

Student Name

Mathematics Stage 4

PROPERTIES OF GEOMETRICAL FIGURES

Book 1 Classify triangles according to their
side and angle properties

Version: 260207

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OVERVIEW

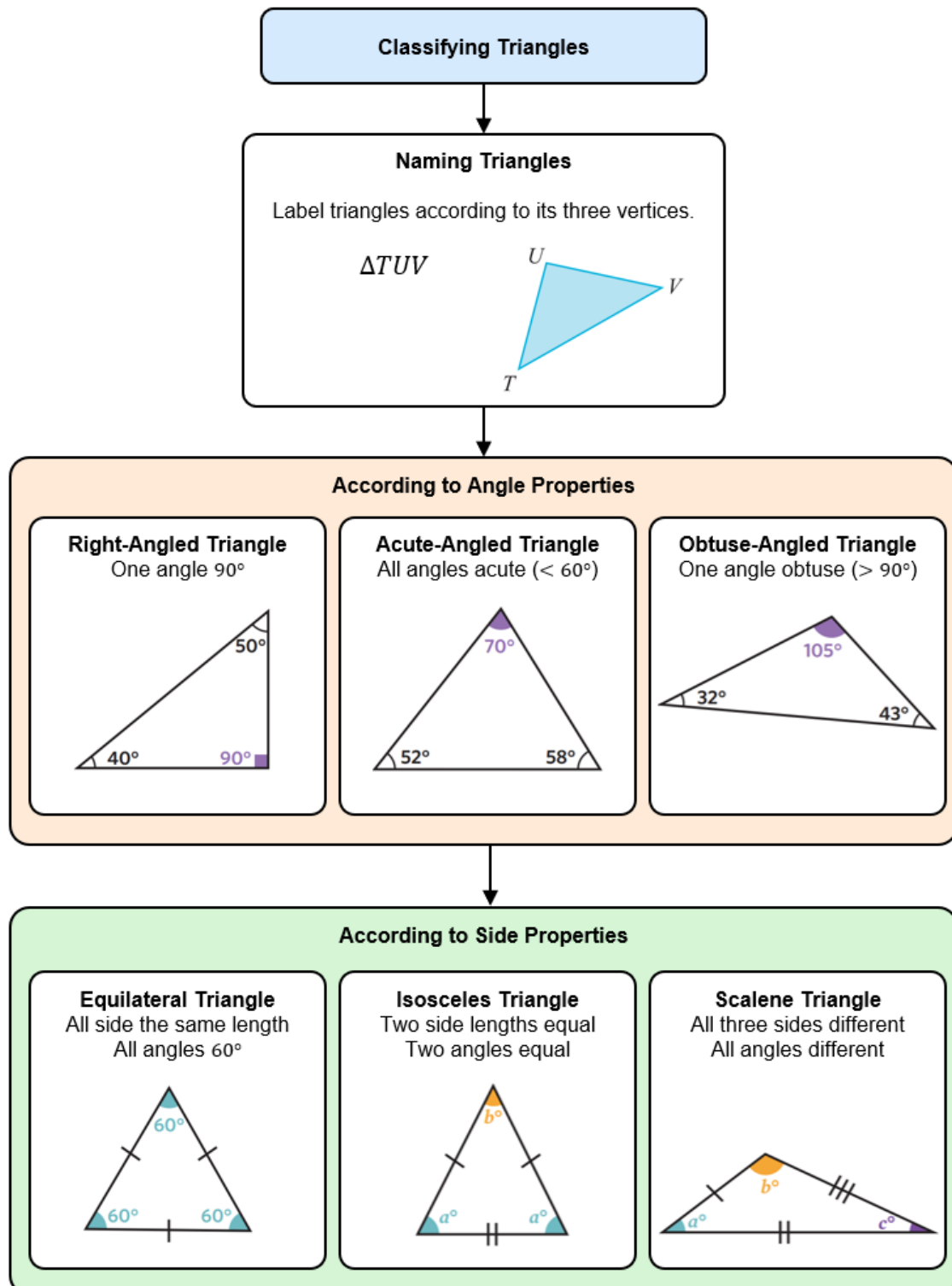
SYLLABUS CONTENT

MA4-GEO-C-01 identifies and applies the properties of triangles and quadrilaterals to solve problems

Classify triangles according to their side and angle properties

- Label triangles using appropriate text and symbols
- Classify and describe types of triangles based on their properties, including acute-angled, right-angled, obtuse-angled, equilateral, isosceles and scalene triangles

SUMMARY

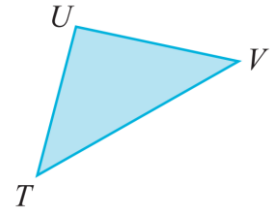


CLASSIFYING TRIANGLES

LABELLING TRIANGLES

- Triangles are labelled using its three vertices.
- Name the vertices in clockwise order.

ΔTUV



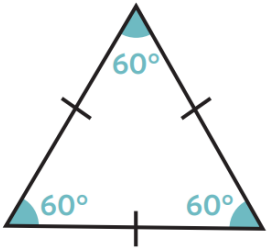
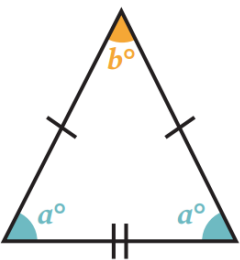
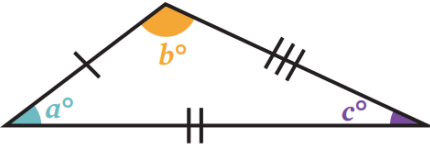
TRIANGLES ACCORDING TO ANGLE PROPERTIES

Right-Angled Triangle	Acute-Angled Triangle	Obtuse-Angled Triangle
One angle is 90°	All angles acute (<90°)	One angle obtuse (>90°)

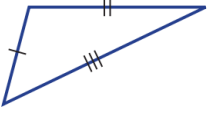
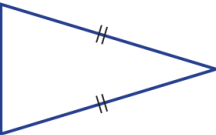
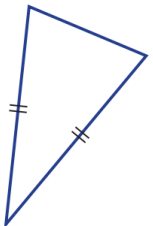
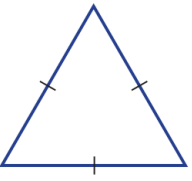
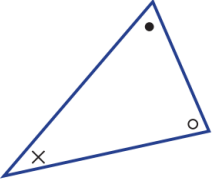
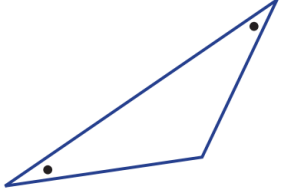
Example Classify triangles according to their angle properties.

Classify these triangles according to their angle properties		
a Right-angled	b obtuse	c acute
d Right-angled	e acute	f Right-angled

TRIANGLES ACCORDING TO SIDE PROPERTIES

Equilateral Triangle	Isosceles Triangle	Scalene Triangle
		
All sides the same length All angles the same (60°)	Two side lengths equal Two angles the same	All three sides different. All angles different.

Example Classify triangles according to their side properties.

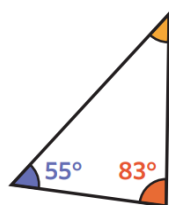
Classify these triangles according to their side properties.		
a 	b 	c 
scalene	isosceles	isosceles
d 	e 	f 
equilateral	scalene	isosceles

Key ideas

1. Triangles can be classified according to their or properties.
2. An triangle has all sides and angles the same.
3. An triangle has two sides and two angles the same.

1 Classify these triangles. Circle every description that matches.

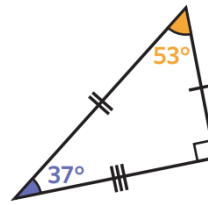
a



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Scalene, acute

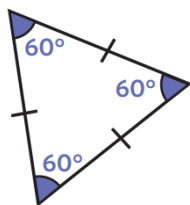
b



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Scalene, right

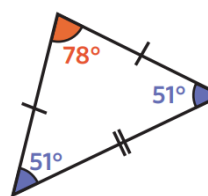
c



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Equilateral, acute

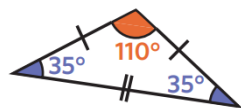
d



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Isosceles, acute

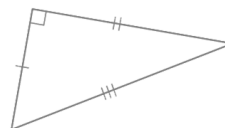
e



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Isosceles, obtuse

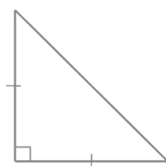
f



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Scalene, right

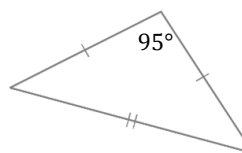
g



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Isosceles, right

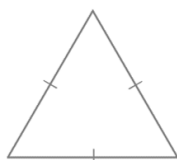
h



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Isosceles, obtuse

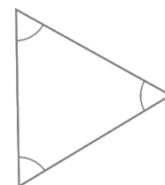
i



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Equilateral, acute

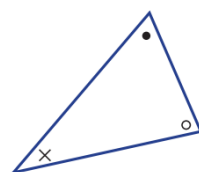
j



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Equilateral, acute

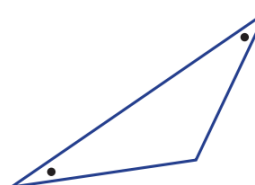
k



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Scalene, acute

l



Equilateral
Isosceles
Scalene
Acute
Right
Obtuse

Isosceles, obtuse

2 Explain why every equilateral triangle is also an acute triangle.

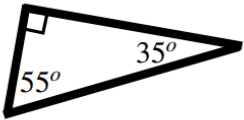
.....
.....

Equilateral triangles have all angles 60° , so it is an acute triangle.

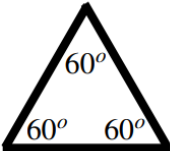
3 Categorise each triangle below into one of the table cells.

	Isosceles	Equilateral	Scalene
Acute	C	I, B	E, G
Right	F		A
Obtuse	D		H

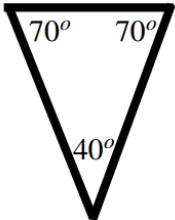
a



b



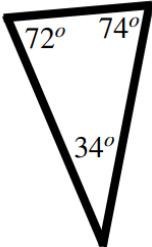
c



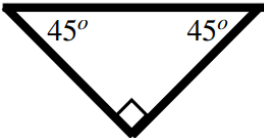
d



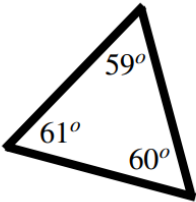
e



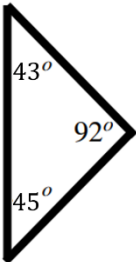
f



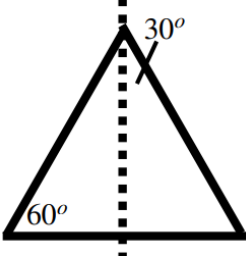
g



h



i



a Explain why the ‘equilateral column’ has two blank boxes.

All equilateral triangles are acute.

b Identify the type of triangle based on the following information:

- i

A triangle with all sides and angles equal

.....

Equilateral
- ii

A triangle with no sides equal

.....

Scalene
- iii

A triangle with one angle 91

.....

Obtuse
- iv

A triangle with angles 103, 20, 57

.....

Scalene, obtuse
- v

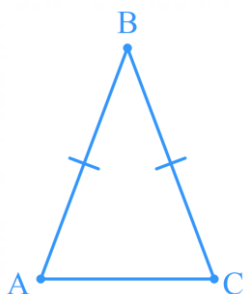
A triangle with sides 11, 15, 11

.....

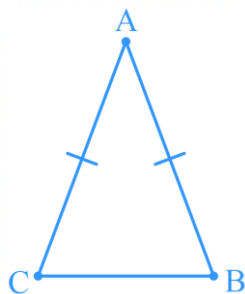
Isosceles

4 Draw the triangles given by these descriptions,

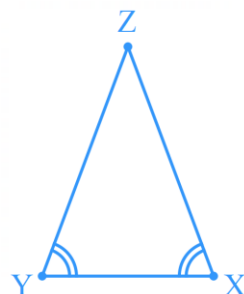
a $\triangle ABC$ isosceles
with $AB = BC$



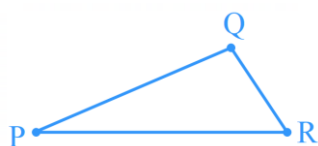
b $\triangle ABC$, isosceles
with $AB = AC$



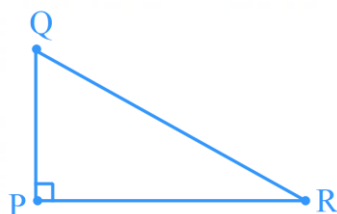
c $\triangle XYZ$, isosceles,
 $\angle ZXY = \angle ZYX$



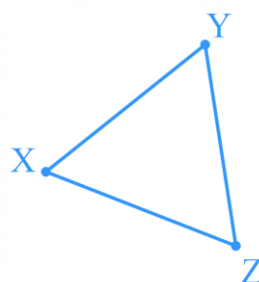
d $\triangle PQR$, scalene
not right-angled



e $\triangle PQR$, scalene with a
right angle at $\angle RPQ$



f $\triangle XYZ$, equilateral



CHECK YOUR UNDERSTANDING

Classifying triangles

1 Which shape does not have exactly 2 sides of equal length?

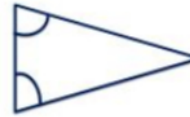
a



b



c



d



2 Which is the mathematical name for this triangle?



a Isosceles

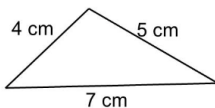
b Equilateral

c Right-angled

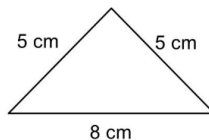
d Scalene

3 Which of these triangles is isosceles?

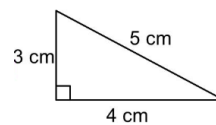
a



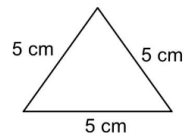
b



c



d



4 A triangle has these angles: 90° , 45° , 45°
Tom says it must be a right-angled triangle.
Katie says it must be an isosceles triangle.
Who is correct?

a Tom

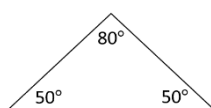
b Katie

c Both

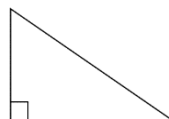
d Neither

5 Which of these triangles is named **incorrectly**?

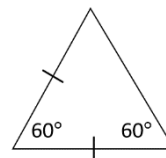
a Obtuse Isosceles



b Right Scalene



c Equilateral



d Acute Isosceles

