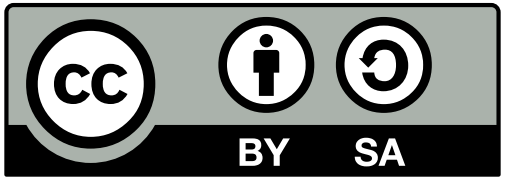
Geometry 1

Caroline Liu



© Caroline Liu, 2017

Table of Contents

1 Introduction

2 Triangles

3 Pythagorean theorem

4 Important/special triangles

5 Trigonometric identities

6 Similar triangles

7 Special lines and points of intersection

Polygons
Introduction

Polygons are 2D shapes that have 3 or more sides.

Polygons
Introduction

Polygons are 2D shapes that have 3 or more sides.

Polygons are named after the number of sides the shape has.

Polygons
Introduction

Polygons are 2D shapes that have 3 or more sides.

Polygons are named after the number of sides the shape has.

Sides	Prefix	Name
3	Tri	Triangle
4	Quad	Quadrilateral
5	Penta	Pentagon

Angles
Introduction

The sum of a shape's interior angles can be found with this formula:

$$\frac{180(n-2)}{n}$$

Angles
Introduction

The sum of a shape's interior angles can be found with this formula:

$$\frac{180(n-2)}{n}$$

The sum of a shape's exterior angles can be found with this formula:

$$360^\circ$$

(It's always 360°.)

Angles
Introduction

The sum of a shape's interior angles can be found with this formula:

$$\frac{180(n-2)}{n}$$

The sum of a shape's exterior angles can be found with this formula:

$$360^\circ$$

(It's always 360°.)

These formulas are very useful for contests.

Shapes to look out for: without 3 sides

Introduction

Trapezoids Can often be split into 2 triangles and a rectangle. Questions include determining a dimension given other info, or calculating area. Very common contest question.

Shapes to look out for: without 3 sides

Introduction

Trapezoids Can often be split into 2 triangles and a rectangle. Questions include determining a dimension given other info, or calculating area. Very common contest question.

Parallelograms, squares, and rectangles May be used in conjunction with circles, or you will be tasked with finding a dimension given some info. Also a common contest question.

Table of Contents

1 Introduction

2 Triangles

3 Pythagorean theorem

4 Important/special triangles

5 Trigonometric identities

6 Similar triangles

7 Special lines and points of intersection

Facts, formulas, and things to look out for

Triangles

Triangles are one of the most common shapes found on contests. Whether its determining angles or sides, or deducing similar triangles, they are almost a guarantee. Basic concepts needed are the sum of the interior angles being 180°, and that the sum of 2 sides should never be larger than the 3rd side

Facts, formulas, and things to look out for

Triangles

Triangles are one of the most common shapes found on contests. Whether its determining angles or sides, or deducing similar triangles, they are almost a guarantee. Basic concepts needed are the sum of the interior angles being 180°, and that the sum of 2 sides should never be larger than the 3rd side

Next, we'll go over some important concepts.

Table of Contents

1 Introduction

2 Triangles

3 Pythagorean theorem

4 Important/special triangles

5 Trigonometric identities

6 Similar triangles

7 Special lines and points of intersection

Your best friend

Pythagorean theorem

Table of Contents

1 Introduction

2 Triangles

3 Pythagorean theorem

4 Important/special triangles

5 Trigonometric identities

6 Similar triangles

7 Special lines and points of intersection

Pythagorean triplets
Important/special triangles

Other nice numbers
Important/special triangles

Table of Contents

1 Introduction

2 Triangles

3 Pythagorean theorem

4 Important/special triangles

5 Trigonometric identities

6 Similar triangles

7 Special lines and points of intersection

SOHCAHTOA

Trigonometric identities

Cheat sheet
Trigonometric identities

Table of Contents

1 Introduction

2 Triangles

3 Pythagorean theorem

4 Important/special triangles

5 Trigonometric identities

6 Similar triangles

7 Special lines and points of intersection

What similar triangles are

Similar triangles

Conditions for similarity

Similar triangles

Table of Contents

1 Introduction

2 Triangles

3 Pythagorean theorem

4 Important/special triangles

5 Trigonometric identities

6 Similar triangles

7 Special lines and points of intersection

Special lines

Special lines and points of intersection

Special points of intersection

Special lines and points of intersection

Special POI properties

Special lines and points of intersection