MILLER INDICES AND ZONE AXES

Calculate Miller Indices, given the following intercepts:

1. \( a' = 3 \quad b' = 2 \quad c' = 4 \)

Answer ____________________

2. \( a' = 2 \quad b' = 3 \quad c' = 1 \)

Answer ____________________

3. \( a' = 0.5 \quad b' = -2 \quad c' = \infty \)

Answer ____________________
4. \( a' = 0.3\bar{3} \quad b' = 1 \quad c' = 0.5 \)

Answer ______________________

5. \( a' = 0.5 \quad b' = -0.25 \quad c' = 0.3\bar{3} \)

Answer ______________________

6. \( a' = \infty \quad b' = 2 \quad c' = \infty \)

Answer ______________________

2
7. \( a' = -3 \quad b' = 1 \quad c' = 2 \)

Answer

8. \( a' = 1 \quad b' = 5 \quad c' = 2 \)

Answer

9. \( a' = 6 \quad b' = 4 \quad c' = 2 \)

Answer

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
    \( z' = \infty \)

Answer
Topaz, $a = 0.465$ nm, $b = 0.880$, $c = 0.840$, Al$_2$SiO$_4$(F,OH)$_2$, orthorhombic

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

    Answer ________________________

12. $x' = \infty$  
    $y' = 0.439$ nm  
    $z' = 0.842$ nm

    Answer ________________________

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

    Answer ________________________

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. \[ x' = 0.710 \text{ nm} \]
\[ y' = -0.472 \text{ nm} \]
\[ z' = 0.639 \text{ nm} \]

Answer 

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

16. (002), (010) 

Answer 

17. (321), (132) 

Answer 

18. (201), (012) 

Answer 

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

Answer 

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

Answer