

Shapes and Angles

Unit 12 Overview: 8 lessons

Students sort polygons by their sides, right angles and parallel sides and tell regular polygons from the rest. They name triangles by their sides and by their angles and give every name that fits a quadrilateral, reading the marks for equal sides, parallel sides and right angles. Then they see that a shape in a smaller group has every property of the larger group (every square is a rectangle) and arrange quadrilaterals in a hierarchy, deciding whether a statement is always, sometimes or never true. On Animal Math a trapezoid has at least one pair of parallel sides, so a parallelogram is a trapezoid too. Three lessons are taught in 5th grade in some states: measuring and sorting angles, the angles of a triangle, and circles.

THE UNIT, DAY BY DAY

Day 1	Pre-Check	What students already know, before the first lesson.
Day 2	12.1 Polygons	I can sort polygons by their sides, angles and parallel sides.
Day 3	12.2 Classify triangles	I can name triangles by their sides and by their angles.
Day 4	12.3 Classify quadrilaterals	I can give every name that fits a quadrilateral.
Day 5	12.4 Properties of shape groups	I can tell which shapes have the properties of a group.
Day 6	12.5 The quadrilateral hierarchy	I can sort quadrilaterals.
Day 7	12.6 Measure and sort angles ★	I can measure angles and sort them by size.
Day 8	12.7 Angles of a triangle ★	I can find an unknown angle of a triangle.
Day 9	12.8 Circles ★	I can find the radius and diameter of a circle.
Day 10	Unit Review	The review, to go over together.
Day 11	Unit Test	Form A; Form B (other numbers) is for a retest.

★ Taught in 5th grade in some states. Skip these lessons if yours teaches them in another grade; animalmath.com/standards shows your state's list.

GET READY FOR THE UNIT

- Shape cards: polygons, triangles and quadrilaterals, some with marks
- Dot paper (the Graph Paper maker prints it), rulers and colored pencils
- Index cards to check right angles, and chart paper for a family tree
- A protractor for each student, and paper triangles to tear
- Paper circles, string or compasses, and round things to measure

HOW EACH LESSON GOES

- 1. Warm up** (5 min)
 - 2. Teach** (10 min)
 - 3. Try it together** (10 min)
 - 4. Practice** (15 min)
 - 5. Exit ticket** (5 min): a quick check on the lesson.
- Each lesson page ends with the Animal Math sheets, makers, tools and quizzes for it. "Sheet 3" is the third worksheet of a pack; a color pack prints each sheet again in black and white.

CHECKING AS YOU GO

PRINTABLE	Pre-Check: Day 1, with a key	EXIT TICKET	Exit Tickets: one a lesson, two to a page
PRINTABLE	Unit Review: the day before the test	PRINTABLE	Unit Test: Forms A and B, with keys



Shapes and Angles

Lesson 12.1: Polygons

GOAL Students sort polygons by their sides, right angles and pairs of parallel sides, and tell a regular polygon (all sides equal and all angles equal) from one that is not.

About 45 minutes

I can sort polygons by their sides, angles and parallel sides.

THE LESSON

- 1 Warm up** (5 min) Show a circle, a triangle, an open shape and a hexagon. Which are polygons? Why not the others?
- 2 Teach** (10 min) On dot paper, draw a hexagon with a flat top and bottom, each 4 spaces long and 4 spaces apart, and a point at each end, 1 space out and halfway up. Count 6 sides. Check each corner with a card: no right angles. Mark arrows: 3 pairs of parallel sides. It is not regular, as its sides differ. A square is regular. A long rectangle has equal angles but not equal sides, and a leaning rhombus equal sides but not equal angles, so neither is regular.
Say: "Regular needs both: every side the same length and every angle the same size."
- 3 Try it together** (10 min) Partners sort shape cards by their number of sides, then into regular and not regular, saying which rule each card breaks.
- 4 Practice** (15 min) No sheet asks whether a polygon is regular; the sort above does that. Students name parallel and perpendicular sides and find right angles on sheet 1 of Classifying Triangles and Quadrilaterals, write which shapes have each property at the bottom of its sheet 5, and draw shapes from clues on sheet 4 of 2D Shapes: Sides and Angles.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 12.1** and circle a face beside the "I can" line. On question 1, look for the regular pentagon and the equilateral triangle; the rhombus means only the sides were checked, the rectangle only the angles. On question 2, look for 6, 2 and 3; 6 pairs means sides were counted, not pairs.

Ready for more? Can a pentagon have exactly 1 pair of parallel sides and no right angles? Draw one or explain.

GET READY

- Shape cards: triangles to octagons
- Dot paper, rulers and index cards

WORDS TO USE

polygon: a closed flat shape with straight sides

regular polygon: all its sides equal and all its angles equal

pair of parallel sides: two sides that never meet

ASK

- How many sides? What is its name?
- Are all its sides equal? All its angles?
- How many pairs of parallel sides?

WATCH FOR

Calls a rhombus regular. Check the angles too: regular needs equal sides and equal angles.

Counts parallel sides, not pairs. Give each pair its own arrows, then count the kinds.

Thinks a shape turned on a corner is a new shape. Turn the card back: its sides and angles stay the same.

Need help? Mark each side with a ruler and check each corner with a card before deciding.

ON ANIMAL MATH

PRINTABLE

Classifying Triangles and Quadrilaterals: sheets 1 and 5

PRINTABLE

2D Shapes: Sides and Angles: sheet 4 (2nd grade), a step back

MAKER

Graph Paper: Paper Type Square Dots

QUIZ

Shapes Quiz: the Classify Shapes level

EXIT TICKET

5th Grade Shapes and Angles Exit Tickets: Exit Ticket 12.1

Shapes and Angles

Lesson 12.2: Classify triangles

GOAL Students name a triangle two ways: by its sides (equilateral, isosceles, scalene) and by its angles (acute, right, obtuse), reading tick marks for equal sides and a small square for a right angle.

About 45 minutes

I can name triangles by their sides and by their angles.

THE LESSON

- 1 Warm up (5 min)** Ask: can a triangle have two right angles? Students try to draw one on dot paper and say why it will not close.
- 2 Teach (10 min)** Draw half of a square, cut on its diagonal: the two short sides get one tick each and the corner a small square, so it is isosceles and right. Draw a triangle with no ticks and every corner inside a card: scalene and acute. Draw one with three ticks: equilateral, and its angles are acute too. Every triangle gets one name for its sides and one for its angles. To name the angles, look at the biggest angle: every triangle has at least two acute ones.
Say: "I name a triangle twice: by its sides and by its biggest angle. The tick marks tell me which sides are equal."
- 3 Try it together (10 min)** Partners draw three triangles on dot paper, one right, one obtuse and one acute, trade, mark the equal sides with ticks, and name each triangle twice. A tilted square corner counts: check it with a card.
- 4 Practice (15 min)** Students name triangles by their angles and by their sides on sheet 2 of Classifying Triangles and Quadrilaterals, then fill in its table of which two names a triangle can have.
- 5 Exit ticket (5 min)** Students do **Exit Ticket 12.2** and circle a face beside the "I can" line. On question 1, look for isosceles and obtuse; acute means the wide angle was not compared with a square corner. On question 2, look for scalene and right; isosceles means the sides were judged by eye, but with no tick marks no two sides are equal.

Need help? Give the student a card with two columns, Sides and Angles, each holding its three names, and point to one name in each column.

Ready for more? Can a triangle be right and equilateral? Obtuse and equilateral? Draw it, or explain why not.

ON ANIMAL MATH

PRINTABLE

Classifying Triangles and Quadrilaterals: sheet 2

MAKER

Graph Paper: Paper Type Square Dots

QUIZ

Shapes Quiz: the Triangles level

EXIT TICKET

5th Grade Shapes and Angles Exit Tickets: Exit Ticket 12.2

GET READY

- Paper triangles of every kind
- Index cards and rulers
- Dot paper

WORDS TO USE

equilateral: 3 equal sides

isosceles: 2 equal sides, marked with matching ticks

scalene: no equal sides, so no tick marks

tick marks: small lines that show which sides are equal

ASK

- Which sides do the tick marks say are equal?
- Which is the biggest angle? Is it smaller than a square corner, the same or bigger?
- Can a triangle have two obtuse angles? Why not?

WATCH FOR

Names a triangle acute from one acute angle.

Every triangle has at least two acute angles: look at the biggest one.

Mixes up names by sides and by angles. Ask first: am I looking at the sides or the angles?

Calls sides equal because they look close.

Trust the tick marks, or measure with a ruler.

Shapes and Angles

Lesson 12.3: Classify quadrilaterals

GOAL Students read a quadrilateral's marks (ticks for equal sides, arrows for parallel sides, squares for right angles) and give every name that fits it, then its best name.

About 45 minutes

I can give every name that fits a quadrilateral.

THE LESSON

- 1 Warm up** (5 min) Show a door. Students say all they know about its shape: its sides, its angles, its parallel sides.
- 2 Teach** (10 min) Post the chart: a trapezoid has at least one pair of parallel sides, a parallelogram 2 pairs, a rectangle 4 right angles, a rhombus 4 equal sides, a square both. A quadrilateral with one pair of arrows and no other marks is a trapezoid. A long rectangle, 3 times as long as it is wide, is a trapezoid, a parallelogram and a rectangle; its best name is rectangle. Every name fits a square. Some books say a trapezoid has exactly one pair; on Animal Math it has at least one, so a parallelogram is a trapezoid too.
Say: "I read every mark and test each name on the chart. The best name tells the most."
- 3 Try it together** (10 min) Partners take turns drawing a quadrilateral with marks on dot paper; the other lists every name that fits and the best name.
- 4 Practice** (15 min) Students write best names and check every name that fits on sheet 3 of Classifying Triangles and Quadrilaterals. For review, sheet 1 of Quadrilaterals counts right angles and parallel sides.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 12.3** and circle a face beside the "I can" line. On question 1, look for parallelogram and rhombus; square means the missing right angle marks were not noticed. On question 2, look for trapezoid only; rectangle means two right angles were taken for four, and parallelogram means one pair of arrows was taken for two.

Ready for more? Can a trapezoid have exactly 1 right angle? Exactly 3? Draw one or explain why not.

GET READY

- Quadrilateral cards with marks
- A chart of the names and what each needs
- Dot paper

WORDS TO USE

trapezoid: at least one pair of parallel sides

parallelogram: 2 pairs of parallel sides

best name: the name that tells the most

ASK

- What does each mark tell you?
- Which names fit? Which do not, and why?
- Which name tells the most?

WATCH FOR

Gives only the best name. Test every name on the chart: a square is a rectangle too.

Calls a rhombus a square because its sides are equal. Look for right angle marks: a square needs them too.

Leaves out trapezoid for a parallelogram. A trapezoid needs at least one pair of parallel sides; a parallelogram has two.

Need help? Color each pair of parallel sides its own color, and tick each name on the chart as it is tested.

ON ANIMAL MATH

PRINTABLE **Classifying Triangles and Quadrilaterals:** sheet 3

PRINTABLE **Quadrilaterals:** sheet 1 (3rd grade), for review

QUIZ **Shapes Quiz:** the Shape Families level

EXIT TICKET **5th Grade Shapes and Angles Exit Tickets:** Exit Ticket 12.3

Shapes and Angles

Lesson 12.4: Properties of shape groups

GOAL Students see that a shape in a smaller group has every property of the larger group: every square is a rectangle, so a square has all that every rectangle has, and properties pass down, never up.

About 45 minutes

I can tell which shapes have the properties of a group.

THE LESSON

- 1 **Warm up** (5 min) Every dog is an animal. What does every dog get from being an animal? Is every animal a dog?
- 2 **Teach** (10 min) List what every rectangle has: 4 right angles; diagonals of the same length (measure two rectangles); a fold across the middle that makes the halves match. A square has 4 right angles, so every square is a rectangle, and it gets everything on the list: measure and fold one to check. The list passes down, never up: a square folds on a diagonal so the halves match, but a long rectangle folded that way does not, so that fold is not on the rectangle list.
Say: "If every square is a rectangle, a square has everything every rectangle has. It does not work backward."
- 3 **Try it together** (10 min) Partners fold and measure paper rectangles and squares to test each property on the list, then add one more property of rectangles and check that a square has it too.
- 4 **Practice** (15 min) Students fill in the family tree on sheet 4 of Classifying Triangles and Quadrilaterals and say what each shape gets from the shapes above it; its always, sometimes or never questions wait for the next lesson. Early finishers answer the yes or no questions on sheet 5 of Quadrilaterals.
- 5 **Exit ticket** (5 min) Students do **Exit Ticket 12.4** and circle a face beside the "I can" line. On question 1, look for rectangle, rhombus and square, not trapezoid: a trapezoid need not be a parallelogram, so its opposite sides need not be equal. On question 2, look for square only; parallelogram means the arrow was followed upward.

Need help? Draw a big circle for rectangles with a small one inside for squares, and write each property beside its circle.

Ready for more? A square's diagonals cross at a right angle. Does that belong on the rectangle list? Test a long rectangle and explain.

GET READY

- Paper rectangles and squares to fold and measure
- Rulers and index cards

WORDS TO USE

property: something every shape in a group has

group: all the shapes that share the same properties

diagonal: a segment from one corner to the opposite corner

always: true for every shape in the group

ASK

- Which group is it in? What does every shape in that group have?
- How do you know a square has it, without measuring?
- Does every rectangle have what a square has? Why not?

WATCH FOR

Thinks every rectangle is a square. Fold a long rectangle on a diagonal: properties pass down, never up.

Tests one shape and says always. Always means every shape in the group: look for one that breaks it.

ON ANIMAL MATH

PRINTABLE

Classifying Triangles and Quadrilaterals: sheet 4

PRINTABLE

Quadrilaterals: sheet 5 (3rd grade), for early finishers

EXIT TICKET

5th Grade Shapes and Angles Exit Tickets: Exit Ticket 12.4

Shapes and Angles

Lesson 12.5: The quadrilateral hierarchy

GOAL Students arrange quadrilaterals in a hierarchy, as a family tree and as groups inside groups, and decide whether a statement is always, sometimes or never true.
I can sort quadrilaterals.

About 45 minutes

THE LESSON

- 1 Warm up** (5 min) Show a square and ask for every name it has. Take a vote on each name, and come back to it at the end.
- 2 Teach** (10 min) Build the family tree: quadrilateral, then trapezoid (at least one pair of parallel sides), then parallelogram (2 pairs), then rectangle and rhombus, and square at the bottom under both. Draw it again as groups inside groups: squares sit where rectangles and rhombuses overlap. To test a statement, look for a shape that breaks it. A rhombus has an obtuse angle: sometimes, as a square has none. A rectangle is a quadrilateral: always. A parallelogram has exactly 1 pair of parallel sides: never.
Say: "A shape belongs to every group above it. Sometimes means one shape makes it true and another does not."
- 3 Try it together** (10 min) Partners place shape cards in yarn circles, then decide always, sometimes or never: A parallelogram has a right angle. A square is a quadrilateral. A trapezoid has exactly 3 right angles.
- 4 Practice** (15 min) Students circle always, sometimes or never on sheet 4 of Classifying Triangles and Quadrilaterals (its family tree was the last lesson's), then sort the shapes in the Venn diagram on its sheet 5.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 12.5** and circle a face beside the "I can" line. On question 1, look for always, then sometimes; never means a square was forgotten. On question 2, look for A outside the parallelograms, B in the rhombuses and C in the parallelograms only; C in the rhombuses means a rectangle was taken for a rhombus.

Ready for more? Write an always, a sometimes and a never statement about trapezoids, and trade with a partner.

GET READY

- Chart paper for a family tree
- Shape cards with marks
- Yarn for groups inside groups

WORDS TO USE

hierarchy: groups inside groups, biggest to smallest

sometimes: true for some shapes in the group, not all

never: true for no shape in the group

ASK

- Which groups is it in, from the top?
- Can you find a shape where it is true? One where it is not?
- Where does a square go?

WATCH FOR

Says always after one example. Always means every shape: look for one that breaks it.

Says never when it is sometimes. Look for one shape that makes it true; a square often does.

Puts a square in only one group. Test it against each group's rule in turn: it passes more than one.

Need help? Keep the family tree out and trace a shape's path from the top with a finger, naming each group.

ON ANIMAL MATH

PRINTABLE

Classifying Triangles and Quadrilaterals: sheets 4-5

QUIZ

Shapes Quiz: the Shape Families level

EXIT TICKET

5th Grade Shapes and Angles Exit Tickets: Exit Ticket 12.5

Shapes and Angles

Lesson 12.6: Measure and sort angles

GOAL Students sort angles as acute, right, obtuse or straight, and measure them with a protractor, checking that each measure fits the kind of angle.

I can measure angles and sort them by size.

About 45 minutes
★ Taught in 5th grade in some states

THE LESSON

- 1 Warm up** (5 min) Students show angles with their arms: smaller than a square corner, a square corner, wider, then a straight line.
- 2 Teach** (10 min) Sort with an index card: inside the card is acute, along its edge right, outside obtuse, and a straight line is a straight angle. Then measure: center mark on the vertex, zero line along one ray, and read the scale that starts at 0 on that ray. An angle of 37 degrees is acute, so the other scale's 143 cannot be right. Measure one of 134 degrees and check that it is more than 90. Make short rays longer with a ruler first.
Say: "First I say acute, right, obtuse or straight. Then I measure, and the number must fit."
- 3 Try it together** (10 min) Partners draw four angles for each other, one of each kind, then trade: name each kind first, measure, and check that the measure fits.
- 4 Practice** (15 min) Students sort and measure angles on sheet 1 of Angles of a Triangle. For review, sheets 1-4 of Measuring Angles with a Protractor name, read, measure and draw angles; sheet 3 of Lines, Rays and Angles is a step back.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 12.6** and circle a face beside the "I can" line. On question 1, look for 126 degrees; 54 means the wrong scale was read, as the angle is obtuse. On question 2, look for acute, obtuse, straight and right; obtuse for the third means a straight angle was not known.

Need help? Trace a card's corner on each angle first, and measure only acute angles until the scale makes sense.

Ready for more? Draw an angle of 135 degrees, then split it with a ray into a right angle and an acute angle. What is the acute part?

ON ANIMAL MATH

PRINTABLE

Angles of a Triangle: sheet 1

PRINTABLE

Measuring Angles with a Protractor: sheets 1-4 (4th grade), for review

PRINTABLE

Lines, Rays, and Angles: sheet 3 (3rd and 4th grade), a step back

QUIZ

Angles Quiz: the Read a Protractor level

EXIT TICKET

5th Grade Shapes and Angles Exit Tickets: Exit Ticket 12.6

GET READY

- A protractor for each student
- Index cards and rulers
- Angles drawn large on paper

WORDS TO USE

acute angle: less than 90 degrees

obtuse angle: between 90 and 180 degrees

straight angle: exactly 180 degrees: a straight line

ASK

- Is it smaller or bigger than a square corner?
- Which scale starts at 0 on your ray?
- Does your measure fit the kind?

WATCH FOR

Reads the wrong scale. Name the kind first, then pick the number that fits.

Thinks longer rays make a bigger angle. An angle's size is how far it opens, not how long its rays are.

Says a straight line is not an angle. Two rays pointing opposite ways from a vertex make one.

Shapes and Angles

Lesson 12.7: Angles of a triangle

GOAL Students see that the three angles of any triangle add up to 180 degrees, by tearing off the corners and lining them up, and find an unknown angle by taking the two known angles from 180.

About 45 minutes

★ Taught in 5th grade in some states

I can find an unknown angle of a triangle.

THE LESSON

- 1 Warm up** (5 min) Draw a straight line split by a ray into two angles, one of 100 degrees. What is the other? How do you know?
- 2 Teach** (10 min) Everyone tears the corners off a paper triangle and lines them up, points together: a straight angle, 180 degrees, whatever the triangle. So with angles of 65 and 80 degrees, the third is $180 - 65 - 80 = 35$ degrees. In a right triangle with an angle of 27 degrees, the third is $180 - 90 - 27 = 63$ degrees. In an isosceles triangle with a top angle of 80 degrees, the other two are $(180 - 80) \div 2 = 50$ degrees each. Add all three to check.
Say: "The angles of a triangle add up to 180 degrees. I take the two I know from 180, then add all three to check."
- 3 Try it together** (10 min) Partners solve on whiteboards: a triangle with angles of 100 and 35 degrees; a right triangle with an angle of 56 degrees. Then each measures two angles of a drawn triangle, works out the third and measures it to check.
- 4 Practice** (15 min) Students add torn and measured angles on sheet 2 of Angles of a Triangle, find unknown angles on sheet 3, name triangles from their angles on sheet 4, and find angles on a line and around a point on sheet 5.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 12.7** and circle a face beside the "I can" line. On question 1, look for $x = 58$ degrees; 122 means 44 and 78 were added but not taken from 180. On question 2, look for $y = 48$; 138 means the right angle was left out.

Need help? Tape a torn triangle's corners to the desk as a straight line, and write 180 above them.

Ready for more? Can a triangle have angles of 95 and 90 degrees? Use the 180 rule to explain.

GET READY

- A paper triangle to tear for each student
- Protractors
- Whiteboards and markers

WORDS TO USE

straight angle: 180 degrees, a straight line

unknown angle: the angle we find, named with a letter

equation: a number sentence like $180 - 65 - 80 = a$

ASK

- What do the three angles add up to?
- What is a right angle mark worth?
- How can you check your answer?

WATCH FOR

Forgets the right angle. A small square means 90: write 90 in that corner first.

Takes the angles from 360 or 100. Line up torn corners again: they make a straight angle, 180.

Measures instead of working it out, and is a little off. The equation is exact; measuring only checks it.

ON ANIMAL MATH

PRINTABLE

Angles of a Triangle: sheets 2-5

QUIZ

Angles Quiz: the Unknown Angles level

EXIT TICKET

5th Grade Shapes and Angles Exit Tickets: Exit Ticket 12.7

Shapes and Angles

Lesson 12.8: Circles

GOAL Students name the center, a radius and a diameter of a circle, see by folding and measuring that a diameter is twice as long as a radius, and find one from the other.

I can find the radius and diameter of a circle.

About 45 minutes
★ Taught in 5th grade in some states

THE LESSON

- 1 Warm up** (5 min) Tie a string to a pencil, hold the other end still and draw a circle on the board. Ask: why is every point of the circle the same distance from the middle?
- 2 Teach** (10 min) Fold a paper circle in half, then in half the other way: the folds cross at the center. Draw a segment from the center to the circle: a radius. Draw one from side to side through the center: a diameter. Measure both: a radius of 5 cm and a diameter of 10 cm. A diameter is two radii end to end, so the diameter is $2 \times$ the radius and the radius is the diameter $\div 2$. A pizza with a diameter of 16 inches has a radius of 8 inches.
Say: "A diameter goes all the way across through the center, so it is twice as long as a radius."
- 3 Try it together** (10 min) Partners measure the diameters of round things in centimeters and write each radius, then draw a circle with a radius of 4 cm with string or a compass and measure its diameter to check: 8 cm.
- 4 Practice** (15 min) No Animal Math sheet teaches circles, so this lesson is hands-on. Students draw three circles of their own with string or a compass, mark the center, a radius and a diameter in each, and measure both. Then they measure across the circle and the half circle on sheet 5 of Estimating and Measuring (not its perimeter questions) and write each radius.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 12.8** and circle a face beside the "I can" line. On question 1, look for center, radius and diameter; radius for JK means the student did not check whether it goes through the center. On question 2, look for 18 cm and 15 in.; 4.5 cm means the radius was halved, and 60 in. means the diameter was doubled.

Ready for more? A round table is 2 meters across. How long is its radius in centimeters?

ON ANIMAL MATH

PRINTABLE

Estimating and Measuring: Length, Mass and Liquid Volume: the circle and half circle on sheet 5, to measure across

EXIT TICKET

5th Grade Shapes and Angles Exit Tickets: Exit Ticket 12.8

GET READY

- Paper circles to fold, and string and pencils or compasses
- Centimeter rulers
- Round things to measure: lids, plates, coins

WORDS TO USE

center: the point inside a circle the same distance from every point on it

radius: a segment from the center to the circle

diameter: a segment across the circle through the center

ASK

- Does the segment go through the center?
- How many radii fit along a diameter?
- Which is longer, the radius or the diameter?

WATCH FOR

Calls any segment across the circle a diameter. A diameter must pass through the center: fold to find the center first.

Halves the radius to get the diameter. The diameter is the longer one: two radii end to end.

Draws a radius that stops short of the circle. A radius runs from the center all the way to the circle.

Need help? Lay two equal paper strips end to end across a folded circle, one for each radius, and compare them with the diameter.