

Math 110 – Mathematical Explorations
Block 4 2005
Team Problems #3, due Monday, December 12

Complete these problems in a group of 3. You may change teams for different assignments if you want. Please make sure every member of your team participates in thinking about the problems. Also, please explain your solutions clearly.

Section 4.4: 16 (Don't just make a tiling– make an interesting and creative one! You can check out the Escher web page linked to from the course page for ideas.)

Section 4.4: 21 (You may photocopy or trace the tiles from the problem, the tiles I have available in my office, or the attached page of Penrose tiles. Tile a roughly page-sized region. Note the extra rule that the tiles can only fit together so that the dots match up along the edges.)

Section 4.5: 7 (Give unfoldings different from the ones presented in the text.)

Section 4.5: 16

Extra Problem 1: Use the wallpaper groups handout to find at least five types of wallpaper groups occurring on campus. For each pattern, carefully sketch the pattern, and include a description of where it occurred. Any physical object may be used. Electronic objects, such as web pages, may not be used. For each pattern that you find, identify the fundamental region, and describe the symmetries of the pattern. Explain how you classified the pattern according to its group. Extra credit will be given for additional patterns discovered beyond five (each pattern must belong to a separate group).

