Introduction to Geometry – Angles and Lines

Level: Key Stage 3

Dimension: Measures, Shape and Space
Module: Learning Geometry through an Intuitive approach
Unit: Introduction to Geometry

Student ability: Low to Average

Content Objectives:

After completing the activity, students should have a consolidated understanding of the key concepts related to lines and angles in geometry.

Language Objectives:

After completing the activity, students should be able to

- understand the English terminology for describing lines and angles found in introductory Geometry (e.g., *point, straight line, line segment with end points, point of intersection, parallel lines, perpendicular lines, angle, acute angle, right angle, obtuse angle, straight angle, reflex angle, round angle* and *vertex*);

- use the English terminology to complete the follow learning tasks:
    - matching the English names of various angles with their corresponding diagrams

    - classifying angles into acute angles, right angles, obtuse angles, straight angles, reflex angles and round angles

    - complete a cross-word puzzle by labelling a set of given angles in a diagram
- follow English instructions on solving problems concerning this topic and work on related problems written in English.

Prerequisite knowledge:

Students should have learned about the properties of straight lines and angles in key stage 2, through the medium of Chinese.
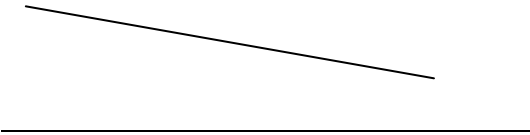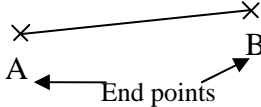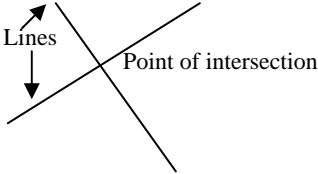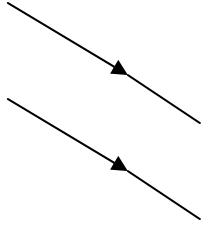
Time: 1 lesson (35 minutes)
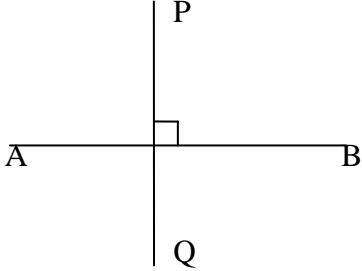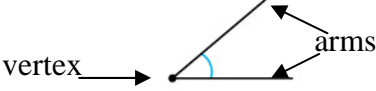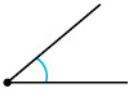
Procedure:

1. The teacher should go through the vocabulary list with the students, reading the terms clearly and slowly (for the first time) to help students master the correct pronunciation of the terms and remember them better.

2. The teacher should discuss the properties of each item with the students using the illustrations list.

3. The teacher should ask the students to finish Part A to check how well they can recognise the vocabulary on the list.

4. The teacher should then discuss the answers to Part A with the students.

5. The teacher should ask the students to finish Part B and present their answers.

6. The teacher should then ask the students to finish Part C and group in pairs to discuss their answers.

Explanatory Notes for Teachers:

1. This activity is designed to revise simple concepts related to lines and angles using English as the medium of instruction.

2. The vocabulary list with an illustration for each term can provide a quick reference for the students during the activity.

3. In discussing the answers with students, apart from asking the students to give their answers, the teacher may also ask the students to explain the answers.

Vocabulary list:

Point	點	Small dot "." or cross "✕"
Straight line	直線	
Line segment with end points	線段與端點	A ✕ ——— ✕ B End points
Point of intersection	(相)交點	Lines Point of intersection
Parallel lines	平行線	Two lines in the same plane (同一平面上) do not intersect (不相交)
Perpendicular lines	垂直線	P A — B Q
Angle	角	arms vertex
Acute angle	銳角	greater than (大於) 0° but less than (少於) 90°

|			
Right angle	直角	equals to 90°	
Obtuse angle	鈍角	greater than 90° but less than 180°	
Straight angle	平角	equals to 180°	
Reflex angle	反角	greater than 180° but less than 360°	
Round angle	周角	equals to 360°	

Name: _____ Class: _____ (   )

Lines and angles
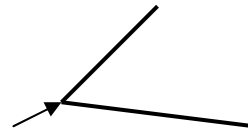
A) Match the following terms (1-8) with the diagrams (A-H) (write down the numbers only):

1. vertex   2. acute angle   3. right angle   4. obtuse angle
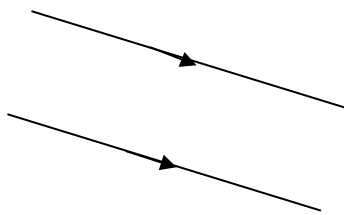5. reflex angle   6. perpendicular lines   7. parallel lines   8. line segment
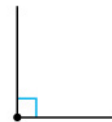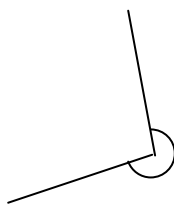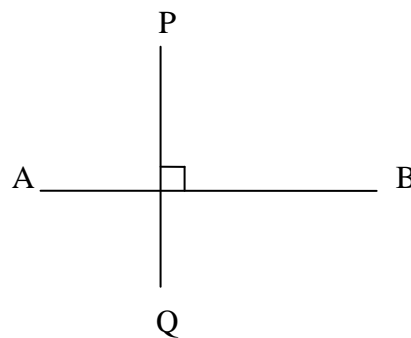
A
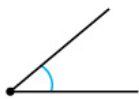
E

B

F

C

G

D

H

A.		B.		C.		D.	
E.		F.		G.		H.	

B. Classify the following angles according to their sizes.

(i) Label the following angles as an acute angle, right angle, obtuse angle, straight angle, reflex angle or a round angle.

(a) 10°   (b)   85°

(c) 148°   (d)   90°

(e) 273°   (f)   180°

(g) 360°   (h)   238°

(ii) Write down the name of the kind of angles shown in the following
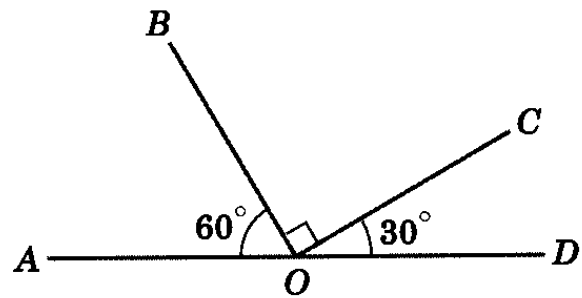
(a) $\angle AOD$

(b) $\angle COD$

(c) $\angle COB$
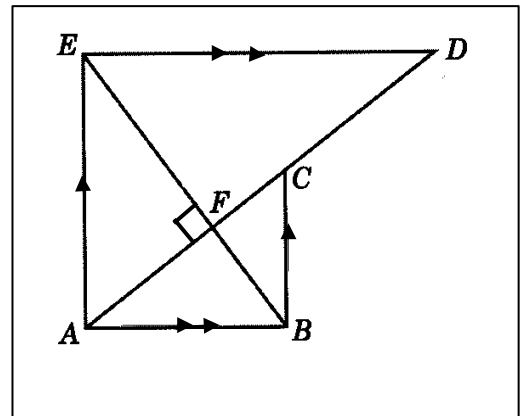
(d) $\angle BOD$

(e) $\angle AOB$

(f) $\angle AOC$

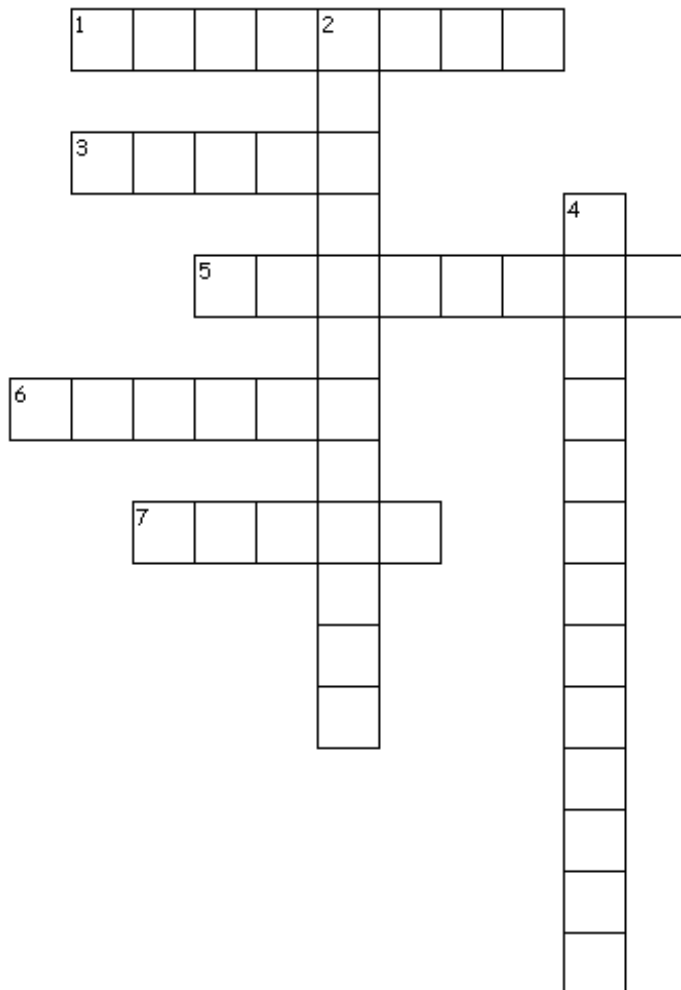C) Refer to the figure below and complete the crossword puzzle which follows.

Across

1. $\angle AFD$ is a _____ angle.
3. $\angle EFA$ is a _____ angle.
5. ED and AB are _____ line segment.
6. $\angle BCD$ is an _____ angle.
7. $\angle FAB$ is an _____ angle.

Down

2. F is the point of _____
    of line AC and BE.
4. EB and AD are _____
    to each other.

Suggested answers:

A)

A.	2	B.	7	C.	4	D.	5
E.	1	F.	8	G.	3	H.	6

B) i)

a) acute angle   b) acute angle   c) obtuse angle   d) right angle

e) reflex angle   f) straight angle   g) round angle   h) reflex angle

B) ii)

a) straight angle   b) acute angle   c) right angle   d) obtuse angle

e) acute angle   f) obtuse angle

C) Across

1. straight   3. right   5. parallel   6. obtuse   7. acute

Down

2. intersection   4. perpendicular