Decimal/Percent Problems

(1) Express each number as directed. (Show all your work by hand—don't use a calculator for these problems.)

(a) $3\frac{5}{8}$ as a decimal

(b) $12\frac{7}{11}$ as a decimal

(c) $8\frac{37}{64}$ as a decimal

(d) 7.2364 as a fraction

(e) 7.236464646464… as a fraction

(f) $3.\overline{85}$ as a fraction

(2) Prove that $0.\overline{9}=1$.

(3) Will $\frac{3^3 x5x7}{2^{12}x3x5^{23}}$ terminate or repeat when expressed as a decimal? Justify your answer.

(4) Simplify this expression (show all your steps).

$$\frac{3(7-4)-(24\div 3\cdot 2)\div 4+2}{18-2(7-4)}$$

(5) A sale advertises that you can either take "70% off the original price" or "50% off the original price with an additional 25% off the sale price." Which is a better deal? Use a $100 item to illustrate your reasoning.

(6) At the end, would you be better off if you got (a) a 10% raise in salary and then a 10% cut in salary, or (b) a 10% cut in salary and then a 10% raise in salary? Use a salary of $100,000 to illustrate your reasoning.

(7) Without evaluating it, how can you tell if the following expression is positive or negative? (State clearly whether you think this is positive or negative.)

$$\frac{50(49)(48)...(3)(2)(1)}{(-2)(-4)(-6)...(-34)}$$

(8) Simplify this expression (show all your steps).

$$\frac{-3(2-5)-(-18\div 3\cdot 4)\div 2+1-6}{8-(7-9)+1}$$

(9) Evaluate this expression when $x=-5$, $y=2$, and $z=-\frac{1}{4}$. $\frac{4y^3-x^2}{25z^{-2}}$

(10) Use a number line to explain and calculate this expression.

-5 – (-(-2)) +1 –3 + (-4)

(11) Use two different methods to show these calculations.

(a) $(-24) \div 8$

(b) -5 + -2

(c) 4(-3)

(d) -7 – (-2)