ST. JOSEPH'S COLLEGE OF NURSING
at St. Joseph's Hospital Health Center

BASIC MATH CALCULATIONS

It is **highly suggested** you complete this packet to assist your success with the basic math competency test and take the practice test in Examplify.

During the exam, you are required to use the calculator provided in Examplify for all math calculations.

Included in this review:

1. General Rounding Rules

General Rounding Rules when directions are not given in the problem. Please use these for the practice problems.

If your answer is:

- Less than 1, round to the nearest hundredth

Look at the number in the thousandths place if 5 or higher, increase the hundredths place by one, if less than 5 just use the number in the hundredths place

Examples:
0.823 mL is rounded to 0.82 mL
0.688 mg is rounded to 0.69 mg

- greater than 1, round to the nearest tenth

Examples:

- 5.67 kg is rounded to 5.7 kg
- 5.21mL is rounded to 5.2 mL
- 45.16 mg is rounded to 45.2 mg

Look at the number in the hundredths place if 5 or higher, increase the tenths place by one, if less than 5 just use the number in the tenths place

- a whole number leave your answer as the whole number – no rounding required.

*****PLEASE NOTE that the Math test will give you rounding directions**

2. Use of Zero

For answers less than 1, place a zero before the decimal point. This is a medication safety issue.

Correct: 0.6 mL
Incorrect: .6mL (the point 6 can be misinterpreted as 6 ml)

There are no trailing zeros when indicating numbers greater than 1.

Correct: 5mL
Incorrect: 5.0mL This could be misinterpreted as 50 mL therefore never place a trailing zero after the decimal point.

3. Basic Math

a. ADDITION & SUBTRACTION

1.	143 + 345	2.	3650 + 519	3.	3990 + 699	4.	54321 + 2677	5.	7567890 + 5675450
6.	67 - 45	7.	2999 - 984	8.	20541 - 1876	9.	43109 - 27690	10.	28421 - 7698

b. MULTIPLICATION & DIVISION

When multiplying and dividing, use your calculator!

1. 35 X 10 = _____
2. 475 X 351 = _____
3. 2785 X 643 = _____
4. 34769 X 41 = _____
5. 45084 X 40 = _____
6. 90 ÷ 30 = _____
7. 1200 ÷ 346 = _____
8. 25692 ÷ 18 = _____
9. 31590 ÷ 278 = _____
10. 907654 ÷ 45676 = _____

4. METRIC CONVERSION

The common conversion factors in the metric system below MUST be memorized to be able to convert with 100% accuracy.

1. Kilogram (kg) to gram (g)	1 kg = 1,000 g
2. Gram (g) to milligrams (mg)	1 g = 1,000 mg
3. Milligram (mg) to micrograms (mcg)	1 mg = 1,000 mcg
4. Liter (L) to milliliter (mL)	1 L = 1,000 mL

An easy way to remember this….

Converting common metric units is easily done by:

- Multiplying or dividing by 1000 OR
- Moving the decimal

To convert grams (g) to kilograms (kg) use the conversion 1 kg = 1000 g

- Divide the number of grams by 1000 or move the decimal three places to the left.

To convert kilograms (kg) to grams (g) use the conversion 1000 g = 1 kg

- Multiply the number of kilograms by 1000 or move the decimal three places to the right.

kg → g → mg → mcg

L → mL

METRIC CONVERSION

ROUNDING your answer. If your answer is:

- less than 1, round to the nearest hundredth
- greater than 1, round to the nearest tenth
- a whole number, leave your answer as the whole number – no rounding required.

1. 1 g = _____ mg

2. 1.2 L = _____ mL

3. 2 mg = _____ mcg

4. 1000 mL = _____ L

5. 5 mg = _____mcg

6. 6 kg = _____ g

7. 1.8 g = _____ mg

8. 950 mg = _____ g

9. 58.5 L = _____ mL

10. 276 mcg = _____ mg

11. 0.025 kg = _____ g

12. 5000 g = _____ kg

5. DECIMALS

Decimals are fractional parts of a whole. For example:

0.1 = one tenth
0.01 = one hundredth
0.001 = one thousandth

a. ADDING and SUBTRACTING DECIMALS

When ADDING & SUBTRACTING decimals, use your calculator!

ROUNDING your answer. If your answer is:

- less than 1, round to the nearest hundredth
- greater than 1, round to the nearest tenth
- a whole number, leave your answer as the whole number – no rounding required.

1.	2.	3.	4.
4.678	0.421	27.904	1.065
+ 75.345	+ 0.06_	- 15.61_	- 0.211

b. MULTIPLICATION

When MULTIPLYING decimals, use your calculator!

ROUNDING your answer. If your answer is:

- less than 1, round to the nearest hundredth
- greater than 1, round to the nearest tenth
- a whole number, leave your answer as the whole number – no rounding required.

1. 3.15 X 0.015 = _____
2. 3.65 X 0.25 = _____
3. 9.65 X 1,000 = _____
4. 8.9 X 0.2 = _____
5. 14.001 X 7.2 = _____

c. DIVISION

When DIVIDING decimals, use your calculator!
ROUNDING your answer. If your answer is:

- less than 1, round to the nearest hundredth
- greater than 1, round to the nearest tenth
- a whole number, leave your answer as the whole number – no rounding required.

1. 2 ÷ 0.5 = _____
2. 1.4 ÷ 1.2 = _____
3. 63.8 ÷ 0.9 = _____
4. 39.6 ÷ 1.3 = _____
5. 1.9 ÷ 3.2 = _____

6. RATIO & PROPORTION

Ratio and proportion are a way of calculating medication dosages.

A ratio is used to indicate a relationship between two numbers.
A proportion is an equation of two ratios of equal value.

A proportion can be written as follows:

1. Separated with an **=** sign

   3 : 4 **=** 6 : 8

2. Written as a fraction

$$\frac{\mathbf{3}}{\mathbf{4}} = \frac{\mathbf{6}}{\mathbf{8}}$$

Medication calculation problems will require you to solve for an unknown quantity, which may be expressed as "x".

Solve for X: $\frac{3}{4} = \frac{12}{X}$

1. Cross multiply. $3x = 48$

2. Solve for x by dividing both sides by the coefficient of x (3) $\frac{3x}{3} = \frac{48}{3}$

3. x = 16

You may check this problem by substituting the answer to X (16) back in the problem.

3 X 16 = 48 4 X 12 = 48;

Therefore… 48 = 48

ANSWER is CORRECT!

RATIO and PROPORTION

Use your calculator!
ROUNDING your answer. If your answer is:

- less than 1, round to the nearest hundredth
- greater than 1, round to the nearest tenth
- a whole number, leave your answer as the whole number – no rounding required.

1. $\frac{2.5}{5} = \frac{24}{X}$

2. $\frac{1}{5} = \frac{4.5}{x}$

3. $\frac{750}{3} = \frac{600}{X}$

4. $\frac{60}{1} = \frac{X}{2.2}$

5. $\frac{40}{16} = \frac{X}{22}$

6. $\frac{2}{X} = \frac{13}{52}$

7. $\frac{13}{X} = \frac{8}{3}$

8. $\frac{3}{2} = \frac{5}{x}$

9. $\frac{20}{24} = \frac{x}{12}$

7. ROMAN NUMERALS with Arabic Equivalents

Some medication orders require knowledge of Roman numerals. The most common are:

- I = 1
- V = 5
- X = 10

The following is a list of the first twenty Roman numerals:

I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV, XVI, XVII, XVIII, XIX, XX

ANSWERS TO PROBLEMS:

Addition & Subtraction – page # 3	Multiplication & Division - page # 3
1. 488 2. 4,169 3. 4,689 4. 56,998 5. 13,243,340 6. 22 7. 2,015 8. 18,665 9. 15,419 10. 20,723	1. 350 2. 166,725 3. 1,790,755 4. 1,425,529 5. 1,803,360 6. 3 7. 3.5 (rounding rule!) 8. 1,427.3 (rounding rule!) 9. 113.6 (rounding rule!) 10. 19.9 (rounding rule!)
Metric Conversion – page # 5	Decimals – page # 6
1. 1,000 mg 2. 1,200 mL 3. 2,000 mcg 4. 1 L 5. 5,000 mcg 6. 6,000 g 7. 1800 mg 8. 0.95 g (rounding rule!) 9. 58,500 mL 10. 0.28 mg (rounding rule!) 11. 25 g 12. 5 kg	1. 80 (rounding rule!) 2. 0.48 (rounding rule!) 3. 12.3 (rounding rule!) 4. 0.85 (rounding rule!)
Decimals & Multiplication – page # 6	Decimals & Division – page # 7
1. 0.05 (rounding rule!) 2. 0.91(rounding rule!) 3. 9,650 4. 1.8 (rounding rule!) 5. 100.8 (rounding rule!)	1. 4 2. 1.2 (rounding rule!) 3. 70.9 (rounding rule!) 4. 30.5 (rounding rule!) 5. 0.59 (rounding rule!)
Ratio and Proportion – page # 9	
1. 48 2. 22.5 3. 2.4 4. 132 5. 55 6. 8 7. 4.9 (rounding rule!) 8. 3.3 (rounding rule!) 9. 10	