

North Penn School District
Elementary Math Parent Letter

Grade 3




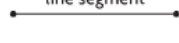
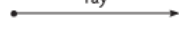
Unit 7 – Chapter 12: Two-Dimensional Shapes

Examples for each lesson:



Lesson 12.1

Describe Plane Shapes

You can use math words to describe plane shapes.

	an exact position or location
	a straight path that goes in two directions without end
	points that are used to show segments of lines
	part of a straight line and has 2 endpoints
	part of a straight line that has 1 endpoint and continues in one direction

A **plane shape** is a shape on a flat surface. It is formed by points that make curved paths, line segments, or both. Plane shapes can be open or closed.


A **closed shape** starts and ends at the same point.  An **open shape** does not start and end at the same point. 

Look at this plane shape called a triangle.

It is a closed shape.

It has 3 line segments.

The line segments meet at the endpoints.




More information on this strategy is available on Animated Math Model #47.

Lesson 12.2


Describe Angles in Plane Shapes

There are different types of angles.

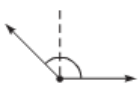
A **right angle** forms a square corner.



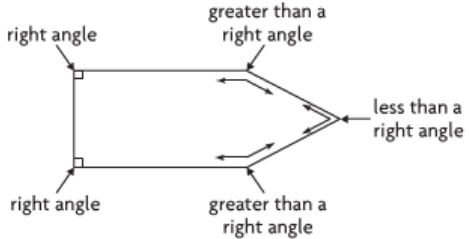
Some angles are less than a right angle.



Some angles are greater than a right angle.



Look at this shape. Describe the angles.



There are 2 right angles.

There are 2 angles greater than a right angle.







There is 1 angle less than a right angle.

Lesson 12.3

Algebra • Find Unknown Side Lengths


Identify Polygons

You can identify and name polygons by the number of sides and angles they have.

 3 sides 3 angles triangle	 4 sides 4 angles quadrilateral	 5 sides 5 angles pentagon
 6 sides 6 angles hexagon	 8 sides 8 angles octagon	 10 sides 10 angles decagon


Describe and name this shape.

It has 4 sides.
It has 4 angles.
It is a **quadrilateral**.



Describe and name this shape.

It has 6 sides.
It has 6 angles.
It is a **hexagon**.



More information on this strategy is available on Animated Math Model #48.

Lesson 12.4

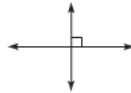
Describe Sides of Polygons

There are different types of line segments in polygons.

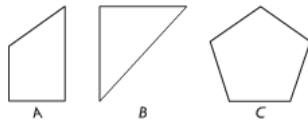
- **Intersecting lines** are lines that cross or meet. Intersecting lines form angles.



- **Perpendicular lines** are intersecting lines that cross or meet to form right angles.



- Lines that appear never to cross or meet and are always the same distance apart are **parallel lines**. They never form angles.



Which shape or shapes appear to have parallel sides? *A*

Which shape or shapes appear to have perpendicular sides? *A, B*

Which shape or shapes appear to have intersecting sides? *A, B, C*

More information on this strategy is available on Animated Math Model #49.

Lesson 12.5

Classify Quadrilaterals

You can classify quadrilaterals by their sides and by their angles.



- 2 pairs of opposite sides that are parallel
- 4 sides that are of equal length
- 4 right angles



- 2 pairs of opposite sides that are parallel
- 2 pairs of sides that are of equal length
- 4 right angles



- 1 pair of opposite sides that are parallel
- lengths of sides could be the same.



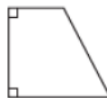
- 2 pairs of opposite sides that are parallel
- 4 sides that are of equal length

How can you classify the quadrilateral?

It has only 1 pair of opposite sides that are parallel.

The lengths of all 4 sides are **not** equal.

So, the quadrilateral is a **trapezoid**.



More information on this strategy is available on Animated Math Model #50.

Lesson 12.6

Draw Quadrilaterals

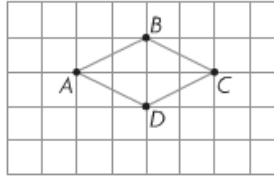
Use grid paper to draw a quadrilateral.

Step 1 Use a ruler to draw line segments.
Connect *A* to *B*.

Step 2 Connect *B* to *C*.

Step 3 Connect *C* to *D*.

Step 4 Connect *D* to *A*.



Write the name of your quadrilateral.

rhombus

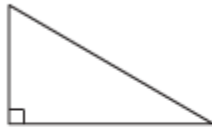
More information on this strategy is available on Animated Math Model #50.

Lesson 12.7

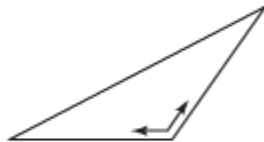
Describe Triangles

You can describe a triangle by its types of angles.

This triangle has 1 right angle.



This triangle has 1 angle greater than a right angle.

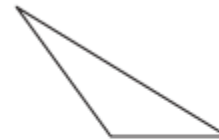


This triangle has 3 angles less than a right angle.

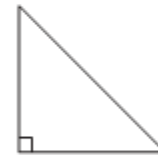


You can describe a triangle by the number of sides of equal length.

This triangle has 0 sides of the same length.



This triangle has 2 sides of the same length.



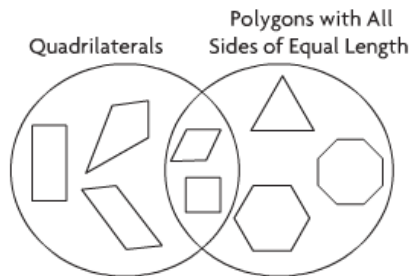
This triangle has 3 sides of the same length.



Lesson 12.8

Problem Solving • Classify Plane Shapes

A **Venn diagram** shows how sets of things are related. This Venn diagram shows how quadrilaterals and polygons with all sides of equal length are related. The shapes in the section where the circles overlap show shapes that belong to both groups.



What types of polygons are in both circles?

Read the Problem	Solve the Problem
What do I need to find? what types of polygons are in both circles	What is true about all polygons in the circle labeled Quadrilaterals? <u>They all have 4 sides.</u>
What information do I need to use? The circles are labeled <u>Quadrilaterals</u> and <u>Polygons with All Sides of Equal Length</u>	What is true about all polygons in the other circle? <u>They all have sides of equal length.</u>
How will I use the information? I will describe the shapes in the section where the circles overlap	Which polygons are in the section where the circles overlap? <u>shapes that are quadrilaterals and that have 4 sides that are of equal length</u> So, <u>a square</u> and <u>a rhombus</u> are in the section where the circles overlap.

Lesson 12.9

Relate Shapes, Fractions, and Area

You can separate a plane shape into equal parts to explore the relationship between fractions and area.

Divide the rectangle into 6 parts with equal area. Write the fraction that names the area of each part of the whole.

Step 1 Draw lines to divide the rectangle into 6 parts with equal area. Use the grid to help you.

Step 2 Write the fraction that names each part of the divided whole.

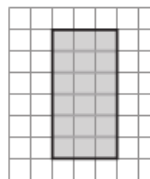
Think: Each part is 1 part out of 6 equal parts.

Each part is $\frac{1}{6}$ of the whole shape's area.

Step 3 Write the fraction that names the whole area.

Think: There are 6 equal parts.

The fraction that names the whole area is $\frac{6}{6}$.



Vocabulary

Angle – a shape formed by two rays that share the same endpoint

Closed shape – a two-dimensional shape that begins and ends at the same point

Line – a straight path extending in both directions with no endpoints

Line segment – a part of a line that included two endpoints and all the points between them

Open shape – a shape that does not begin and end at the same point

Plane shape – a shape on a flat surface that is formed by curves, line segments, or both

Point – an exact position or location

Polygon – a closed plane shape with straight sides

Ray – a part of a line, with one endpoint, that is straight and continues in one direction

Right angle – an angle that forms a square corner

Two-dimensional shape – a plane shape that has length and width