

College Bound Math Problem Set #5
for the week of November 3, 2014

Note: Each problem (1, 2, 3) is closely related to the corresponding problem in Set #4. It may help (a lot!!) to look back at those. If you haven't done them yet, it would make sense to work on them first or instead of these.

1. (a) Tell your mentor why $1\frac{4}{5} \times 4\frac{1}{2} = (1 + \frac{4}{5})(4 + \frac{1}{2})$.
- (b) Compute the value above without using decimals at any point in the calculation. Show your work.
- (c) Find the value of 1.8×4.5 with a calculator, but also without one, showing your work. Also show that your result here is equal to your answer to part (b).
2. Fill in the blanks: $3^0 = 1$, $3^1 = 3$, $3^2 = \underline{\hspace{1cm}}$, $3^3 = \underline{\hspace{1cm}}$, $3^4 = \underline{\hspace{1cm}}$.
- (a) If $3^x = 9$, what is the value of x ?
- (b) If $3^{x-1} = 27$, what is the value of x ?
- (c) If $3^{2x} = 81$, what is the value of x ?
3. The entire gray and white figure shown here is a rectangle that is 3 inches wide and 2 inches high. Each circle just touches its neighbors and the rectangle.

- (a) Find the area of one circle.
- (b) Find the total area of the 6 circles.
- (c) Find the area of the gray portion.

