1) Multiplying yields $\begin{bmatrix} 7(5)+5(9)+4(1) \\ 7(1)+5(4)+4(2) \\ 7(4)+5(0)+4(1) \end{bmatrix} = \begin{bmatrix} 84 \\ 35 \\ 32 \end{bmatrix}$. The two largest elements are thus {84 and 35}.

Their resulting multiples are:
35: 35 70 105 140 175 210 245 280 315 350 385 [420]
84: 84 168 252 336 [420].

Therefore, $\boxed{420}$.

2) For A, minimum value is that "y" value at the x-point $(-b/2a)$. In this case, $(-b/2a) = 16/8$ or 2. Therefore min. val. at is y = -3, so A = -3. For B, $(-b/2a)$ is the formula for axis of symmetry so x = B results in x = 2, so B = 2. For C, plug 0 in for x and you find that $y = 13$, therefore C = 13. For D & E, use the quadratic formula to find D & E = $2 \pm \frac{\sqrt{3}}{2}$. The sum of A + ... + E = $\boxed{16}$.

3) Examine only the 1st and 3rd equations to start. Add them to get, 6c = 30, therefore c = 5. Sub- this value into any equation to get a = -3. Then, evaluate the third eq. (now that you know "a") to get b = 8.5. Therefore a + b + c = $\boxed{10.5 \text{ or } 21/2}$.

4) Use (-b)/(2a) to find the axis of symmetry for both functions, these occur at x = 0.5 and x = -2.5 respectively. Plug these values in to find that A = 5.5 and B = -9.25. Thus A – B = $\boxed{14.75 \text{ or } 59/4}$.

5) Distribute and add (-6) to both sides of eq. 1 to find that z = 3y. Then plug that into the second equation to find that y = 2. Then replug back into the 1st eq. to find that z = 6. Then the 3rd eq. becomes $\log_2 x = 6$ OR $2^6 = x$. Therefore, $x = \boxed{64}$.

6) A = 100 using summation formula, B = 3 (use the defintion of the identity matrix), C = 0 using patterns of systems of equations. For D, find the axis of symmetry as (-b)/2a) or (-1), thus the vertex is at (x, -1). Sub (-1) in for y and find that x = -4. Thus D = -4. A + B + C + D = $\boxed{99}$.

7) For A, use arithmetic formula, $a_n = a_1 + (n-1)d$, $a_n = 6 + (112-1)3$, $a_n = 339$, A = 339. For B, use the geometric formula, $a_n = a_1(r^{(n-1)})$, $8192 = a_1(2^{(14-1)})$, $a_1 = 1$, B = 1. For C, use the arithmetic sum formula $S_n = (^n/_2)(a_1 + a_n)$, $(^{26}/_2)(16 + 21) = 481$. C = 481. For D, use the geometric sum formula $S_n = a_1(^{(1-r^n)}/_{(1-r)})$, $16.875 = 9(^{(1-r^4)}/_{(1-r)})$, r = 0.5, D = 0.5. A + B + C + D = 339 + 1 + 481 + 0.5 = $\boxed{821.5 \text{ OR } 1643/2}$.

8) Use $\frac{-b}{a}$ to get $-2/1 = |-2| = \boxed{2}$ or use the quadratic formula to find that $\frac{-2 \pm \sqrt{4-4(1)(3)}}{2}$ which reduces to $\frac{-2 \pm \sqrt{-8}}{2} = \frac{-2 \pm i\sqrt{8}}{2}$. Add the two solutions to find the sum = -2. $|-2| = \boxed{2}$.

9) Multiply the matrices to find that $\begin{bmatrix}(-2)\log x+(3)(-1)\\(-2)(2)+(1)(-1)\end{bmatrix}=\begin{bmatrix}-7\\-5\end{bmatrix}$. Therefore $-2\log(x) = -4$. Solve so that $\log_{10}(x) = 2$. Therefore $x = \boxed{100}$.

10) First, factor out a 2 to get $2(x^3 + 3x^2 - 3x - 5)$. So A = 2. Then apply the factoring theorem for third degree functions to find that $2(x + 1)(x^2 + 2x - 5)$. So, A = 2, B = 1, C = 1, D = 1, E = 2, F = 2, G = 1, H = -5, j = 0. Their sum thus is $\boxed{5}$. *(note: D&F and E&G can be switched, however the final answer remains the same).*

11) The transposition of the given matrix is: $\begin{bmatrix}4 & 1\\6 & 9\end{bmatrix}$. Thus when multiplied the matrix produced is: $\begin{bmatrix}52 & 58\\58 & 82\end{bmatrix}$. The sum of these elements is thus $\boxed{250}$.

12) Since binary is a positional system, it can be represented as $0(2^0) + 1(2^1) + 0(2^2) + 1(2^3) + 0(2^4) + 0(2^5) + 1(2^6) + 0(2^7) + 0(2^8) + 1(2^9) = \boxed{586}$.

13) Factor and use the quadratic formula described above to find that the roots are $-1+2i$ and $-1-2i$. These are two imaginary roots, thus choice $\boxed{C}$.

14) $q = \frac{k}{j}$, Plug in the given conditions to solve for the constant "k", k = 30. Then sub. in the final values to find that q = $\boxed{3}$.

15) The axis of symmetry can be solved using the formula $({}^{-b}/_{2a})$, thus (-3)/(2), Since the "y" variable is independent, the axis of symmetry is $\boxed{y = {}^{-3}/_2 \text{ or } -1.5}$.