GLY 4200C   NAME_____
HOMEWORK 3
MILLER INDICES AND ZONE AXES

Calculate Miller Indices, given the following intercepts:

1. $a' = 3$ $b' = 2$ $c' = 4$

                                    Answer _____(463)_____

2. $a' = 2$ $b' = 3$ $c' = 1$

                                    Answer ____(326)_____

3. $a' = 0.5$ $b' = -2$ $c' = \infty$

                                    Answer ____(4\overline{1}0)_____

4.   a' = 0.33   b' = 1   c' = 0.5

Answer ___(312)_____

5.   a' = 0.5   b' = - 0.25   c' = 0.33

Answer ___(243)_____

6.   a' = ∞   b' = 2   c' = ∞

Answer ___(010)_____

7.   a' = -3   b' = 1   c' = 2

Answer ___(263)___

8.   a' = 1   b' = 5   c' = 2

Answer ___(10,2,5)___

9.   a' = 6   b' = 4   c' = 2

Answer ___(236)___

Calculate Miller Indices from the following X-ray data:

Sylvite, **a** = 0.6293 nm, KCl, isometric

10.   x' = 1.2568 nm
       y' = 0.3145 nm
       z' = ∞

Answer ___(140)___

Topaz a = 0.465 nm, **b** = 0.880, **c** = 0.840, $Al_2SiO_4(F,OH)_2$, orthorhombic

11.   x' = 0.930 nm
      y' = -0.883 nm
      z' = 0.418 nm

Answer ___(124)___

12.   x' = ∞
      y' = 0.439nm
      z' = 0.842 nm

Answer ___(021)___

13.   x' = 0.234 nm
      y' = 0.443 nm
      z' = 1.259 nm

Answer ___(331)___

Cassiterite, **a** = 0.473 nm, **c** = 0.318 nm, SnO_2, tetragonal

14.   x' = 0.473 nm
      y' = 1.183 nm
      z' = -0.932 nm

Answer ___(15,6,5)___

15. x' = 0.710 nm
    y' = -0.472 nm
    z' = 0.639 nm

Answer ___(4$\bar{6}$3)___

Calculate the zone axis of each of the following pairs of planes:

16. (00$\bar{2}$), (010)

Answer ___[200] = [$\bar{1}$00]___

17. (321), (13$\bar{2}$)

Answer ___[$\bar{7}\bar{7}\bar{7}$] = [$\bar{1}\bar{1}\bar{1}$]___

18. (201), (012)

Answer ___[$\bar{1}\bar{4}$2]___

19. (2$\bar{1}$0), (021)

Answer ___[$\bar{1}$24]___

20. (1$\bar{2}$2), (122)

Answer ___[$\bar{8}$04] = [$\bar{2}$01]___