Last Name, First Name	Discussion Section	Student ID

Worksheet 5 • Units and Proportion

1. Note that one yard is three feet. Assume that a day is exactly 24 hours. Alice runs at a speed of 10 feet per second. What is this speed in units of yards and days?

2. Water leaks from a faucet at a rate of .2 cubic yards per week. How many cubic inches does it leak per minute?

3. A painter needs two cubic feet of paint to paint a wall with an area of 2000 square feet. The painter now needs to paint a wall with an area of 2000 square yards. How many cubic yards of paint does he need?

4. For the next two problems, remember that muscle strength and bone strength depend on the cross sectional area of the muscle and bone. Ignore complicating factors such as body mechanics. A giant stands 30 feet tall and has the exact same body proportions of a man who is five feet nine inches tall, weighs 170 pounds, and benchpresses 340 pounds. How much would you expect the giant to weigh? How much would you expect the giant to bench press? What is the man's benchpress to bodyweight ratio? What is the giant's benchpress to body weight ratio?

5. Suppose that a certain six foot tall man with a body weight of 180 pounds can squat 500 pounds. A mad scientist makes an exact copy of this man but scaled down to be one inch tall. How much does this copy weigh and how much can this copy squat? What is the squat weight to body weight ratio for the man and his miniature copy?

6. When you were a child, it was less painful for you to walk over small rocks at the beach or on a riverbank than it is today. Why is this the case?