

# CONTENTS

---

<i>Preface</i> .....	v
<i>To the Teacher</i> .....	vii
<b>I. Understanding Geometry</b> .....	<b>1</b>
<i>Teaching Notes</i> .....	2
<i>Student Activity Sheets</i> .....	4
What Is Geometry .....	4
Why Geometry Is Important .....	5
Geometry in Everyday Life .....	6
A Famous Geometer .....	7
Terms Used in Geometry .....	8
<b>II. Two-Dimensional Geometric Shapes</b> .....	<b>9</b>
<i>Teaching Notes</i> .....	10
<i>Student Activity Sheets</i> .....	13
What Is a Flat Shape? .....	13
Characteristics of Two-Dimensional Shapes .....	14
Circles .....	15
Polygons .....	16
Quadrilaterals and Parallelograms .....	17
Triangles .....	18
The Pythagorean Theorem .....	19
Perimeter .....	20
Area .....	21
<b>III. Three-Dimensional Geometric Shapes</b> .....	<b>23</b>
<i>Teaching Notes</i> .....	24
<i>Student Activity Sheets</i> .....	28
What Is a Solid? .....	28
Characteristics of Three-Dimensional Shapes .....	29
Polyhedrons .....	30
Cubes .....	31
Prisms .....	32
Pyramids .....	33
Spheres .....	34
Cylinders .....	35
Cones .....	36
Surface Area .....	37
Volume .....	38

# TO THE TEACHER

---

A teacher once described graphic organisers as “sophisticated doodles”. In a way, he was right. In fact, that may be the best way for you to think about graphic organisers and to present them to your students. You can find many jargon laden articles and books that analyse graphic organisers, put forth new taxonomies and labour to link them to psychological dynamics. These have their place, of course, but graphic organisers – essentially a simple teaching tool – have been overanalysed, with the net effect of confusing rather than enlightening educators.

*Graphic Organisers for Geometry* is designed to cut through the jargon and give you a practical tool that you can put to use immediately. Spend a little time reading this introduction and thumbing through the graphic organisers, and you’ll be ready to go.

## UNDERSTANDING GRAPHIC ORGANISERS

On a practical, classroom level, all you need to know about graphic organisers can be summed up in a few key points. As you use this book, or use graphic organisers in any educational context, keep these ideas in mind:

**Graphic organisers are simply ways to organise information visually.** This is a simple, straightforward and accurate description of graphic organisers.

**Graphic organisers are nearly always appropriate.** Many people tend to think in visual terms, so graphic organisers are an appropriate way to organise information.

**Graphic organisers come in many forms.** Many attempts have been made to categorise graphic organisers and to identify them by type. You’ve probably heard of sequence chains, concept maps, webs, flowcharts, Venn diagrams and so on. (You’ll find many of these in this book.) But some of the best graphic organisers are combinations of these standard forms, and some are utterly unique.

**Graphic organisers are never right or wrong, only better or worse.** As long as the facts presented, and their interrelationships, are correct, there are no “wrong” graphic organisers. However, some do a better job of presenting the same information than others.

**Graphic organisers are not communicative, but conceptual.** They are tools that help students acquire knowledge, not impart it. Obviously, graphic organisers are excellent communication tools, but in the classroom, you should focus on using them as a way for students to learn, and not as a way for students to show you what they have learned.

**Graphic organisers are concept driven.** The form of a graphic organiser should follow its function, not vice versa.

## CONTENT AND ORGANISATION: MAJOR FIELDS, KEY CONCEPTS AND MAIN IDEAS

This book covers a wide range of middle years geometry topics, as a glance at the table of contents will show. The major sections of the book correspond to *major fields* taught in geometry classes in the middle years. Within each major field, the graphic organisers emphasise key concepts. Each graphic organiser focuses on the main ideas of each key concept.

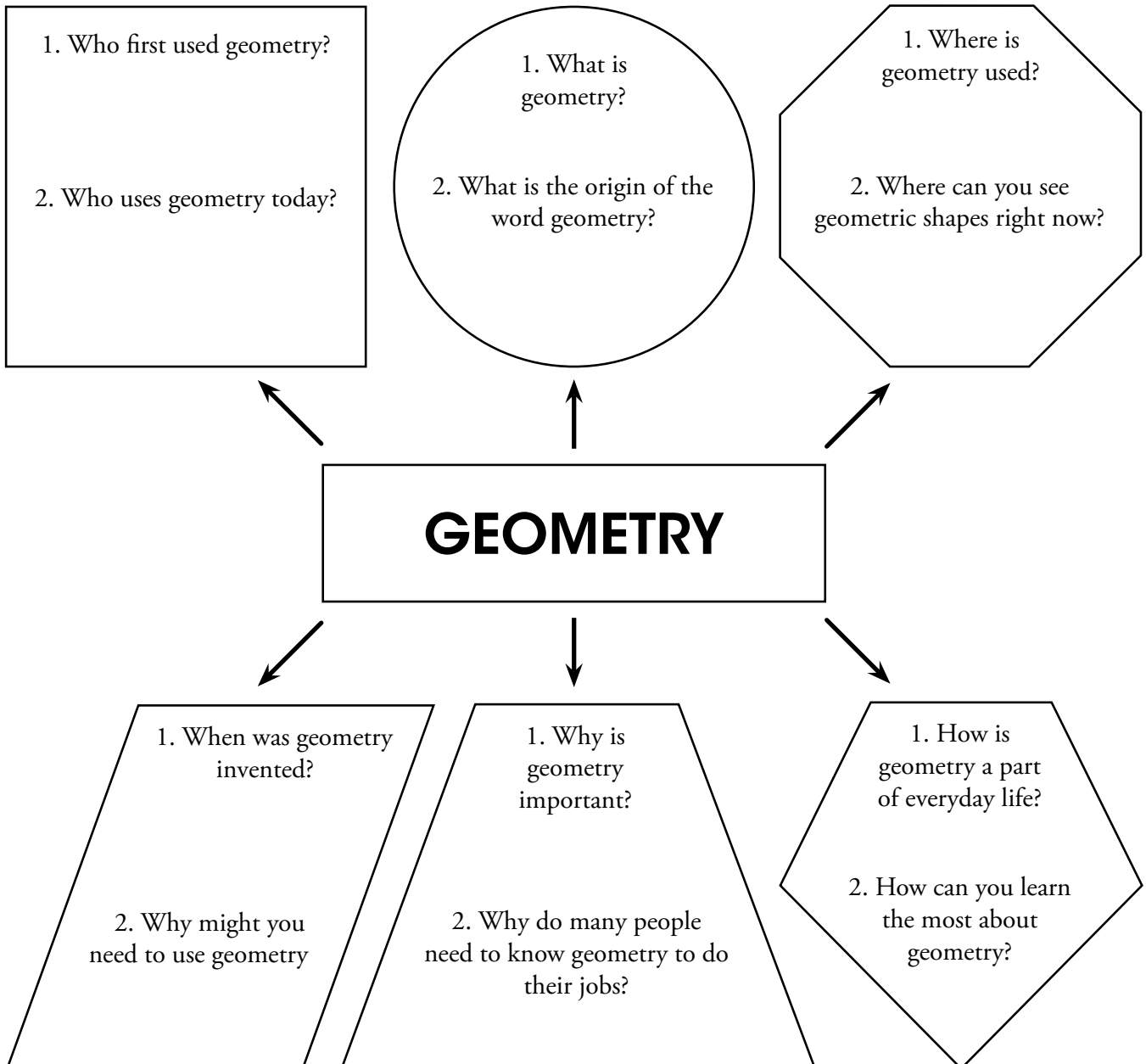
This organisation enables you to use these graphic organisers throughout the year to help students achieve the principal learning objectives of your geometry class.

Name \_\_\_\_\_ Date \_\_\_\_\_

# WHAT IS GEOMETRY?

**Introduction:** Geometry is one of the chief branches of mathematics. It is concerned with the shape, size and position of geometric figures, both two- and three-dimensional. You can quickly learn more about geometry by asking and answering a few questions.

**Directions:** Conduct research to answer questions 1 and 2 in each shape.



**Taking Another Step:** Ask six questions of your own about geometry and write them on the back of this sheet. Then trade your sheet with a partner and answer each other's questions.

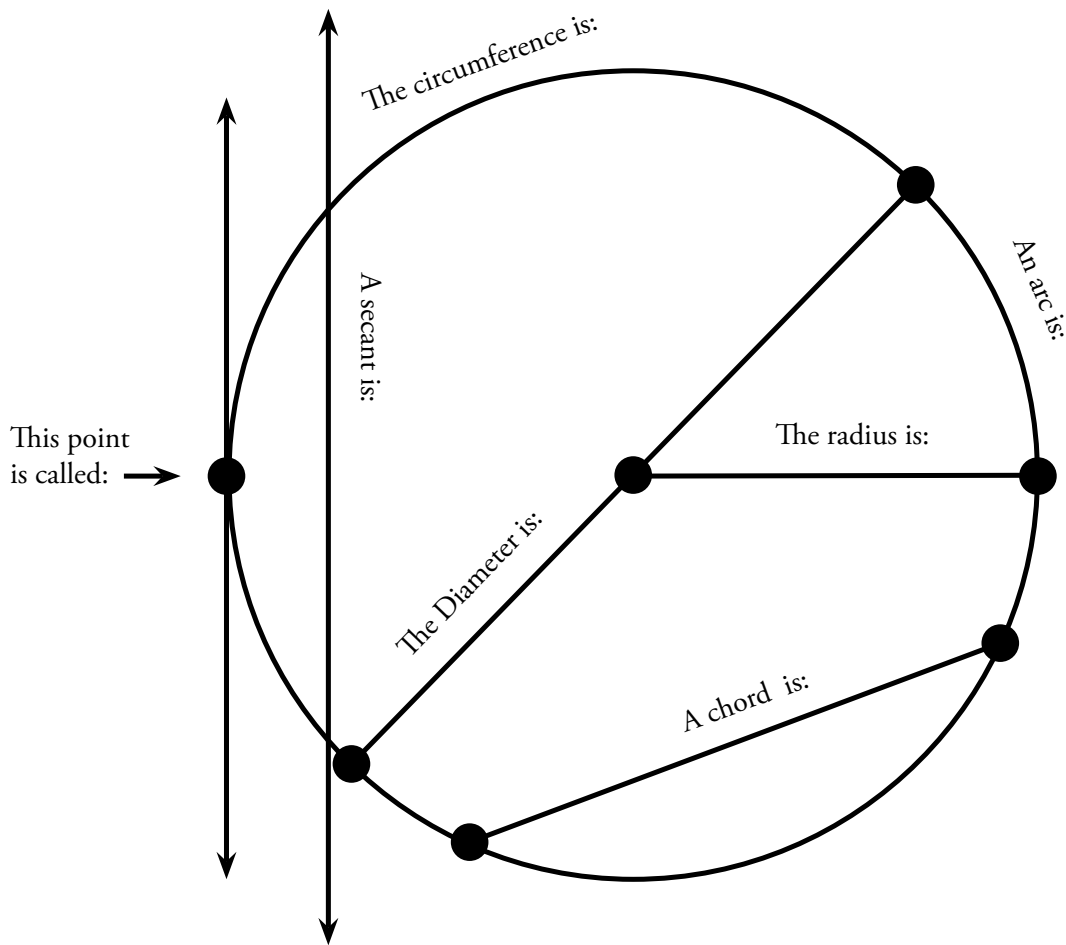
Copyright © 2011 by Hawker Brownlow Education. All rights reserved. Reprinted from *Graphic Organisers For Geometry, Years 7-10* by Daniel J. Barnekow. Melbourne, Vic: Hawker Brownlow Education, www.hbe.com.au. To the extent not permitted by Part VB of the Copyright Act 1968, and subject to the terms of use for this resource, the purchaser of this resource may photocopy this page for their teaching purposes. Reproduction authorised only for use in the school site that has purchased the book.

Name \_\_\_\_\_ Date \_\_\_\_\_

# CIRCLES

**Introduction:** Circles are common shapes. Actually, they're *very* common shapes. They appear in nature and in things people create. They are also useful shapes – *very* useful shapes. Because they are very common, and very useful, it pays to know all you can about circles. Knowing about circles well help you be a “well-rounded” person!

**Directions:** Use your textbook, talk to your teacher and classmates, and conduct other research to complete the diagram.



**Taking Another Step:** Complete the table.

<b><math>\pi</math></b>	
Symbol	
Definition	
Value	
Why pi is useful	

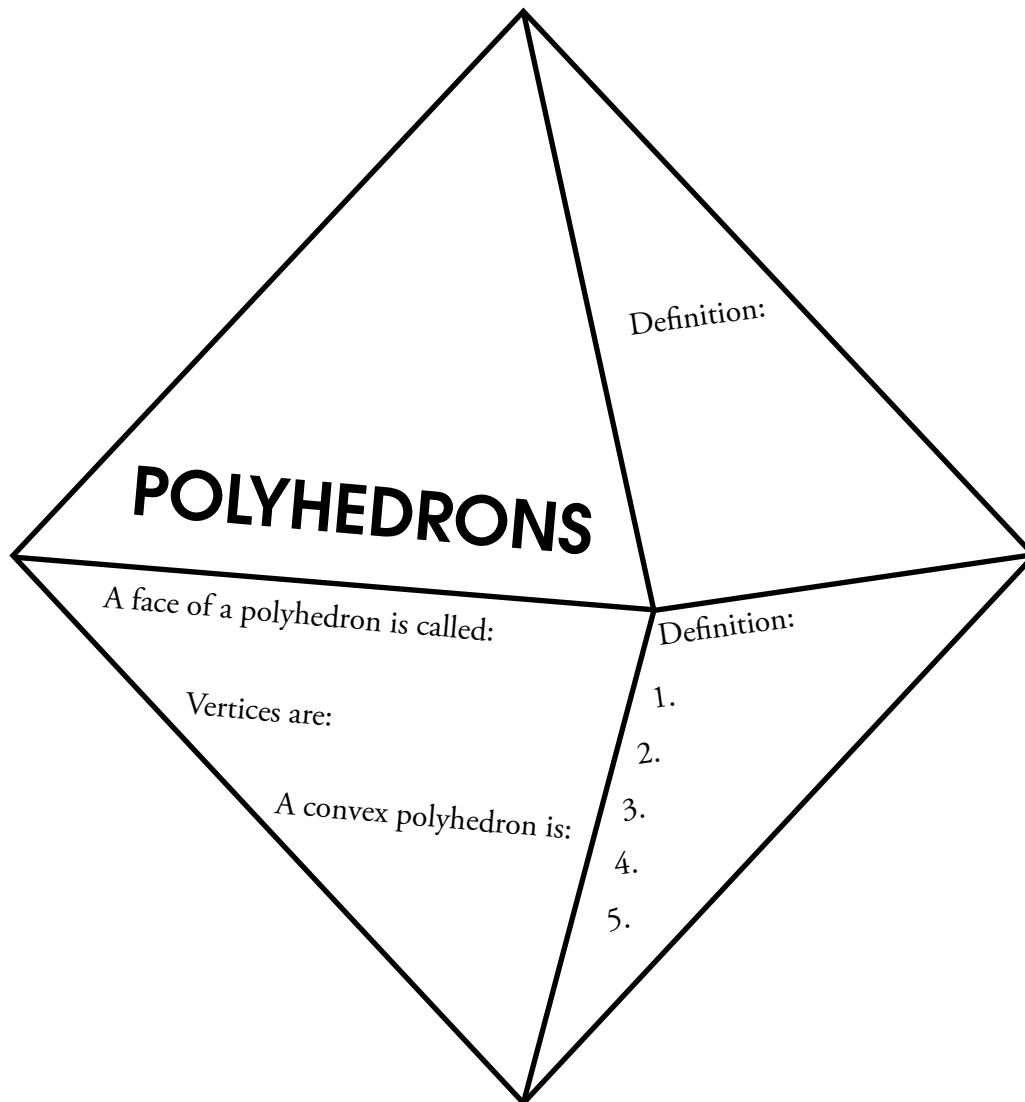
Copyright © 2011 by Hawker Brownlow Education. All rights reserved. Reprinted from *Graphic Organisers For Geometry, Years 7-10* by Daniel J. Barnekow. Melbourne, Vic: Hawker Brownlow Education, www.hbe.com.au. To the extent not permitted by Part VB of the Copyright Act 1968, and subject to the terms of use for this resource, the purchaser of this resource may photocopy this page for their teaching purposes. Reproduction authorised only for use in the school site that has purchased the book.

Name \_\_\_\_\_ Date \_\_\_\_\_

# POLYHEDRONS

**Introduction:** **Polyhedron** is a fancy word, but polyhedrons themselves are easy to understand – as you are about to see.

**Directions:** Use your textbook, talk to your teacher and classmates, and conduct other research to complete the diagram.



**Taking Another Step:** What type of polyhedron is represented by the diagram? Is it convex? Write your answers on the back of this sheet.