**Pre Calc BC Lines and Planes Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. a) Give an example of the coordinates of a point on the y-axis.

b) Give the coordinates of a point on the xy plane.

2. Sketch or describe the set of points for which:

a) z = 3 b) x = y = 2 c) 0 ≤ x ≤ 1, 0 ≤ y ≤ 1, 0 ≤ z ≤ 1

3. A room has dimensions: 12’ x 18’ x 8’. Find the distance between a corner of the floor and the opposite corner of the ceiling.

4. Sketch or describe each plane:

a) x = 5 b) x + y = 2 c) 2x + 3y + z = 6

d) x/2 + y/3 + z = 1 e) -x = y f) 3x + 2y = 12 - 4z

5. a) Write an equation for the plane parallel to the xy plane and 3 units behind it

b) A plane through points P(20, 1, 8); Q(5, 5, 10) and R(0, 0, -2).

c) Find an equation of the plane containing (3, -1, 4) and parallel the to the plane 3x + 2y - 5z - 6 = 0

6. Determine whether these 4 points P(4, 0, 0); Q(0, 4, -1); R(4, -2, 1); S(8, -2, 0) are coplanar. (*hint: find an equation for the plane determine by 3 of the points).*

7. Write an equation of the plane passing through A (1, 4, -4), B (1, 0, 2) and

C (-2, 12, 2)

8. Write an equation for the line containing (2, 3, 5) and (5, 0, -1).

9. Are the following three points collinear: (6, 2, 2), (0, -1, 0) and (12, 5, 4) ?

10. Consider the two points P(3, 5, 8) and Q(-2, -5, 3).

a) Find the length of PQ b) Find the midpoint of PQ

c) Write an equation of the line d) Find the intersection of PQ

containing P and Q with the plane 7x - 14y + 2z = -14