

2017 MEDICAL MATH TEST (50 Questions)

READ INSTRUCTIONS CAREFULLY

NOTE: answers must include specific measures: i.e.; units, ml, ml, tabs, ml/hr, gtts/min etc. in order to receive credit for a correct answer. Record your results in the space available.

(If the calculation is for an infusion pump, remember that the infusion pump can be programmed to the nearest tenth in the case of administration of medicated drips.)

1. ORDER: Lopressor 25 mg PO
AVAILABLE: Lopressor 50 mg/tablet
ADMINISTER: _____

2. ORDER: Lopressor 2. 5 mg IV push
AVAILABLE: Lopressor 5 mg/5 ml's
ADMINISTER: _____

3. ORDER: 1000 ml 0.45% NS at 42 ml/hr
AVAILABLE: 60-gtts/ml administration set
ADMINISTER: _____

4. ORDER: Fortaz 1 gm in 100 ml D5W infused over 30 minutes
AVAILABLE: programmed on infusion pump
ADMINISTER: _____

5. ORDER: Kdur 40 meq PO
AVAILABLE: Kdur 20 meq PO
ADMINISTER: _____

6. ORDER: Lanoxin 0.375mg IV push
AVAILABLE: 250-mcg/1 m
ADMINISTER: _____

7. ORDER: Dilantin elixir 200 mg PO
AVAILABLE: Dilantin elixir 125mg/5 ml's
ADMINISTER: _____

8. ORDER: Heparin 1450 units/hour
AVAILABLE: Heparin 25000 units in 250 ml D5W
administered on an infusion pump
ADMINISTER: _____

9. ORDER: 1000 ml 0.45 % NS q 6 hours
AVAILABLE: administered on an infusion pump
ADMINISTER: _____

10. ORDER: Vasotec 1.25 mg /50 ml's D5W over 15
minutes
AVAILABLE: 12-gtts/ ml administration set
ADMINISTER: _____

11. ORDER: Claforan 2 gm in 100 ml D5W infused over 20 minutes

AVAILABLE: programmed on infusion pump

ADMINISTER:

12. ORDER: Hyperstat 2 mg/kg IV push

Client weighs 165 lbs.

AVAILABLE: 15 mg/ml

How many milligrams would you administer?

13. ORDER: Hyperstat 1 mg/kg IV push

Client weighs 165 lbs.

AVAILABLE: 15 mg/ml

How many milligrams would you administer?

14. ORDER: Lidocaine 1mg/kg IV push

Client weighs 154 lbs.

AVAILABLE: 10 mg/ml

How many milligrams would you administer?

How many milliliters would you administer?_____

15. ORDER: Lidocaine 1mg/kg IV push

Client weighs 220 lbs.

AVAILABLE: 10 mg/ml

How many milligrams would you administer?

How many milliliters would you administer?_____

**16. ORDER: Heparin 950 units/hour
AVAILABLE: Heparin 25000 units in 250 ml D5W
administered on an infusion pump
ADMINISTER:**

**17. ORDER: Heparin 700 units/hour
AVAILABLE: Heparin 25000 units in 500 ml D5W
administered on an infusion pump
ADMINISTER:**

**18. ORDER: Heparin 1200 units/hour
AVAILABLE: Heparin 25000 units in 250 ml D5W
administered on an infusion pump
ADMINISTER:**

**19. ORDER: Dilantin elixir 300 mg PO
AVAILABLE: Dilantin elixir 125mg/5 ml's
ADMINISTER:**

**20. ORDER: Heparin 1250 units/hour
AVAILABLE: Heparin 25000 units in 500 ml D5W
administered on an infusion pump
ADMINISTER:**

21. ORDER: 1000 ml D5W q 12 hours
AVAILABLE: administered on an infusion pump
ADMINISTER: _____

22. ORDER: nitroglycerin 0.4 mg SL
AVAILABLE: nitroglycerin grains 1/150/tablet, grains 1/200 /tablet, grains 1/100 /tablet
Which concentration of nitroglycerin would you select?

What would you administer?

23. ORDER: Vasotec 1.25 mg /50 ml's D5W over 15 minutes
AVAILABLE: 10-gtts/ ml administration set
ADMINISTER: _____

24. ORDER: levothyroxine 0.125 mg IV push
AVAILABLE: 250-mcg/10 ml's
ADMINISTER: _____

25. ORDER: levothyroxine 2 mcg/kg IV push
Client weight is 330 lbs.
AVAILABLE: vials containing either 250-mcg/10 ml's or 500-mcg/10ml's.
Which concentration of Synthroid would you select?

How many micrograms would you administer?

How many milliliters would you administer?_____

26. ORDER: Reglan 10 mg /50 ml's D5W over 15 minutes

AVAILABLE: 15-gtts/ ml administration set

ADMINISTER: _____

27. ORDER: Nitroglycerin 10 mcg/min as a continuous infusion

AVAILABLE: Nitroglycerine 50 mg/ 250 ml D5W administered on an infusion pump

ADMINISTER: _____

28. ORDER: Lidocaine 2mg/min as a continuous infusion

AVAILABLE: Lidocaine 4 grams/ in 500 ml D5W administered on an infusion pump

ADMINISTER: _____

29. ORDER: Dopamine 2. 5mcg/kg/min as a continuous infusion

Patient's weight 176 lbs.

AVAILABLE: Dopamine 400mg in 500 ml D5W administered on an infusion pump

ADMINISTER: _____

30. ORDER: Nitroglycerin 15 mcg/min as a continuous infusion

AVAILABLE: Nitroglycerine 50 mg/ 250 ml D5W administered on an infusion pump

ADMINISTER: _____

31. ORDER: Lidocaine 1mg/min as a continuous infusion

AVAILABLE: Lidocaine 2 grams/ in 250 ml D5W administered on an infusion pump

ADMINISTER: _____

32. ORDER: Dopamine 5mcg/kg/min as a continuous infusion

Patient's weight 176 lbs.

AVAILABLE: Dopamine 400mg in 500 ml D5W administered on an infusion pump

ADMINISTER: _____

Use the following physician orders to answer questions.

Pre-printed Orders for Continuous Heparin Infusions

Date: Time: a.m./p.m.

1. Do not use Heparin Protocol if patient, not on previous anticoagulant therapy, has an INR > 1.3 and /or PTT> 35 seconds at baseline.
2. Obtain PT/PTT stat if not already drawn within the past 24 hours.
3. administer Heparin 5000 units IV Bolus stat
4. Start standard heparin infusion 25000 units /250 ml of D5W at:
1,200 units/hour patients >100 kg
1,000 units/hour patients 80-100 kg
800 units/hour patients <80 kg
5. Place order for repeat PTT under Heparin Protocol in computer system.
6. If patient on Coumadin, obtain PT daily and call results to MD

7. If patient is receiving both Coumadin and Heparin and **INR > 2.5 STOP IV HEPARIN** and call MD

8. Titrate to keep PTT between 45-75 seconds using the following:

HEPARIN ADJUSTMENT NOMOGRAM

PTT BOLUS (UNITS) STOP INFUSION RATE CHANGE (ML/HR)

REPEAT PTT

< 40 3000 0 min. +1 5+ hours

40-44 0 0 min +0.5 5+ hours

45-75 0 0 min 0 (no change) Next am

76-85 0 0 min - 0.5 Next am

86-100 0 30 min -1 5+ hours

101-120 0 60 min -1.5 5+ hours

>120 0 60 min -3 5+ hours

NOTE: ANTICIPATED REDRAW TIME IS 5-12 HOURS

33. You are caring for a client who has the above orders placed on their chart to initiate the heparin protocol. The morning results of the client's baseline PTT is 25 seconds. The INR 1.0. What would you do next?

34. You are preparing to administer the bolus and have available heparin 10000 units/ml. How many milliliters would you prepare to administer? _____

35. The client weighs 218 pounds. How many units per hour would you initiate? _____

36. What would you program the infusion pump at?

37. The IV infusion is initiated at 8 am. A PTT result of 28 seconds is released at 12pm. What action would you take?

38. The client has a PTT result of 44 seconds released at 4 pm. What would you prepare to perform? **(Check all that apply)**

- a. Stop infusion for one hour
- b. Bolus 3000 units of heparin
- c. Increase infusion by 50 units/Hr
- d. Repeat the PTT at least five hours later
- e. Repeat the PTT in the morning.

39. The client has a PTT result of 39 seconds released at 12am. What would you prepare to perform? **(check all that apply)**

- a. Stop infusion for one hour
- b. Bolus 3000 units of heparin
- c. increase infusion by 50 units/hr
- d. increase the infusion by 100 units/hr
- e. Repeat the PTT at least five hours later
- f. Repeat the PTT in the morning.

40. The client has a PTT result of 87 seconds released at 6am. What would you prepare to perform? **(check all that apply)**

- a. Stop infusion for 30 minutes
- b. Stop infusion for 60 minutes
- c. Bolus 3000 units of heparin
- d. Decrease infusion by 50 units/hr
- e. Decrease the infusion by 100 units/hr
- f. Repeat the PTT at least five hours later
- g. Repeat the PTT in the morning.

41. The client has a PTT result of 77 seconds released at 2 pm. What would you prepare to perform? **(check all that apply)**

- a. Stop infusion for 30 minutes
- b. Stop infusion for 60 minutes
- c. Bolus 3000 units of heparin
- d. Decrease infusion by 50 units/hr
- e. Decrease the infusion by 100 units/hr
- f. Repeat the PTT at least five hours later
- g. Repeat the PTT in the morning.

42. The client has a PTT result of 67 seconds released at 8 am. What would you prepare to perform? **(check all that apply)**

- a. Stop infusion for 30 minutes
- b. Stop infusion for 60 minutes
- c. Bolus 3000 units of heparin
- d. Increase infusion by 50 units/hr
- e. Increase the infusion by 100 units/hr
- f. Repeat the PTT at least five hours later
- g. Repeat the PTT in the morning.

Use the following physician orders to answer question

WEIGHT-BASED HEPARIN PROTOCOL

PLACE PATIENT ID LABEL HERE

PROTOCOL FOR TNK OR EPTIFIBATIDE (INTEGRILIN)

1. Draw baseline PTT.
2. Make calculations using actual body weight: _____ lb = _____ kg (see chart).
Conversion from lb to kg: 2.2 lb = 1 kg Example: $\frac{110 \text{ lbs}}{2.2 \text{ lbs}} = 50 \text{ kg}$
3. **Bolus** heparin, 60 units/kg x _____ kg = _____ units (see chart).
Round all bolus calculations to the nearest 1000 units.
Maximum bolus dose is 4000 units.
4. **Maintenance** IV heparin, 12 units/kg/hour x _____ kg = _____ units/hr (see chart).
Standard heparin solution is 25,000 units in 500 ml D5W (50 units/ml).
Round all maintenance rate calculations up to the nearest 50 units.
Maximum initial drip rate is 1000 units/hour (20 ml/hr).
5. Do *stat* PTT 6 hours after heparin bolus.
6. Adjust heparin infusion based on sliding scale below:

PTT (Seconds)	Bolus	Infusion	Next PTT
<40			Draw stat PTT
<40 confirmed	Bolus 3000 units	Increase 100 units/hr	6 hrs
40-49	0	Increase 50 units/hr	6 hrs
50-70	0	No change	6 hrs; after second therapeutic reading order qAM
71-80	0	Decrease 50 units/hr	6 hrs
81-90	0	Decrease 100 units/hr	6 hrs
91-110	0	Decrease 150 units/hr	6 hours
>110	Hold infusion for 1 hour	Decrease 300 units/hr	4 hrs

7. Order a PTT six (6) hours after any dosage change (4 hours after PTT > 110), adjusting heparin infusion by the sliding scale until PTT is therapeutic (50-70 seconds). When two (2) consecutive PTTs are therapeutic, order PTT (and readjust heparin drip as needed) every 24 hours.
8. Notify physician for signs of bleeding and/or change in vital signs, i.e., hypotension and/or tachycardia.
9. Notify physician if PTT > 110 seconds
 YES NO

43. You are caring for a client receiving TNK for an acute myocardial infarction, who has the above orders placed on their chart. A baseline PTT/INR has been sent to the lab. The client weighs 154 lbs. What is the client's dose based on the orders provided? _____

44. You are preparing to administer the bolus and have available heparin 5000 units/ml. How many milliliters would you prepare to administer? _____

45. Based on the client's weight, how many units per hour would you initiate? _____

46. What would you program the infusion pump at (be sure to consider max dose ranges)? _____

47. The IV infusion is initiated at 8 am. A PTT result of 39 seconds is released at 2pm. What action would you take?

48. The client has a repeat PTT result of 39 seconds released at 3 pm. What would you prepare to perform?

(check all that apply)

- a. Stop infusion for one hour
- b. Bolus 3000 units of heparin
- c. Increase infusion by 0.5 ml/Hr
- d. Increase infusion by 1 ml/Hr
- e. Increase infusion by 2 ml /Hr
- f. Increase infusion by 1.5 ml/Hr
- g. Increase infusion by 2.5 ml/Hr
- h. Increase infusion by 3 ml /Hr
- i. Repeat the PTT in four hours
- j. Repeat the PTT in six hours
- k. Repeat the PTT in the morning.

49. The client has a PTT result of 111 seconds released at 10 pm. What would you prepare to perform? **(check all**

that apply)

- a. Stop infusion for one hour
- b. decrease infusion by 0.5 ml/Hr
- c. decrease infusion by 1 ml/Hr
- d. decrease infusion by 2 ml /Hr
- e. decrease infusion by 1.5 ml/Hr
- f. decrease infusion by 2.5 ml/Hr
- g. decrease infusion by 3 ml /Hr
- h. decrease infusion by 4 ml/Hr
- i. decrease infusion by 5 ml/Hr
- j. decrease infusion by 6 ml /Hr
- k. Repeat the PTT in four hours
- l. Repeat the PTT in six hours
- m. Repeat the PTT in the morning.

50. The client has a PTT result of 87 seconds released at 6am. What would you prepare to perform? **(check all that apply)**

- a. Stop infusion for one hour
- b. decrease infusion by 0.5 ml/Hr
- c. decrease infusion by 1 ml/Hr
- d. decrease infusion by 2 ml /Hr
- e. decrease infusion by 1.5 ml/Hr
- f. decrease infusion by 2.5 ml/Hr
- g. decrease infusion by 3 ml /Hr
- h. decrease infusion by 4 ml/Hr
- i. decrease infusion by 5 ml/Hr
- j. decrease infusion by 6 ml /Hr
- k. Repeat the PTT in four hours
- l. Repeat the PTT in six hours
- m. Repeat the PTT in the morning.