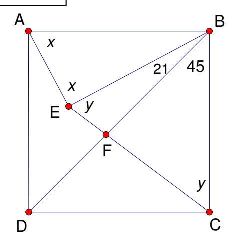
1. $\boxed{x = 34, y = 68}$

2. $\boxed{40}$

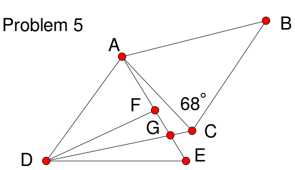
3. First thing to notice is that since $ABCD$ is a square, the diagonal bisects the vertex angles into $45°$ angles. This makes $\angle FBC = 45$. Now $\angle ABE = 90 - 21 - 45 = 24$. Since $AB = BE$, $\boxed{\angle BAE = x = (180 - 24)/2 = 78}$. Now also notice that $BE = AB = BC$. This means that we can find $y = (180 - 21 - 45)/2 = 57$. We can now find $\boxed{\angle DCE = 90 - 57 = 33}$ and $\boxed{\angle EFB = 180 - 21 - 57 = 102}$.



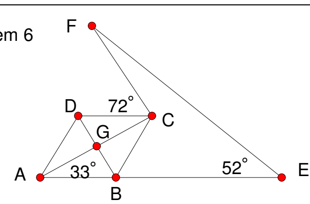
4. $\boxed{\angle EBC = 75, \angle DCB = 79, \angle ACG = 41}$

5. Since $ABCD$ is a rhombus, $\triangle ABC$ is an isosceles triangle with $AB = BC$ or, more importantly, $\angle BAC = \angle BCA = 68$. This leaves $\boxed{\angle ABC = 180 - 2(68) = 44}$. Next, since $ABCD$ is a rhombus, the diagonals bisect the vertex angles. This means that $\angle DAC = \angle BAC = 68$. Since $\triangle ADE$ is equilateral, $\angle DAF = 60$ so $\angle FAC = \angle DAC - \angle DAF = 8$. This gives us $\angle AGC = 180 - 8 - 68 = 104$. Now $\angle DGF = 180 - 104 = 76$ so we can find $\boxed{\angle FDG = 180 - 90 - 76 = 14}$ and $\boxed{\angle DGE = 180 - 76 = 104}$.

Problem 5

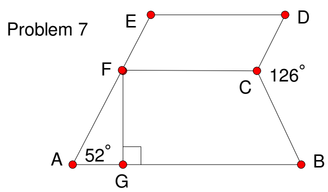


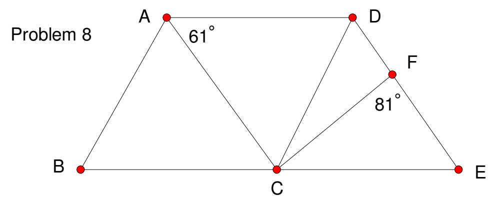
Problem 6



6. Since $ABCD$ is a rhombus, the diagonal bisects the vertex angles. This means $\angle DAB = \angle DCB = 66$ and $\angle ABC = 180 - 66 = 114$. Now $\boxed{\angle EBC = 180 - 114 = 66}$. The improper $\angle BCF = 360 - 72 - 66 = 222$. Now we can find $\boxed{\angle CFE = 360 - 222 - 66 - 52 = 20}$

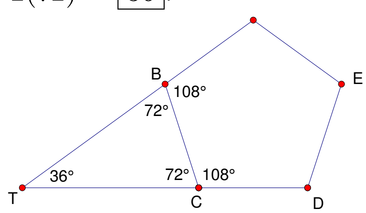
7. Since $ABCF$ is a trapezoid, $\overline{FC} \parallel \overline{AB}$. Using $\overline{AE}$ as a transversal, $\angle EFC = \angle FAG = 52$. Since $CDEF$ is a parallelogram, $\boxed{\angle FCD = 180 - 52 = 128}$. Now $\angle FCB = 360 - 128 - 126 = 106$. Observing trapezoid $FCBG$, we can find $\boxed{\angle ABC = 360 - 90 - 90 - 106 = 74}$.





8. Since $ABCD$ is a rhombus, the diagonal $\overline{AC}$ bisects $\angle BAD$ and $\angle BCD$. This gives us $\angle BAC = \angle BCA = \angle DCA = 61$. We can now find $\boxed{\angle ABC = 180 - 61 - 61 = 58}$. Since $ABCD$ is a rhombus, $\overline{AD} \parallel \overline{BE}$ so $\angle FDA + \angle BEF = 180$. We also know that $CD = CE$ so $x = \angle CDF = \angle BEF$. Using $\overline{DE}$ as a transversal, $58 + x + x = 180$ so $x = 61$. $\boxed{\angle FDA = 61 + 58 = 119}$. $\angle DFC = 180 - 81 = 99$. Now $\boxed{\angle DCF = 180 - 99 - 61 = 20}$.

9. Since $ABCDE$ is a regular pentagon, we know that each exterior angle is equal to $\frac{360}{5} = 72$. Then $\angle BTC = 180 - 2(72) = \boxed{36}$.



10. $\boxed{108,\ 108}$