

TEXAS MATH AND SCIENCE COACHES ASSOCIATION (TMSCA) SCIENCE PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE

<https://tmascascience.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	15

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.

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

SAMPLE

1. The block below a fault is called the _____.
 - A. Roof
 - B. Fault plane
 - C. Foot wall
 - D. Hanging wall
2. Which type of scattering explains why the sky is blue?
 - A. Mie scattering
 - B. Diffraction
 - C. Rayleigh scattering
 - D. Fluorescence
3. What is another name for a destructive plate boundary?
 - A. Convergent boundary
 - B. Divergent boundary
 - C. Transform boundary
 - D. Passive boundary
4. Which phase does a cell typically enter after cytokinesis?
 - A. G1
 - B. S
 - C. G2
 - D. M
5. Lines from east to west across maps are called
 - A. Latitudes
 - B. Longitudes
 - C. Parallels
 - D. Meridians
6. An oval or circular uplifted area created by rising molten rock is called what?
 - A. A dome
 - B. A basin
 - C. A plateau
 - D. An arch

- 7. Which term describes bacteria that are round in shape?**
- A. Vibrio
 - B. Coccus
 - C. Bacillus
 - D. Spirillum
- 8. The _____ lines measure north and south of the equator.**
- A. Latitude
 - B. Longitude
 - C. Meridian
 - D. Equator
- 9. Which plant category includes all flowering crops?**
- A. Angiosperms
 - B. Bryophytes
 - C. Ferns
 - D. Gymnosperms
- 10. Drugs and certain other chemicals that could damage a cell are broken down by which organelle?**
- A. Endoplasmic Reticulum
 - B. Golgi apparatus
 - C. Mitochondria
 - D. Nucleus

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. The block below a fault is called the _____.

- A. Roof
- B. Fault plane
- C. Foot wall
- D. Hanging wall

In fault terminology, blocks are named by their position relative to the fault plane: the block below the plane is the footwall, while the block above is the hanging wall. The correct term for the block beneath the fault plane is footwall because it sits below the sliding surface. The hanging wall is the block above the plane, so that would be incorrect for something below. The fault plane is the surface along which movement occurs, not a block, and the roof is not the standard term used for the block in this context.

2. Which type of scattering explains why the sky is blue?

- A. Mie scattering
- B. Diffraction
- C. Rayleigh scattering
- D. Fluorescence

Sunlight is made of a mix of colors, but as it travels through the air, the gas molecules scatter light. When the scattering depends on wavelength, shorter wavelengths scatter much more strongly than longer ones. This is Rayleigh scattering. Because blue light has a shorter wavelength, it gets bounced in many directions by air molecules, so the sky looks blue from everywhere you look. Violet light is scattered even more, but there's less violet reaching us from the Sun and our eyes are more sensitive to blue, so the sky doesn't appear violet. If larger particles were responsible, a different kind of scattering would happen that tends to produce a whiter, less blue sky (Mie scattering). Diffraction isn't the main effect here, and fluorescence involves light being absorbed and re-emitted, not just scattered in the atmosphere, so it doesn't explain the blue sky.

3. What is another name for a destructive plate boundary?

- A. Convergent boundary
- B. Divergent boundary
- C. Transform boundary
- D. Passive boundary

Destructive boundaries happen where tectonic plates collide or one is forced downward into the mantle. This type of movement is described by the term convergent boundary, which is the label for plates moving toward each other and interacting vigorously. In subduction zones, an oceanic plate sinks beneath another plate, creating trenches, volcanic activity, and strong earthquakes; when two continental plates collide, mountains are built. Other boundary types describe different motions: divergent boundaries where plates move apart, and transform boundaries where they slide past one another. A passive boundary isn't actively tectonically interacting. So the proper name for this situation is a convergent boundary.

4. Which phase does a cell typically enter after cytokinesis?

- A. G1**
- B. S
- C. G2
- D. M

After cytokinesis, the cell finishes dividing its cytoplasm and re-enters interphase, starting with the first stage called G1. In G1 the cell grows, carries out normal functions, and checks that conditions are favorable before copying its DNA. Only after G1 does it move into S phase for DNA replication, then G2 to prep for another division. Mitosis, which includes prophase through cytokinesis, has just concluded with cytokinesis, so the next phase is G1.

5. Lines from east to west across maps are called

- A. Latitudes
- B. Longitudes
- C. Parallels**
- D. Meridians

Lines that run from east to west on a map are lines of latitude, which are also called parallels. They form circles around the globe and lie parallel to the equator, which is why they're described as parallels. These lines show how far north or south you are from the equator. In contrast, lines that run north to south are longitudes (meridians), which measure east–west position and converge at the poles. The term parallels is the precise description for those east–west lines, making it the best choice.

6. An oval or circular uplifted area created by rising molten rock is called what?

- A. A dome**
- B. A basin
- C. A plateau
- D. An arch

When molten rock pushes upward and lifts the surrounding crust, it creates a rounded, elevated feature with beds dipping outward from the center. That central uplift in an oval or circular shape is a dome. Basins are depressions, not uplifted; plateaus are broad, flat-topped high terrains formed by extended uplift or lava flows, not a single central bulge; arches are erosion-formed rock bridges. So the oval or circular uplift produced by rising molten rock is a dome.

7. Which term describes bacteria that are round in shape?

- A. Vibrio
- B. Coccus**
- C. Bacillus
- D. Spirillum

Round bacteria are described as cocci. In microbiology, cocci are spherical cells, which can occur alone or group in various arrangements depending on how they divide. The other terms describe different shapes: vibrio refers to curved, comma-shaped rods; bacillus means rod-shaped; spirillum denotes spiral-shaped bacteria. So when the shape is round, the correct term is cocci.

8. The _____ lines measure north and south of the equator.

- A. Latitude**
- B. Longitude
- C. Meridian
- D. Equator

Latitude lines measure how far north or south you are from the equator. They run east to west around the globe and are called parallels, with values from 0° at the equator to 90° at the poles. Longitude lines, on the other hand, measure distance east or west from the Prime Meridian and run north to south. The equator is the specific 0° latitude line itself, not a measure. So the lines that quantify position north or south are latitude.

9. Which plant category includes all flowering crops?

- A. Angiosperms**
- B. Bryophytes
- C. Ferns
- D. Gymnosperms

Flowers and seeds enclosed in a fruit define angiosperms, the group that includes all flowering crops. These plants form flowers and then produce seeds inside a fruit, which is what makes them flowering crops like apples, wheat, corn, and many others. Other plant groups don't have flowers: bryophytes and ferns reproduce by spores rather than flowers, and gymnosperms have seeds but no true flowers or fruits. So the category that encompasses all flowering crops is angiosperms.

10. Drugs and certain other chemicals that could damage a cell are broken down by which organelle?

A. Endoplasmic Reticulum

B. Golgi apparatus

C. Mitochondria

D. Nucleus

Detoxifying drugs and other potentially damaging chemicals mainly happens in the smooth endoplasmic reticulum. This part of the ER houses enzymes, especially the cytochrome P450 family, that perform oxidation and other reactions (Phase I metabolism) to convert lipophilic substances into forms that are easier to eliminate in the body. While the rough ER is involved in making and folding proteins, and the Golgi apparatus modifies and ships those molecules, the detox role sits with the smooth ER. Mitochondria provide energy and can influence cell fate, while the nucleus stores genetic material, but neither is the primary site for breaking down drugs. So the endoplasmic reticulum is the organelle responsible for this detox process.

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://tmascience.examzify.com>

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

SAMPLE