Name: _____ **Date:** _____

Test Prep — 12.1 Homework Work Session — Math 126

Note: Today's quiz section is a homework work session. In future weeks we will usually begin with a short *Test Prep* (an old exam-style problem), then shift into homework discussion.

Each quiz section you can earn:

- +1 for showing clear written homework attempts (everyone gets this point today)
- +1 for participating in the Test Prep (you get this if you remember to turn this in today)

During each Tuesday/Thursday quiz section, make sure your TA marks both your homework and this sheet (this is your record of participation).

You can also earn one weekly **bonus candy point** by presenting, sharing work, or helping correct a mistake. These do not affect your grade, but will earn you candy later in the term. You can only get 1 bonus candy point per week.

Part 1: Getting to Know Your Class (5 minutes)

You will work in groups a bit during quiz sections, so it would be good to meet a few of your classmates now. Please introduce yourself to the group of people around you. Then write some answers to these questions.

- What is the first name of three classmates near you?

- Give the high school name and mascot of one classmate near you.

- Give the name of at least one pet belonging to someone else sitting near you.

- Give one hobby, club, or interest of someone else sitting near you.

Part 2: 12.1 Homework Discussion

Work in groups. Your goal is not just to get answers — it is to explain your reasoning clearly to others.

Be ready: Your TA may ask your group to share or send someone to the board.

All problems below are taken from parts of the 12.1 homework.

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1. Points and Coordinate Planes (first problem in the 12.1 homework)

$$A(-3, 0, -2), \quad B(4, 1, -7), \quad C(1, 3, 6)$$

- Which point is closest to the yz-plane?
- Which point lies in the xz-plane?

Candy Pt (group):
Someone writes the distance from $P(a, b, c)$ to the xy-plane on the board.
Candy Pt (group):
Someone writes the distance from $P(a, b, c)$ to the z-axis on the board.

2. Describing a Surface (a multiple choice problem in the 12.1 homework)
Describe the surface in $\mathbb{R}^3$ represented by the equation $x + y = 6$. And what does it mean that there is no z in the equation?

Candy Pt (group):
Someone from your group draws this accurately on the board and describes the points in set notation.

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3. Describing a Region (a multiple choice problem in the 12.1 homework)
Write an inequality to describe the region: The solid cylinder that lies on or below the plane $z = 5$ and on or above the disk in the xy-plane with center the origin and radius 4.

Candy Pt (group):
Someone from your group draws this accurately on the board and gives the defining equations/inequalities.

4. Largest Sphere in the First Octant
Find an equation of the largest sphere with center $(5, 4, 6)$ that is contained in the first octant.

Candy Pt (group):
Someone from your group draws this accurately on the board and gives the equation.

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5. Sphere Intersections
Find an equation of the sphere with center $(3, -12, 6)$ and radius 10. This sphere does not intersect one of the coordinates planes, which one?

Candy Pt (group):
Someone from your group draws the sphere accurately on the board and explains why it intersects two of the coordinate planes but not the other.

If you finish all of this, then open the 12.1 homework and continue working on it in your group.