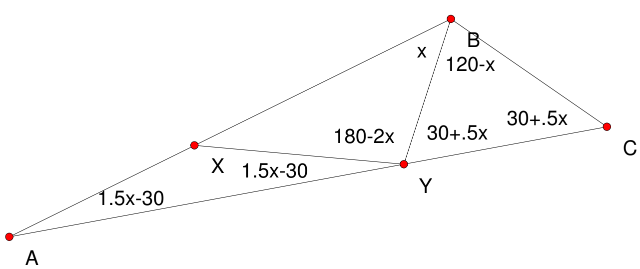
1. $\boxed{\frac{48}{5} = 9.6}$

2. Since $\triangle MNO$ is a right triangle, we can find the length of NO with the Pythagorean Theorem: $NO^2 = 20^2 - 12^2 = 256$, so $NO = 16$. Now we can find length TO using length of NO and the altitude found in the problem previous. $TO^2 = 16^2 - 9.6^2 = 163.84$, so $TO = 12.8$. Now we use the area of a triangle formula to find $.5 \cdot 12.8 \cdot 9.6 = \boxed{\frac{1536}{25} = 61.44}$

3. Let $\angle ABY$ be x. Then $\angle YBC = 120 - x$. Using properties of isosceles triangles, write all the values of the angles in terms of x. Thus $\angle BCA = 30 + .5x$, $\angle XYB = 180 - 2x$, and so on. Follow the diagram if you are confused. Finally, we see $\angle BAC = 1.5x - 30$ and we know $\angle ACB = 30 + .5x$ and $\angle ABC = 120$. So we can write an equation, adding up the angles, setting equal to 180, and solving for x:

$$180 = 120 + 30 + .5x + 1.5x - 30 = 120 + 2x$$

We see $x = 30$. So then $\angle BAC = 1.5x - 30 = 45 - 30 = \boxed{15^\circ}$



4. $\boxed{\text{C}}$

5. $\boxed{\text{D}}$

6. $\boxed{\text{B}}$

7. Since BD bisects $\angle ABE$, we have $\dfrac{AD}{DE} = \dfrac{AB}{BE}$; since BE bisects $\angle DBC$, we have $\dfrac{DE}{EC} = \dfrac{BD}{BC}$. Hence, $\dfrac{AD}{EC} = \dfrac{DE(AB/BE)}{DE(BC/BD)} = \dfrac{(AB)(BD)}{(BE)(BC)}$. $\boxed{\text{D}}$

8. The problem should have said $AC = b$. Then the answer would have been $\boxed{\text{B}}$

9. The bisector of the angle of the triangle divides the opposite sides into segments proportional to the other two sides, i.e., $y/c = x/b$. It follows that $x/b = (x + y)/(b + c) = a/(b + c)$. $\boxed{\text{D}}$

10. 312.5 rods. $\boxed{\text{E}}$