

Practice Test 2  
March XX, 2006

**Name:**

No calculators allowed.

DO NOT BEGIN TEST UNTIL INSTRUCTED TO  
DO SO.

Write out and sign the honor code below.

I will be academically honest in all of my academic work and will  
not tolerate academic dishonesty of others.

---

---

---

- (1) A vertical pole that is 1 yard long casts a shadow that is 2 feet 6 inches long. At the same time Heather's shadow is 3 feet 9 inches long.
- (a) Draw a picture of the similar triangles that are relevant to determining Heather's height and explain why the triangles are similar.

- (b) Determine Heather's height in an elementary way *without* setting up a proportion in which you set two fractions equal to each other. Explain your reasoning in detail as if you were teaching someone the method you use.

- (2) What does it mean for two shapes in the plane to be congruent?

(3) Jenny wants to know what it means when we say that a tank is 284 cubic feet. What can you tell Jenny?

(4) What is the difference between an ounce and a fluid ounce?

(5) What is the difference between reporting that something weighs 2 pounds and that it weighs 2.0 pounds? Give a thorough answer.

- (6) A child in your class wants to know why we multiply only three of the lengths of the edges of a box in order to calculate the volume of the box. Why don't we have to multiply *all* the lengths of the edges? Explain to this child why it makes sense to calculate the volume of a box as we do.
- (7) Explain how either of a 1 in  $\times$  5 in  $\times$  5 in box and a 3 in  $\times$  3 in  $\times$  3 in box can be considered larger. Do this by first comparing the blocks' sizes with respect to a 2-dimensional aspect of the blocks, and then comparing the blocks' sizes with respect to a 3-dimensional aspect of the blocks.

- (8) The floor area of a house is 2500 square feet. Find the floor area of the house in square meters, using the fact that 1 inch = 2.54 cm. Show your work, taking care to use correct notation.