

pearson physical science optics test answers Printable PDF

pearson physical science optics test answers are essential resources for students preparing for their assessments in physical science, particularly in the optics unit. Optics, the branch of physics that deals with light and its interactions, is a fundamental topic that encompasses concepts such as reflection, refraction, lenses, mirrors, and optical phenomena. Having access to accurate and comprehensive test answers can significantly enhance learning, help identify areas for improvement, and boost confidence ahead of exams. This guide provides an extensive overview of common questions, concepts, and best practices related to Pearson Physical Science optics tests, ensuring students are well-equipped to succeed.

Understanding Pearson Physical Science Optics Test Questions

Types of Questions Typically Found in the Test

Pearson Physical Science tests on optics often feature a variety of question formats designed to assess both conceptual understanding and practical application. These include:

- Multiple Choice Questions (MCQs)
- True or False Statements
- Short Answer Questions
- Diagram Labeling and Interpretation
- Problem-Solving Scenarios
- Experimental and Conceptual Questions

Understanding the nature of these questions is key to preparing effective answers. For example, MCQs may test your knowledge of properties of light, while diagram questions assess your ability to visualize optical phenomena.

Common Topics Covered in the Test

The optics section typically encompasses the following fundamental concepts:

- Reflection and mirrors
- Refraction and lenses

- Dispersion of light
- Optical illusions
- The electromagnetic spectrum
- Color and light absorption
- Real vs. virtual images
- The physics of vision

Familiarity with these topics and their interrelations forms the basis for accurate answers and high scores.

Key Concepts in Physical Science Optics for Test Success

Reflection and Mirrors

Reflection involves light bouncing off surfaces. Key points include:

- The Law of Reflection: The angle of incidence equals the angle of reflection.
- Types of mirrors: plane, concave, and convex.
- Properties of images formed by mirrors:
 - Upright or inverted
 - Real or virtual
 - Magnified or diminished

Refraction and Lenses

Refraction is the bending of light as it passes through different mediums. Important concepts include:

- Snell's Law: $n_1 \sin \theta_1 = n_2 \sin \theta_2$
- Refractive index (n)
- Convex and concave lenses
- Focal point, focal length, and image formation
- Lens equations and magnification

Dispersion of Light

Dispersion occurs when light separates into its component colors, as seen in:

- A prism separating white light into a spectrum
- The formation of rainbows
- Understanding how different wavelengths refract differently

Optical Phenomena and Applications

- Total internal reflection
- The functioning of optical instruments like microscopes and telescopes
- How human eyes focus light
- Optical illusions and how they trick perception

How to Find and Use Pearson Physical Science Optics Test Answers

Accessing Authentic Test Answers

To effectively prepare, students should seek out reliable sources for Pearson optics test answers:

- Official Pearson resources and student portals
- Textbooks and study guides provided by Pearson
- Educator-approved practice tests
- Online educational platforms with verified answer keys

Always verify the credibility of the source to ensure accuracy.

Strategies for Using Test Answers Effectively

Using answers as a learning tool rather than just a shortcut is crucial. Strategies include:

- Attempting the question first on your own before reviewing the answer
- Comparing your solution with the provided answer to identify mistakes
- Understanding the reasoning behind each answer choice
- Creating a personalized mistake log to monitor recurring errors
- Using answer explanations to deepen conceptual understanding

Benefits of Reviewing Test Answers

- Reinforces correct understanding

- Clarifies misconceptions
- Improves test-taking strategies
- Builds confidence for the actual exam

Sample Questions and Model Answers in Pearson Physical Science Optics

Question 1: Reflection

Q: A ray of light strikes a mirror at an incident angle of 30° . What is the angle of reflection?

A: The angle of reflection equals the incident angle, so 30° .

Question 2: Lens Image Formation

Q: An object is placed 10 cm in front of a convex lens with a focal length of 15 cm. Use the lens formula to find the image distance.

A: Using the lens formula:

$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$

$$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$$

$\frac{1}{15} = \frac{1}{10} + \frac{1}{d_i}$

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$$\frac{1}{d_i} = \frac{1}{15} - \frac{1}{10} = \frac{2}{30} - \frac{3}{30} = -\frac{1}{30}$$

$d_i = -30$

$d_i = -30$

$$d_i = -30, \text{ cm}$$

\]

The negative sign indicates the image is virtual and on the same side as the object, located 30 cm from the lens.

Common Challenges and How to Overcome Them

Understanding complex concepts

Optics can involve abstract ideas. To grasp these:

- Use diagrams extensively
- Relate concepts to real-world examples
- Practice problem-solving regularly

Memorizing formulas and laws

While understanding is vital, memorization helps:

- Create flashcards for laws like Snell's law and the law of reflection
- Practice derivations to reinforce understanding

Applying concepts to practical scenarios

Many test questions involve applying knowledge:

- Practice with real-world problems
- Use online simulations and virtual labs
- Engage in hands-on experiments when possible

Additional Resources for Mastering Physics Optics

- Pearson's Student Editions and Practice Tests
- Online educational platforms such as Khan Academy or Physics Classroom
- YouTube channels dedicated to physics tutorials
- Study groups and tutoring sessions

Conclusion

Having comprehensive and accurate Pearson Physical Science optics test answers can significantly enhance students' exam preparation and understanding of light and optical phenomena. However, it's equally important to focus on grasping the underlying concepts, practicing problems, and applying knowledge practically. Use answer keys responsibly as a learning aid, and complement your studies with additional resources for a well-rounded understanding. With diligent preparation and effective study strategies, mastering optics in physical science becomes an achievable goal.

Pearson Physical Science Optics Test Answers: An Expert Review and Guide

In the realm of physical science education, mastering optics is a crucial component for students pursuing physics and related disciplines. With the advent of digital learning tools and assessment resources, Pearson's physical science optics test answers have gained popularity as a reference point for students and educators alike. This article offers an in-depth review of Pearson's optics test solutions, analyzing their structure, accuracy, pedagogical value, and how they can be effectively utilized to enhance learning.

Understanding Pearson's Approach to Optics Assessments

Pearson, a leading educational publisher, designs assessments that align with curriculum standards, aiming to evaluate students' understanding of fundamental concepts in optics. Their test answers serve as guides or solutions to practice questions, homework assignments, and exam preparations.

Key features of Pearson's optics test answers include:

- Alignment with Curriculum Standards: Ensuring that solutions reflect the learning objectives outlined in physical science curricula.
- Step-by-Step Explanations: Breaking down complex concepts into digestible steps, aiding comprehension.
- Variety of Question Types: Covering multiple-choice, short-answer, diagram-based, and problem-solving questions.
- Incorporation of Visuals: Utilizing diagrams, ray diagrams, and illustrations to clarify optical phenomena.

Structure and Content of Pearson's Optics Test Answers

Pearson's physical science optics test answers are typically structured to facilitate understanding and self-assessment. Let's explore their common components:

1. Clear Question Restatement

Each answer begins by restating the question to ensure clarity and context. This approach helps students connect the solution directly to the question prompt.

2. Conceptual Explanation

Before delving into calculations, answers often include explanations of the relevant physics principles, such as reflection, refraction, lens behavior, or wave properties.

3. Step-by-Step Solutions

This is the core of Pearson's answer guides, often presented as numbered steps:

- Identifying knowns and unknowns
- Applying relevant formulas (e.g., Snell's Law, lens/mirror formulas)
- Drawing diagrams when necessary
- Performing calculations with detailed reasoning

4. Visual Aids and Diagrams

Optics relies heavily on visual understanding. Pearson's solutions frequently incorporate diagrams illustrating ray paths, image formation, or wave interference, which are essential for conceptual clarity.

5. Final Answer and Interpretation

Solutions conclude with a clear statement of the answer, including units and interpretation to ensure students understand the significance of the result.

Accuracy and Pedagogical Value of Pearson's Test Answers

One of the most critical considerations is the accuracy of Pearson's solutions. Based on extensive reviews and educator feedback, Pearson's answers are generally reliable and adhere to standard physics principles. They serve as excellent resources for:

- Self-Study: Students can use these solutions to verify their work and understand mistakes.
- Teaching Support: Educators can utilize the solutions to prepare lesson plans or create supplementary exercises.

- Test Preparation: Practice with Pearson's answers helps students build confidence and proficiency.

However, it is essential to recognize that solutions are guides, and understanding the underlying concepts is more valuable than rote memorization.

Pedagogical advantages include:

- Encouraging critical thinking through detailed explanations
- Reinforcing the application of formulas and principles
- Developing visualization skills via diagrammatic representations
- Providing practice in problem-solving techniques specific to optics

How to Effectively Use Pearson's Optics Test Answers for Learning

While Pearson's test answers are invaluable, their effectiveness depends on how students and teachers utilize them. Here are some best practices:

1. Active Engagement

Instead of passively reading solutions, students should attempt to solve problems independently before reviewing the answers. Use Pearson's solutions to compare reasoning and identify gaps.

2. Understand the 'Why'

Focus on understanding the rationale behind each step. For example, why is a particular diagram drawn a certain way? Why is a specific formula applied?

3. Practice Diverse Problems

Use the solutions to tackle a variety of question types, including conceptual, numerical, and diagram-based problems, to build comprehensive understanding.

4. Clarify Misconceptions

If a solution seems confusing or inconsistent, consult additional resources such as textbooks, online tutorials, or ask educators for clarification.

5. Incorporate Visual Learning

Pay close attention to diagrams and ray diagrams provided. Practice drawing your own to reinforce spatial understanding of optical phenomena.

Limitations and Considerations

While Pearson's optical science test answers are generally reliable, some limitations are worth noting:

- Potential for Over-Reliance: Students might become dependent on solutions instead of developing problem-solving skills.
- Curriculum Variability: Different courses or curricula may emphasize different aspects of optics; ensure the solutions align with your specific syllabus.
- Simplification of Complex Concepts: Some explanations may be simplified for clarity; students should seek deeper understanding through supplementary materials.

Conclusion: The Value of Pearson's Optics Test Answers in Physics Education

In summary, Pearson's physical science optics test answers are a valuable resource for students seeking to deepen their understanding of optical phenomena. Their structured approach, clarity, and pedagogical focus make them suitable for self-study, homework assistance, and exam preparation. When used appropriately?complemented by active problem-solving, conceptual study, and supplementary learning?they can significantly enhance mastery of optics.

As with all educational tools, the key to success lies in balance. Use Pearson's answers as a guide, not a crutch, ensuring that your grasp of optical principles remains robust and genuine. By doing so, students can confidently tackle complex problems, grasp the intricacies of light behavior, and lay a strong foundation for future studies in physics and related sciences.

Final Advice: Always verify solutions with multiple resources and strive to understand the core principles behind each problem. With disciplined effort and strategic use of Pearson's test answers, mastering optics becomes an achievable goal.

Question Where can I find the official Pearson Physical Science optics test answers?
Answer Official Pearson resources and your instructor are the best sources for verified test answers. Avoid unauthorized sources to ensure academic integrity. How can I prepare effectively for the Pearson Physical Science optics test? Review your class notes, complete practice problems, understand key concepts like reflection and refraction, and use any provided study guides or online resources offered by Pearson. What are common topics covered in the Pearson Physical Science optics test? Topics often include light behavior, reflection, refraction, lenses, mirrors, and the electromagnetic

spectrum. Are there online resources to help understand optics concepts for Pearson tests? Yes, websites like Khan Academy, Physics Classroom, and Pearson's own online resources offer tutorials and practice questions on optics. Can I use quizlet or other online flashcards for studying optics for Pearson Physical Science? Yes, but ensure the information is accurate and aligns with your curriculum. Always cross-reference with your textbook or teacher's notes. What should I do if I struggle with understanding optics concepts on the Pearson test? Seek help from your teacher, join study groups, and utilize online educational videos to clarify difficult topics. Are there practice tests available for Pearson Physical Science optics section? Yes, your textbook, Pearson's online platform, and educational websites often provide practice tests to help you prepare. What is the importance of understanding optics for the Pearson Physical Science course? Understanding optics is fundamental to grasping how light behaves, which is essential for many scientific and technological applications. Is it ethical to look up Pearson Physical Science optics test answers online? No, it is not ethical. Using test answers dishonestly can lead to academic penalties and undermines your learning process. How can I improve my score on the Pearson Physical Science optics test? Consistent studying, practicing problems, understanding key concepts, and reviewing your mistakes will help boost your performance.

Related keywords: Pearson Physical Science optics quiz solutions, Pearson optics test key, physical science optics exam answers, Pearson optics practice test solutions, Pearson physics optics review answers, Pearson physical science optics worksheet answers, Pearson optics study guide solutions, Pearson physical science light and optics answers, Pearson optics chapter test answers, Pearson physical science optics comprehension answers

physical science creative teaching press physical changes

Physical science creative teaching press physical changes is a vital topic in the realm of science education, especially for educators aiming to foster understanding and curiosity about the fundamental nature of matter. Understanding physical changes is essential for students to grasp how substances transform without altering their chemical composition. This article explores the concept of physical changes in physical science, emphasizing creative teaching methods, key principles, real-world examples, and effective strategies to make learning engaging and comprehensive.

Understanding Physical Changes in Physical Science

What Are Physical Changes?

Physical changes refer to alterations in the form, appearance, or state of a substance that do not

modify its chemical identity. These changes are often reversible, meaning the original substance can typically be recovered without chemical reactions taking place.

Examples of physical changes include:

- Melting ice into water
- Boiling water into vapor
- Cutting paper
- Dissolving sugar in tea
- Crushing a can

Key characteristics of physical changes:

- No new substances formed
- Usually reversible
- Involve changes in physical properties like shape, size, or phase

Difference Between Physical and Chemical Changes

While physical changes involve no change in chemical composition, chemical changes result in the formation of new substances with different properties.

Aspect	Physical Change	Chemical Change
Definition	Change in physical form or state	Formation of new substances
Reversibility	Usually reversible	Usually irreversible
Example	Melting ice	Burning wood

Creative Teaching Strategies for Physical Changes

Engaging students in understanding physical changes requires innovative and creative teaching methods. Here are some effective strategies:

Hands-On Experiments and Demonstrations

Practical activities help students visualize and understand physical changes concretely.

Examples include:

- Melting ice cubes and observing the change
- Evaporating saltwater
- Crumpling aluminum foil
- Freezing water to form ice
- Dissolving sugar and salt

Tips for effective experiments:

- Use clear, simple materials
- Encourage students to record observations
- Discuss reversible vs. irreversible changes

Interactive Visual Aids and Simulations

Utilize multimedia tools like animations and virtual labs to demonstrate physical changes that are difficult to observe directly.

Benefits include:

- Enhancing visualization skills
- Providing safe environments for experimentation
- Catering to diverse learning styles

Storytelling and Real-Life Contexts

Integrate stories or real-world examples to make the concept relatable.

Examples:

- How ice melts outside on a sunny day
- How a puddle evaporates after rain
- The process of freezing water into ice cubes at home

Creative Classroom Activities

Engage students through activities that promote exploration and discussion.

Ideas include:

- "Change Detective" game where students identify physical changes around them
- Group projects on different physical changes observed in nature
- Art projects like sculpting or paper folding to demonstrate physical transformations

Key Concepts and Principles of Physical Changes

States of Matter and Phase Changes

Understanding how matter transitions between solid, liquid, and gas states is central to physical science.

Common phase changes:

- Melting (solid to liquid)
- Freezing (liquid to solid)
- Vaporization or boiling (liquid to gas)
- Condensation (gas to liquid)
- Sublimation (solid to gas)

Teaching tip: Use diagrams and models to illustrate these transitions dynamically.

Properties of Materials During Physical Changes

Monitor how physical properties such as shape, volume, density, and color change during physical transformations.

Examples:

- Volume expansion of metal when heated
- Changes in shape during molding or crushing
- Color changes due to temperature effects

Reversibility and Conservation of Mass

Most physical changes are reversible and adhere to the law of conservation of mass, meaning the total mass remains constant during the change.

Discussion points:

- How physical changes do not alter the chemical identity
- Examples demonstrating conservation of mass in physical changes

Real-World Applications of Physical Changes

Understanding physical changes has numerous applications across industries and daily life.

In Manufacturing and Industry

- Metal forging and shaping
- Plastic molding
- Food processing (freezing, boiling, drying)

In Nature and Environment

- Water cycle processes like evaporation and condensation
- Glacial melting
- Weathering of rocks

In Daily Life

- Cooking (boiling, freezing)
- Cleaning (dissolving detergents)
- Recycling materials like aluminum cans

Assessment and Evaluation Strategies

To gauge understanding, educators can implement various assessment tools:

- Quizzes and Worksheets: Focused on identifying physical changes
- Observation and Lab Reports: Documenting experiments
- Group Discussions: Explaining processes and concepts
- Creative Projects: Designing models or presentations illustrating physical changes

Challenges and Solutions in Teaching Physical Changes

Common challenges include:

- Abstract concepts difficult for students to grasp
- Confusing physical changes with chemical changes
- Limited access to laboratory resources

Solutions:

- Use visual aids and models extensively
- Reinforce concepts with real-life examples
- Incorporate virtual labs and simulations
- Encourage critical thinking and questioning

Conclusion

Teaching physical science with a focus on physical changes demands creativity, engagement, and clarity. By employing hands-on experiments, visual tools, storytelling, and real-world contexts, educators can foster a deep understanding of physical changes among students. Recognizing the importance of these concepts not only enhances scientific literacy but also prepares learners to appreciate the dynamic nature of matter in everyday life and various industries. As educators continue to innovate in their teaching approaches, the topic of physical changes remains a fundamental and exciting area of physical science education.

Keywords for SEO Optimization:

- Physical science
- Creative teaching methods
- Physical changes
- Science education
- Phase changes
- Reversible changes

- Hands-on science experiments
- Teaching physical science effectively
- Real-world science applications

Physical Science Creative Teaching Press Physical Changes: A Comprehensive Guide to Engaging Science Education

In the realm of physical science education, understanding the concept of physical changes is fundamental. When educators utilize resources from the Creative Teaching Press, particularly their materials on physical science, they open doors to innovative, hands-on learning experiences. This guide delves into the essence of physical changes, exploring how teachers can effectively introduce, demonstrate, and assess this critical scientific concept using creative teaching strategies and resources.

Understanding Physical Changes in Science

Physical changes refer to alterations in the state or appearance of a substance without changing its chemical composition. These changes are often reversible and are fundamental to students' grasp of material properties, states of matter, and the nature of physical phenomena.

Key Characteristics of Physical Changes:

- No new substance forms
- Usually reversible
- Changes involve physical properties like shape, size, phase, or texture
- Do not affect the chemical identity of the substance

Examples include melting, freezing, boiling, condensation, breaking, and dissolving.

Why Focus on Physical Changes?

Teaching about physical changes lays the groundwork for understanding more complex topics like chemical reactions and molecular structure. It also encourages observational skills, critical thinking, and science process skills such as hypothesizing, experimenting, and analyzing.

Using creative teaching methods, including hands-on activities, visual aids, and real-world applications, enhances student engagement and comprehension.

Effective Strategies for Teaching Physical Changes

- Hands-On Experiments and Demonstrations

Experiments are the cornerstone of science teaching. Engaging students with tangible experiences helps solidify abstract concepts.

Sample Activities:

- Melting Ice: Show how ice melts into water when heated, emphasizing phase change from solid to liquid.
- Dissolving Salt or Sugar: Demonstrate solubility and how substances can undergo physical changes without chemical reactions.
- Crushing or Breaking: Break chalk or plastic to illustrate physical alteration, emphasizing that the material remains the same.

Tips:

- Use clear, simple materials.
- Encourage students to record observations and hypothesize outcomes.
- Discuss reversibility after each activity.

- Visual Aids and Graphic Organizers

Visual tools help students visualize the concept and organize their understanding.

Examples:

- Charts comparing physical and chemical changes
- Diagrams illustrating phase changes
- Flowcharts depicting the steps in various physical processes

- Incorporate Creative Media and Resources

Creative Teaching Press offers a suite of resources, including posters, activity books, and digital content, designed to make learning about physical changes interactive and memorable.

Utilize:

- Illustrated posters showing different physical changes
- Interactive worksheets that challenge students to classify changes
- Story-based scenarios that involve physical change concepts

- Real-Life Applications and Contextual Learning

Connecting science to students' everyday experiences makes lessons relevant and meaningful.

Examples:

- Melting ice in a beverage
- Freezing water to make ice cubes
- Dissolving sugar in coffee or tea
- Physical alterations in manufacturing or cooking

Classroom Activities and Lesson Plans

Here's a sample outline for a comprehensive lesson:

Lesson Title: Exploring Physical Changes

Objectives:

- Define physical change
- Identify different types of physical changes
- Conduct simple experiments to observe physical changes

Materials Needed:

- Ice cubes
- Water
- Salt
- Sugar
- Plastic or glass containers
- Crayons or chalk
- Safety goggles

Procedure:

- Introduction (10 minutes): Discuss what physical changes are, using visuals.
- Demonstration (15 minutes): Melting ice and dissolving salt/sugar.
- Student Activity (30 minutes): Students perform experiments:
 - Observe ice melting
 - Dissolve sugar in water
 - Break chalk into pieces
 - Freeze water and observe ice formation
- Discussion (15 minutes): Students share observations, compare results, and classify each change.
- Assessment (10 minutes): Quiz or worksheet to reinforce understanding.

Assessment Tips:

- Use questioning strategies to assess understanding.
- Have students draw diagrams of their experiments and label physical changes.

Assessing Understanding of Physical Changes

Assessment should gauge both conceptual understanding and practical skills.

Methods:

- Observation during activities
- Student reflections and explanations
- Quizzes with multiple-choice and short-answer questions
- Concept maps illustrating types of changes

Common Misconceptions and How to Address Them

- Misconception: Physical changes always involve a change in the substance's chemical identity.

Correction: Emphasize that physical changes do not alter the chemical structure, using examples like melting ice or tearing paper.

- Misconception: All physical changes are reversible.

Correction: Clarify that some physical changes, like breaking or cutting, are reversible, but others, like tearing or dissolving, may not be easily reversible.

Integrating Creative Teaching Press Resources

Creative Teaching Press provides various materials tailored for physical science instruction, which can elevate your teaching approach:

- Activity Books: Ready-made experiments and activities that align with standards.
- Posters and Visuals: Engaging images that reinforce concepts.
- Interactive Worksheets: Opportunities for students to classify and analyze physical changes.
- Digital Resources: Online games and quizzes to supplement lessons.

Strategies for Integration:

- Use posters as classroom decor to continually reinforce concepts.
- Incorporate activity books into small-group work or centers.
- Assign digital quizzes as formative assessments.

Extending Learning Beyond the Classroom

Encourage students to observe physical changes in their environment.

Assignments:

- Keep a science journal recording physical changes observed at home or outdoors.
- Research and present on real-world applications of physical changes in industries.
- Design their own experiments related to physical changes and share findings.

Conclusion

Understanding physical changes is a vital component of physical science education. By leveraging

creative teaching strategies and resources, such as those provided by Creative Teaching Press, educators can foster curiosity, deepen understanding, and nurture scientific literacy among students. From hands-on experiments to visual aids and real-world connections, teaching physical changes effectively prepares students for more advanced topics and encourages a lifelong appreciation for science.

Remember: The goal is to make science accessible, engaging, and relevant. Through creative teaching approaches, educators can inspire the next generation of scientists and thinkers to explore the fascinating world of physical science.

Question What are some effective creative teaching strategies for explaining physical changes in science classes? Creative strategies include hands-on experiments, visual demonstrations, interactive models, and storytelling to help students grasp concepts like melting, freezing, and condensation in engaging ways. How can teachers make the concept of physical changes more relatable to students? Teachers can use everyday examples such as ice melting, boiling water, or folding paper to illustrate physical changes, making the concepts more familiar and easier to understand. What role does the Physical Science Creative Teaching Press play in improving science education? The Physical Science Creative Teaching Press provides innovative resources, lesson plans, and activities designed to foster creativity and enhance student understanding of physical science concepts like physical changes. What are some common misconceptions students have about physical changes, and how can creative teaching address them? Students often confuse physical changes with chemical changes. Creative teaching methods like experiments and visual aids can clarify that physical changes do not alter the substance's identity, helping to correct misconceptions. Can technology enhance teaching about physical changes in physical science? If so, how? Yes, technology such as virtual labs, simulations, and interactive videos can provide dynamic and visual representations of physical changes, making abstract concepts more accessible and engaging for students.

Related keywords: physical science, creative teaching, physical changes, science education, hands-on experiments, teaching resources, science curriculum, classroom activities, scientific concepts, educational publishing

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