OFFICER APTITUDE RATING (OAR) FORMULAS PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://oarformulas.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

Table of Contents

Copyright 1

Table of Contents 2

Introduction 3

How to Use This Guide 4

Questions 5

Answers 8

Explanations 10

Next Steps 14

SAMPLE

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.

SAMPLE

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!

SAMPLE

Questions

SAMPLE

1. If n, R, and T are constant in the ideal gas law, what happens to P V?

A. They increase

B. They decrease

C. They remain constant

D. They become zero

2. Convert 60 minutes to hours.

A. 0.5 hours

B. 1 hour

C. 1.5 hours

D. 2 hours

3. A rectangular prism has length 2, width 3, height 6. What is its volume?

A. 36

B. 24

C. 18

D. 12

4. Which formula defines machine efficiency?

A. E = work out / work in

B. E = work in / work out

C. E = work out + work in

D. E = (work out) * (work in)

5. If the distance traveled increases while height stays fixed, what happens to the friction coefficient μ defined as height / distance traveled?

A. Increases

B. Stays the same

C. Decreases

D. Doubles

6. If the diameter of a circle doubles, by what factor does the area increase?

A. It doubles

B. It quadruples

C. It stays the same

D. It increases by 50%

SAMPLE

7. In a right triangle the legs are 3 and 4 units. What is the length of the hypotenuse?

A. √7

B. √12

C. 5

D. √15

8. A product is bought for 100 and sold for 120. What is the percent profit?

A. 30%

B. 10%

C. 20%

D. 50%

9. Scaling a polygon by a factor k maps a point (x, y) to which coordinates?

A. (x, y) -> (x/k, y/k)

B. (x, y) -> (kx, y)

C. (x, y) -> (x, ky)

D. (x, y) -> (kx, ky)

10. Which statement correctly defines velocity?

A. V = distance / time

B. V = distance / time (including direction)

C. V = distance / time × direction

D. V = mass × acceleration

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. If n, R, and T are constant in the ideal gas law, what happens to P V?

A. They increase

B. They decrease

C. They remain constant

D. They become zero

When n, R, and T are fixed, the right side of PV = nRT becomes a constant. That means the product PV cannot change; it stays equal to that fixed value. The individual pressure and volume can trade off with each other (P and V are inversely related for a constant n and T), but their product remains the same. For example, if volume doubles while keeping n and T the same, pressure must halve to keep PV equal to nRT. So PV remains constant.

2. Convert 60 minutes to hours.

A. 0.5 hours

B. 1 hour

C. 1.5 hours

D. 2 hours

60 minutes is equal to 1 hour because an hour contains 60 minutes. To convert, divide the number of minutes by 60: 60 ÷ 60 = 1, so it's 1 hour. The other options correspond to different amounts of time: 0.5 hours is 30 minutes, 1.5 hours is 90 minutes, and 2 hours is 120 minutes.

3. A rectangular prism has length 2, width 3, height 6. What is its volume?

A. 36

B. 24

C. 18

D. 12

Volume is found by multiplying the length, the width, and the height. With dimensions 2, 3, and 6, compute 2 × 3 = 6, then 6 × 6 = 36. The volume is 36 cubic units. This uses all three dimensions as given, which is why that result is correct. The other numbers would come from using different height values or dimensions, not the ones provided.

4. Which formula defines machine efficiency?

A. E = work out / work in

B. E = work in / work out

C. E = work out + work in

D. E = (work out) * (work in)

Efficiency measures how much of the input work is converted into useful output. It's defined as the ratio of work out to work in, so the formula is E = work out / work in. This captures the idea that you're comparing what the machine delivers to what you put in. For example, if you put in 100 joules and get 70 joules out, the efficiency is 0.7, or 70% when expressed as a percentage. The other ways of forming the ratio aren't correct because they don't represent the portion of input energy that becomes useful output. Dividing work in by work out would invert the relationship and can yield values greater than 1, which doesn't align with how efficiency is defined. Adding or multiplying the two quantities doesn't describe a ratio of usable output to input either.

SAMPLE

5. If the distance traveled increases while height stays fixed, what happens to the friction coefficient μ defined as height / distance traveled?

A. Increases

B. Stays the same

C. Decreases

D. Doubles

When you have a ratio where the numerator is fixed and the denominator changes, the value moves in the opposite direction to the denominator. Here, height is fixed and distance traveled increases, so μ = height / distance traveled gets smaller as distance grows. For a concrete feel: if height is 1 unit and distance goes from 2 to 4, μ drops from 0.5 to 0.25. In general, doubling the distance halves μ, and as distance becomes very large, μ approaches zero. The result is a decrease.

6. If the diameter of a circle doubles, by what factor does the area increase?

A. It doubles

B. It quadruples

C. It stays the same

D. It increases by 50%

Area grows with the square of the radius. Doubling the diameter doubles the radius, and since area = πr^2, the new area is π(2r)^2 = 4πr^2. That's four times the original area, so the circle's area quadruples.

7. In a right triangle the legs are 3 and 4 units. What is the length of the hypotenuse?

A. √7

B. √12

C. 5

D. √15

The main idea here is using the Pythagorean theorem to find the hypotenuse in a right triangle. If the legs are 3 and 4, the hypotenuse squared equals 3^2 + 4^2 = 9 + 16 = 25. Therefore the hypotenuse is the square root of 25, which is 5. This matches the classic 3-4-5 right triangle. The other options would imply different sums of squares (7, 12, or 15) and do not satisfy the given leg lengths, so they can't be correct.

8. A product is bought for 100 and sold for 120. What is the percent profit?

A. 30%

B. 10%

C. 20%

D. 50%

Profit percent is based on the cost of the item. First find the profit: 120 − 100 = 20. Then divide the profit by the cost and multiply by 100: 20/100 × 100 = 20%. So the percent profit is 20%. (If you used the selling price as the base, you'd get about 16.7%, but the standard definition uses cost as the base.)

SAMPLE

9. Scaling a polygon by a factor k maps a point (x, y) to which coordinates?

A. (x, y) -> (x/k, y/k)

B. (x, y) -> (kx, y)

C. (x, y) -> (x, ky)

D. (x, y) -> (kx, ky)

Multiplying both coordinates by the same factor k is how uniform scaling works from the origin. Every point (x, y) becomes (kx, ky), so distances from the origin are scaled by k in every direction. This means a point moves away from or toward the origin by the same proportion along both axes, preserving its direction from the origin. If k is greater than 1, the shape enlarges; if 0 < k < 1, it shrinks; if k is negative, it flips across the origin as it scales. The other forms would only affect one coordinate or invert the scaling: multiplying only x or only y stretches along a single axis, and dividing by k shrinks toward the origin but does not apply a uniform scaling in the same direction for both axes.

10. Which statement correctly defines velocity?

A. V = distance / time

B. V = distance / time (including direction)

C. V = distance / time × direction

D. V = mass × acceleration

Velocity is a vector: it not only tells you how fast something is moving, but also in what direction. This means it combines a magnitude (the speed) with a direction. A clear way to express this is to take the speed, which is distance traveled per unit time, and assign it a direction. Representing velocity as (distance per time) multiplied by a direction vector gives you a quantity that has the right magnitude and points in the correct direction. If the direction is a unit vector in the direction of motion, this formulation matches the idea that velocity is speed in a specific direction. The other ideas fall short because velocity isn't just a scalar of how far or how fast, and it isn't mass times acceleration. Mass times acceleration is force, not velocity. And using distance without a directional component omits the vector nature of velocity, while using a direction without framing it as a unit vector can lead to mismatched magnitudes.

SAMPLE

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://oarformulas.examzify.com

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

SAMPLE