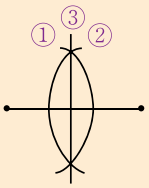
Course 1 Summary of Key Points and Exercises for Basic Problems

Grade:	Class:	Name:	/100

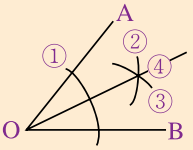
Summary of Key Points

1 Basic Drawings

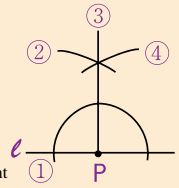
(1) Perpendicular bisector of line segment



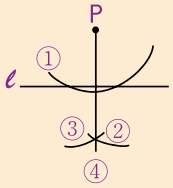
(2) Angle bisector



(3) Perpendicular line (Points on the straight line)



(4) Perpendicular line (Points outside the straight line)



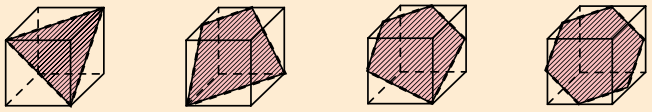
(Note) **Perpendicular bisector of line segment**... Set of points at an equal distance from both ends of the line segment
Angle bisector... Set of points at an equal distance on the two sides of the angle

2 Space Figures

(1) Positional relation between two straight lines

Intersecting lines, Parallel lines → Present on the same plane
Skew lines → Not on the same plane

(2) Cut sections of a cube



Triangle　Quadrangle　Pentagon　Hexagon

3 Parallel lines and Angles

(1) Parallel lines
① Exterior-interior angles and alternate-interior angles of parallel lines are equal.
② Two lines having equal exterior-interior angles or alternate-interior angles are parallel.

(2) Angles of a triangle
① Sum of the interior angles of a triangle is 180°.
② An exterior angle of a triangle is equal to the sum of the 2 non-adjacent interior angles.

(3) Angles of a polygon
① Sum of the interior angles of the n-sided polygon is 180°× (n-2).
② Sum of the exterior angles of n-sided polygon is 360°.

Basic Problems

1 <Basic Drawings> Answer the following question.

(1) In **Figure 1**, draw the perpendicular bisector of line segment **AB** and the bisector of ∠**C**.

(2) In **Figure 2**, draw a perpendicular to the straight line ℓ passing through point **P** and a perpendicular to the straight line ℓ passing through point **Q**.

Figure 1

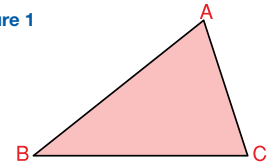
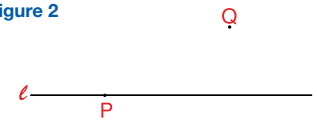


Figure 2



▶Use only compass and ruler. Keep the lines, drawn during making the figure, as it is. Do not erase the lines.

2 <Space Figures> **Figure 1** on the right side is a cube, and **Figure 2** is the opened-up cube. Answer the following.

(1) Mention all the sides parallel to side **AB**.

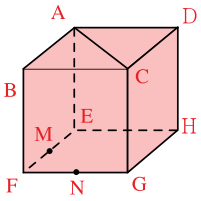
A.

(2) Mention all the skew lines with respect to the straight line **AC**.

▶Find out the sides that does not intersect with AC, and are not parallel to AC.

A.

Figure 1



(3) Take the midpoint of side **EF** as **M**, and midpoint of side **FG** as **N**. View of the section of the cube shown in the **Figure 1**,when it is cut in to a plane on four points **A**, **M**, **N** and **C**.

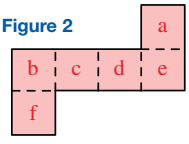
▶AC//MN as the surface ABCD is parallel to surface EFGH.

A.

(4) In **Figure 2**, which surface will be parallel to plane '**b**', when the opened-up cube is assembled.

▶Find out the surface non-adjacent to 'b'.

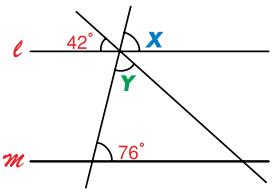
Figure 2



A.

3 <Parallel lines and angles>
In the following figure, calculate the size of ∠**X**, ∠**Y**, when ℓ // *m*.

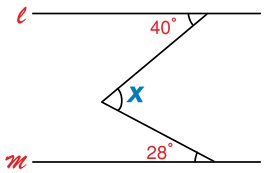
(1)



▶∠**X** =180°- (∠**X**+ 42°)

A. ∠**X**　　∠**Y**

(2)

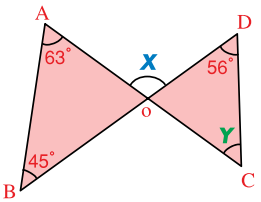


▶Draw parallel lines to ℓ, *m* from the top of ∠**X**. ∠**X** = 40°+28°

A. ∠**X**

4 <Angles of triangle> In the following figure, calculate the size of ∠**X**, ∠**Y**.

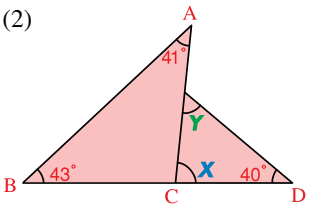
(1)



▶∠**X** is an exterior angle of △ABO and △CDO.

A. ∠**X**　　∠**Y**

(2)



▶∠**X** is an exterior angle of △ABC.

A. ∠**X**　　∠**Y**

5 <Angles of polygon> Answer the following question.

(1) Calculate the sum of interior angles of an octagon.

▶180°× (8-2)

A.

(2) Calculate the size of one exterior angle of a regular dodecagon.

▶360° ÷12

A.