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Understanding lines of symmetry is an important part of geometry. Symmetry is the property of a shape or object being the same on both sides. In a rectangle, two lines of symmetry divide the shape into two identical halves, making it easier to analyze and understand the properties of rectangles. Lets take a closer look at lines of symmetry in rectangles and how they are used in geometry. Lines of Symmetry in RectanglesA line of symmetry bisects a shape, dividing it into two equal halves that are mirror images. In a rectangle, there are always two lines of symmetryone vertical line and one horizontal linethat intersect at its center point. These lines divide the rectangle into four identical quadrants that can be used to analyze its properties and create equations for calculations such as area and perimeter.Using Lines of Symmetry for AnalysisLines of symmetry in rectangles can be used for various analytical tasks. For example, you can use them to calculate the area or perimeter quickly since each side has an exact opposite side with which it shares dimensions. You can also draw diagonals from each corner to find out if all angles are equal (90 degrees). Drawing diagonals between opposite corners creates four congruent triangles that help you determine angles and lengths more accurately than measuring them independently from each other.Efficiency with Lines of SymmetryIn addition to analysis, understanding lines of symmetry in rectangles can help you work faster when solving problems involving area and perimeter calculations. Since each side is equal to its counterpart across the line(s) of symmetry, you only need to measure one side before finding the length or width (or any other dimension) for the entire rectangle. This saves time compared with measuring all sides individually and helps ensure accuracy when working with large-scale shapes or multiple shapes. Knowing how to identify and use lines of symmetry in rectangles is an essential part of geometry that students should master early on in their studies. Identifying these lines makes analyzing various properties easier and more accurate while saving time when solving complex problems involving measurements and calculations such as area or perimeter. With this knowledge under your belt, youll be better prepared for future mathematical endeavors! FAQWhy does a rectangle have 4 lines of symmetry?A rectangle does not have four lines of symmetryit only has two. The two lines of symmetry in a rectangle are one vertical line and one horizontal line that intersect at its center point, dividing the shape into four equal quadrants. These two lines of symmetry divide the rectangle into two identical halves. How do you explain lines of symmetry?Lines of symmetry are lines or planes that divide a shape into two equal halves. They bisect the shape, creating two mirror images of each other. In a rectangle, there are always two lines of symmetry: one vertical line and one horizontal line that intersect at its center point. These lines can be used to analyze various properties of rectangles and to work more efficiently when solving problems involving area and perimeter calculations. Download the Testbook APP & Get Pass Pro Max FREE for 7 Days10,000+ Study NotesRealtime Doubt Support71000+ Mock TestsRankers Test Series+ more benefitsDownload App Nowa rectangle has 2 lines of symmetry: one runs from the center of one of the shorter sides to the center of the other short side. The second runs from the center of one of the longer sides to the center of the other longer side. Diagonals are not lines of symmetry.Many textbooks use what is called the folding test to find lines of symmetry of plane shapes. This tests says that when the folded part sits perfectly on top so that all the edges are matching, then the fold line is a line of symmetry. If we use this definition, then a diagonal is not a line of symmetry of a rectangle. We would find 2 lines of symmetry using this definition.Many books define both reflective and rotational symmetries. In fact, in more advanced algebra we look at groups that deal with this. Here is some interesting info about how that would would work with a rectangle. First you would need to identify the corners of the rectangle by using numbers or letters such as ABCD.Using this we can see two rotational symmetries and two reflective or line symmetries of the rectangle. Now think of symmetries as a function mapping the points of the rectangle back on themselves. Using this idea we can define the product of these functions or transformations. This would be one symmetry followed by another. A composition of symmetries.A rectangle has two lines of symmetry, each of which is a perpendicular bisector to two opposite sides of the rectangle.A rectangle has two lines of symmetry In this article we will cover Lines of symmetry in a rectangle, Lines of symmetry on rectangle, How to figure out how many lines of symmetry a shape has. There are only two lines of symmetry in a rectangle. These two lines are the only ones that can be used to cut a rectangle in half. It cannot be folded from corner to corner to achieve symmetry. A rectangle has 2 lines of symmetry which divides it into two identical parts. A shape can be different types of symmetry, such as linear symmetry, mirror symmetry, reflectional symmetry, and so on. A shape can be two or more lines of symmetry. To recall, a rectangle is one of the quadrilaterals whose two opposite sides are equal and parallelogram. Thus, a rectangle is also considered as a special parallelogram. For a rectangle, both the line and rotational symmetry exists which are discussed below.RectangleSymmetryReflection SymmetryFigures with SymmetryWhat is Lines of Symmetry in Rectangle?There are 2 symmetry lines of a rectangle which are from its length and breadth. These two lines cut the rectangle in two similar halves which are mirror images of each other. If a rectangle is folded along its line of symmetry, it superimposes perfectly.Number of Symmetry Lines in a Rectangle = 2Here are the two lines of symmetry in a rectangle:Lines Of Symmetry In A RectangleIt should be noted that for a rectangle, the diagonals are not its lines of symmetry. This is because, if a rectangle cut along its diagonals will not superimpose perfectly as the sides will be of different measurement.Rotational Symmetry of a RectangleA rectangle has an order of rotational symmetry of 2 at 180 and 360. This means a rectangle can map onto itself 2 times during rotation of 360 i.e. at 180 and 360. This is in contrast to a square which has rotational symmetry of 4 as it has 4 equal sides.Video Lesson on Properties of rectanglesA rectangle is a 4 sided polygon whose two opposite sides are equal and parallel. The angles of a rectangle are always 90 degrees and its diagonals are always equal.A rectangle has 2 lines of symmetry. The lines of symmetry in a rectangle cut its opposite sides into equal parts.Yes, a rectangle has rotational symmetry. A rectangle has rotational symmetry of 180 (Order 2). Put your understanding of this concept to test by answering a few MCQs. Click Start Quiz to begin! Select the correct answer and click on the Finish buttonCheck your score and answers at the end of the quiz Visit BYJUS for all Maths related queries and study materials 0 out of 0 arewrong 0 out of 0 are correct 0 out of 0 are Unattempted View Quiz Answers and Analysis A rectangle has 2 lines of symmetry which divides it into two identical parts. A shape can be different types of symmetry, such as linear symmetry, mirror symmetry, reflectional symmetry, and so on. A shape can be two or more lines of symmetry. To recall, a rectangle is one of the quadrilaterals whose two opposite sides are equal and parallelogram. Thus, a rectangle is also considered as a special parallelogram. For a rectangle, both the line and rotational symmetry exists which are discussed below.RectangleSymmetryReflection SymmetryFigures with SymmetryWhat is Lines of Symmetry in Rectangle?There are 2 symmetry lines of a rectangle which are from its length and breadth. These two lines cut the rectangle in two similar halves which are mirror images of each other. If a rectangle is folded along its line of symmetry, it superimposes perfectly.Number of Symmetry Lines in a Rectangle = 2Here are the two lines of symmetry in a rectangle:Lines Of Symmetry In A RectangleIt should be noted that for a rectangle, the diagonals are not its lines of symmetry. This is because, if a rectangle cut along its diagonals will not superimpose perfectly as the sides will be of different measurement.Rotational Symmetry of a RectangleA rectangle has an order of rotational symmetry of 2 at 180 and 360. This means a rectangle can map onto itself 2 times during rotation of 360 i.e. at 180 and 360. This is in contrast to a square which has rotational symmetry of 4 as it has 4 equal sides.A rectangle is a 4 sided polygon whose two opposite sides are equal and parallel. The angles of a rectangle are always 90 degrees and its diagonals are always equal.A rectangle has 2 lines of symmetry. The lines of symmetry in a rectangle cut its opposite sides into equal parts.Yes, a rectangle has rotational symmetry. A rectangle has rotational symmetry of 180 (Order 2). Here you will learn about lines of symmetry, including symmetry properties within polygons, angle properties, and symmetry of different line graphs. Students first learn about line symmetry in grade 4 with their work with 2D shapes in geometry. Lines of symmetry are straight lines that divide a shape into two equal parts, where one part is an exact reflection or mirror image of the other. In geometry, many 2D shapes have line symmetry. For example, Equilateral triangleSquareRectangleRegular hexagon 3 lines of symmetry 4 lines of symmetry 2 lines of symmetry 6 lines of symmetry Line symmetry can be seen in nature. For example, Line symmetry can be seen in art. For example, Regular polygons are polygons that have equal side lengths and equal angle measures. For example, Equilateral Triangle 3 lines of symmetry Notice how each line of symmetry can be a fold line.Square 4 lines of symmetry Notice how each line of symmetry can be a fold line.Regular pentagon 5 lines of symmetry Notice how each line of symmetry can be a fold line.Regular hexagon 6 lines of symmetry Notice how each line of symmetry can be a fold line. Notice how the number of lines of symmetry in these regular polygons is equal to the number of sides and angles the polygons have. All regular polygons share the property that the number of sides is equal to the number of lines of symmetry. Use this quiz to check your grade 2 4 students understanding of 2D shape. 10+ questions with answers covering a range of 2nd, 3rd and 4th grade 2D shape topics to identify areas of strength and support! DOWNLOAD FREE x Use this quiz to check your grade 2 4 students understanding of 2D shape. 10+ questions with answers covering a range of 2nd, 3rd and 4th grade 2D shape topics to identify areas of strength and support! DOWNLOAD FREE Irregular polygons are polygons that do not have all equal angles and all equal side lengths. However, they can have line symmetry. For example, these irregular polygons have line symmetry. Lets look at different shapes (specifically quadrilaterals) and their number of lines of symmetry. QuadrilateralImageNumber of Lines of SymmetrySquare 4 Rectangle 2 Parallelogram 0 Rhombus 2 Kite 1 Trapezoid 0 Isosceles Trapezoid 1 Irregular 0 The diameter of a circle splits the circle into two equal sized half circles, orsemicircles. Think of the diameter as the line of reflection. A circle can be folded in-half many ways, meaning that there are an infinite number of lines of symmetry. How does this apply to 4th grade math? Grade 4: Geometry (4.G.A.3)Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. In order to draw/identify lines of symmetry: Locate the center of the 2D shape. Draw a vertical line through the center and check for line symmetry. Draw a horizontal line through the marked center and check for line symmetry. Draw a line from each vertex through the center and check for symmetry. State the number of lines of symmetry. How many lines of symmetry does the equilateral triangle have? Locate the center of the 2D shape. 2Draw a vertical line through the center and check for line symmetry. The vertical line through the center is a line of symmetry dividing the triangle into two equal halves that are mirror images of each other. Notice that it can be a fold line. 3Draw a horizontal line through the marked center and check for line symmetry. 4Draw a line from each vertex through the center and check for line symmetry. 5State the number of lines of symmetry. The equilateral triangle has 3 lines of symmetry. An equilateral triangle has 3 equal sides and 3 equal angles, so it will have 3 lines of symmetry. How many lines of symmetry does the regular pentagon have? Locate the center of the 2D shape. Draw a vertical line through the center and check for line symmetry. The vertical line is a line of symmetry because it divides the regular pentagon into two equal halves that are mirror images of each other. Draw a horizontal line through the marked center and check for line symmetry. The horizontal line is NOT a line of symmetry because it does not divide the regular pentagon into two equal halves that are mirror images of each other. Draw a line from each vertex through the center and check for line symmetry. State the number of lines of symmetry. A regular pentagon has 5 lines of symmetry. A regular pentagon has 5 equal sides and 5 equal angles, so it will have 5 lines of symmetry. How many lines of symmetry does the trapezoid have? Locate the center of the 2D shape. Draw a vertical line through the center and check for line symmetry. The vertical line is a line of symmetry because it divides the trapezoid into two equal halves that are mirror images of each other. Draw a horizontal line through the marked center and check for line symmetry. The horizontal line is NOT a line of symmetry because it does not divide the trapezoid into two equal halves that are mirror images of each other. Draw a line from each vertex through the center and check for line symmetry. State the number of lines of symmetry. The trapezoid has one line of symmetry. How many lines of symmetry does the irregular hexagon have? Locate the center of the 2D shape. Draw a vertical line through the center and check for line symmetry. The vertical line is a line of symmetry because it divides the irregular hexagon into two equal halves that are mirror images. Draw a horizontal line through the marked center and check for line symmetry. The horizontal line is a line of symmetry because it divides the irregular hexagon into two equal halves that are mirror images. Draw a line from each vertex through the center and check for line symmetry. State the number of lines of symmetry. The irregular hexagon has two lines of symmetry. How many lines of symmetry does the parallelogram have? Locate the center of the 2D shape. Draw a vertical line through the center and check for line symmetry. The vertical line is NOT a line of symmetry because it does not divide the parallelogram into two equal halves that are mirror images of each other. Draw a horizontal line through the marked center and check for line symmetry. The horizontal line is NOT a line of symmetry because it does not divide the parallelogram into two equal halves that are mirror images of each other. Draw a line from each vertex through the center and check for line symmetry. State the number of lines of symmetry. The parallelogram does not have any lines of symmetry. How many lines of symmetry does the shape have? Locate the center of the 2D shape. Draw a vertical line through the center and check for line symmetry. The vertical line is a line of symmetry because it divides the shape into two equal halves that are mirror images of each other. Draw a horizontal line through the marked center and check for line symmetry. The horizontal line is a line of symmetry because it divides the shape into two equal halves that are mirror images of each other. Draw a line from each vertex through the center and check for line symmetry. State the number of lines of symmetry. The irregular shape has 4 lines of symmetry. Use hands on manipulatives to help students gain understanding of lines of symmetry. Infuse creative activities such as origami so that students can build understanding through fun learning tasks. Not visualizing that a line of symmetry is like a fold lineFor example, thinking that this is a line of symmetry. If you were to fold the parallelogram along the line of symmetry, the two halves would not be mirror images of each other. Thinking that all quadrilaterals have \bf{4} lines of symmetryThe only quadrilateral with 4 lines of symmetry is a square because it is a regular polygon. The other quadrilaterals are not regular polygons so do not have 4 lines of symmetry. The number of sides always \textbf{=} the number of lines of symmetryAlthough this is true for regular shapes, it is not true for all shapes. Thinking all triangles have \bf{3} lines of symmetryFor example, this right scalene triangle does not have any lines of symmetry.Equilateral triangles are the only triangles that have 3 lines of symmetry because it is a regular triangle. Symmetry Rational symmetry Regular polygons have the same number of lines of symmetry as the number of sides that they have. A hexagon has 6 sides so it has 6 lines of symmetry. Marking the center, there are 6 lines that can be drawn through the center that cut the regular hexagon into equal halves that are mirror images of each other. After marking the center, the vertical line through the center and the horizontal line through the center are the only lines of symmetry. Any other line drawn through the center will not result in the shape being divided into two equal halves that are mirror images. After marking the center, the only line of symmetry is the horizontal line. There is no other line that can be drawn through the center that will divide the shape into two equal parts that are mirror images of each other. After marking the center, the lines of symmetry are the vertical line through the center and the horizontal line through the center. No other lines through the center will divide the shape into two equal parts that are mirror images of each other. Circles have an infinite amount of lines of symmetry. However, you have to take the eyes and mouth into account when figuring out the lines of symmetry. There is only one line of symmetry vertically down the face that will divide the smiley face into two equal mirror images of each other. The photo has two lines of symmetry, one that is horizontal through the center and the other that is vertical through the center. There are no other lines that can be drawn that divides the photo into two equal halves that are mirror images of each other. What are the types of symmetry? There are two types of symmetry. Line symmetry is drawing a line through the center of a figure where both halves are mirror images of each other. Rotational symmetry involves turning a shape and determining how many times the shape appears as its original in one complete 360^{\circ} turn. What is the axis of symmetry? In algebra, you will learn about quadratic functions whose graph is a parabola. The parabola has a line going through the center that divides it into identical halves, which is the axis of symmetry. It is also the line of symmetry of the parabola. Do all triangles have line symmetry? No, a scalene triangle does not have any lines of symmetry. Meaning there are no imaginary lines or mirror lines that can be drawn through the center of the triangle, where one half is equal and the mirror image of the other half. Isosceles triangles have only one line of symmetry. Equilateral triangles are regular polygons, so they have 3 lines of symmetry. Are all regular polygons symmetrical? Yes, regular polygons are symmetrical shapes because they have equal sides and equal angles. They have line symmetry and rotational symmetry. What does congruent mean? Congruent means identical in shape and size. When drawing a dotted line representing line symmetry, each half of the shape is congruent. Angles in polygons Congruence and similarity Transformations At Third Space Learning, we specialize in helping teachers and school leaders to provide personalized math support for more of their students through high-quality, online one-on-one math tutoring delivered by subject experts. Each week, our tutors support thousands of students who are at risk of not meeting their grade-level expectations, and help accelerate their progress and boost their confidence. Find out how we can help your students achieve success with our math tutoring programs. We use essential and non-essential cookies to improve the experience on our website. Please read our Cookies Policy for information on how we use cookies and how to manage or change your cookie settings.AcceptPrivacy & Cookies Policy A rectangle has two lines of symmetry, one horizontal and one vertical. Each of these lines divide the rectangle into two identical parts. In simple words, you can fold a rectangle into half either horizontally or vertically. In geometry, a symmetrical figure is a figure that can be folded along a line such that the two parts are identical. The line through which we fold is known as the line of symmetry. A line of symmetry always cuts the shape into two mirror images. A rectangle is a quadrilateral in which opposite sides are parallel and equal. It has 4 right angles (90°). Since a rectangle is a 2-D shape, it is characterized by two dimensions, length, and width. Length is the longer side of the rectangle and width is the shorter side. Lines of symmetry in a rectangle are the lines that divide the rectangle into two equal parts. We know that the opposite sides of a rectangle are equal. We can try this out by taking a rectangular piece of paper. The simple technique of folding through can help us to find out if a shape has a line of symmetry or not. If the folded part overlaps the other one, then that folding line is known as the line of symmetry. In the above figure, each half is placed on the other when the rectangle is folded along the lines of symmetry. The diagonals of a rectangle are not lines of symmetry as they do not form equal matching shapes on both sides. The two parts of the rectangle formed by a diagonal do not overlap. This can be seen in the figure given below that why a rectangle does not produce two halves when folded across the diagonal. More Worksheets If we rotate a figure or a flat shape along its axis and it still appears to be the same as before, we call it rotational symmetry. In other words, if the shape remains the same as before on partial rotation, then it possesses rotational symmetry. When a rectangle is rotated by $180^\circ and $360^\circ on its axis, it has rotational symmetry. In a rectangle, since the length is greater than its breadth, we can say that there is no rotational symmetry at $90^\circ and $270^\circ. Order of rotational symmetry of rectangle $= 2$. This means a rectangle comes back to its original position 2 times during rotation of $360^\circ. A square has 4 lines of symmetry. A circle has infinitely many lines of symmetry. 1. Draw a rectangle and mark the line of symmetry passing through the width. Solution: The line of symmetry along the width is the horizontal line of symmetry. 2. Draw a rectangle and mark the line of symmetry through the center along the length. Solution: The line of symmetry in a rectangle passing through the length is the vertical line of symmetry. 3. Check whether l and m marked in the figure are lines of symmetry in the rectangle given below. Justify your answer. Solution: Here, l and m are not lines of symmetry because the diagonals of a rectangle do not form lines of symmetry. 4. At which two angles does rotational symmetry not hold for a rectangle? Solution: The rotational symmetry does not hold at $90^\circ and $270^\circ as the length is greater than the breadth. 5. Why does the rotational symmetry of the rectangle have order 2? Solution: When we rotate the rectangle at $180^\circ and $360^\circ, we get the original rectangle. Hence, the order of rotational symmetry of a rectangle is 2. This means a rectangle comes back to its original position 2 times during rotation of $360^\circ. Attend this quiz & Test your knowledge.Correct answer is: 2A rectangle has only 2 lines of symmetry one through the center along length and other along breadth.Correct answer is: 2We only get the original shape of a rectangle when we rotate it at 180° and $360^\circ.$90^\circ and 360°180^\circ and 270°90^\circ and 270°180^\circ and 360°Correct answer is: $180^\circ and 360°We only get the original shape of a rectangle when we rotate it at $180^\circ and $360^\circ.Correct answer is: n and on and o are the diagonals of a rectangle which are not the lines of symmetry.Correct answer is: 4The rectangle gets divided into 4 parts if we fold it through length and breadth. How many lines of symmetry does a square have? A square has 4 lines of symmetryone through the center along the length, one along the breadth and two diagonals. How many lines of symmetry does a scalene triangle have? A scalene triangle has no lines of symmetry because all sides are of different measure. How can we find lines of symmetry of any shape? We can find the line of symmetry of a shape by folding it. If we get two identical halves, then the line will be a line of symmetry. How many lines of symmetry does a general parallelogram have? A general parallelogram has no lines of symmetry. Does a rectangle have a diagonal line of symmetry? No, a rectangle does not have a diagonal line of symmetry. How many lines of symmetry does a rectangle have? A rectangle has 2 lines of symmetry. Why does a rectangle have 2 lines of symmetry? In a rectangle, the opposite sides are the equal and all interior angles are right angles. Therefore, it can be folded once along the length and once along the breadth. This way, we get two lines of symmetry. Can a rectangle have a line of symmetry? Yes! There are two lines of symmetry in a rectangle, one line through the center along its length and the other is drawn along the width (breadth). In Geometry, a figure is said to be symmetrical when it is divided into two identical halves with the help of a line. These lines are called the lines of symmetry of a shape or figure.& A line of symmetry always cuts the shape into two equal and similar parts. There are different types of symmetries for a shape like linear symmetry, mirror symmetry, reflectional symmetry.Let us read more about the lines of symmetry in a rectangle. We know that a rectangle is a special parallelogram whose opposite sides are equal and parallel. A rectangle has 2 lines of symmetry. Let us learn how to find the lines of symmetry in a rectangle. What are Lines of Symmetry in a Rectangle? There are two lines of symmetry in a rectangle. When one line is drawn through the center along its length and the other is drawn along the width (breadth), we get the two lines of symmetry. By doing this, we get four equal and matching shapes. This can be tried out by taking a rectangular piece of paper. This is a simple technique of folding through which we can find out if a shape has a line of symmetry or not. If the folded part is placed exactly on the other one, then that folding line is called the line of symmetry. The figure shown below shows the lines of symmetry of a rectangle along its length and width. Each half is placed on the other when the rectangle is folded along the lines of symmetry. First, fold the paper horizontally to check the first line of symmetry and observe the size and shape of the equal halves. Then, fold it vertically to check the second line of symmetry to see the other identical halves.It should be noted that the diagonals of a rectangle cannot be taken as lines of symmetry as they do not form equal matching shapes. Now, let us observe the following figure which shows why a rectangle does not produce two halves when folded across the diagonal. This is because, when we fold the rectangle along the diagonal line, we do not get two identical halves.Rotational Symmetry of a Rectangle If a figure or a flat shape is rotated along its axis and it still appears to be the same as before, we call it rotational symmetry. In other words, on partial rotation, if the shape remains the same as before, then there is rotational symmetry. A rectangle has a rotational symmetry when it is rotated by 180 and 360 on its axis. When a rectangle is rotated, it fits exactly on its boundary two times, once at 180 and once at 360. In a rectangle the length is greater than its breadth, so we can say that there is no rotational symmetry at 90 and 270.Topics Related to Lines of Symmetry in Rectangle Example 1: Check whether line 1 and line 2 marked in the figure are the lines of symmetry in the rectangle given below. Justify your answer.Solution:When the rectangle is folded along line 1, each of the parts formed by the line do not superimpose each other completely. The same thing happens when we fold it along line 2. So, we can say that line 1 and line 2 are not the lines of symmetry for this rectangle.Example 2: What are the angles at which a rectangle has rotational symmetry?Solution:A rectangle has rotational symmetry at 180 and 360.Show Solution >go to slidego to slideWant to build a strong foundation in Math?Go beyond memorizing formulas and understand the why behind them. Experience Cuemath and get started.Book a Free Trial ClassFAQs on Lines of Symmetry in a Rectangle The lines of symmetry in a rectangle are those lines that divide the rectangle into two identical halves. A rectangle has 2 lines of symmetry. One is drawn horizontally and the other is drawn vertically. It should be noted that the diagonals of a rectangle are not considered to be the lines of symmetry in a rectangle because they don't divide the rectangle into equal and identical halves.What is a Line of Symmetry?A line of symmetry can be defined as an imaginary line that is either drawn horizontally or vertically along the center of a shape to divide it into two equal halves.How to find the Lines of Symmetry in a Shape?When a shape is folded and if one half is exactly equal in size to the other half, then we say that the folded line is a line of symmetry. A shape can have more than one line of symmetry.How many Lines of Symmetry does a Rectangle have?A rectangle has two lines of symmetry. One along the side of length and another along the side of width.How do I find the Lines of Symmetry in a Rectangle?The lines of symmetry in a rectangle can be easily identified using a rectangular piece of paper. When we fold the rectangular piece of paper through its center horizontally or vertically we get two equal halves of the shape. Those folded lines are the lines of symmetry of a rectangle.What is Rotational Symmetry?A shape is said to have rotational symmetry if after some rotation by a certain angle it still remains in the same shape as it was ealier.Does Rectangle have a Rotational Symmetry?Yes, a rectangle has a rotational symmetry at 180 and 360. The line of symmetry is the line which passes through the centre of the object or any shape. It is considered as the axis or imaginary line of the object. In geometry, you must have learned well about the term symmetry which is defined as a balanced and a proportionate similarity found in two halves of an object, that is, one-half is the mirror image of the other half.For example, if we cut an apple in two equal halves, then the piece of apple is said to be in symmetry with another. One more good example is to imagine if we cut an equilateral triangle into two equal halves, then the two triangles formed after the intersection is the right-angled triangles. Few more examples such as square, rectangle, circle, can also be considered for line symmetry.Line of Symmetry DefinitionThe imaginary line or axis along which you can fold a figure to obtain the symmetrical halves is called the line of symmetry. It is also termed as the axis of symmetry. The line symmetry is also called a mirror line because it presents two reflections of an image that coincide. Therefore, it is also a type of reflection symmetry. It basically divides an object into two halves. There may be one or more lines of symmetry. In fact, a shape may have:No line of symmetry which implies that the figure is asymmetricalInfinite lines of symmetryOne line of symmetryTwo lines of symmetryMultiple (more than two) lines of symmetrySymmetry has many types such as: no line of symmetry, infinite lines of symmetry, 1 and 2 lines of symmetry in detail. There are many shapes which are irregular and cannot be divided into equal parts. Such shapes are termed as asymmetrical shapes. Hence, for such cases, line symmetry is not applicable. Here, letsfocus on shapes with types of lines of symmetry.Also, read:Symmetry Two Lines SymmetryRotational SymmetryTypes of Lines of SymmetryThe lines or axes may be any combination of vertical, horizontal and diagonal. But basically there are two types of lines of symmetry, they are:Vertical Line of SymmetryHorizontal Line of SymmetryVertical Line of SymmetryThe axis of the shape which divides the shape into two identical halves, vertically, is called a vertical line of symmetry. The mirror image of the other half of the shape can be seen in a vertical or straight standing position. Some of the alphabets such as A, H, M, O, U, V, W, T, Y can be divided vertically in symmetry.Horizontal Line of SymmetryThe symmetry line or horizontal axis of a shape which divides the shape into two identical halves is known as horizontal line of symmetry. That means the axis here crosses across the shape to cut it into two equal parts. The English alphabets such as B, C, H, E, are the examples of horizontal symmetry.Three Lines of SymmetryAn equilateral triangle has about three lines of symmetry. It is symmetrical along its three medians.Some other patterns also have three lines of symmetry.Four Lines of SymmetryA square is symmetrical along four lines of symmetry, two along the diagonals and two along with the midpoints of the opposite sides.Some other patterns also have four lines of symmetry.Five Lines of SymmetryA regular pentagon has around five lines of symmetry. The lines joining a vertex to the mid-point of the opposite side divides the figure into ten symmetrical halves.Some other patterns also have five lines of symmetry, such as a star.Six Lines of SymmetryA regular hexagon is said to have six lines of symmetry, 3 joining the opposite vertices and 3 joining the mid-points of the opposite sides.Similarly, a regular polygon with N sides has N lines of symmetry.Infinite Lines of SymmetryA circle has infinite or no lines of symmetry. It is symmetrical along all its diameters.Line of Symmetry ExamplesSome of the examples of the line of symmetry for different figures are given below-A Triangle is said to have 3, 1 or even no lines of symmetryA Quadrilateral has 4 or 2 or no lines of symmetryEquilateral Triangle is said to have 3- lines of symmetryRegular Pentagon has 5 lines of symmetryA Regular Heptagon has 7 lines of symmetry To learn more about multiple lines of symmetry, register now and download BYJUS- The Learning App. Parallel lines are the lines that do not intersect or meet each other at any point in a plane. They are always parallel and are at equidistant from each other. Parallel lines are non-intersecting lines. We can also say Parallel lines meet at infinity.Also, when a transversal intersects two parallel lines, then pairs of angles are formed, such as:Corresponding anglesAlternate interior anglesAlternate exterior anglesVertically opposite anglesLinear pairIf two lines are intersecting each other at a point, in a plane, they are called intersecting lines. If they meet each other at 90 degrees, then they are called perpendicular lines.DefinitionTwo lines are said to be parallel when they do not meet at any point in a plane. Lines which do not have a common intersection point and never cross path with each other are parallel to each other. The symbol for showing parallel lines is ||.Two lines which are parallel are represented as:\(\begin{array}{l}\overleftrightarrow{AB}||\overleftrightarrow{CD}\end{array} \)This means that line AB is parallel to CD.The perpendicular distance between the two parallel lines is always constant.In the figure shown above, the line segments PQ and RS represent two parallel lines as they have no common intersection point in the given plane. Infinite parallel lines can be drawn parallel to lines PQ and RS in the given plane.Pairs of AnglesLines can either be parallel or intersecting. When two lines meet at a point in a plane, they are known as intersecting lines. If a line intersects two or more lines at distinct points then it is known as a transversal line.In figure 2, line l intersects lines a and b at points P and Q respectively. The line l is the transversal here.1,2,7 and 8 are the exterior angles and 3,4,5 and 6 denote the interior angles.The angle pairs formed due to intersection by a transversal are named as follows:Corresponding Angles: 1 and 6; 4 and 8; 2 and 5; 3 and 7 are the corresponding pair of angles.Alternate Interior Angles: 4 and 5 ; 3 and 6 denote the pair of alternate interior angles.Alternate Exterior Angles: 1 and 7; 2 and 8 are the alternate exterior angles.Same side Interior Angles: 3 and 5; 4 and 6 denote the interior angles on the same side of the transversal or co-interior or consecutive interior angles.If the lines a and b are parallel to each other as shown, then the following axioms are given for angle pairs of these lines. Properties of Parallel LinesAs we have already learned, if two lines are parallel, they do not intersect, on a common plane. Now if a transversal intersects two parallel lines, at two distinct points, then there are four angles formed at each point. Hence, below are the properties of parallel lines with respect to transversals.Corresponding angles are equal.Vertical angles/ Vertically opposite angles are equal.Alternate interior angles are equal.Alternate exterior angles are equal.Pair of interior angles on the same side of the transversal are supplementary.For More Information On Parallel Lines and Intersecting Lines, Watch The Below Video:Parallel Lines Axioms and TheoremsGo through the following axioms and theorems for the parallel lines.Corresponding Angle AxiomIf two lines which are parallel are intersected by a transversal then the pair of corresponding angles are equal.From Fig. 3: 1=6, 4=8, 2= 5 and 3= 7The converse of this axiom is also true according to which if a pair of corresponding angles are equal then the given lines are parallel to each other.Theorem 1If two lines which are parallel are intersected by a transversal then the pair of alternate interior angles are equal.From Fig. 3: 4=5 and 3=6Proof: As, 4=2 and 1=3(Vertically Opposite Angles)Also, 2=5 and 1=6 (Corresponding Angles)4=5 and 3=6The converse of the above theorem is also true which states that if the pair of alternate interior angles are equal then the given lines are parallel to each other.Theorem 2If two lines which are parallel are intersected by a transversal then the pair of interior angles on the same side of the transversal are supplementary.3+ 5=180 and 4+6=180As 4=5 and 3=6 (Alternate interior angles)3+ 4=180 and 5+6=180 (Linear pair axiom)3+ 5=180 and 4+6=180The converse of the above theorem is also true which states that if the pair of co-interior angles are supplementary then the given lines are parallel to each other.Applications of Parallel Lines in Real LifeOne will be able to see lines which are parallel to each other in real life too if only one has the patience and is observant enough to do so. For instance, take the railroads. The railway tracks are literally parallel lines. The two lines or tracks are meant for the wheels of the train to travel along on. The difference between the parallel lines imagined by mathematicians and the ones who actually make the railway tracks is that mathematicians have the liberty to imagine the parallel lines over flat surfaces and paper, while trains travel across all sorts of terrain, from hills, slopes and mountains to over bridges.According to mathematicians when two parallel lines are graphed, they must always be at the same angle, which means theyll have the same slope or steepness.Solved ExamplesQ.1: In the given figure, p || q and l is a transversal. Find the values of x and y.Solution: Since, 6x+y and x+5y are corresponding angles.6 x + y = x + 5 y6 x x = 5 y y5 x = 4 yx = 4y/5Now, 4x and 6x+y are linear pair of angles, so,4 x + 6 x + y = 18010x + y = 18040y/5 + y = 18045y/5 = 18045y = 180 5 = 900y = 20x = (4 20)/5 = 16Therefore, x = 16 and y = 20Q.2: In Figure, AB and CD are parallel lines intersected by a transversal PQ at L and M respectively, If CMQ = 60, find all other angles in the figure.Solution:ALM = CMQ = 60 [corresponding angles]LMD = CMQ = 60 [Vertically opposite angles]ALM = PLB = 60 [Vertically opposite angles]Here, CMQ + QMD = 180 are the linear pairQMD = 180 60 = 120Now,QMD = MLB = 120 [Corresponding angles]QMD = CML = 120 [Vertically opposite angles]MLB = ALP = 120 [Vertically opposite angles]To learn more, download BYJUS The Learning App from Google Play Store and watch interactive videos. Also, take free tests to practice for exams.Parallel lines are those lines on a plane that do not meet each other at any point. They are non-intersecting lines.Parallel lines are always equidistant apart from each other. They do not intersect each other. When cut by a transversal, parallel lines form a pair of angles. Hence, corresponding angles are equal, alternate interior angles are equal, alternate exterior angles are equal, vertical angles are equal and sum of interior angles on the same side of transversal are supplementary.Given, x and y are pairs of interior angles on the same side of transversal, hence they are supplementary.x + y = 180Also, x and y are equal. Therefore,x + x = 1802x = 180x = 90Therefore the angles are equal to 90 degrees.If one of the pair of angles is 45 degrees, then its corresponding angle is also equal to 45 degrees.If one of the pairs of angles is 108 degrees, then its vertically opposite angle is also equal to 108 degrees. The concept of lines of symmetry in a rectangle is very important in mathematics and geometry. It helps students visualize how a rectangle can be divided into exactly equal halvesboth for understanding shape properties and answering symmetry-based exam questions. At Vedantu, teachers use symmetry to simplify many geometry problems for classes 48. What Is a Line of Symmetry in a Rectangle?A line of symmetry in a rectangle is an imaginary line that divides the rectangle into two identical, mirror-image halves. When you fold a rectangle along this line, both sides overlap perfectly. Related mathematical ideas include reflection symmetry, axes of symmetry, and symmetry in 2D shapes like parallelograms and triangles. How Many Lines of Symmetry Does a Rectangle Have?A rectangle has only 2 lines of symmetry: one vertical and one horizontal, both passing through its center. Line of Symmetry Description Result of Fold Vertical (Lengthwise) Cuts the rectangle into left and right equal halves Overlapping halves Horizontal (Breadthwise) Cuts the rectangle into top and bottom equal halves Overlapping halves Students often think diagonals are also lines of symmetry for rectangles. This is a common mistake. Only squares have their diagonals as symmetry lines because all sides are equal. In rectangles (with unequal sides), folding along the diagonal doesnt give two matching halves. Simple Step-by-Step to Find Lines of Symmetry in a Rectangle Take any rectanglea sheet of paper or a drawn shape. Fold it exactly from left to right through the center. Check if the two halves overlap perfectly. This is the vertical line of symmetry. Now fold it exactly from top to bottom through the center. The two halves again overlap. This is the horizontal line of symmetry. Try folding along any diagonal. Check if the corners and edges match. In a rectangle, they will not overlap completely, so the diagonals are not symmetry lines. Side-by-Side: Rectangle vs Square Symmetry Shape Number of Symmetry Lines Types of Symmetry Rectangle 2 Vertical, Horizontal Square 4 Vertical, Horizontal, Two Diagonals Squares have all four lines of symmetry because all their sides and angles are the same. Rectangles only have two because opposite sides are equal, not all. Worksheet: Practice Questions on Rectangle Symmetry Draw a rectangle and mark all its lines of symmetry. True or False: A rectangle has 4 lines of symmetry (explain). If a square has 4 lines of symmetry, why does a rectangle have less? Does a rectangle have diagonal symmetry? Justify your answer. Compare a rectangle's lines of symmetry with those of a parallelogram. Similar Figures & More Examples Shape Lines of Symmetry Rectangle 2 Square 4 Equilateral Triangle 3 Regular Hexagon 6 Parallelogram 0 For more on other shapes, see figures with symmetry. Common Doubts and Quick Revision The only lines of symmetry in a rectangle are vertical and horizontal. Both these lines must pass through the center of the rectangle. Diagonals do NOT create equal halves, so they are not symmetry lines in a rectangle. Squares are special rectanglesso a square's rules are different. Speed Trick for ExamsExam Shortcut: For any rectangle, just check the vertical and horizontal center lines. Ignore the diagonals! This saves time in MCQs or drawing questions. Need more shortcuts? Vedantus live classes often use paper folding or digital tools to speed up learning in symmetry topics. Relation to Other Maths TopicsThe lines of symmetry in a rectangle build your foundation for all types of symmetry (like rotational, reflection, or point symmetry) and more complex figures in geometry. Practice recognizing these in plane shapes to do well in symmetry in 2D shapes chapters. Wrapping UpUnderstanding lines of symmetry in a rectangle helps you solve geometry problems quickly, reduces errors, and strengthens your logical thinking. For more tips, examples, and instant feedback, try Vedantu's online learning sessions. Practice regularly and youll become confident in all symmetry questions. Also Learn: Reflection Symmetry |Figures With Symmetry |Rectangle Properties

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