

PHARMACY TECHNICIAN CERTIFICATION BOARD (PTCB) MATH PRACTICE EXAM (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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1. What is the Roman numeral representation of the number 45?
 - A. XLI
 - B. LIV
 - C. XLV
 - D. XLVI
2. What is the sum of $\frac{1}{4}$ and $\frac{2}{5}$?
 - A. $\frac{13}{20}$
 - B. $\frac{9}{20}$
 - C. $\frac{1}{5}$
 - D. $\frac{3}{20}$
3. If a solution has 25 grams of dextrose in 500ml, what is the percentage strength of the solution?
 - A. 4
 - B. 5
 - C. 6
 - D. 8
4. A 1:4 solution contains how many grams of solute in 80ml of solution?
 - A. 20 grams
 - B. 16 grams
 - C. 18 grams
 - D. 25 grams
5. To prepare a 500mg dose of chlorpromazine using 25mg/mL stock solution, how many mL will be needed?
 - A. 15
 - B. 20
 - C. 25
 - D. 30

6. What is the flow rate in gtts/min when using 15 gtts/ml tubing and a rate of 0.78 ml/min?
- A. 8 gtts/min
 - B. 12 gtts/min
 - C. 15 gtts/min
 - D. 18 gtts/min
7. To prepare 1500ml of hydrochlorothiazide at 10mg/ml, how many 25mg tablets are required?
- A. 300
 - B. 500
 - C. 600
 - D. 400
8. How many cubic centimeters are in 1 milliliter?
- A. 0.1
 - B. 1
 - C. 10
 - D. 100
9. Determine the percentage strength of a solution containing 20 grams of drug in 300ml.
- A. 5.33
 - B. 6.67
 - C. 8
 - D. 10
10. What is the result of subtracting $\frac{1}{5}$ from $\frac{6}{7}$?
- A. $\frac{23}{35}$
 - B. $\frac{5}{35}$
 - C. $\frac{25}{35}$
 - D. $\frac{1}{2}$

Answers

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1. C
2. A
3. B
4. B
5. B
6. B
7. C
8. B
9. B
10. A

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Explanations

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1. What is the Roman numeral representation of the number 45?

- A. XLI
- B. LIV
- C. XLV**
- D. XLVI

The Roman numeral representation of the number 45 is XLV. In Roman numerals, the letters represent specific values. The letter 'X' stands for 10, 'L' stands for 50, and 'V' stands for 5. To break it down for 45: - The numeral 'XL' translates to 40, which is derived from the fact that 'L' (50) is preceded by 'X' (10), indicating a subtraction (50 - 10). - Following that, 'V' adds 5 to the total. Thus, XL (40) plus V (5) equals 45, confirming that XLV is indeed the correct representation. The other choices do not accurately represent the number 45. For instance, XLI symbolizes 41, which is constructed from 'X' (10) + 'L' (50) - 'I' (1). LIV represents 54, as it stands for 'L' (50) - 'I' (1) + 'V' (5). Lastly, XLVI represents 46, totaling 'XL' (40) plus 'VI' (6). Therefore, only XLV properly corresponds to the number 45.

2. What is the sum of $\frac{1}{4}$ and $\frac{2}{5}$?

- A. $\frac{13}{20}$**
- B. $\frac{9}{20}$
- C. $\frac{1}{5}$
- D. $\frac{3}{20}$

To find the sum of two fractions, you first need to express them with a common denominator. The fractions given are $\frac{1}{4}$ and $\frac{2}{5}$. The denominators are 4 and 5. The least common multiple (LCM) of 4 and 5 is 20. Next, you will convert each fraction to have this common denominator of 20. For $\frac{1}{4}$, you multiply both the numerator and the denominator by 5: $\frac{1}{4} = \frac{(1 \times 5)}{(4 \times 5)} = \frac{5}{20}$. For $\frac{2}{5}$, you multiply both the numerator and the denominator by 4: $\frac{2}{5} = \frac{(2 \times 4)}{(5 \times 4)} = \frac{8}{20}$. Now that both fractions have the same denominator, you can add them together: $\frac{5}{20} + \frac{8}{20} = \frac{(5 + 8)}{20} = \frac{13}{20}$. Thus, the correct answer is indeed $\frac{13}{20}$, as it represents the combined value of $\frac{1}{4}$ and $\frac{2}{5}$ when expressed with a common denominator. This demonstrates the correct method for adding fractions, which involves finding a common

3. If a solution has 25 grams of dextrose in 500ml, what is the percentage strength of the solution?

- A. 4
- B. 5**
- C. 6
- D. 8

To determine the percentage strength of a solution, you can use the formula for calculating percentage concentration, which is: $\text{Percentage (\%)} = \left(\frac{\text{Amount of solute in grams}}{\text{Total volume of solution in milliliters}} \right) \times 100$. In this scenario, the amount of dextrose (the solute) is 25 grams and the total volume of the solution is 500 ml. Plugging in the values: $\text{Percentage (\%)} = \left(\frac{25 \text{ grams}}{500 \text{ ml}} \right) \times 100$. Calculating this gives: $\text{Percentage (\%)} = (0.05) \times 100 = 5\%$. This means that 5% of the solution consists of dextrose, which is why this answer is the correct choice. The solution's strength reflects how much solute is present relative to the total volume, indicating a clear understanding of concentration in pharmacy practice.

4. A 1:4 solution contains how many grams of solute in 80ml of solution?

- A. 20 grams
- B. 16 grams**
- C. 18 grams
- D. 25 grams

To determine how many grams of solute are in an 80 mL solution of a 1:4 ratio, first understand that a 1:4 solution means there is 1 part solute for every 4 parts of solution. In total, there are 1 part solute + 4 parts solvent = 5 parts total. To find the amount of solute in the 80 mL solution, you can first calculate what one part equals in terms of volume. Since there are 5 parts total, divide the total volume of the solution by the number of parts: $80 \text{ mL} \div 5 = 16 \text{ mL}$ per part. Since the ratio is 1 part solute, we know that the amount of solute is equivalent to 1 part: 1 part = 16 mL. Next, to find how many grams this corresponds to, remember that in the context of a solution, you'll need to convert this volume to grams, but since we are not provided the density of the solute, we can work directly with the concept that in this ratio the mass of the solute in grams is equivalent to the volume of the solution in mL when working with water and dilute solutions. Thus, the

5. To prepare a 500mg dose of chlorpromazine using 25mg/mL stock solution, how many mL will be needed?

- A. 15
- B. 20**
- C. 25
- D. 30

To determine how many milliliters of a 25 mg/mL stock solution are needed to prepare a 500 mg dose of chlorpromazine, you can use the formula: $\text{Volume (mL)} = \text{Desired Dose (mg)} / \text{Concentration (mg/mL)}$ First, you need to plug in the values: Desired Dose = 500 mg Concentration = 25 mg/mL Now, performing the calculation: $\text{Volume (mL)} = 500 \text{ mg} / 25 \text{ mg/mL} = 20 \text{ mL}$ This means that to achieve a total of 500 mg of chlorpromazine, you will need 20 mL of the 25 mg/mL stock solution. This calculation directly aligns with the requirement of preparing an accurate dose for patient care, ensuring that the technician successfully understands how to convert stock solution concentrations into measurable volumes needed for medication preparation.

6. What is the flow rate in gtts/min when using 15 gtts/ml tubing and a rate of 0.78 ml/min?

- A. 8 gtts/min
- B. 12 gtts/min**
- C. 15 gtts/min
- D. 18 gtts/min

To determine the flow rate in drops per minute (gtts/min) when using a specific type of IV tubing, you start with the given flow rate in milliliters per minute and the drop factor of the tubing. In this scenario, you have a flow rate of 0.78 ml/min and the drop factor of the tubing is 15 gtts/ml. To find the flow rate in drops per minute, you can use the formula: $\text{Flow Rate (gtts/min)} = \text{Flow Rate (ml/min)} \times \text{Drop Factor (gtts/ml)}$ By substituting the known values into the formula, we calculate: $\text{Flow Rate (gtts/min)} = 0.78 \text{ ml/min} \times 15 \text{ gtts/ml}$ Now multiplying these values: $0.78 \times 15 = 11.7 \text{ gtts/min}$ When rounding this figure to the nearest whole number, it becomes 12 gtts/min. Therefore, the correct answer to the question is indeed 12 gtts/min. This method of converting flow rates is essential in pharmacy, especially when working with intravenous medications or solutions. Understanding the relationship between milliliters, drops, and the drop factor allows for accurate dosing and administration of medications.

7. To prepare 1500ml of hydrochlorothiazide at 10mg/ml, how many 25mg tablets are required?

- A. 300
- B. 500
- C. 600**
- D. 400

To determine how many 25 mg hydrochlorothiazide tablets are needed to create a solution of 1500 mL at a concentration of 10 mg/mL, we first need to calculate the total amount of hydrochlorothiazide required for the entire solution. The concentration of the solution is 10 mg/mL, and you need to prepare 1500 mL. Thus, the total amount of drug required is calculated as follows: $\text{Total amount required} = \text{concentration} \times \text{volume}$ $\text{Total amount required} = 10 \text{ mg/mL} \times 1500 \text{ mL} = 15000 \text{ mg}$ Next, you need to figure out how many 25 mg tablets are necessary to provide 15000 mg. To do this, divide the total amount needed by the amount of drug in each tablet: $\text{Number of tablets required} = \frac{\text{total amount required}}{\text{amount per tablet}}$ $\text{Number of tablets required} = \frac{15000 \text{ mg}}{25 \text{ mg}}$

8. How many cubic centimeters are in 1 milliliter?

- A. 0.1
- B. 1**
- C. 10
- D. 100

One milliliter is equivalent to one cubic centimeter. This is based on the definitions of metric units, where both milliliters and cubic centimeters are used to measure volume. The metric system defines these two units to be directly interchangeable, meaning that 1 mL = 1 cm³. This equivalence is particularly useful in the fields of pharmacy and medicine, as it allows for straightforward conversions and calculations when measuring liquids—important for administering accurate dosages. Therefore, when you see the measurement of 1 milliliter, you can confidently understand it as equal to 1 cubic centimeter.

9. Determine the percentage strength of a solution containing 20 grams of drug in 300ml.

- A. 5.33
- B. 6.67**
- C. 8
- D. 10

To calculate the percentage strength of a solution, you can use the formula for percentage strength, which is: $\text{Percentage Strength} = \left(\frac{\text{mass of solute (g)}}{\text{volume of solution (ml)}} \right) \times 100$ In this case, you have a solution containing 20 grams of the drug in 300 milliliters of solution. Plugging the values into the formula gives: $\text{Percentage Strength} = \left(\frac{20 \text{ g}}{300 \text{ mL}} \right) \times 100$ Calculating the fraction: $\frac{20}{300} = 0.0667$ Now, multiply this by 100 to convert it into a percentage: $0.0667 \times 100 = 6.67\%$ Thus, the percentage strength of the solution is 6.67%. This makes the choice of 6.67 the correct answer. Understanding this calculation is essential as it helps pharmacy technicians assess and prepare solutions accurately, an important skill in medication preparation.

10. What is the result of subtracting $\frac{1}{5}$ from $\frac{6}{7}$?

A. $\frac{23}{35}$

B. $\frac{5}{35}$

C. $\frac{25}{35}$

D. $\frac{1}{2}$

To find the result of subtracting $\frac{1}{5}$ from $\frac{6}{7}$, you need a common denominator for the fractions. The least common multiple of the denominators 5 and 7 is 35. Next, convert each fraction to have a denominator of 35: - For $\frac{6}{7}$: $\frac{6}{7} = \frac{6 \times 5}{7 \times 5} = \frac{30}{35}$ - For $\frac{1}{5}$: $\frac{1}{5} = \frac{1 \times 7}{5 \times 7} = \frac{7}{35}$ Now that both fractions have a common denominator, you can proceed to subtract: $\frac{30}{35} - \frac{7}{35} = \frac{30 - 7}{35} = \frac{23}{35}$ Thus, the result of subtracting $\frac{1}{5}$ from $\frac{6}{7}$

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://ptcbmath.examzify.com>

We wish you the very best on your exam journey. You've got this!

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