Name:_____   Date:_____

Section 3.6 Order of Operations with Rational Numbers:

1. Simplify and evaluate each of the following without a calculator:

a) $\dfrac{-9}{5} \times \dfrac{-15}{21} \div \left(\dfrac{-45}{14}\right)$	b) $\dfrac{3}{2} - \left(\dfrac{-3}{4}\right) + \dfrac{1}{4}$	c) $\dfrac{3}{10} - \dfrac{2}{5} - \left(\dfrac{-5}{8}\right)$
d) $\left(\dfrac{15}{-32}\right) \times \left(\dfrac{-8}{5}\right) \div \dfrac{21}{16}$	e) $\dfrac{1}{2} + \dfrac{2}{3} - \dfrac{3}{4} - \dfrac{2}{3}$	f) $\dfrac{1}{2}\left(\dfrac{6}{5} - \dfrac{8}{3}\right) + \dfrac{1}{2}$
g) $-3.75 \times 1.6 \div (-1.2)$	h) $\left[\dfrac{5}{12} \div 15\right] - \dfrac{5}{8} \times \dfrac{3}{10}$	i) $0.08 \times (1.2) \times 0.5 - 1.2$
j) $3.58 - \dfrac{14.5}{4.2}(3.7 - 5.8)$	k) $-4.8 \div 1.2 + \left(\dfrac{-50.5}{12.5}\right)$	L) $0.8 \times (0.375 - 1.75) - 1.5$

2. The following students simplified their work as shown. Indicate any the mistakes from each student:

a) $\dfrac{3}{10} - \dfrac{2}{5} - \left(\dfrac{-5}{8}\right)$	b) $\dfrac{3}{2} - \left(\dfrac{-3}{4}\right) \times \dfrac{8}{9}$	c) $\left[\dfrac{-5}{7} - \dfrac{5}{6}\right] \times \left(\dfrac{7}{13}\right)$
$s1 \quad \dfrac{3}{10} - \dfrac{2}{10} + \dfrac{-5}{8}$	$s1 \quad \dfrac{6}{4} + \dfrac{3}{4} \times \dfrac{8}{9}$	$s1 \quad \left[\dfrac{-30 - 35}{42}\right] \times \left(\dfrac{7}{13}\right)$
$s2 \quad \dfrac{1}{10} + \dfrac{-5}{8}$	$s2 \quad \dfrac{9}{4} \times \dfrac{8}{9}$	$s2 \quad \left[\dfrac{-65}{42}\right] \times \left(\dfrac{7}{13}\right)$
$s3 \quad \dfrac{1}{80} - \dfrac{-50}{80}$	$s3 \quad \dfrac{2}{1} = 2$	$s3 \quad \dfrac{-455}{546}$
$s4 \quad \dfrac{-49}{80}$		

3. The average mass (M) of a 14year old compared to their height (H) is given by the formula: $M = 0.75H - 72$. Mass is measured in kg and the height is measured in cm. What is the mass of a student that is 160cm tall?

4. The cost(C) for renting a car for "n" number of days is given by the formula: $C = 30.5n + 0.012(d - 60)$. Where "d" is the distance travelled altogether. What is the rental cost if the car is driven 850km in 8 days?

5. The relationship between Celsius and Fahrenheit degrees is given by the formula: $C = \frac{5}{9}(F - 32)$, where "C" is the degree in Celsius and "F" is the degree in Fahrenheit. Find the Celsius temperature which correspond to $40°F$?

6. The rate of fuel consumption of a BMW is given by the formula: $R = -\frac{31}{6}F + \frac{33}{4}$. Where "R" is the rate in litres per 100km and "F" is the fraction of the driving on the highway. Find the value of "R" when 25% of the driving is on highway? Find "R" when 80% of the driving is on the highway? Compare the two answers.

7. The distance "d" that a car requires to come to a complete stop when brakes are applied is given by the formula: $d = vt - 3.6t^2$, where "v" is the speed of the car, and "t" is the time it takes to stop when the brakes are applied. If a car travelling at 120km/h and requires 4s to stop, how far will the car travel?

8. The value (A) of an invest is given by the formula: $A = P\left(1 + \frac{r}{n}\right)^{n \times t}$, where "P" is the principle, "r" is the interest rate, "n" is the number of compounds, and "t" is the number of years. If $500 is invested for 12years compounded 12 times a year at 7% interest (r=0.07), what will the value be when the investment matures?