1. If we start with 100% and take off 20% then we're left with 80%. The sales tax is taken on the sale price, giving us an 8% increase from our 80%. $0.08 \times 0.8 = 0.064$, or 6.4% more for a total of $80\% + 6.4\% = \boxed{86.4\%}$.

2. $\boxed{40}$

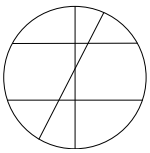
3. $\boxed{414}$

4. This is a simple proportions problem. However, it is easier to convert everything into dollars since our answer will be in dollars. 8.9 cents = \$0.089. The machine will give back \$1 − \$0.089 = \$0.911 for every \$1 inserted. Now we put this into proportions:

$$\frac{0.911}{1} = \frac{x}{50.5}$$
$$0.911 \times 50.5 = x$$
$$x = 46.0055 \approx \boxed{\$46.01}$$

5. $\boxed{7}$

6. We first draw any two parallel lines intersecting the circle to create 3 regions, since this is the best we can do with two parallel lines. The third line is going to give us a maximum number of regions when it intersects both parallel lines. The fourth line is trickier. The diagram showing the four lines is shown below.



It is clear that we have $\boxed{10}$ non-overlapping regions inside the circle.

7. What we need to do here is to find a pattern with the tens digit when taking 7 to powers. Since only the tens and units digits affect our pattern, we will only look at those digits:

$$7^1 = 07$$
$$7^2 = 49$$
$$7^3 = 43$$
$$7^4 = 01$$
$$7^5 = 07$$
$$7^6 = 49$$
$$7^7 = 43$$
$$7^8 = 01$$

It is clear that we have a repeating pattern every 4 powers. Now we only need to look at the remainder when dividing 4 into 2010. $2010 \div 4 = 502\text{R}2$. This means that the tens digit will be $\boxed{4}$.

8. Since the product of the digits of n is zero, we know that one of the digits must be zero. In particular the tens digit must be zero, since if the hundreds digit were zero we would have only a two-digit integer and if the units digit were zero we would have an even number. Also the units digit must be odd since n must be an odd number. This gives us only a few possibilities for n: 107, 305, 503, 701. When averaging them, we get $\frac{107+305+503+701}{2} = \boxed{404}$.

9. What we know from the principle of FOILing, is that each term of the first polynomial will be multiplied by each term of the second polynomial and the products will all be added together. Since we are only looking for the coefficient of the x^3 term, we will only look at the products which yield x^3. Those are $-3x^3 \cdot 7 = -21x^3$, $5x^2 \cdot 4x = 20x^3$, $-6x \cdot (-3x^2) = 18x^3$, $1 \cdot 2x^3 = 2x^3$. When adding them together, we get $-21x^3 + 20x^3 + 18x^3 + 2x^3 = 19x^3$ so our coefficient is $\boxed{19}$.

10. We know that for any triangle with sides measuring a, b, c, that $a + b > c, a + c > b, b + c > a$. Using these principles, the only possible triangles we can get from Andrew's sticks have sides measuring:

$$5, 5, 8$$
$$5, 14, 14$$
$$8, 14, 14$$

Thus there are only $\boxed{3}$ possible non-congruent triangles.