

PRACTICE MATH FOR NURSING 333

Instructor: Tricia Wickers

**Know the following equivalents:**

Metric	Apothecary	Approximate both systems
1L = 1000mL	1T=3t	1g=gr15
1gram=1000mg	1cup=8oz	gr1=60mg
1mg=1000mcg or 0.0001g	1pound=16oz	1t=5mL
1kg=1000grams		1oz=30mL
1 unit=1000 miliunits		1kg=2.2 pounds

Common Formulas

$\frac{\text{Dose Ordered}}{\text{Volume on hand}} = \frac{\text{Quantity desired}}{X \text{ volume}}$ <p>Cross multiply Vol. and Quantity, then divide by Dose Ordered</p>	<p>Must convert doses is problem before placing in formula.</p> <p>To arrange the ratio proportion correctly, the same units must be placed on top and the same units must be place on the bottom. For example:</p> $\frac{\text{mg}}{\text{mL}} = \frac{\text{mg}}{X \text{ mL}}$
$\frac{\text{Dose Ordered}}{\text{Dose you Have}} \times \text{Quantity you Have} = X$	<p>Must convert doses before placing in formula.</p>
<p>IV Formulas</p> <p>Infusion by drip chamber</p> $\frac{\text{mL to be given(volume)}}{\text{time in minutes}} \times \text{drip factor}$	<p>Example: Doctor orders 1gms of Ampicillin to be given. Pharmacy sends up 100mL bag with Ampicillin 1 gm to be infused over 30 minutes. Drip factor is 15. You set your drip rate at ____ drops/minute</p> $\frac{100\text{mL}}{30 \text{ minutes}} \times 15 = \text{drops per minute}$ <p>(answer 31)</p>
<p>Infusion pump at hourly rate:</p> $\frac{\text{Total mL ordered}}{\text{Total hour ordered}} = \text{mL/hour}$	<p>Round off to a whole number</p>
<p>Infusion for less than one hour by infusion pump use ratio and proportion</p> $\frac{\text{mL to infuse}}{\text{time to infuse in minutes}} = \frac{X \text{ mL}}{60 \text{ minutes}}$	<p>For example, using the same problem above, but giving Ampicillin by pump.</p> $\frac{100\text{mL}}{30 \text{ min}} = \frac{X \text{ mL}}{60 \text{ minutes}}$ <p>(answer 200)</p>
<p>For Pitocin and Ritodrine problems use formulas one or two. This will give you the dose/minute, which you must multiply by 60 to get the hourly rate to set the pump at.</p>	

*If you need more detailed directions on these formulas, refer to your Pickar Dosage Calculations book*

**Some additional rules to always follow:**

1. Always put a 0 in front of a decimal. For example, 0.2, 0.15
2. When the amount to be administered is under 1mL, use a TB syringe (1mL syringe).
3. Carry out your calculations to the third space and round off to the second space for your doses under 1mL. For example: 0.126 would be rounded off to 0.13mL.
4. When the amount to be administered is over 1mL, use a 3mL syringe.
5. Carry out your calculations to the 2<sup>nd</sup> space and round off to the 1<sup>st</sup> space. For example. 1.26, would be rounded off to 1.3mL, 1.66, would be rounded off to 1.7mL.
6. Round up one for 5 or more.
7. Use whole numbers for IV problems.

**PRACTICE MATH PROBLEMS FOR NURSING 333**

1. Give Toradol 45mg. On hand is a vial of Toradol 60mg/2mL. You should draw up \_\_\_\_\_ mL in a \_\_\_\_\_ syringe.
2. Give Benedryl 25 mg from Benedryl 50mg/mL (1mL vial) IM. You should draw up \_\_\_\_\_ mL in a \_\_\_\_\_ syringe
3. Give Benedryl 45 mg from Benedryl 50mg/mL (1mL vial) IM. You should draw up \_\_\_\_\_ mL in a \_\_\_\_\_ syringe.
4. The doctor ordered Phergan 20 mg form Phergan 50mg/1mL. You should give \_\_\_\_\_ mL.
5. Give Demerol 10mg from Demerol 25mg/mL, IM
6. Give Demerol 35mg from Demerol 50mg/mL vial, IM.
7. Give Tylenol 30 mg, po. On hand is Tylenol gr ii/5mL. Give \_\_\_\_\_ mL.
8. 1.2 million Units of Aqueous Penicillin G is ordered. In stock is Aqueous Penicillin G 1,000,000Units/mL. You would give \_\_\_\_\_ mL.
9. The doctor ordered Tylenol gr V. The pharmacy sent up Tylenol 300mg tabs. You would give \_\_\_\_\_ tab(s)
10. The doctor ordered Phenobarb 40mg. The pharmacy sent up 20mg tabs. You would give \_\_\_\_\_ tab(s)
11. The doctor ordered Tylenol gr Viii. You have Tylenol 500mg tabs. You need to give \_\_\_\_\_ tab(s).

12. Morphine sulfate gr  $\frac{1}{8}$  is ordered for injection for your patient. The available solution is gr  $\frac{1}{12}$  per mL. What amount will you give?
13. Motrin 0.6g is ordered; available tablets contain 600 mg. How many tablets will you give?
14. Clinoril 250 mg is ordered; available tablets are 0.5 g. How many tablets will you give?
15. Ergotrate maleate 200 mcg is ordered. Dosage strength is 0.2 mg. How many tablets will you administer?
16. Imipramine HCL is available in 50 mg tablets. How many tablets will you administer if the order is for .05 g
17. Sodium Seconal capsules are labeled 100 mg. How many will be administered if the order is for gr  $1 \frac{1}{2}$ ?
18. Azulfidine 1.5 g has been ordered every twelve hours. The available tablets are 500 mg each. What amount will you give?
19. Premarin 1.25 mg is ordered daily for your patient. The only available tablet strength is 625 mcg. What amount will you give?
20. A Potassium penicillin 1,200,000 u has been ordered for your patient. The available tablets are 400,000 u each. What amount will you give?
21. Azulfidine two grams has been ordered every twelve hours. The available tablets are 500 mg each. What amount will you give?
22. Potassium penicillin 800,000 u has been ordered for your patient. The available tablets are 400,000 u each. How many will you give?
23. 100 mg per tablet is available; how much will you administer if the dosage ordered is 0.1 gram?
24. Dilaudid 3 mg IM is ordered for your patient. The only available dosage strength is 2 mg/mL. What amount will you give?

25. 0.25g Tetracycline is ordered; available solution contains 50mg per mL. How many mL's will you give?
26. The physician orders an IV infusion of D5W 1000 mL to infuse over the next eight hours. The IV tubing that you are using delivers 15gtt/min. What is the correct rate of flow?
27. A patient, admitted with a head injury, has an order for D5NS at 25 mL/hour. The IV tubing has a calibration of 10gtt/mL. What is the correct rate of flow for this patient?
28. Your patient has an order to infuse 100 mL of D51/2NS with 10MEq of KCl over the next thirty minutes. You would set your IV pump at \_\_\_\_\_mL/hour.
29. The order reads: "Over the next 4 hours, infuse 500 ml of 5% Dextrose in Normal Saline. Add 20 MEq of KCl to solution." You should set your IV pump at \_\_\_\_\_mL/hour.
30. The 10am medications scheduled for your patient include Keflex 1.5 G in 50 mL of a 5% Dextrose solution. According to the pharmacy, this preparation should be administered in thirty minutes. The IV tubing on your unit delivers 15 gtts per milliliter. What is the correct rate of flow in drops per minute?
31. The 10am medications scheduled for your patient include Keflex 1.5 G in 50 mL of a 5% Dextrose solution. According to the pharmacy, this preparation should be administered in thirty minutes. You should set your IV pump at \_\_\_\_\_mL/hour.
32. The physician orders an IV infusion of D5W 1000 ml to infuse over the next eight hours. The IV tubing that you are using delivers 10 gtt/ml. What is the correct rate of flow (drops per minute)?
33. The physician orders an IV infusion of D5W 1000 ml to infuse over the next eight hours. You would set your IV pump at \_\_\_\_\_mL/hour.
34. The 10am medications scheduled for your patient include Keflex 2.0 g in 100 ml of a 5% Dextrose solution. According to the pharmacy, this preparation should be administered in thirty minutes. The IV tubing on your unit delivers 10 gtts per milliliter. What is the correct rate of flow in drops per minute?
35. The 10am medications scheduled for your patient include Keflex 2.0 g in 100 ml of a 5% Dextrose solution. According to the pharmacy, this preparation should be administered in thirty minutes. You should set your IV pump at \_\_\_\_\_mL/hour.

36. The physician orders 1.5 liters of Lactated Ringers solution to be administered intravenously to your patient over the next 12 hours. Calculate the rate of flow if the IV tubing delivers 20gtt/ml.
37. The physician reduces an IV to 30ml/hour. The IVAC indicates that 270 ml are remaining in the present IV bag. You notice that it is exactly 10:30 am. At what time will the infusion be completed?
38. The medications scheduled for your patient include Keflex 1.5 grams in 50 ml of a 5% Dextrose solution. According to the pharmacy, this preparation should be administered in 30 minutes. You would set your IV pump at \_\_\_\_\_mL/hour.
39. The physician ordered the pitocin infusion to run at 16mu/min. The pharmacy sent up 10 units of pitocin in 500mL of D5LR. You would set your pump at \_\_\_\_\_ mL/hour.
40. The physician ordered the pitocin infusion to run at 6mu/min. The pharmacy sent up 10 units of pitocin in 500mL of D5LR. You would set your pump at \_\_\_\_\_ mL/hour.
41. The physician ordered Ritodrine IV 50mcg/min. The pharmacy sent up Ritodrine 150mg premixed in 500mL D5W. You would set your IV pump at \_\_\_\_\_mL/hour.
42. The physician ordered Ritodrine IV 70mcg/min. The pharmacy sent up Ritodrine 150mg premixed in 500mL D5W. You would set your IV pump at \_\_\_\_\_mL/hour
43. The doctor ordered Magnesium Sulfate 2gm/ hour IV. Magnesium Sulfate come in 40gm/1000mL IV bottle. You would set your pump at \_\_\_\_\_mL/hour.
44. The doctor ordered Magnesium Sulfate 4gm IV to be given over 20 minutes. Magnesium Sulfate come in 40gm/1000mL IV bottle. You would set your pump at \_\_\_\_\_mL/hour.

## Answers

1. 1.5mL in a 3mL syringe
2. 0.5mL in a TB (1mL) syringe
3. 0.9mL in a TB syringe
4. 0.4mL
5. 0.4mL
6. 0.7mL
7. 1.25mL
8. 1.2mL
9. 1 tab
10. 2 tabs
11. 1 tab
12. 1.5mL
13. 1 tab
14. 1/2 tab
15. 1 tab
16. 1 tab
17. 1 tab
18. 3 tabs
19. 2 tabs
20. 3 tabs
21. 4 tabs
22. 2 tabs
23. 1 tab
24. 1.5 mL
26. 31 gtts
27. 4 gtts
28. 200mL
29. 100mL/hr
30. 25 gtts
31. 100 mL/hr
32. 21 gtts
33. 125 mL/hr
34. 17 dtts
35. 200mL/hr
36. 42 gtts
37. 7:30 P.M.
38. 100mL/hr
39. 48mL/hr
40. 18mL/hr
41. 10mL/hr
42. 14 mL/hr
43. 50 mL/hr
44. 300 mL/hr