Important Concepts . . .

Preview Review

Mathematics Grade 5

W3 - Lesson 2: 2-D Shapes and 3-D Objects

V5-07

Important Concepts of Grade 5 Mathematics

W1 - Lesson 1 .....Number Sense Numbers 0 to 100 000
W1 - Lesson 2 ..... Exploring Proper Fractions
W1 - Lesson 3 ..... Exploring Decimals
W1 - Lesson 4 .....Numbers With Up to 2 Decimal Places
W1 - Lesson 5 ..... Multiplication
W1 - Quiz
W2 - Lesson 1 ..... Division
W2 - Lesson 2 ..... Collecting Data and Analyzing Patterns
W2 - Lesson 3 .....Estimating and Taking Measurements
W2 - Lesson 4 ..... Perimeter and Area Measurements
W2 - Lesson 5 ..... Metric Measurements
W2 - Quiz
W3 - Lesson 1 ..... Volume, Capacity, Mass, and Time
W3 - Lesson 2 ..... 2-D Shapes and 3-D Objects
W3 - Lesson 3 .....Transformations
W3 - Lesson 4 ..... Statistics and Probability
W3 - Lesson 5 .....Chance and Probability
W3 - Quiz

Materials Required

Protractor
Ruler
Calculator

A textbook is not needed.

This is a stand-alone course.

Mathematics Grade 5
Version 5
Preview/Review W3 - Lesson 2

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Preview/Review Concepts for Grade Five Mathematics

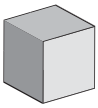
W3 - Lesson 2: 2-D Shapes and 3-D Objects

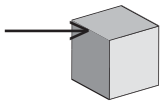
OBJECTIVES

By the end of this lesson, you should

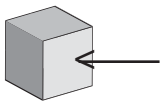
- understand the geometric figures in a *tangram*
- classify triangles
- identify and name polygons
- draw and build 3-D shapes

Glossary of Terms

Cube:  a figure with 6 equal square faces – 3D object (sugar cube)

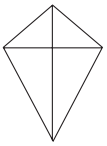
Edge:  the line segment where 2 faces of a solid figure meet

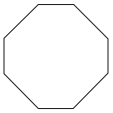
Equilateral triangle: a triangle that has 3 equal sides

Face:  a flat surface in a solid figure

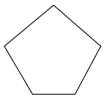
Hexagon: a polygon with 6 sides and only 1 line of symmetry

Isosceles triangle: a triangle with 2 equal sides

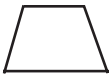
Kite: a polygon with 4 sides – 2 pairs of equal adjacent sides 

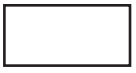
Octagon: a polygon with 8 sides 

Parallelogram: a quadrilateral with 2 sets of parallel sides

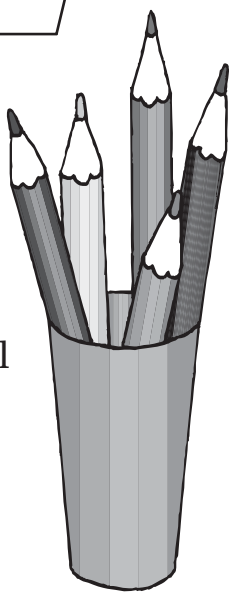
Pentagon: a polygon with 5 sides 

Polygon: a closed 2D shape with only straight sides (It can have many sides.)

Quadrilateral: a polygon with 4 sides 

Rectangle: a polygon with 4 sides – 2 sets of equal opposite sides meeting at right angles 

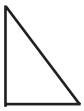
Regular Polygon: a polygon with equal sides and equal angles



Right Prism: a solid 3D figure in which all the side faces are rectangles

Rhombus: a polygon with 2 sets of all sides are equal length

Scalene Triangle: a triangle that has no equal sides



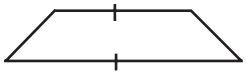
Solid Figure: a 3D figure with length, width, and depth (such as a pyramid or cube)

Square: a parallelogram with 4 equal sides and right angles

Tangram: a square cut into 7 pieces called tans (the pieces are used to make different shapes as in a Chinese game)

Trapezium: 4 -sided polygon with 1 pair of parallel sides; also known as a trapezoid

Trapezoid: a polygon with 4 sides – one pair of parallel sides.

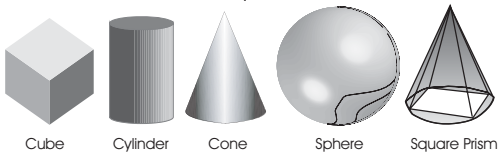


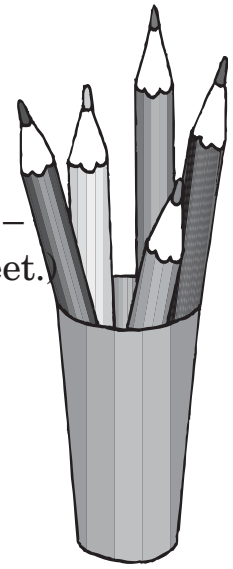
Triangle: a polygon with 3 sides.

Vertices:

a point where two or more edges meet (Often the corners – A, B, C – are all vertices where 2 edges meet.)

3-D Three Dimensional: measured in 3 directions such as length, width, and height

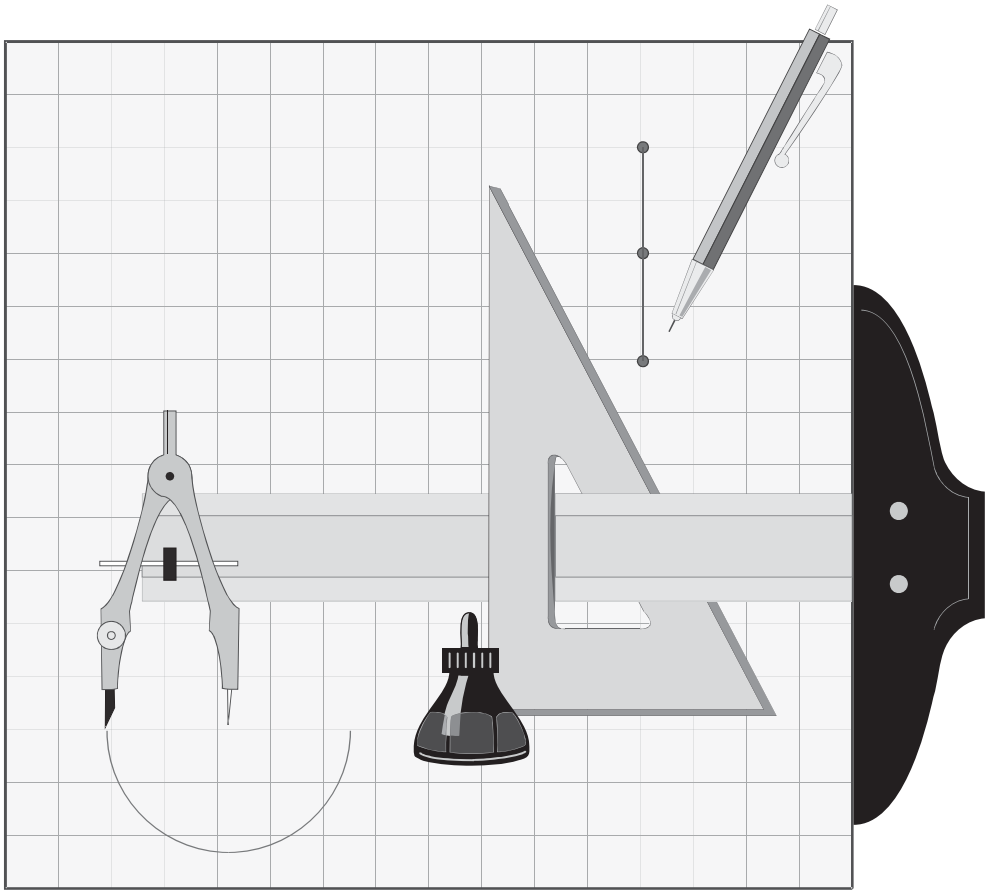




W3 - Lesson 2: 2-D Shapes and 3-D Objects

Concepts:

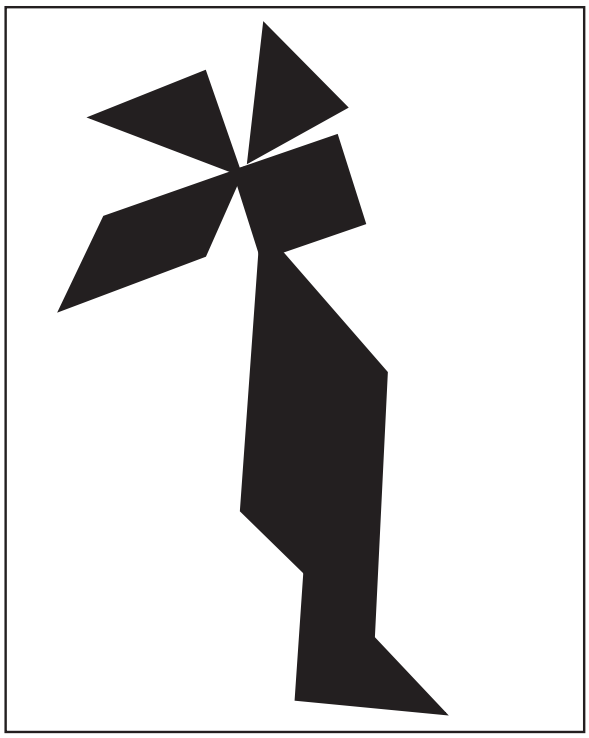
- Tangrams
- Classifying Triangles
- Identify and Name Polygons
- Draw 3-D Shapes
- Build 3-D Shapes

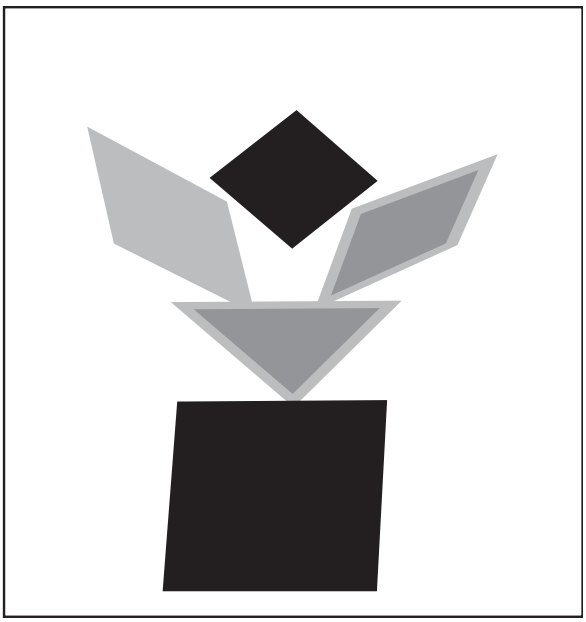


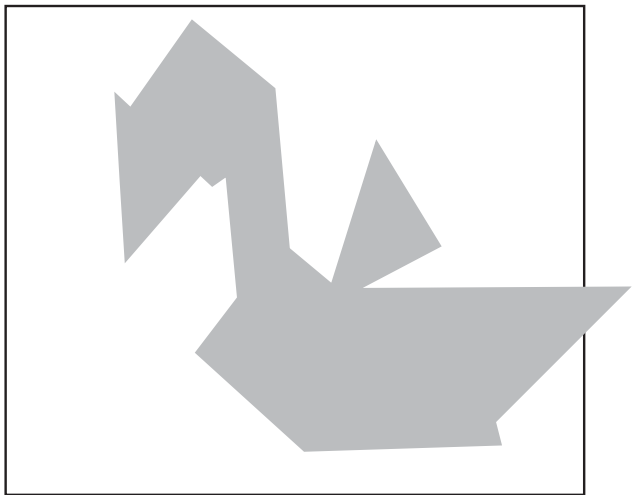
Tangrams

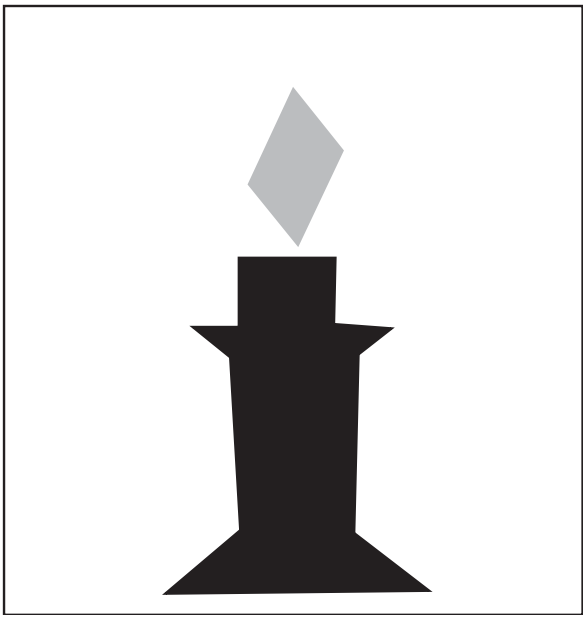
A **tangram** is a square cut into 7 pieces called tans: 1 parallelogram, 1 square, 1 medium triangle, 2 small triangles, and 2 larger triangles. The pieces are used to make different pictures. *(Tan* means pieces, and *grams* means picture.) Tangrams were invented as a game over 250 years ago by the Chinese.

Using the tangram on the next page of the lesson, try to make the following pictures.



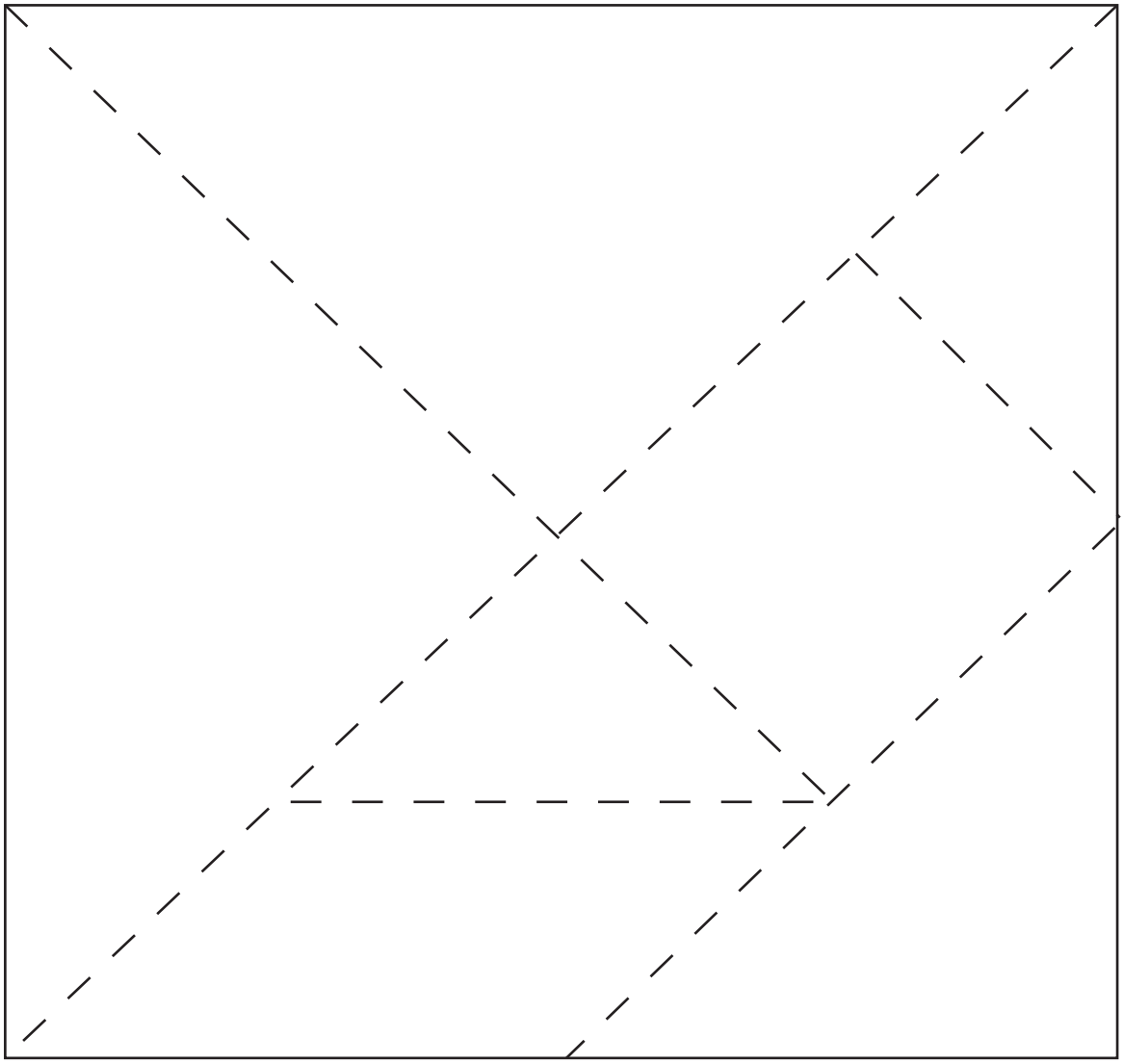






Tangram Pattern

Cut out these shapes and make the pictures on the previous page. If you have a friend also working on this lesson, make a game of it and see who can create each tangram in the fastest time.



Classifying Triangles

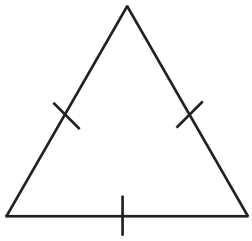
Triangle: a polygon with 3 sides

- **Equilateral triangle:** a triangle with 3 equal sides
- **Isosceles triangle:** a triangle with 2 equal sides
- **Scalene triangle:** a triangle with no equal sides

Polygon: a closed 2D shape with only straight sides (It can have three or more sides.)

Regular polygon: a polygon with equal sides and equal angles

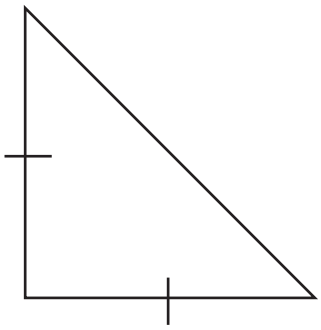
1. Slashes have been used to show equal sides. What are four ways we can classify this triangle? Choose from the list above.



_____ _____

_____ _____

2. What are three ways we can classify this triangle?



_____

_____

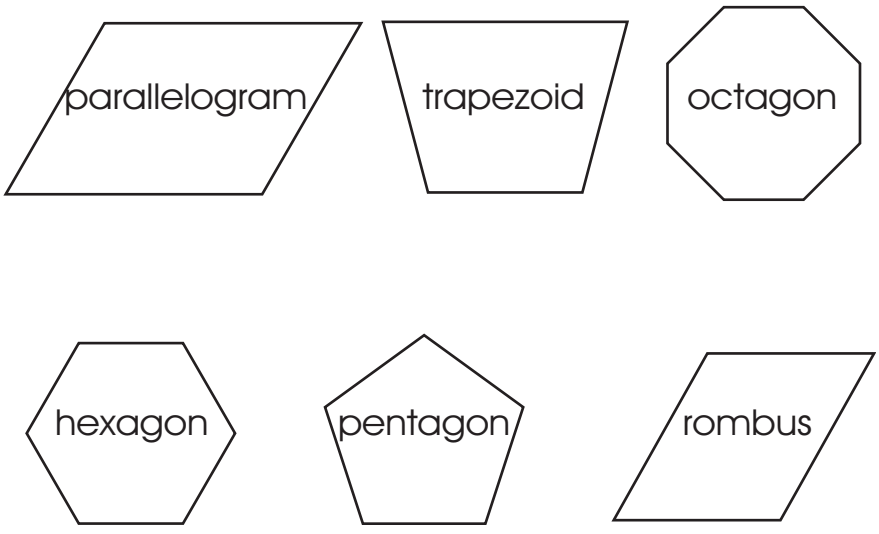
_____

4. Draw a scalene triangle.

	Number of Equal Sides	Number of Equal Angles
Equilateral triangle		
Isosceles triangle		
Scalene triangle	0	0

Identify and Name Polygons

Polygons are two-dimensional shapes with straight sides. The prefix of each polygon tells how many sides the shape has. Keep in mind that some polygons can have several looks. For example, a square can become a rhombus if the angles are changed.

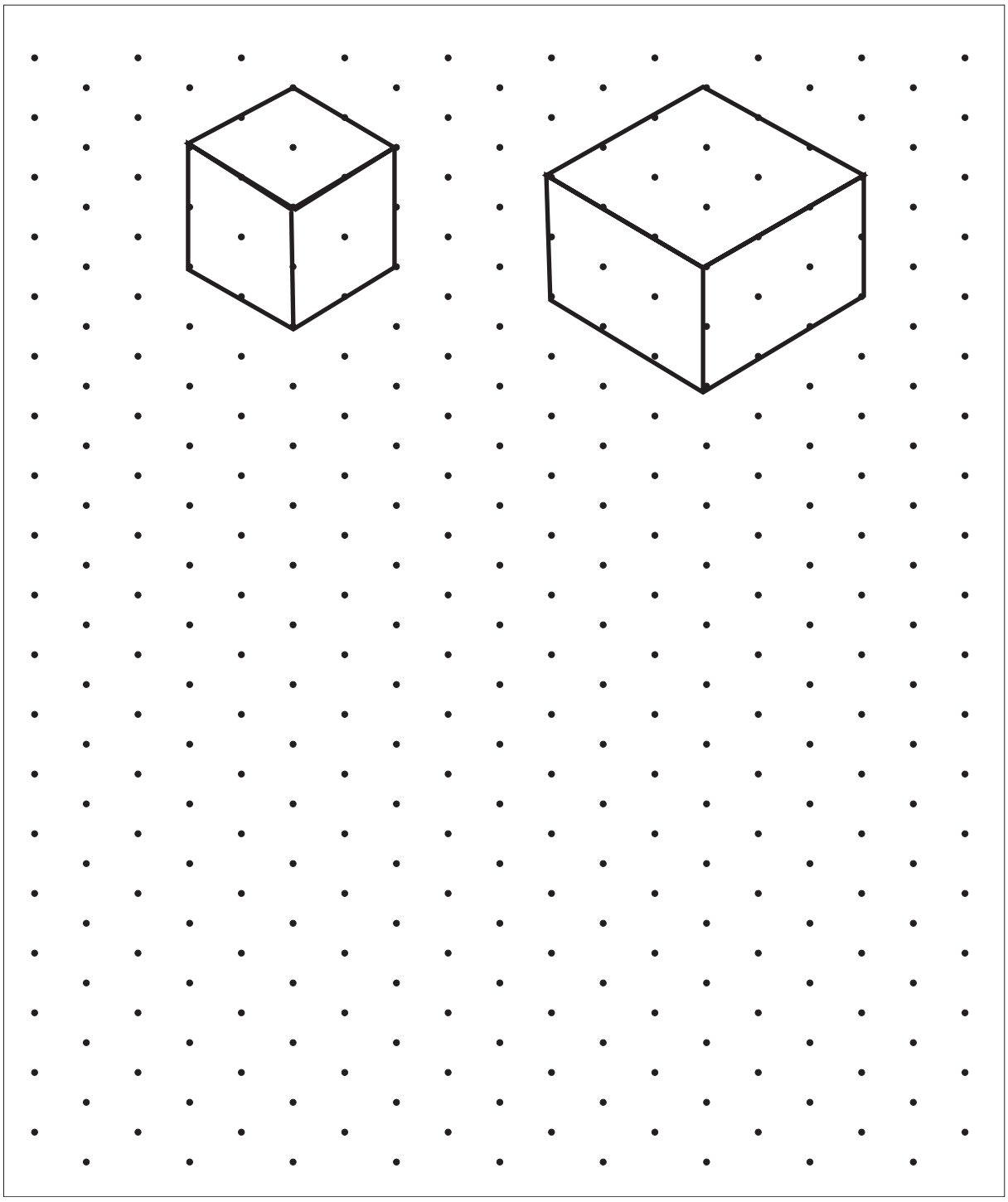


Use the glossary to help you fill in the chart below.

	Number of Sides	Are all the Sides the Same Length	Number of Angles	Number of Vertices
triangle	3			
quadrilateral	4			
pentagon	5			
hexagon				
octagon				
kite				
parallelogram				
rectangle				
rhombus				
square				
Trapezium				
Trapezoid				

Draw 3-D Shapes

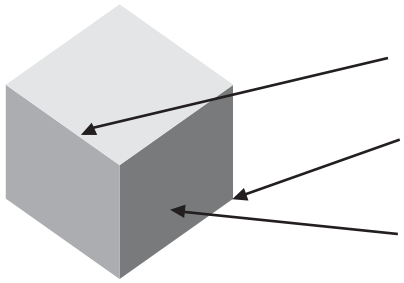
Drawing 3-D shapes is easier with graph or dot paper. Copy the shapes below exactly. Then try enlarging or reducing a favourite shape. Try a different 3-D shape.



Build 3-D Shapes

Complete the questions below.

Label this cube with the appropriate terms listed along the side. Draw an arrow to the correct part of the cube.



Give 5 examples of sphere-shaped items.

_____

_____

_____

_____

_____

Name the one common solid shape for these items.

Pop can	
Container of Pringles chips	
A section of pipe	
A funnel	
Prism	

Draw a triangular pyramid.

On a cylinder,

How many vertices? _____

How many edges? _____

How many faces? _____

How many curved edges? _____

How many curved surfaces? _____

On a triangular prism,

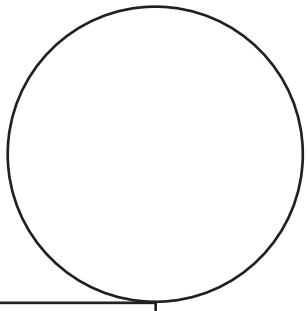
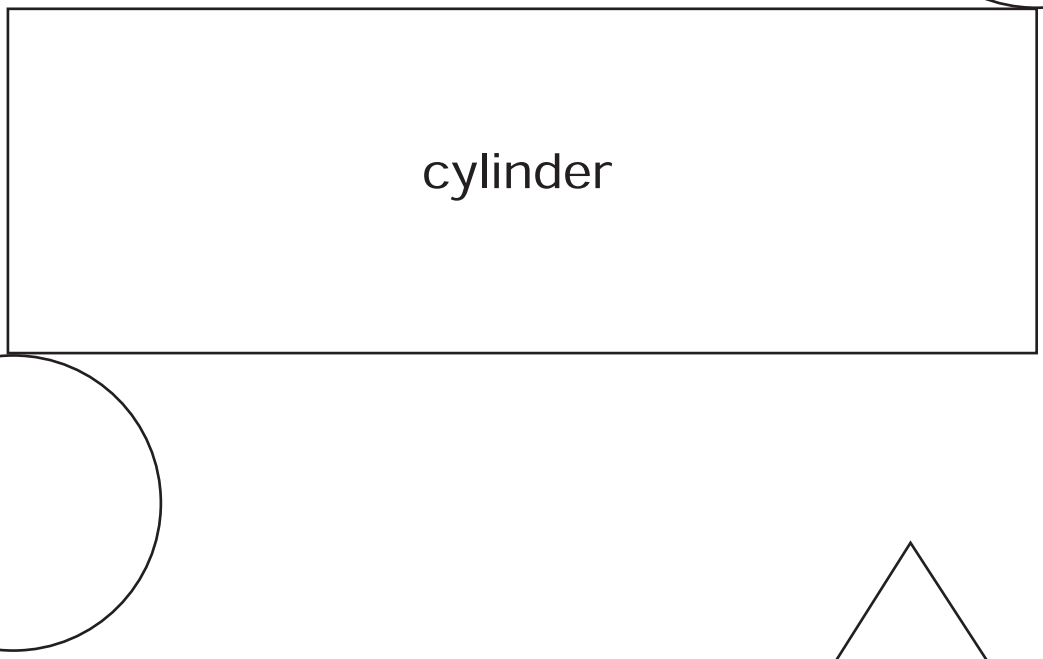
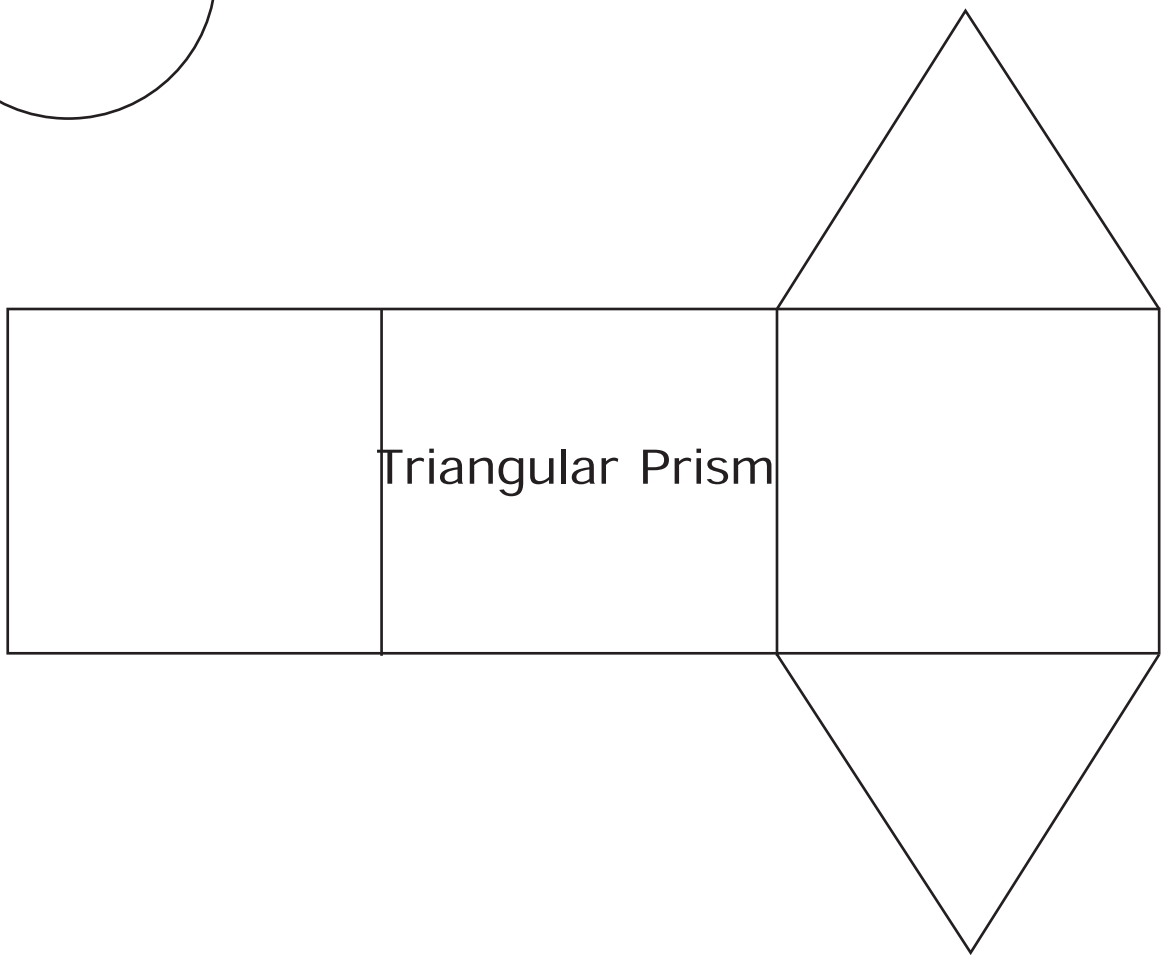
How many vertices? _____

How many edges? _____

How many faces? _____

How many curved edges? _____

How many curved surfaces? _____

Build 3D Shapes–Patterns

Please note: some pieces overlap.
Cut out the two shapes below to build 3-D objects.