

Dosage Calculation Competency

Level III
Practice Sheet

STUDENT NAME: _____ DATE: ____ / ____ / ____

STUDENT I.D. #: _____ ADVISOR: _____

A 95% must be achieved on the competency exam to progress in the Nursing Program. Retesting cannot occur the same day as the failed exam. Each exam may be repeated once within the testing period unless there are no more published dates available. Testing process must be completed within specified testing dates. Failure to pass competency exam will result in following the remediation process as outlined in the student handbook.

Student will be allowed one hour to complete this competency.

If the student leaves during testing the exam will be collected and graded at that point whether completed or not.

A student photo ID is required to take the Dosage Calculation Competency Exam.

Only simple four function calculators are allowed for testing. Students may not share calculators.

DIRECTIONS:

Place all personal items in designated area.

Silence all cell phones.

Calculate the correct dosage and show your work on the exam.

- **Failure to label answers will result in missing the problem.**
- **Failure to show work will result in missing the problem.**
- All metric weights should be rounded to the nearest hundredth.
- Rounding should only be done at the last step in the problem.
- Round tablets/capsules to the nearest whole or half tablet (if scored).
- Liquid volumes greater than 1 mL/cc should be rounded to the nearest tenth. If volumes are less than 1 mL/cc, round to the nearest hundredth.
- Drip Rates - Calculate drip rates to the tenths place and round off to the nearest whole number
- IV pump drip rates – Calculate to the hundredths place and round to the tenths place.

Once exam is complete submit to faculty in room and proceed to designated waiting area to receive notification of score.

THERE ARE 20 QUESTIONS TO THIS TEST.

DO NOT OPEN THIS TEST OR BEGIN UNTIL DIRECTED TO START

For additional practice problems see:

Curren, A.M. (2010). *Dimensional Analysis for Meds* (4th ed). New York; Delmar.

COX COLLEGE
Springfield, Missouri

Dosage Calculation Competency
Math Review

Equivalents:

1 kilogram (KG) = 1000 Grams ((GM)

1 Gram (GM) = 1000 milligrams (mg)

1 mg = 1000 micrograms (mcg)

1 Liter (L) = 1000 milliliters (ml)

1 ml = 1 cubic centimeter (cc)

5 ml = 1 teaspoon (tsp)

3 tsp = 1 Tablespoon (Tbsp)

30 ml = 1 ounce (oz)

65 mg = 1 grain (gr)

2.2 pounds (lb) = 1 kilogram (KG)

1 lb = 16 oz

1 oz = 1/16 lb

11. Vanessa is to receive 1000 ml in 8h. You are using 10 gtt/ml tubing. What will your gtt/min be?

12. Peggy weighs 85 lbs and is to receive Rocephin GM 1 q12h. The Rocephin is mixed in 150 ml D₅W. Figure the gtt/min if it is to infuse over 40 minutes using 15 gtt/ml tubing.

13. The physician has ordered 500000 units swish and swallow. Based on the label how much will the nurse administer?



14. A hypotensive client is receiving IV dopamine(400 mg/250ml). The client weighs 72 kg and is receiving 15 ml/hr. How many mcg/kg/min is the client receiving?

15. Cindy is to receive 250 mL of NS over the next hour. The tubing drop factor is 15 so what will the gtt/min be?
16. You are to administer 12.5 mcg of Synthroid p.o. to Jean. The pharmacy sends Synthroid 0.025 mg per scored tablet. How many tablets should you administer?
17. Sherry's IV fluids are to finish over the next 3 hours. She has 500 ml left and the drop factor is 15. What should the drip rate be set at?
18. Your client is receiving an IV nitroglycerin gtt. (50 mg/250ml normal saline). The nurse needs to set your volumetric pump at what mL/hour to deliver 10 mcg/min?
19. The client weighs 132 pounds and is receiving a dopamine (400mg/500ml) infusion at 22.5 ml/hr per volumetric pump. How many mcg/kg/min is being given?
20. A 70 kg hypertensive client is ordered to receive 0.5 mcg/kg/min of IV nitroprusside. The solution strength is 50mg/250ml NS. How many mL/hr will the nurse set the IV pump?

Answers:

1. 55 ml
2. 45 gtt/min
3. 0.7 ml
4. 50 gtt/min
5. 60 mg
6. 24 mEq
7. 14 ml/hr
8. 1400 units
9. 10 ml/hr
10. 0.14 mg
11. 21 gtts./min
12. 56 gtts/min
13. 5 mL
14. 5.56 mcg/kg/min
15. 63 gtts/min
16. 0.5 tablets
17. 42 gtt/min
18. 3ml/hr
19. 5 mcg/kg/min
20. 10.5 mL/hr

Dosage Comp Level III & Level IV Practice Worksheet
Keys worked in Dimensional Analysis

- #1. **55 mL**
- | | | | | | |
|--|--------|---------------------------|--------|---------|--------|
| | Wanted | Recommended concentration | Order | | Answer |
| | mL | 1 mL | 275 mg | 1 x 275 | 55 |
| | | 5 mg | | 5 | |
- #2. **45 drops per minute**
- | | | | | | |
|--|-----------|-------------|--------|---------|--------|
| | Flow rate | Drip factor | Order | | Answer |
| | gtt | 60 gtt | 30 mL | 60 x 30 | 45 |
| | min | 1 mL | 40 min | 1 x 40 | |
- #3. **0.7 mL**
- | | | | | | |
|--|--------|--------------|-------|--------|--------|
| | Wanted | Have on hand | Order | | Answer |
| | mL | 40 mL | 7 mg | 40 x 7 | 0.7 |
| | | 400 mg | | 40 | |
- #4. **50 drops per minute**
- | | | | | | |
|--|-----------|-------------|--------|----------|--------|
| | Flow rate | Drip factor | Order | | Answer |
| | gtt | 15 gtt | 150 mL | 15 x 150 | 50 |
| | min | 1 mL | 45 min | 1 x 45 | |
- #5. **60 mg**
- | | | | | | | |
|--|--------|------------|--------------|-------|---------------|--------|
| | Wanted | conversion | Dose on hand | order | | Answer |
| | mg | 1000 mg | 1 gm | 30 mL | 1000 x 1 x 30 | 60 |
| | | 1 gm | 500 mL | | 1x 500 | |
- #6. **24 mEq**
- | | | | | | |
|--|--------|---------|------------------|----------|--------|
| | Wanted | Order | Solution on hand | | Answer |
| | mEq | 40 mEq | 600 mL | 40 x 600 | 24 |
| | | 1000 mL | | 1000 | |
- #7. **14 mL/ hr**
- | | | | | | |
|--|--------|--------------|-------|---------|--------|
| | Wanted | Dose on hand | Order | | Answer |
| | mL/hr | 250 mL | 7 mg | 250 x 7 | 14 |
| | | 125 mg | | 125 | |
- #8. **1400 units**
- | | | | | | |
|--|--------|--------------|-------|------------|--------|
| | Wanted | Dose on hand | Order | | Answer |
| | units | 25000 Units | 14 mL | 25000 x 14 | 1400 |
| | | 250 mL | | 250 | |
- #9. **10 mL/hr**
- | | | | | | |
|--|--------|--------------|---------|---------|--------|
| | Wanted | Dose on hand | Order | | Answer |
| | mL | 250 mL | 4 units | 250 x 4 | 10 |
| | | 100 units | | 100 | |
- #10. **0.14 mg**
- | | | | | | | | |
|--|---------|---------------|--------|------------|----------------|----------------|--------|
| | Wanted | Order per day | weight | conversion | Frequency/dose | | Answer |
| | Mg/dose | 0.06 mg | 7.2 kg | 1 day | 8 hr | 0.06 x 7.2 x 8 | 0.14 |
| | | 1 kg | | 24 hours | | 1 x 24 | |

#11. **21 gtt/min**

Flow rate	Drip factor	Order	Conversion	Answer
gtt	10 gtt	1000 mL	1 hr	20.8
min	1 mL	8 hr	60 min	
				$10 \times 1000 \times 1$
				$1 \times 8 \times 60$

#12. **56 gtt/min**

Flow rate	Drip factor	Supplied	Order	Answer
gtt	15 gtt	150 mL	1 gm	56.25
min	1 mL	1 gm	40 min	
				$15 \times 150 \times 1$
				$1 \times 1 \times 40$

#13. **5 mL**

Wanted	Have on Hand	Order	Answer
mL	1 mL	500,000	5
	100,000		
			1×500000
			100000

#14. **5.56 mcg/kg/min**

wanted	conversion	Strength of med	IV rate	conversion	Weight	Answer
Mcg	1000 mcg	400 mg	15 mL	1 hr	1	5.555
Kg/min	1 mg	250 mL	1 hr	60 min	72 kg	
						$1000 \times 400 \times 15 \times 1 \times 1$
						$1 \times 250 \times 1 \times 60 \times 72$

#15. **63 gtt/min**

Flow rate	Drip factor	Order	Conversion	Answer
gtt	15 gtt	250 mL	1 hr	62.5
min	1 mL	1hr	60 min	
				$15 \times 250 \times 1$
				$1 \times 1 \times 60$

#16. **0.5 tab or 1/2 tab**

Wanted	Have on Hand	conversion	Order	Answer
tabs	1 tab	1 mg	12.5 mcg	.05
	0.025 mg	1000 mcg		
				$1 \times 1 \times 12.5$
				0.025×1000

#17. **42 gtt/min**

Flow rate	Drip factor	Order	Conversion	Answer
gtt	15 gtt	500 mL	1 hr	41.666
min	1 mL	3 hr	60 min	
				$15 \times 500 \times 1$
				$1 \times 3 \times 60$

#18. **3 mL/hr**

wanted	Strength of med	conversion	order	conversion	Answer
mL	250 mL	1 mg	10 mcg	60 min	3
hr	50 mg	1000 mcg	Kg/min	1 hr	
					$250 \times 1 \times 10 \times 60$
					$50 \times 1000 \times 1$

#19. **5 mcg/kg/min**

wanted	conversion	Strength of med	IV rate	conversion	Wt	conversion	Answer
Mcg	1000 mcg	400 mg	22.5 mL	1 hr		2.2 #	5
Kg/min	1 mg	500 mL	1 hr	60 min	132#	1 kg	
							$1000 \times 400 \times 22.5 \times 1 \times 2.2$
							$1 \times 500 \times 1 \times 60 \times 132 \times 1$

#20. **10.5 mL/hr**

wanted	Strength of med	conversion	order	conversion	weight	Answer
mL	250 mL	1 mg	0.5 mcg	60 min	70 Kg	10.5
hr	50 mg	1000 mcg	Kg/min	1 hr		
						$250 \times 1 \times 0.5 \times 60 \times 70$
						$50 \times 1000 \times 1$