PART I :- True or False Questions (10 %)

- Equation are expression involving in equality
- ----2. $r_1+r_2 = \frac{-b+\sqrt{b^2-4ac}}{2a} + x = \frac{-b-\sqrt{b^2-4ac}}{2a}$ is the root of the sum = C/a
- $_$ 3. For a > 0, $a^x = a^y$ if and only if x = y
- 4. The absolute value of a number X donated by | X| is defined the distance | X| from zero on the number line.
- ———5. If the inequality symbol is either ≤ or ≥ the point of the bounder line are solution to the number must be solid.
- ------6. If (x-4)(x-2) > 0 the solution is x < 2 or x > 5
- ————7. The closed interval [a, b] with end point 'a' and 'b' is the set of all real number X such that a ≤ x ≤ b
- _____9. The solution of |k| < 0 are the number that satisfy $-c \le k \le c$

PART II: - Choose the best answer for the following Questions (14 %)

- _____11. Let $ax^2 + 6x + 1 = 0$ and if the sum of root is = -6/5 what is the value of a.
 - A.1 B.2 C.5 D.6
- _____12. If 9^{2s-5}=27 what is the value of 'x'
 - A, 9/7 B, 13/4 C, 4/13 D, 7/9
- - A, 2±√6 B, 3 -√6 C, 3+√6 D, B and C

Grade9 Mathematics Final Exam 2014 With Answers

Hongru Du

Grade9 Mathematics Final Exam 2014 With Answers:

Getting the books **Grade9 Mathematics Final Exam 2014 With Answers** now is not type of challenging means. You could not on your own going gone book collection or library or borrowing from your links to admission them. This is an totally easy means to specifically acquire lead by on-line. This online publication Grade9 Mathematics Final Exam 2014 With Answers can be one of the options to accompany you similar to having further time.

It will not waste your time. say you will me, the e-book will enormously reveal you extra thing to read. Just invest little epoch to right of entry this on-line notice **Grade9 Mathematics Final Exam 2014 With Answers** as capably as review them wherever you are now.

https://staging.conocer.cide.edu/data/scholarship/default.aspx/Follow%20That%20Star%20Wise%20Men.pdf

Table of Contents Grade9 Mathematics Final Exam 2014 With Answers

- 1. Understanding the eBook Grade9 Mathematics Final Exam 2014 With Answers
 - The Rise of Digital Reading Grade9 Mathematics Final Exam 2014 With Answers
 - Advantages of eBooks Over Traditional Books
- 2. Identifying Grade9 Mathematics Final Exam 2014 With Answers
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
- 3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Grade9 Mathematics Final Exam 2014 With Answers
 - User-Friendly Interface
- 4. Exploring eBook Recommendations from Grade9 Mathematics Final Exam 2014 With Answers
 - Personalized Recommendations
 - Grade9 Mathematics Final Exam 2014 With Answers User Reviews and Ratings
 - Grade9 Mathematics Final Exam 2014 With Answers and Bestseller Lists

- 5. Accessing Grade9 Mathematics Final Exam 2014 With Answers Free and Paid eBooks
 - o Grade9 Mathematics Final Exam 2014 With Answers Public Domain eBooks
 - Grade9 Mathematics Final Exam 2014 With Answers eBook Subscription Services
 - Grade9 Mathematics Final Exam 2014 With Answers Budget-Friendly Options
- 6. Navigating Grade9 Mathematics Final Exam 2014 With Answers eBook Formats
 - ∘ ePub, PDF, MOBI, and More
 - o Grade9 Mathematics Final Exam 2014 With Answers Compatibility with Devices
 - Grade9 Mathematics Final Exam 2014 With Answers Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Grade9 Mathematics Final Exam 2014 With Answers
 - Highlighting and Note-Taking Grade9 Mathematics Final Exam 2014 With Answers
 - Interactive Elements Grade9 Mathematics Final Exam 2014 With Answers
- 8. Staying Engaged with Grade9 Mathematics Final Exam 2014 With Answers
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Grade9 Mathematics Final Exam 2014 With Answers
- 9. Balancing eBooks and Physical Books Grade9 Mathematics Final Exam 2014 With Answers
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Grade9 Mathematics Final Exam 2014 With Answers
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Grade9 Mathematics Final Exam 2014 With Answers
 - Setting Reading Goals Grade9 Mathematics Final Exam 2014 With Answers
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Grade9 Mathematics Final Exam 2014 With Answers
 - Fact-Checking eBook Content of Grade9 Mathematics Final Exam 2014 With Answers
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
- Exploring Educational eBooks
- 14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

Grade9 Mathematics Final Exam 2014 With Answers Introduction

Grade9 Mathematics Final Exam 2014 With Answers Offers over 60,000 free eBooks, including many classics that are in the public domain. Open Library: Provides access to over 1 million free eBooks, including classic literature and contemporary works. Grade9 Mathematics Final Exam 2014 With Answers Offers a vast collection of books, some of which are available for free as PDF downloads, particularly older books in the public domain. Grade9 Mathematics Final Exam 2014 With Answers: This website hosts a vast collection of scientific articles, books, and textbooks. While it operates in a legal gray area due to copyright issues, its a popular resource for finding various publications. Internet Archive for Grade9 Mathematics Final Exam 2014 With Answers: Has an extensive collection of digital content, including books, articles, videos, and more. It has a massive library of free downloadable books. Free-eBooks Grade9 Mathematics Final Exam 2014 With Answers Offers a diverse range of free eBooks across various genres. Grade9 Mathematics Final Exam 2014 With Answers Focuses mainly on educational books, textbooks, and business books. It offers free PDF downloads for educational purposes. Grade9 Mathematics Final Exam 2014 With Answers Provides a large selection of free eBooks in different genres, which are available for download in various formats, including PDF. Finding specific Grade9 Mathematics Final Exam 2014 With Answers, especially related to Grade9 Mathematics Final Exam 2014 With Answers, might be challenging as theyre often artistic creations rather than practical blueprints. However, you can explore the following steps to search for or create your own Online Searches: Look for websites, forums, or blogs dedicated to Grade9 Mathematics Final Exam 2014 With Answers, Sometimes enthusiasts share their designs or concepts in PDF format. Books and Magazines Some Grade9 Mathematics Final Exam 2014 With Answers books or magazines might include. Look for these in online stores or libraries. Remember that while Grade9 Mathematics Final Exam 2014 With Answers, sharing copyrighted material without permission is not legal. Always ensure youre either creating your own or obtaining them from legitimate sources that allow sharing and downloading. Library Check if your local library offers eBook lending services. Many libraries have digital catalogs where you can borrow Grade9 Mathematics Final Exam 2014 With Answers eBooks for free, including popular titles. Online Retailers: Websites like Amazon, Google Books, or Apple Books often sell eBooks. Sometimes, authors or publishers offer promotions or free periods for certain books. Authors Website Occasionally, authors provide excerpts or short stories for free on their websites. While

this might not be the Grade9 Mathematics Final Exam 2014 With Answers full book, it can give you a taste of the authors writing style. Subscription Services Platforms like Kindle Unlimited or Scribd offer subscription-based access to a wide range of Grade9 Mathematics Final Exam 2014 With Answers eBooks, including some popular titles.

FAOs About Grade9 Mathematics Final Exam 2014 With Answers Books

What is a Grade9 Mathematics Final Exam 2014 With Answers PDF? A PDF (Portable Document Format) is a file format developed by Adobe that preserves the layout and formatting of a document, regardless of the software, hardware, or operating system used to view or print it. How do I create a Grade9 Mathematics Final Exam 2014 With Answers **PDF?** There are several ways to create a PDF: Use software like Adobe Acrobat, Microsoft Word, or Google Docs, which often have built-in PDF creation tools. Print to PDF: Many applications and operating systems have a "Print to PDF" option that allows you to save a document as a PDF file instead of printing it on paper. Online converters: There are various online tools that can convert different file types to PDF. How do I edit a Grade9 Mathematics Final Exam 2014 With Answers PDF? Editing a PDF can be done with software like Adobe Acrobat, which allows direct editing of text, images, and other elements within the PDF. Some free tools, like PDFescape or Smallpdf, also offer basic editing capabilities. How do I convert a Grade9 Mathematics Final Exam 2014 With Answers PDF to another file format? There are multiple ways to convert a PDF to another format: Use online converters like Smallpdf, Zamzar, or Adobe Acrobats export feature to convert PDFs to formats like Word, Excel, JPEG, etc. Software like Adobe Acrobat, Microsoft Word, or other PDF editors may have options to export or save PDFs in different formats. How do I password-protect a Grade9 Mathematics Final Exam 2014 With **Answers PDF?** Most PDF editing software allows you to add password protection. In Adobe Acrobat, for instance, you can go to "File" -> "Properties" -> "Security" to set a password to restrict access or editing capabilities. Are there any free alternatives to Adobe Acrobat for working with PDFs? Yes, there are many free alternatives for working with PDFs, such as: LibreOffice: Offers PDF editing features. PDFsam: Allows splitting, merging, and editing PDFs. Foxit Reader: Provides basic PDF viewing and editing capabilities. How do I compress a PDF file? You can use online tools like Smallpdf, ILovePDF, or desktop software like Adobe Acrobat to compress PDF files without significant quality loss. Compression reduces the file size, making it easier to share and download. Can I fill out forms in a PDF file? Yes, most PDF viewers/editors like Adobe Acrobat, Preview (on Mac), or various online tools allow you to fill out forms in PDF files by selecting text fields and entering information. Are there any restrictions when working with PDFs? Some PDFs might have restrictions set by their creator, such as password protection, editing restrictions, or print restrictions. Breaking these restrictions might require specific software or tools, which may or may not be legal depending on the circumstances and local laws.

Find Grade9 Mathematics Final Exam 2014 With Answers:

follow that star wise men

for loves sake

for a time like this; studies for salvation today and mission today by.

food service careers

footprints scripture with reflections for teens

food and spirits

food choices a student audit of resource use

food groups

food for freezing gem guide ser.

food for friends

food in season daily table blebings for the christian year

foodservice standards in resorts l.j. minor foodservice standards ser

food fabulous food

food analysis theory practice 1st edition

footprint files puzzle adventure kit series

Grade9 Mathematics Final Exam 2014 With Answers:

maths olympiad unleash the maths olympian in you intermediate - Sep 06 2022

web 2023 year end sale olympiad best selling p5 s 19 95 s 14 96 qty description more info refund policy q a the first series of books maths olympiad unleash the maths olympian in you published in 2007 and 2008 has served as an ideal companion to students looking to establish a strong foundation in mathematics be it for psle

solution of maths of intermediate up board full pdf - Jul 04 2022

web solution of maths of intermediate up board 1 solution of maths of intermediate up board intermediate algebra an applied approach student solutions manual for introductory and intermediate algebra simple solutions mathematics intermediate b se maths olympiad intermediate sap sap group - Jan 10 2023

web description maths olympiad is a series of books specially designed for students preparing for various mathematics competitions as well as students who are interested to sharpen their skills in solving non routine mathematical problems each book in the series comprises clear classifications of various heuristics and non routine problems

solution of maths of intermediate up board eric lehman - Aug 05 2022

web mar 2 2023 solution of maths of intermediate up board is available in our digital library an online access to it is set as public so you can download it instantly our book servers hosts in multiple countries allowing you to get the most less latency time to download any of our books like this one

up board intermediate solution class 12 byju s - Oct 19 2023

web the class 12 up board maths solution is the most preferred way of preparing for the exams as they have been created as per the syllabus of these exams intermediate maths solution up board helps the students to solve chapter solution of maths of intermediate up board pdf store spiralny - Jan 30 2022

web solution of maths of intermediate up board downloaded from store spiralny com by guest eva andrews advanced problems in mathematics preparing for university nelson thornes mathematical modeling is becoming increasingly versatile and multi disciplinary this text demonstrates the broadness of this field as the authors consider the

solution of maths of intermediate up board uniport edu - Dec 29 2021

web aug 22 2023 solution of maths of intermediate up board below composite mathematics for class 8 anubhuti gangal composite mathematics is a series of books for pre primer to class 8 which conforms to the latest cbse curriculum the main aim of writing this series is to help the children understand difficult mathematical

up board solutions for class 10 maths $\square \square \square$ - May 14 2023

web jan 18 2023 up board solutions for class 10 maths $\square \square \square$ january 18 2023 by veerendra up board class 10 maths book solutions pdf download $\square \square \square$ are the part of up board solutions for class 10 here we have given up board books syllabus ncert solutions for class 10th maths pdf ganit

solution of maths of intermediate up board pdf full pdf - Feb 28 2022

web setting up an inclusive maths department policy and a brand new chapter on materials manipulatives and communication this book will equip you with the essential skills to tackle your pupils maths difficulties and improve standards

solution of maths of intermediate up board copy - Feb 11 2023

web solution of maths of intermediate up board by online you might not require more era to spend to go to the book start as capably as search for them in some cases you likewise complete not discover the broadcast solution of maths of intermediate up board that you are looking for it will very squander the time

solution of maths of intermediate up board pdf - Aug 17 2023

web solution of maths of intermediate up board understanding year 9 10 maths feb 02 2023 maths may 05 2023 intermediate mathematics 2 nov 18 2021 gcse maths intermediate jun 01 2020 gcse success questions ans**diffusion and osmosis i**

worksheet medicine libretexts - Apr 12 2023

web aug 14 2020 1 list 5 mechanisms by which molecules pass through the plasma membrane state whether these mechanisms are passive or active ie use energy or not 2 which mechanism 3 circle the correct statements below diffusion is a process that 4 circle the correct statements below osmosis 5 a semi permeable membrane is a

diffusion and osmosis key answers worksheets learny kids - Sep 05 2022

web 1 diffusion and osmosis answer key 2 diffusion and osmosis worksheet answer key biology 3 mr croft osmosis worksheet answers 4 answer key for osmosis and tonicity 5

diffusion and osmosis worksheet the answers pdf scribd - Mar 11 2023

web f 1a these are pictures of molecules frozen at two different times draw arrows to show the direction each particle might travel due to diffusion in diagrams a and b 1b describe the way the particles of a gas move randomly they continue in a straight line until they hit each other or an object and ricochet in a new direction f 1a

3 4 diffusion and osmosis answer key new trello - Jun 02 2022

web answer key 1 false hydrophilic 2 true 3 false hydrophobic 4 section 4 instant replay 1 hypertonic solution plus sign should be inside 2 facilitated diffusion 3 concentration gradient the big picture 4 13 08 2020 facilitated diffusion passive **diffusion and osmosis worksheet key 08 pdf osmosis** - Dec 08 2022

web diffusion and osmosis worksheet diffusion is the movement of particles from areas of higher concentration to areas of lower concentration it is a natural random process this means that it does not require extra energy input 1a these are pictures of molecules frozen at two different times

18 9 osmosis and diffusion chemistry libretexts - Nov 07 2022

web the three main kinds of passive transport are diffusion or simple diffusion osmosis and facilitated diffusion simple diffusion and osmosis do not involve transport proteins facilitated diffusion requires the assistance of proteins diffusion and osmosis questions practice questions of diffusion - Jul 03 2022

web practise questions on diffusion and osmosis q1 differentiate between osmosis and diffusion q2 what is reverse osmosis q3 give some examples of osmosis that we encounter in everyday life q4 what is dialysis q5 explain different types of diffusion click the pdf to check the answers for practice questions download pdf

chapter review diffusion and osmosis answer key - Jan 29 2022

web jun 8 2023 chapter review diffusion and osmosis answer key ebook chapter review diffusion and osmosis answer key is also beneficial along with manuals you could savor the moment is chapter review diffusion and osmosis answer key below it will hugely simplicity you to see manual chapter review diffusion and osmosis

difference between osmosis and diffusion osmosis vs diffusion - Feb 27 2022

web osmosis and diffusion are the two types of passive transport which play a vital role in moving molecules in and out of the cell osmosis osmosis is the process of moving solvent particles across a semipermeable membrane from the solvent's higher concentration to the solvent's lower concentration

diffusion and osmosis worksheet key 08 studocu - Aug 16 2023

web diffusion and osmosis worksheet diffusion is the movement of particles from areas of higher concentration to areas of lower concentration it is a natural random process this means that it does not require extra energy input 1a these are pictures of molecules frozen at two different times

diffusion and osmosis biology i introduction to cell and - Aug 04 2022

web osmosis is a specific kind of diffusion in which water moves across a semipermeable membrane from an area of high water concentration to an area of low water concentration a semipermeable membrane is a barrier that allows the passage of chapter review diffusion and osmosis answer key pdf old vulkk - May 01 2022

web cell membranes diffusion and osmosis chapter 7 part 2 of 3 diffusion osmosis active x port across cell membranes by professor fink osmosis an overview sciencedirect topics chapter review diffusion and osmosis answer key

answer key lab diffusion and osmosis pdf scribd - Jul 15 2023

web the rate of diffusion is influenced by both temperature how fast the particles move and size how big they are part 1 brownian motion in this part of the lab you will use a microscope to observe brownian motion in carmine red powder which is a

bio 101 lab 05 osmosis and diffusion answer key studocu - Feb 10 2023

web osmosis is a type of passive diffusion it occurs when water h2o molecules moves across a membrane from high water concentration to lower water concentration during osmosis the solvent moves but solutes do not diffuse diffusion and osmosis what do you know key by - Mar 31 2022

web description this is the answer key to a free worksheet available at biologycorner com worksheets diffusion osmosis review html this worksheet was designed for an anatomy class and contains a set of statements where students must circle the right word that completes the statement

answer key lab diffusion and osmosis studocu - Oct 06 2022

web lab 4 diffusion and osmosis the cell membrane plays the dual roles of protecting the living cell by acting as a barrier to the outside world yet at the same time it must allow the passage of food and waste products into and out of the cell for metabolism to proceed

lab 5 diffusion osmosis online worksheet pdf studocu - Jan 09 2023

web how are these observations related to the processes of diffusion and osmosis these observations are related to the

processes of diffusion and osmosis because larger molecules can t diffuse easily through cell membranes activity b diffusion of molecules through a selectively permeable membrane

diffusion and osmosis answer key barbara herlihy 2023 - Dec 28 2021

web as this diffusion and osmosis answer key it ends stirring swine one of the favored ebook diffusion and osmosis answer key collections that we have this is why you remain in the best website to see the unbelievable ebook to have mosby s comprehensive review for veterinary technicians e book monica m tighe 2019 03 28

diffusion and osmosis biology libretexts - Jun 14 2023

web 1 description of diffusion and osmosis a water solution that contains nutrients wastes gases salts and other substances surrounds cells this is the external environment of a cell the cell s outer surface of the plasma membrane is in contact with this external environment while the inner surface is in contact with the cytoplasm

chapter review diffusion and osmosis flashcards quizlet - May 13 2023

web facilitated diffusion moves substances down their concentration gradient using the cell's energy the spreading of something more wildly diffusion equilibrium a state in which opposing forces or influences are balanced osmosis a process in which molecules of a solvent tend to pass through membrane

troubadours of allah sufi music from the indus valley - Jun 14 2023

web check out troubadours of allah sufi music from the indus valley by various artists on amazon music stream ad free or purchase cd s and mp3s now on amazon com

troubadours of allah sufi music from the indus va 2022 - May 01 2022

web the troubadours inside arabic music heroic poets poetic heroes the british journal of photography singers die twice the legacy of muslim spain history of islam in german thought neue zeitschrift für musik troubadours of allah sufi music from the indus va downloaded from stackdockeridp fixspec com by guest brady gaige music and song

troubadours of allah sufi music from the indus va 2022 - Jan 09 2023

web troubadours of allah sufi music from the indus va can be one of the options to accompany you similar to having extra time it will not waste your time endure me the e book will unconditionally impression you further business to read just invest tiny times to get into this on line statement troubadours of allah sufi music from the indus va

troubadours of allah sufi music from the indus va frances - Feb 27 2022

web troubadours of allah sufi music from the indus va is available in our digital library an online access to it is set as public so you can allowing you to get the most less latency time to download any of our books like this one merely said the troubadours of allah sufi music from the indus va is universally compatible with any devices to troubadours of allah sufi music from the indus va 2023 - Jul 15 2023

web explores the global rise of the sufi music phenomenon focusing on the musical and devotional activities revolving around sufi islam s most popular figure the 13th century mystic saint mevlana jalaleddin rumi

troubadours of allah sufi music from the indus va - Sep 05 2022

web 2 troubadours of allah sufi music from the indus va 2022 08 09 gathered from contemporary and archive sources many of them unique to this book and directories of world music labels specialist stores around the world and on the internet the troubadours murty classical library of india what makes hundreds of listeners cheer

troubadours of allah sufi music from the indus va b lashua - Dec 08 2022

web get the troubadours of allah sufi music from the indus va join that we have enough money here and check out the link you could buy guide troubadours of allah sufi music from the indus va or acquire it as soon as feasible you could quickly download this troubadours of allah sufi music from the indus va after getting deal

troubadours of allah sufi music from the indus valley jiosaavn - Oct 06 2022

web listen to troubadours of allah sufi music from the indus valley songs online on jiosaavn hindi music album by bahauddin qutbuddin qawwal party 1 khyal ang qawwali bahauddin qutbuddin qawwal party 2

troubadours of allah sufi music from the indus valley by - Dec 28 2021

web troubadours of allah sufi music from the indus valley by sufi islam thrives eloquent and poetic as ever aik sufism the gnostic chameleon muscle and brain of islam

troubadoure allahs sufi von pannke zvab - Aug 04 2022

web troubadoure allahs sufi musik im industal von pannke peter friedrichs horst a und eine große auswahl ähnlicher bücher kunst und sammlerstücke erhältlich auf zvab com

troubadours of allah sufi music from the indus va download - Jun 02 2022

web troubadours of allah sufi music from the indus va 3 3 an adrenalin charged trip through some of the cultural flashpoints of the past few decades pop grenade celebrates the power of music as a force for change based on first hand personal reportage from raves riots and rebellions it explores how music has been used as a weapon in

troubadours of allah sufi music from the indus valley - Aug 16 2023

web listen to troubadours of allah sufi music from the indus valley on spotify various artists compilation 1999 21 songs troubadours of allah sufi music from the indus va 2023 - May 13 2023

web troubadours of allah sufi music from the indus va harappa jul 03 2020 includes pictures includes a bibliography for further reading when one thinks of the world's first cities sumer memphis and babylon are some of the first to come to mind but if the focus then shifts to india then harappa and mohenjo daro will likely come up these troubadours of allah sufi music from the indus va 2022 - Mar 11 2023

web troubadours of allah sufi music from the indus va downloaded from stackdockeridp fixspec com by guest douglas jimenez rhythm music magazine rough guides shah abdul latif s risalo is acknowledged as the greatest classic of sindhi literature in this collection of sufi verses composed for musical performance the poet creates a

troubadours of divine bliss on apple music - Mar 31 2022

web listen to music by troubadours of divine bliss on apple music find top songs and albums by troubadours of divine bliss including holy now awakening to love and more

troubadours of allah sufi music from the indus valley - Feb 10 2023

web share your videos with friends family and the world

troubadours of allah sufi music from the indus valley by - Jan 29 2022

web music sufi music paderborner sj blog maulana rumi online abraham maimonides a jewish sufi stream troubadours of allah sufi music from the indus way of shah abdul latif a song by qurban fakir amp ensemble troubadours of allah sufi music from the indus valley label wergo rate your music

various artists troubadours of allah sufi music indus vly album - Apr 12 2023

web jan 11 2000 discover troubadours of allah sufi music indus vly by various artists released in 2000 find album reviews track lists credits awards and more at allmusic

troubadours of allah sufi music from the indus valley by - Nov 07 2022

web the indus valley stream troubadours of allah sufi music from the indus london exhibition explores sindh s sufi music pakpositive the arab contribution to music reserve lasd org 3 37

troubadours of allah sufi music from the indus va 2022 - Jul 03 2022

web elements in the music of the islamic middle ages their relevance to both contemporary and traditional iranian music and their interaction with classical persian poetry and metrics