

## Math Review Answer Key

### Conversions

$100 \text{ mg} = \underline{\hspace{2cm}} \text{ g}$

$100 \text{ mg} \times \frac{1 \text{ g}}{1,000 \text{ mg}} = 0.1 \text{ g}$

$0.1 \text{ g} = \underline{\hspace{2cm}} \text{ mg}$

$0.1 \text{ g} \times \frac{1,000 \text{ mg}}{1 \text{ g}} = 100 \text{ mg}$

$1 \text{ oz} = \underline{\hspace{2cm}} \text{ mL}$

$1 \text{ oz} \times \frac{30 \text{ mL}}{1 \text{ oz}} = 30 \text{ mL}$

$500 \text{ mg} = \underline{\hspace{2cm}} \text{ g}$

$500 \text{ mg} \times \frac{1 \text{ g}}{1,000 \text{ mg}} = 0.5 \text{ g}$

$12 \text{ kg} = \underline{\hspace{2cm}} \text{ lb}$

$12 \text{ kg} \times \frac{2.2 \text{ lb}}{1 \text{ kg}} = 26.4 \text{ lb}$

$1 \text{ L} = \underline{\hspace{2cm}} \text{ mL}$

$1 \text{ L} \times \frac{1,000 \text{ mL}}{1 \text{ L}} = 1,000 \text{ mL}$

$300 \text{ mcg} = \underline{\hspace{2cm}} \text{ mg}$

$300 \text{ mcg} \times \frac{1 \text{ mg}}{1,000 \text{ mcg}} = 0.3 \text{ mg}$

$6 \text{ oz} = \underline{\hspace{2cm}} \text{ mL}$

$6 \text{ oz} \times \frac{30 \text{ mL}}{1 \text{ oz}} = 180 \text{ mL}$

$0.6 \text{ mg} = \underline{\hspace{2cm}} \text{ mcg}$

$0.6 \text{ mg} \times \frac{1,000 \text{ mcg}}{1 \text{ mg}} = 600 \text{ mcg}$

$10 \text{ oz} = \underline{\hspace{2cm}} \text{ mL}$

$10 \text{ oz} \times \frac{30 \text{ mL}}{1 \text{ oz}} = 300 \text{ mL}$

$600 \text{ mg} = \underline{\hspace{2cm}} \text{ g}$

$600 \text{ mg} \times \frac{1 \text{ g}}{1,000 \text{ mg}} = 0.6 \text{ g}$

$0.015 \text{ g} = \underline{\hspace{2cm}} \text{ mg}$

$0.015 \text{ g} \times \frac{1,000 \text{ mg}}{1 \text{ g}} = 15 \text{ mg}$

$12 \text{ tsp} = \underline{\hspace{2cm}} \text{ mL}$

$12 \text{ tsp} \times \frac{5 \text{ mL}}{1 \text{ tsp}} = 60 \text{ mL}$

$10 \text{ mcg} = \underline{\hspace{2cm}} \text{ mg}$

$10 \text{ mcg} \times \frac{1 \text{ mg}}{1,000 \text{ mcg}} = 0.01 \text{ mg}$

$90 \text{ mL} = \underline{\hspace{2cm}} \text{ tbs}$

$90 \text{ mL} \times \frac{1 \text{ tbs}}{15 \text{ mL}} = 6 \text{ tbs}$

$2 \text{ kg} = \underline{\hspace{2cm}} \text{ lb}$

$2 \text{ kg} \times \frac{2.2 \text{ lb}}{1 \text{ kg}} = 4.4 \text{ lb}$

$1,500 \text{ mcg} = \underline{\hspace{2cm}} \text{ g}$

$1,500 \text{ mcg} \times \frac{1 \text{ mg}}{1,000 \text{ mcg}} \times \frac{1 \text{ g}}{1,000 \text{ mg}} = 0.0015 \text{ g}$

$2,100 \text{ g} = \underline{\hspace{2cm}} \text{ kg}$

$2,100 \text{ g} \times \frac{1 \text{ kg}}{1,000 \text{ g}} = 2.1 \text{ kg}$

$5,000 \text{ g} = \underline{\hspace{2cm}} \text{ mcg}$

$5,000 \text{ g} \times \frac{1,000 \text{ mg}}{1 \text{ g}} \times \frac{1,000 \text{ mcg}}{1 \text{ mg}} = 5,000,000,000 \text{ mcg}$

$8 \text{ tsp} = \underline{\hspace{2cm}} \text{ mL}$

$8 \text{ tsp} \times \frac{5 \text{ mL}}{1 \text{ tsp}} = 40 \text{ mL}$

$30 \text{ kg} = \underline{\hspace{2cm}} \text{ lb}$

$30 \text{ kg} \times \frac{2.2 \text{ lb}}{1 \text{ kg}} = 66 \text{ lb}$

$250 \text{ mcg} = \underline{\hspace{2cm}} \text{ mg}$

$250 \text{ mcg} \times \frac{1 \text{ mg}}{1,000 \text{ mcg}} = 0.25 \text{ mg}$

$102 \text{ F} = \underline{\hspace{2cm}} \text{ C}$

$102 \text{ F} - 32 \div 1.8 = 38.88, \text{ rounds up to } 38.9 \text{ C}$

$8.4 \text{ lb} = \underline{\hspace{2cm}} \text{ kg}$

$8.4 \text{ lb} \times \frac{1 \text{ kg}}{2.2 \text{ lb}} = 3.8 \text{ kg}$

$10 \text{ mg} = \underline{\hspace{2cm}} \text{ mcg}$

$10 \text{ mg} \times \frac{1,000 \text{ mcg}}{1 \text{ mg}} = 10,000 \text{ mcg}$

$0.2 \text{ g} = \underline{\hspace{2cm}} \text{ mg}$

$0.2 \text{ g} \times \frac{1,000 \text{ mg}}{1 \text{ g}} = 200 \text{ mg}$

$60 \text{ mL} = \underline{\hspace{2cm}} \text{ oz}$

$60 \text{ mL} \times \frac{1 \text{ oz}}{30 \text{ mL}} = 2 \text{ oz}$

$0.001 \text{ mg} = \underline{\hspace{2cm}} \text{ mcg}$

$0.001 \text{ mg} \times \frac{1,000 \text{ mcg}}{1 \text{ mg}} = 1 \text{ mcg}$

$38.7 \text{ C} = \underline{\hspace{2cm}} \text{ F}$

$38.7 \text{ C} \times 1.8 + 32 = 101.66, \text{ rounds up to } 101.7 \text{ F}$

$150 \text{ lb} = \underline{\hspace{2cm}} \text{ kg}$

$150 \text{ lb} \times \frac{1 \text{ kg}}{2.2 \text{ lb}} = 68.18, \text{ rounds up to } 68.2 \text{ kg}$

$9 \text{ tsp} = \underline{\hspace{2cm}} \text{ tbs}$

$9 \text{ tsp} \times \frac{5 \text{ mL}}{1 \text{ tsp}} \times \frac{1 \text{ tbs}}{15 \text{ mL}} = 3 \text{ tbs}$

### Story Problems

**NOTE:** F: formula method; DA: Dimensional Analysis; R/P: ratio/proportion

1. A health care provider (HCP) orders carbamazepine (Tegretol) 0.2 g tabs orally TID for a client with an onset of new seizures.

Available from pharmacy: carbamazepine (Tegretol) 100 mg tabs

A nurse will administer how many **tablets** per dose? 2

$$F: 0.2 \text{ g} \times \frac{1000 \text{ mg}}{1 \text{ g}} = 200 \text{ mg} \quad \frac{200 \text{ mg}}{100 \text{ mg}} \times 1 \text{ tab} = 2$$

**OR**

$$DA: ? \text{ tab} \times \frac{1 \text{ tab}}{100 \text{ mg}} \times \frac{1000 \text{ mg}}{1 \text{ g}} \times \frac{0.2 \text{ g}}{1} = 2$$

**OR**

$$\frac{R}{P}: \frac{100 \text{ mg}}{1 \text{ tab}} = \frac{200 \text{ mg}}{X \text{ tab}} = 2$$

How many milligrams will the client receive in 24 hours? 600

$$0.2 \text{ g} \times \frac{1000 \text{ mg}}{1 \text{ g}} = 200 \text{ mg} \quad 200 \text{ mg} \times \text{tid} (3) = 600$$

2. A health care provider (HCP) orders hydrochlorothiazide 12.5 mg orally TID

Available from pharmacy: hydrochlorothiazide 25 mg scored tablets

A nurse will administer how many **tablets** per dose? 0.5

$$F: \frac{12.5 \text{ mg}}{25 \text{ mg}} \times 1 \text{ tab} = 0.5$$

**OR**

$$DA: ? \text{ tab} \quad \frac{1 \text{ tab}}{25 \text{ mg}} \times \frac{12.5 \text{ mg}}{1} = 0.5$$

**OR**

$$\frac{R}{P}: \frac{25 \text{ mg}}{1 \text{ tab}} = \frac{12.5 \text{ mg}}{X \text{ tab}} = 0.5$$

How many milligrams will the client receive in 24 hours? 37.5

$$12.5 \text{ mg} \times \text{tid} (3 \text{ doses}) = 37.5$$

3. A health care provider (HCP) orders digoxin (Lanoxin) 375 mcg orally once a day.

Available from pharmacy: digoxin (Lanoxin) 0.25 mg scored tablets.

A nurse will administer how many **tablets** per dose? 1.5

$$F \quad 375 \text{ mcg} \times \frac{1 \text{ mg}}{1000 \text{ mcg}} = 0.375 \text{ mg} \quad \frac{0.375 \text{ mg}}{0.25 \text{ mg}} \times 1 \text{ tab} = 1.5$$

**OR**

$$DA: ? \text{ tab} \quad \frac{1 \text{ tab}}{0.25 \text{ mg}} \times \frac{1 \text{ mg}}{1000 \text{ mcg}} \times \frac{375 \text{ mcg}}{1} = 1.5$$

**OR**

$$\frac{R}{P}: 375 \text{ mcg} \times \frac{1 \text{ mg}}{1000 \text{ mcg}} = 0.375 \text{ mg} \quad \frac{0.25 \text{ mg}}{1 \text{ tab}} = \frac{0.375 \text{ mg}}{X \text{ tab}} = 1.5$$

4. A health care provider orders linezolid (Zyvox) 0.6 g orally q12h

Available from pharmacy: linezolid (Zyvox) oral suspension 100 mg per 5 mL

A nurse will administer how many **milliliters** per dose? 30

$$F \quad 0.6 \text{ g} \times \frac{1000 \text{ mg}}{1 \text{ g}} = 600 \text{ mg} \quad \frac{600 \text{ mg}}{100 \text{ mg}} \times 5 \text{ mL} = 30$$

**OR**

$$DA \quad ? \text{ mL} \quad \frac{5 \text{ mL}}{100 \text{ mg}} \times \frac{1000 \text{ mg}}{1 \text{ g}} \times \frac{0.6 \text{ g}}{1} = 30$$

**OR**

$$\frac{R}{P}: 0.6 g \times \frac{1000 mg}{1 g} = 600 mg \quad \frac{100 mg}{5 mL} = \frac{600 mg}{X mL} = 30$$

If the container holds 600 mL, how many doses are in the bottle? 20

$$600 \frac{mL}{bottle} \div 30 \frac{mL}{dose} = 20 doses$$

5. A health care provider orders valproic acid (Depakene) 150 mg orally BID  
Available from pharmacy: valproic acid (Depakene) oral suspension 250 mg per 5 mL  
A nurse will administer how many **milliliters** per dose? 3

$$F: \frac{150 mg}{250 mg} \times 5 mL = 3$$

**OR**

$$DA: ? mL \quad \frac{5 mL}{250 mg} \times \frac{150 mg}{1} = 3$$

**OR**

$$\frac{R}{P}: \frac{250 mg}{5 mL} = \frac{150 mg}{X mL} = 3$$

If the container holds 180 mL, how many doses are in the bottle? 60

$$180 \frac{mL}{bottle} \div 3 \frac{mL}{dose} = 60$$

6. A health care provider orders ketorolac (Toradol) 25 mg IM q6h prn for severe pain  
Available from pharmacy: ketorolac 15 mg/mL  
A nurse will administer how many **milliliters** per dose? 1.7

$$F: \frac{25 mg}{15 mg} \times 1 mL = 1.66, rounds up to 1.7$$

**OR**

$$DA: ? mL \quad \frac{1 mL}{15 mg} \times \frac{25 mg}{1} = 1.66, rounds up to 1.7$$

**OR**

$$\frac{R}{P}: \frac{15 \text{ mg}}{1 \text{ ml}} = \frac{25 \text{ mg}}{X \text{ mL}} = 1.7$$

7. A healthcare provider orders ondansetron (Zofran) 3 mg slow IV push X 1 dose stat. Available from pharmacy: ondansetron (Zofran) 4 mg/2 mL single dose vial  
A nurse will administer how many **milliliters** of ondansetron per dose? 1.5

$$F: \frac{3 \text{ mg}}{4 \text{ mg}} \times 2 \text{ mL} = 1.5$$

**OR**

$$DA: ? \text{ mL} \frac{2 \text{ mL}}{4 \text{ mg}} \times \frac{3 \text{ mg}}{1} = 1.5$$

**OR**

$$\frac{R}{P}: \frac{4 \text{ mg}}{2 \text{ mL}} = \frac{3 \text{ mg}}{X \text{ mL}} = 1.5$$

8. A health care provider orders a client with psoriasis hydrocortisone cream 2% (2 g/100 mL) topical ointment. The client is to apply 100 mg (1 applicator full) to the right elbow BID and cover with an occlusive dressing.  
How many **milliliters** does the client administer per dose? 5

$$F: 2 \text{ g} \times \frac{1000 \text{ mg}}{1 \text{ g}} = 2,000 \text{ mg} \quad \frac{100 \text{ mg}}{2,000 \text{ mg}} \times 100 \text{ mL} = 5$$

**OR**

$$DA: ? \text{ mL} \frac{100 \text{ mL}}{2 \text{ g}} \times \frac{1 \text{ g}}{1,000 \text{ mg}} \times \frac{100 \text{ mg}}{1} = 5$$

**OR**

$$\frac{R}{P}: 2 \text{ g} \times \frac{1000 \text{ mg}}{1 \text{ g}} = 2,000 \text{ mg} \quad \frac{2,000 \text{ mg}}{100 \text{ mL}} \times \frac{100 \text{ mg}}{X \text{ mL}} = 5$$

9. A health care provider orders heparin 6,000 units subcut q12h. Available from pharmacy: heparin 10,000 units/mL vial

A nurse will administer how many **milliliters** per dose? \_\_\_\_\_ **0.6** \_\_\_\_\_

$$F: \frac{6,000 \text{ units}}{10,000 \text{ units}} \times 1 \text{ mL} = 0.6$$

**OR**

$$DA: ? \text{ mL} \frac{1 \text{ mL}}{10,000 \text{ units}} \times \frac{6,000 \text{ units}}{1} = 0.6$$

**OR**

$$\frac{R}{P}: \frac{10,000 \text{ units}}{1 \text{ mL}} = \frac{6,000 \text{ units}}{X \text{ mL}} = 0.6$$

10. A health care provider orders enoxaparin sodium (Lovenox) 65 mg subcut q12h  
Available from pharmacy: enoxaparin sodium (Lovenox) 40 mg/0.4 mL syringe  
A nurse will administer how many **milliliters** per dose? \_\_\_\_\_ **0.65** \_\_\_\_\_

$$F: \frac{65 \text{ mg}}{40 \text{ mg}} \times 0.4 \text{ mL} = 0.65$$

**OR**

$$DA: ? \text{ mL} \frac{0.4 \text{ mL}}{40 \text{ mg}} \times \frac{65 \text{ mg}}{1} = 0.65$$

**OR**

$$\frac{R}{P}: \frac{40 \text{ mg}}{0.4 \text{ mL}} = \frac{65 \text{ mg}}{X \text{ mL}} = 0.65$$

11. A health care provider orders Novolin R (regular U-100 insulin) 21 units with Novolin N (NPH U-100) 15 units subcut stat.  
A nurse will administer **how many total units** of insulin? \_\_\_\_\_ **36** \_\_\_\_\_

$$21 \text{ units} + 15 \text{ units} = 36$$

12. A health care provider orders Humulin R (regular U-100 insulin) 16 units with Humulin N (NPH U-100 insulin) 42 units subcut stat  
A nurse will administer **how many total units** of insulin? \_\_\_\_\_ **58** \_\_\_\_\_

$$16 \text{ units} + 42 \text{ units} = 58$$

13. A healthcare provider orders methylprednisolone sodium succinate (Solu-Medrol) 175 mg slow IV push daily. The pharmacy sends a 500 mg vial of powdered medication for reconstitution with the following mixing directions: Reconstitute with 8 mL of Bacteriostatic Water for injection with Benzyl Alcohol. Mix well. The resulting concentration is 500 mg per 8 mL.

A nurse will administer how many **milliliters** per dose? \_\_\_\_\_ 2.8 \_\_\_\_\_

$$F: \frac{175 \text{ mg}}{500 \text{ mg}} \times 8 \text{ mL} = 2.8$$

**OR**

$$DA: ? \text{ mL} \frac{8 \text{ mL}}{500 \text{ mg}} \times \frac{175 \text{ mg}}{1} = 2.8$$

**OR**

$$\frac{R}{P}: \frac{500 \text{ mg}}{8 \text{ mL}} = \frac{175 \text{ mg}}{X \text{ mL}} = 2.8$$

14. Read the label below and use it to answer the following question:

A prescriber orders a client with pneumonia to receive fluconazole 50 mg orally BID. The pharmacy supplies fluconazole suspension. See Label Below:

**FOR ORAL USE ONLY**  
**STORAGE**  
*Before Reconstitution:*  
 Store below 86°F (30°C).  
*After Reconstitution:*  
 Store suspension between 41°F (5°C) and 86°F (30°C).  
 Protect from freezing.  
**SHAKE WELL BEFORE EACH USE.**  
**DISCARD UNUSED PORTION AFTER 2 WEEKS.**  
**MIXING DIRECTIONS**  
 Tap bottle lightly to loosen powder. Add 24 mL of distilled water or Purified Water (USP) to the bottle. Shake well.  
**DOSAGE AND USE**  
 See accompanying prescribing information. This package contains 350 mg fluconazole in a natural orange-flavored mixture.\*  
 Distributed by:  
**Greenstone LLC**  
 Peapack, NJ 07977

NDC 59762-5029-1  
 35 mL when reconstituted  
**GREENSTONE® BRAND**  
**fluconazole**  
 for Oral Suspension  
**ORANGE FLAVORED**  
**10 mg/mL**  
 when reconstituted  
 Rx only

How many **milliliters** of diluent should be added? \_\_\_\_\_ 24 \_\_\_\_\_

After reconstitution, how many **milligrams** are in one milliliter? \_\_\_\_\_ 10 \_\_\_\_\_

How many **milliliters** will a nurse administer per dose? \_\_\_\_\_ 5 \_\_\_\_\_

$$F: \frac{50 \text{ mg}}{10 \text{ mg}} \times 1 \text{ mL} = 5$$

**OR**

$$DA: ? \text{ mL} = \frac{1 \text{ mL}}{10 \text{ mg}} \times \frac{50 \text{ mg}}{1} = 5$$

**OR**

$$\frac{R}{P}: \frac{10 \text{ mg}}{1 \text{ mL}} = \frac{50 \text{ mg}}{X \text{ mL}} = 5$$

How many **milligrams** will the client receive in 24 hours? 100

$$50 \text{ mg} \times \text{BID (2 doses per day)} = 100$$

If the bottle contains 35 mL, how many **total doses** are available? **7**

$$35 \frac{\text{mL}}{\text{bottle}} \div 5 \frac{\text{mL}}{\text{dose}} = 7$$

15. A diabetic client is to receive mealtime coverage for carbohydrate intake with Regular insulin subcutaneously. The client's insulin to carbohydrate ratio is 1:12. The client consumed 72 grams of carbohydrates at their meal.

How many **units of regular insulin** should a nurse administer? 6

$$72 \text{ g CHO} \div 12 \frac{\text{units}}{\text{g}} = 6$$

16. A type I diabetic client has the following insulin orders:

Check the client's capillary blood glucose before meals and cover with Humulin R per sliding scale orders, this dose is in addition to the regularly scheduled dose of morning insulin.

Give Humulin N (NPH U-100) 25 units and Humulin R (regular U-100) 6 units subcut with breakfast at 0800.

Sliding Scale Coverage

0 - 150	Give 0 units
151 - 175	Give 2 units
176 - 200	Give 4 units
201 - 225	Give 6 units
226 - 250	Give 8 units
> 250	Call Prescriber

**The RN noted that the client's AM glucose was 202 at 0745 hrs**

How many **units of regular insulin** should be given? 6 units + 6 units = 12

How much **total insulin** should be given? 25 N + 12 R = 37

17. A health care provider orders 1000 mL of 5% Dextrose in Water (D5W) to infuse over 8 hours. A nurse will set the IV pump for how many **milliliters per hour**? 125

$$1000 \text{ mL} \div 8 \text{ hr} = 125$$

18. A health care provider orders a client to receive 1500 mL of Lactated Ringers Solutions (LR) over 8 hours. How many **milliliters per hour** should the IV pump be programmed by a nurse? 188

$$1500 \text{ mL} \div 8 \text{ hr} = 187.5, \text{ rounds up to } 188$$

19. An IV is infusing a 66 ml/hr. A nurse notes that there are 429 ml left in the IV and the time is 0915 hours. At **what time** in hours and minutes (use military time) will the infusion be complete? 1545 hrs

$$429 \text{ mL} \div 66 \frac{\text{mL}}{\text{hr}} = 6.5 \text{ hours}$$

$$60 \frac{\text{min}}{\text{hr}} \div 0.5 \text{ hr} = 30 \text{ minutes}$$

$$0915 \text{ hr} + 6.5 \text{ hrs} = 1545 \text{ hrs}$$

20. A health care provider orders piperacillin and tazobactam (Zosyn) 1.3 g in 100 mL of 5% Dextrose in Water (D5W) IVPB to infuse in 30 minutes. A nurse will set the IV pump for how many **milliliters per hour**? 200

$$\frac{30 \text{ min}}{60 \text{ min/hr}} = 0.5 \text{ hr} \quad \frac{100 \text{ mL}}{0.5 \text{ hr}} = 200$$

21. A health care provider orders 50 mL of an IVPB antibiotic solution to infuse in 30 minutes. A nurse will set the IV for how many **milliliters per hour**? 100

$$\frac{30 \text{ min}}{60 \text{ min/hr}} = 0.5 \text{ hr} \quad \frac{50 \text{ mL}}{0.5 \text{ hr}} = 100$$

22. A health care provider orders 5% Dextrose in Water (D5W) 1000 mL IV to infuse in 12 hours. Drop factor of the tubing is 20 gtts/mL. How many **drops per minute** will a nurse set the infusion? 28

$$\frac{1000 \text{ mL}}{12 \text{ hr}} \times \frac{20 \text{ gtts/mL}}{60 \text{ min/hr}} = 27.7, \text{ rounds up to } 28$$

23. A health care provider orders a client to receive 500 mL of blood plasma over 4 hours.

Drop factor of the tubing is 15 gtts/mL.

How many **drops per minute** will a nurse set the infusion? 31

$$\frac{500 \text{ mL} \times 15 \text{ gtts/mL}}{4 \text{ hr} \times 60 \text{ min/hr}} = 31.25, \text{ rounds down to } 31$$

24. A health care provider orders ampicillin 500 mg dissolved in 100 mL of 5% Dextrose in Water (D5W) to infuse in 1 hour via IVPB. Drop factor of the tubing is 10 gtts/mL

Calculate the **milliliters per hour**. 100

Calculate the **drops per minute**. 17

$$\frac{\text{mL}}{\text{hr}}: \frac{100 \text{ mL}}{1 \text{ hr}} = 100$$

$$\frac{100 \text{ mL} \times 10 \text{ gtts/mL}}{1 \text{ hr} \times 60 \text{ min/hr}} = 16.66, \text{ rounds up to } 17$$

25. A health care provider orders a client to receive 500 mL of 5% Dextrose and 0.45% Sodium Chloride (D5&1/2NS) to infuse over 6 hours. Drop factor of the tubing is 20 gtt/mL

Calculate the **milliliters per hour**. 83.3

Calculate **drops per minute**. 28

$$\frac{500 \text{ mL}}{6 \text{ hr}} = 83.3$$

$$\frac{500 \text{ mL}}{6 \text{ hr}} \times \frac{20 \text{ gtts/mL}}{60 \text{ min/hr}} = 27.7, \text{ rounds up to } 28$$

26. A health care provider orders a client to receive 0.9% Sodium Chloride (NS) 500 mL mixed with heparin 20,000 units to infuse at 1,400 units/hr

A nurse will set the IV pump for how many **milliliters per hour**? 35

$$DA: ? \frac{\text{mL}}{\text{hr}} \frac{500 \text{ mL}}{20,000 \text{ units}} \times \frac{1,400 \text{ units/hr}}{1} = 35$$

**OR**

$$F: \frac{1,400 \text{ units/hr}}{20,000 \text{ units}} \times 500 \text{ mL} = 35$$

**OR**

$$\frac{R}{P}: \frac{20,000 \text{ units}}{500 \text{ mL}} = \frac{1,400 \text{ units}}{X \text{ mL}} = 35$$

27. A health care provider orders a client to receive regular insulin to infuse at 3 units/hr. The insulin comes from pharmacy in a concentration of 100 units of regular insulin in 200 mL of 0.9% Sodium Chloride (NS).  
A nurse will set the IV pump at how many **milliliters per hour**? 6

$$F: \frac{3 \text{ units/hr}}{100 \text{ units}} \times 200 \text{ mL} = 6$$

**OR**

$$DA: ? \frac{\text{mL}}{\text{hr}} \frac{200 \text{ mL}}{100 \text{ units}} \times \frac{3 \text{ units/hr}}{1} = 6$$

**OR**

$$\frac{R}{P}: \frac{100 \text{ units}}{200 \text{ mL}} = \frac{3 \text{ units/hr}}{X \text{ mL}} = 6$$

28. A health care provider orders potassium chloride 40 mEq in 1000 mL of D5W to infuse at 2 mEq/hr. A nurse will program the IV pump for how many **milliliters per hour**? 50

$$F: \frac{2 \text{ mEq/hr}}{40 \text{ mEq}} \times 1000 \text{ mL} = 50$$

**OR**

$$DA: ? \frac{\text{mL}}{\text{hr}} \frac{1000 \text{ mL}}{40 \text{ mEq}} \times \frac{2 \text{ mEq/hr}}{1} = 50$$

**OR**

$$\frac{R}{P}: \frac{40 \text{ mEq/hr}}{1000 \text{ mL}} \times \frac{2 \text{ mEq}}{X \text{ mL/hr}} = 50$$

29. A health care provider orders lidocaine 2 g IV in 500 mL of D5W to infuse at 2 mg/min. Calculate the **milliliters per hour** to set the IV pump. 30

$$DA: ? \frac{\text{mL}}{\text{hr}} \frac{500 \text{ mL}}{2 \text{ g}} \times \frac{2 \text{ mg/min}}{1} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{1 \text{ g}}{1000 \text{ mg}} = 30$$

**OR**

$$\frac{r}{p}: 2g \times \frac{1,000 mg}{1 g} = 2,000 mg; \frac{20 mg}{1 min} \times \frac{60 min}{hr} = 120 \frac{mg}{hr}$$

$$\frac{2,000 mg}{500 mL} = \frac{120 mg/hr}{X mL} = 30$$

30. A health care provider orders nitroglycerin 125 mg IV in 500 mL of D5W to infuse at 42 mcg/min for a client having chest pain.

A nurse will set the IV pump to infuse at how many **millimeters per hour**? 10.1

$$DA: ? \frac{mL}{hr} \quad \frac{500 mL}{125 mg} \times \frac{1 mg}{1000 mcg} \times \frac{42 mcg/min}{1} \times \frac{60 min}{1 hr} = 10.08, \text{ round to } 10.1$$

**OR**

$$\frac{R}{P}: \frac{42 mcg}{1 min} \times \frac{60 min}{1 hr} = 2,520 \frac{mcg}{hr}; \quad 2,520 mcg \times \frac{1 mg}{1,000 mcg} = 2.52 mg/hr$$

$$\frac{125 mg}{500 mL} = \frac{2.52 mg/hr}{X mL/hr} = 10.1$$

31. A health care provider orders oxytocin (Pitocin) 15 units IV in 500 mL of lactated ringers solution (LR) to infuse at 1 milliunit/min.

A nurse will set the IV pump to infuse at how many **milliliters per hour**? 2

$$DA: ? \frac{mL}{hr} \quad \frac{500 mL}{15 units} \times \frac{1 unit}{1000 milliunits} \times \frac{1 milliunit/min}{1} \times \frac{60 min}{1 hr} = 2$$

**OR**

$$\frac{R}{P}: \frac{1 milliunit}{1 min} \times \frac{60 min}{1 hr} = 60 \frac{milliunits}{hr}; \quad 60 \frac{milliunits}{hr} \times \frac{1 unit}{1,000 milliunits} = 0.06 units/hr$$

$$\frac{15 units}{500 mL} \times \frac{0.06 units}{X mL/hr} = 2$$

32. tirofiban (Aggrastat) is ordered to infuse at 0.1 mcg/kg/min for a patient weighing 136 lbs. A premixed IV bag that contains 12.5 mg in 250 mL NS is on hand.

How many **milliliters per hour** will a nurse set the pump? 7.4

$$DA \frac{mL}{hr} \quad \frac{250 mL}{12.5 mg} \times \frac{1 mg}{1000 mcg} \times \frac{0.1 \frac{mcg}{kg}/min}{2.2 lb} \times \frac{136 lb}{1 hr} \times \frac{60 min}{1} = 7.4$$

OR

$$\frac{R}{P}: 136 \text{ lb} = \frac{1 \text{ kg}}{2.2 \text{ lb}} = 61.8 \text{ kg}; \quad 61.8 \text{ kg} \times \frac{0.1 \text{ mcg/kg}}{1 \text{ min}} = 6.18 \frac{\text{mcg}}{\text{min}} \times \frac{60 \text{ min}}{1 \text{ hr}} = 370.8 \frac{\text{mcg}}{\text{hr}}$$

$$\frac{370.8 \text{ mcg}}{\text{hr}} \times \frac{1 \text{ mg}}{1,000 \text{ mcg}} = 0.3708 \frac{\text{mg}}{\text{hr}}$$

$$\frac{12.5 \text{ mg}}{250 \text{ mL}} = \frac{0.3708 \text{ mg/hr}}{X \text{ mL}} = 7.4$$

33. A health care provider orders dicloxacillin sodium 125 mg orally q6hr for a child who weighs 62 lb.

The recommended dosage of dicloxacillin sodium for children weighing less than 40 kg is 12.5 to 25 mg/kg/day po in equally divided doses q6hr for moderate to severe infections.

Child's weight in kg: 28.2 kg

Is the dosage ordered in range: **ANSWER EITHER** yes or no yes

Rationale: 24-hour dose is 500 mg and this falls between 352.5 and 705 mg/day

$$62 \text{ lb} \times \frac{1 \text{ kg}}{2.2 \text{ lb}} = 28.18, \text{ rounds up to } 28.2 \text{ kg}$$

$$\text{range: } 28.2 \text{ kg} \times \frac{12.5 \frac{\text{mg}}{\text{kg}}}{\text{day}} = 352.5 \frac{\text{mg}}{\text{day}} \text{ to } 28.2 \text{ kg} \times \frac{25 \frac{\text{mg}}{\text{kg}}}{\text{day}} = 705 \text{ mg/day}$$

$$\text{dose ordered is } 125 \text{ mg every } 6 \text{ hours} = 125 \text{ mg} \times 4 \text{ doses} = 500 \frac{\text{mg}}{\text{day}}$$

*the dose is in range and can be given*

34. A health care provider orders kanamycin sulfate (Kantrex) 34 mg IM q8hr for an infant who weighs 7 lb 3 oz.

The recommended dosage is 15 mg/kg/day in 2 or 3 equal doses

Infant's weight in kg: 3.3 kg

Is the dosage ordered in range: **ANSWER EITHER** yes or no No

Rationale: single dose should be 16.5 mg and the HCP ordered 34 mg/dose, do not administer, call HCP to clarify order

$$7.3 \text{ lb} \times \frac{1 \text{ kg}}{2.2 \text{ lb}} = 3.3 \text{ kg}$$

$$\text{range: } 3.3 \text{ kg} \times \frac{15 \frac{\text{mg}}{\text{kg}}}{\text{day}} = 49.5 \frac{\text{mg}}{\text{day}}$$

*to be divided into 3 doses = 16.5 mg per dose*

35. A health care provider orders glycopyrrrolste (Robinul) 50.8 mcg IM 60 minutes before surgery for a child who weighs 28 lb.

Recommended dosage is 4 mcg/kg 30 to 60 minutes before surgery

Child's weight in kg: 12.7 kg

Is the dosage order in range: **ANSWER EITHER** yes or no yes

Rationale: *the ordered dose and recommended dose are the same and safe to give*

$$28 \text{ lb} \times \frac{1 \text{ kg}}{2.2 \text{ lb}} = 12.7 \text{ kg}$$

$$\text{range: } 12.7 \text{ kg} \times 4 \frac{\text{mcg}}{\text{kg}}$$

*= 50.8 mcg single dose: this is exactly what is ordered and is safe to give*