{1}{2}h \times y = \frac{1}{2}h \times (x - y) = \frac{1}{2}h \times a$$

7. Draw two segments, the ratio of lengths of which is 2:3.
8. Draw a rectangle with the ration of sides 5:3
9. Draw a right triangle with the ratio of legs 3:4. Measure the length of the legs and hypotenuse and find the ratio of the length of each legs and hypotenuse.
10. Draw the angle of 60°. Divide the angle into two angles in ratio 1;2.