

Math 32, Spring 2010, Section 101
Worksheet 1

Work through the following problems in groups of three or four. Take turns writing; everyone should get a chance to write for some of the problems.

1. Write the names of all groups members at the top of your blackboard.
2. Introduce yourselves, chat a bit. When I come around, tell me a little bit about yourself - name, major, year, hobbies, whatever you want.
3. Simplify the following fractions or combinations of fractions.

(a) $\frac{3}{9}$

(f) $\frac{2}{4} + \frac{3}{5}$

(b) $\frac{1}{6} + \frac{1}{6}$

(g) $\frac{2}{3 \cdot 2} + \frac{3}{9}$

(c) $\frac{1}{6} * \frac{2}{6}$

(h) $\frac{5^{127}}{5^{125}}$

(d) $5 * \frac{4}{5}$

(i) $\frac{4^2}{2^2}$

(e) $\frac{\frac{5}{6}}{\frac{1}{4}}$

(j) $\frac{1}{2} * 2^{-1}$

4. Factor the following expressions.

(a) $3x^4 + 9x^2$

(b) $t^2 - t - 6$

(c) $9z^2 - 25$

(d) $2r^2 + 3r - 2$

5. Which of the following are mathematical rules (i.e., always true)? For the false statements, provide a *counterexample*. That is, give an example where the statement is not true. In all of the following, a and b are variables standing for any real number (positive, negative, fraction, π , whatever) and m and n are positive, whole numbers.

(a) $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$

(e) $-a$ is a negative number

(b) $a^{m+n} = a^m * a^n$

(f) $a * \frac{5}{6} = \frac{5a}{6}$

(c) $\frac{1}{a+b} = \frac{1}{a} + \frac{1}{b}$

(g) $a * \frac{5}{6} = \frac{5}{6a}$

(d) $\frac{a+b}{1} = \frac{a}{1} + \frac{b}{1}$

6. Use a common denominator to add/simplify: $\frac{x}{x^2-x-6} - \frac{2}{x+2}$.