

Visual notes



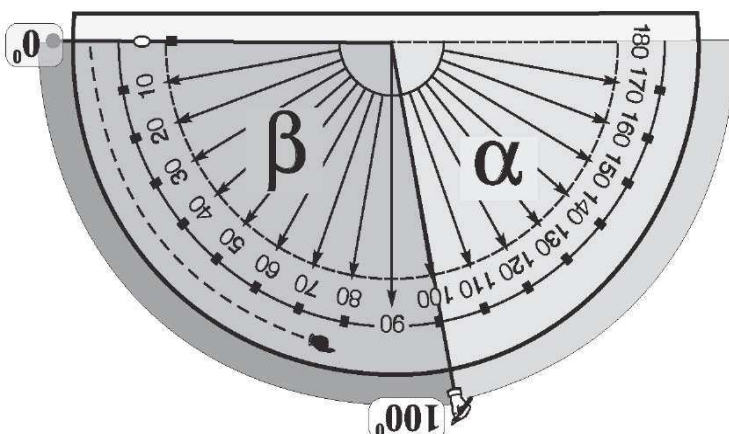
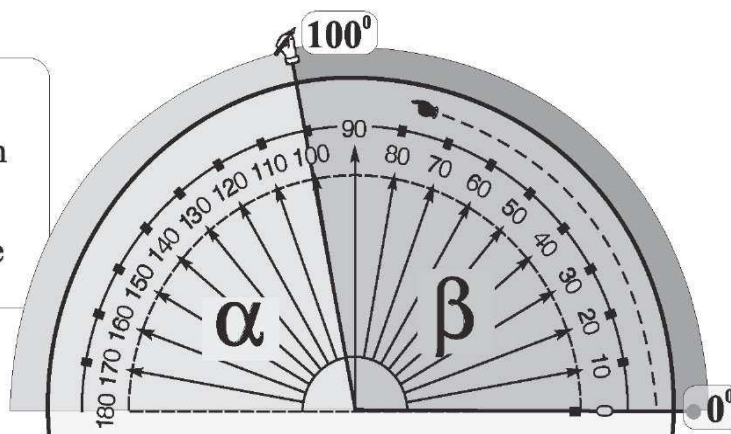
Relations between angles

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Information diagram «Angle»	42

1

CONTIGUOUS ANGLES

Contiguous angles have a common side, the other two sides make a line

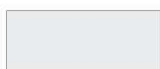


They say:
angle α is **contiguous** with angle β

1

LOOK AND FIND

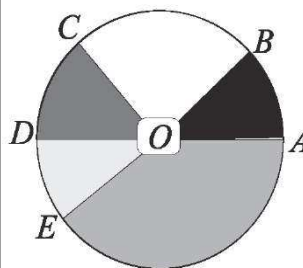
how many pairs of contiguous angles can be determined in the picture of the table lamp



2

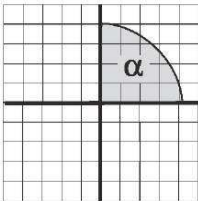
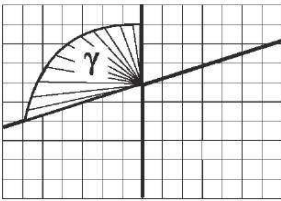
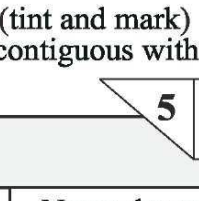
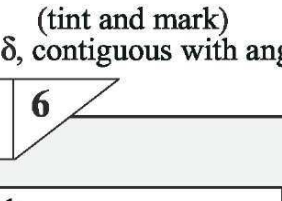
CHOOSE THE ANSWER

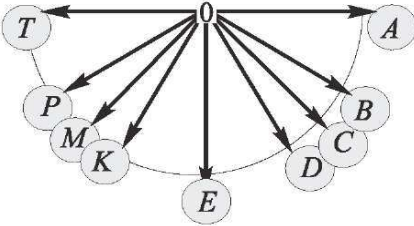
Contiguous angles are
















1	AOB and DOE
2	AOC and EOA
3	DOE and DOB
4	BOD and COE
5	DOB and BOA
6	EOC and COB
7	BOC and DOC

Reznik N.A. Visual notes "Angles": Visual materials for teachers and pupils (5-7 forms).
 /Translated from Russian by V.N. Zykova. - Murmansk, 1997. - 46p. - (Institute of Productive
 Training of the Russian Academy of Education. Murmansk State Technical University)

	LOOK AND FIND	
3		4
<div style="display: flex; justify-content: space-around;"> <div style="text-align: left; width: 45%;"> <p>(crosshatch and mark) angle β, contiguous with angle α</p>  </div> <div style="text-align: left; width: 45%;"> <p>(crosshatch and mark) angle α, contiguous with angle γ</p>  </div> </div>		
<div style="display: flex; justify-content: space-around;"> <div style="text-align: left; width: 45%;"> <p>(tint and mark) angle γ, contiguous with angle β</p>  </div> <div style="text-align: left; width: 45%;"> <p>(tint and mark) angle δ, contiguous with angle α</p>  </div> </div>		
5	LOOK AND FIND	6

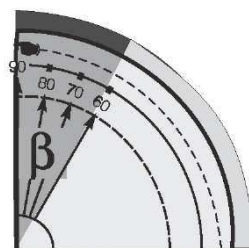
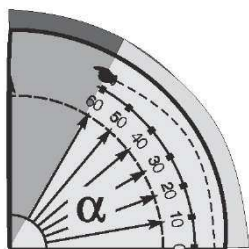
7	Name the angle contiguous with											
S t i m u l a t o r		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 5%; text-align: center;">1</td><td>$\angle TOE$</td></tr> <tr><td style="text-align: center;">2</td><td>$\angle DOT$</td></tr> <tr><td style="text-align: center;">3</td><td>$\angle EOK$</td></tr> <tr><td style="text-align: center;">4</td><td>$\angle DOK$</td></tr> <tr><td style="text-align: center;">5</td><td>$\angle KOP$</td></tr> </table>	1	$\angle TOE$	2	$\angle DOT$	3	$\angle EOK$	4	$\angle DOK$	5	$\angle KOP$
1	$\angle TOE$											
2	$\angle DOT$											
3	$\angle EOK$											
4	$\angle DOK$											
5	$\angle KOP$											

Test 3	Choose the pairs for signalmen so that the angles between their flags would be							
contiguous								
								
								
								
								
								

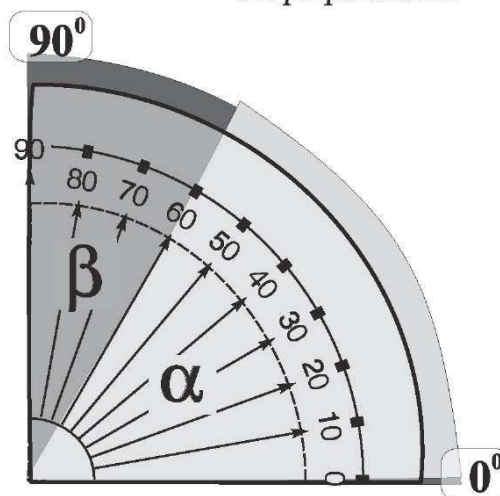
2

COMPLEMENTARY ANGLES

Sides of
complementary angles
are perpendicular



They say:
angle β is
complementary
to angle α



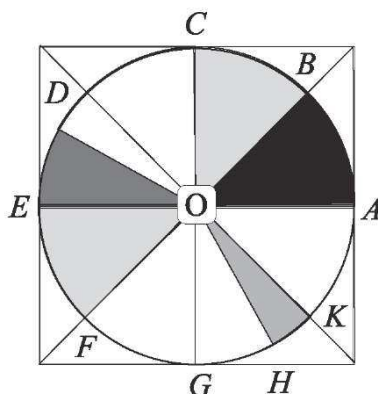
Complementary
angles make
angle
in sum

Series 1

an angle
complementary to
angle

1	AOB
2	COD
3	DOE
4	FOH
5	KOH

Find



Series 2

an angle,
contiguous to
angle

1	AOB
2	COD
3	DOE
4	FOH
5	KOH

Series 3 Crosshatch angle β complementary to angle α

1

2

3

4

4

4 CHOOSE THE ANSWER

Two contiguous angles can be

A	right	A
B	obtuse	B
C	acute	C
D	straight	D
F	zero	F

Two complementary angles can be

5 CHOOSE THE ANSWER

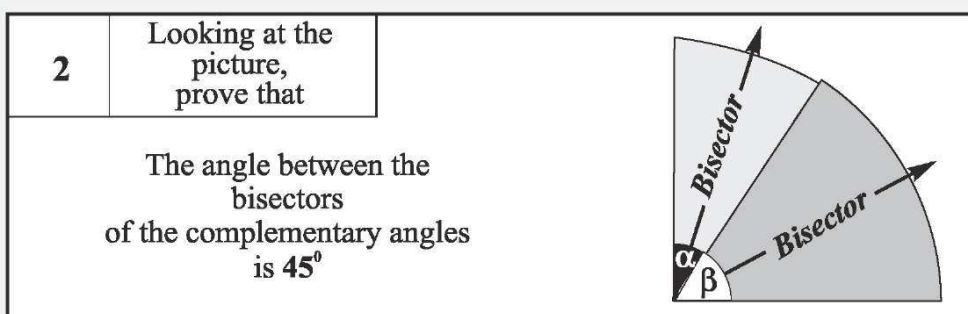
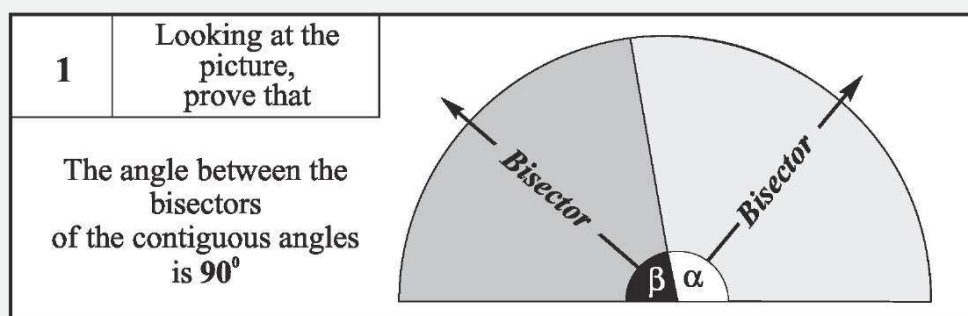
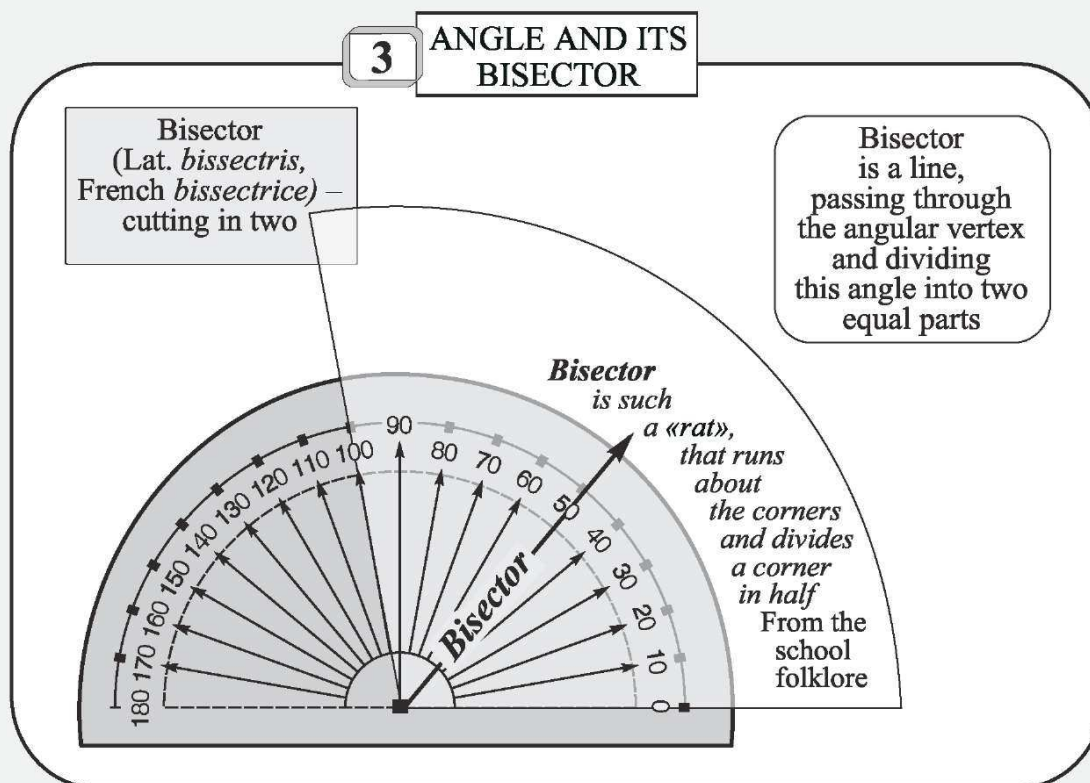
LOOK AND FIND 6

(tint) angle β contiguous to angle α

(crosshatch) angle δ complementary to angle α

7 LOOK AND FIND

Test 8	Find the value of the angle contiguous to angle										Find the value of the angle complementary to angle										Test 9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	15°	30°	45°	60°	75°	90°	105°	120°	135°	150°	165°																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		</

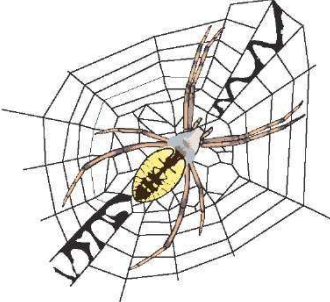


Series 3		Series 4
Find the bisector of the angle		Find the angles, the bisector of which is line
1 A_0OA_8		OA_6 1
2 A_0OA_4		OA_2 2
3 A_0OA_7		OA_1 3
4 A_2OA_7		OA_5 4
5 A_7OA_0		OA_4 5

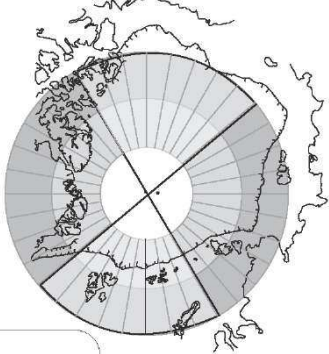
Test 5	Find the measures of the angles, which are made, when the second hand-«bisector» divides the angles between the hour hand and the minute hand of the clock										
	27,5°	30°	37,5°	40°	45°	52,5°	60°	67,5°	70°	75°	80°

4

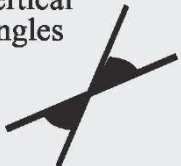
**ВЕРТИКАЛЬНЫЕ
УГЛЫ**




Vertical angles
have a common



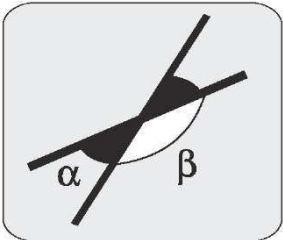
Vertical angles

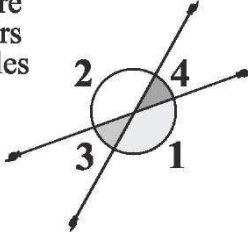


Vertical angles



Two intersecting lines
make pairs of
vertical angles

1	Looking at the picture, prove that	
vertical angles are always equal		

2 S t i m u l a t o r	1 and 2	1	Determine, what are the pairs of angles		Set up an equation and an inequality for the pairs of angles	1	1 2	3	S t i m u l a t o r
	2 and 3	2				2	2 3		
	3 and 4	3				3	3 4		
	2 and 4	4				4	2 4		
	1 and 4	5				5	1 4		

Series 4

Find an angle
contiguous to angle

1	AOE
2	BOM
3	XOE
4	DOK
5	FOS

Series 5

Find an angle
vertical to angle

AOX	1
CAO	2
DOF	3
NOZ	4
KOS	5

Series 6

Find
angle 2,
if

1	$\angle 1 = \angle 2$	
2	$\angle 1 = \angle 4$	
3	$\angle 1 = 2\angle 2$	
4	$\angle 1 = 0,5\angle 2$	
5	$\angle 1 = 3\angle 4$	

7

**LOOK
AND FIND**

if the assertion is
always true:

Angles are
contiguous,
if
the sum
of the angles
is 180°

Angles are
vertical,
if
angles
are equal

8

Series 9

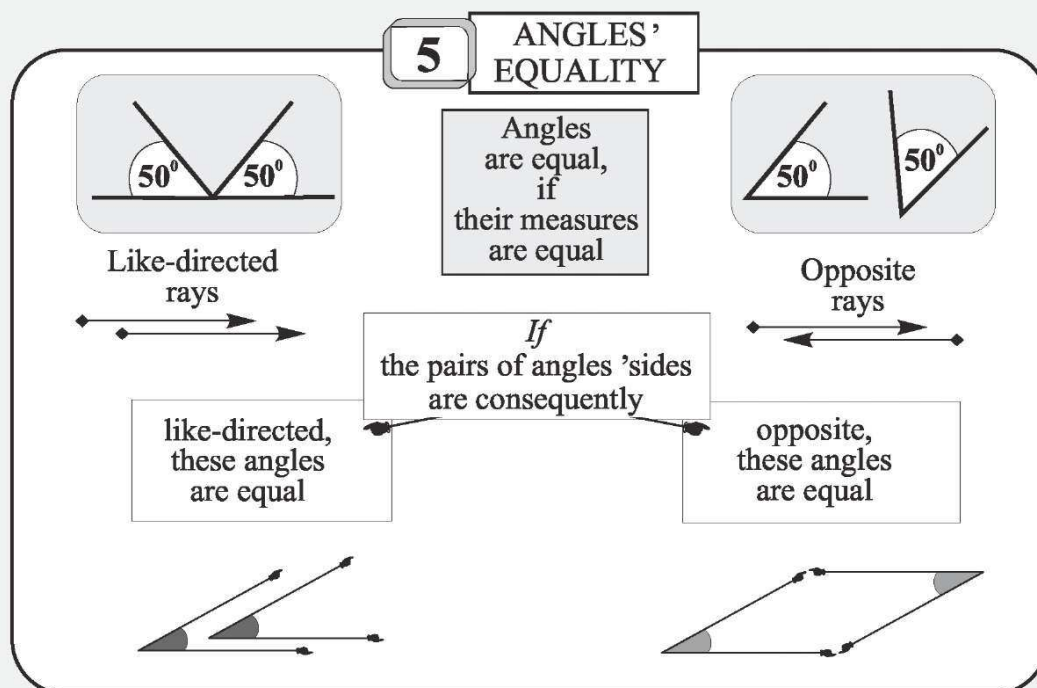
Find
angle 2,
if

1	$\angle 1 + \angle 4 = 60^\circ$	
2	$1 + \angle 3 = 60^\circ$	
3	$\angle 1 + \angle 2 + \angle 3 = 150^\circ$	
4	$\angle 1 + \angle 3 = 270^\circ - \angle 4$	
5	$2\angle 2 + 3\angle 4 = \angle 3$	

Series 10

Find contiguous
angles α and β ,
if it is known that

1	$\alpha = \beta$	
2	$2\alpha = \beta$	
3	$\alpha = 3\beta$	
4	$2\alpha = 3\beta$	
5	$\alpha = 90^\circ + \beta$	

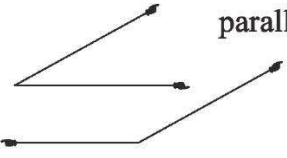


Series 1		Draw the pairs of equal angles with the vertex, if it is known that
1	the sides of one angle are the continuation of the sides of the other one	
2	the sides of one angle are perpendicular to the sides of the other one	
3	they have a common side, and their other sides make a line	
4	they have a common side, and their other sides are parallel	

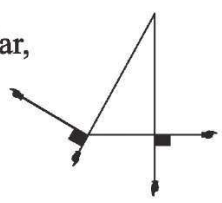
2
LOOK
AND FIND
3

whether the assertion is true:

parallel,

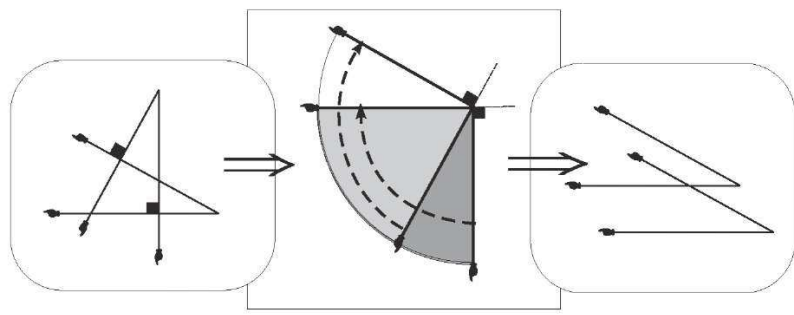


if
angles' sides are
perpendicular,
these angles
are
equal

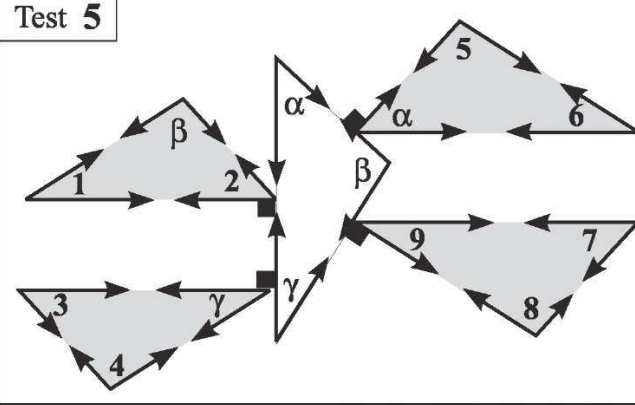


4
Looking at the
picture,
prove that

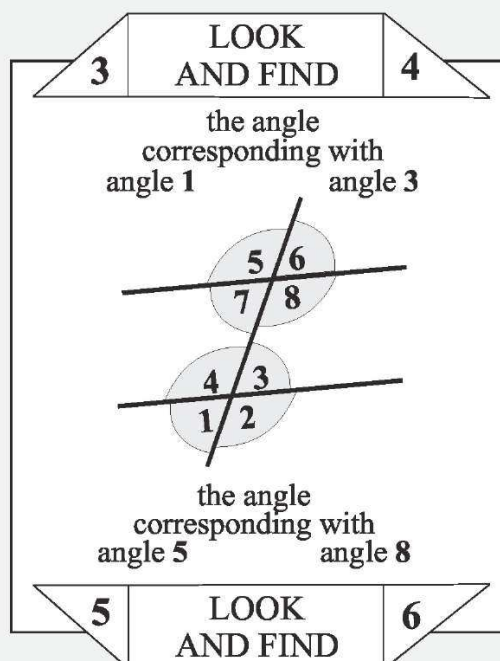
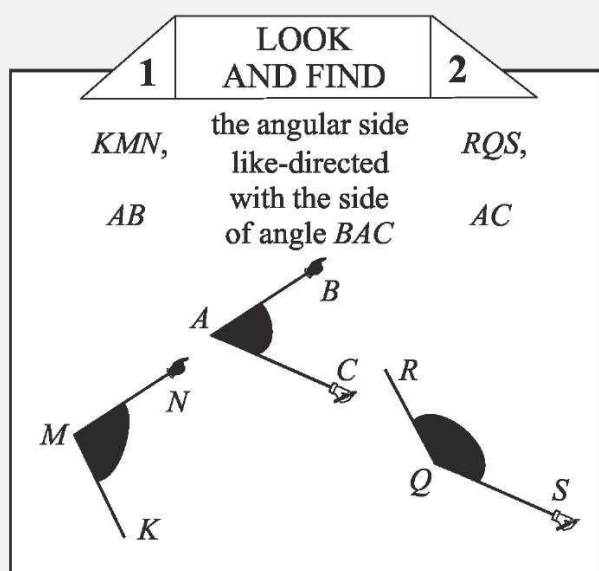
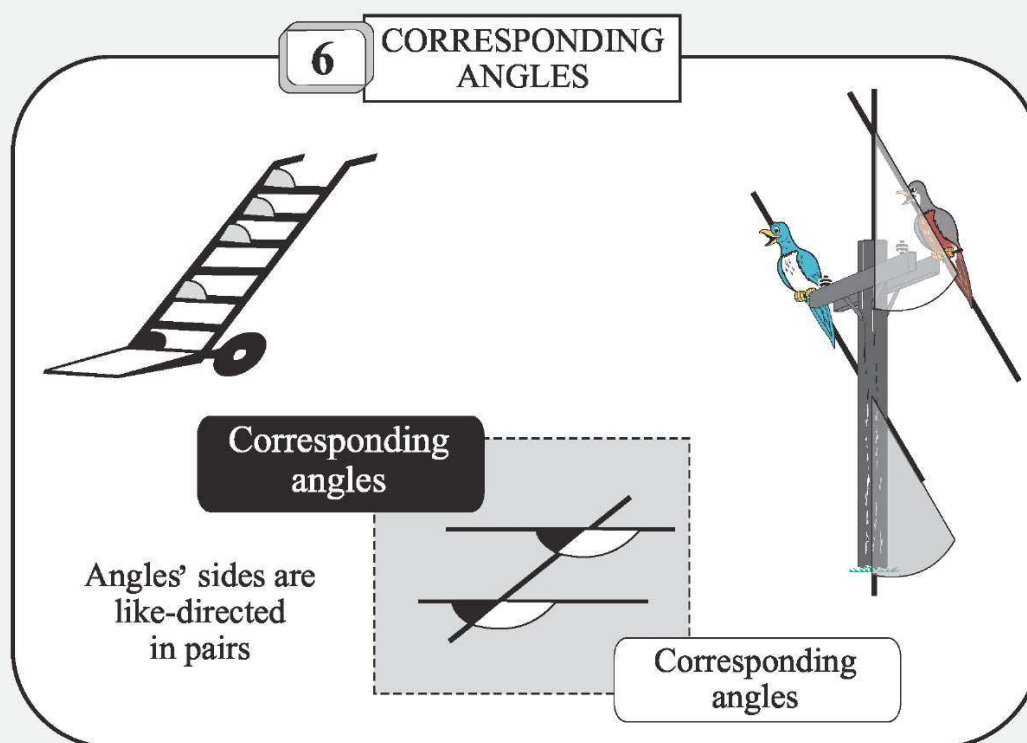
if
angles' sides are
consequently
perpendicular,
these angles
are
equal

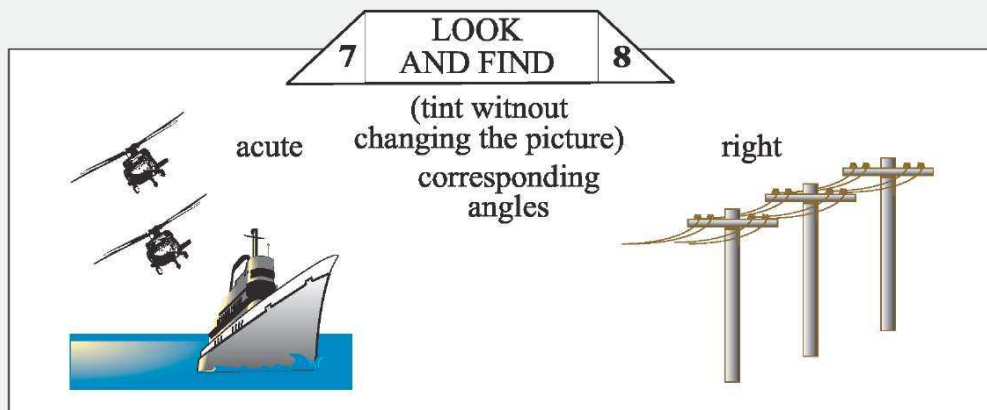


Test 5

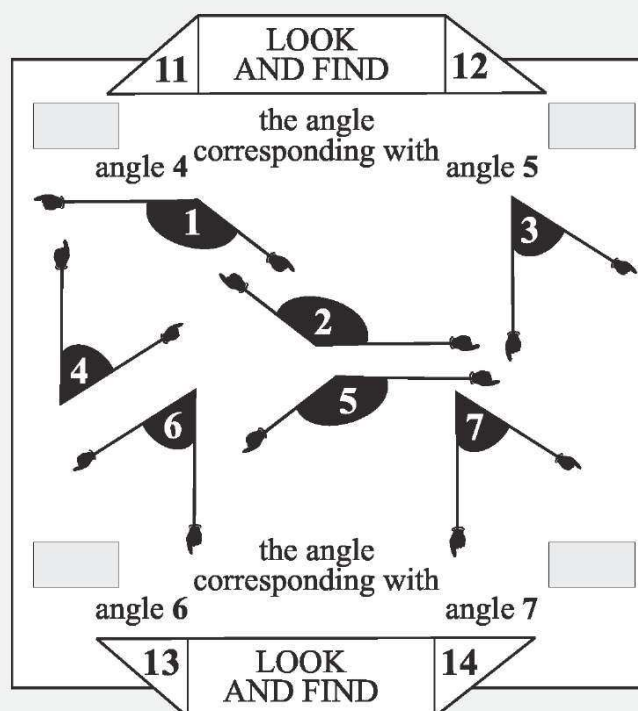
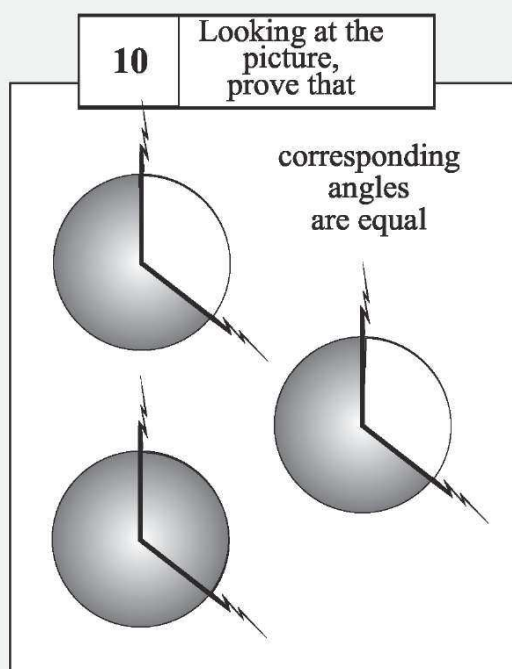


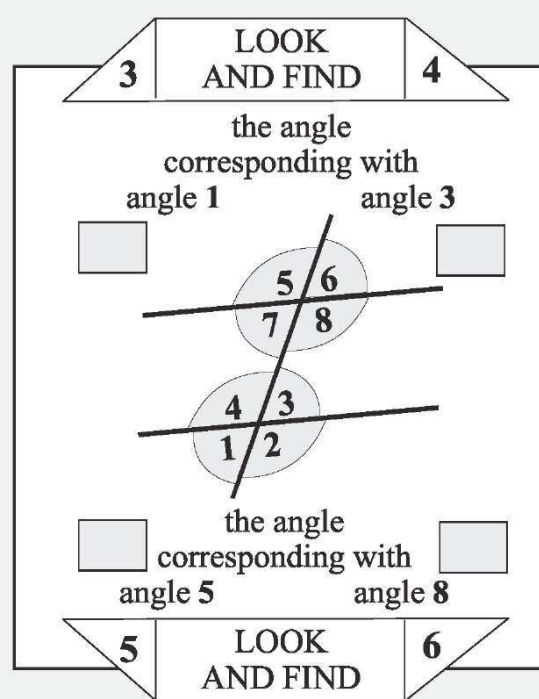
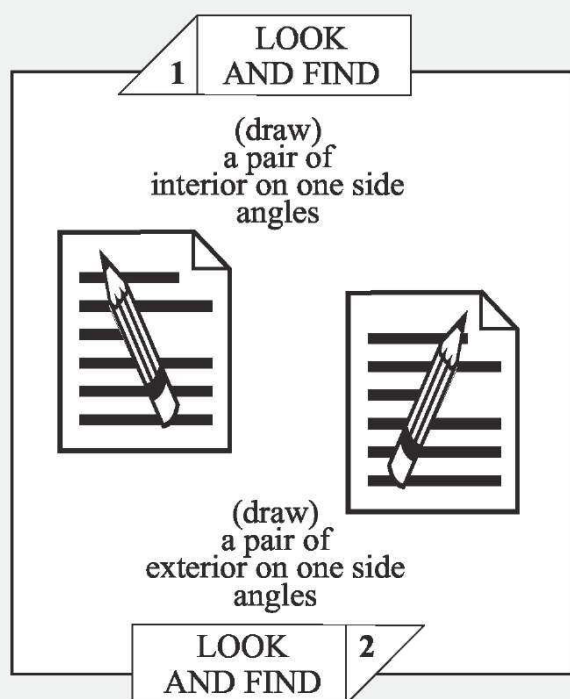
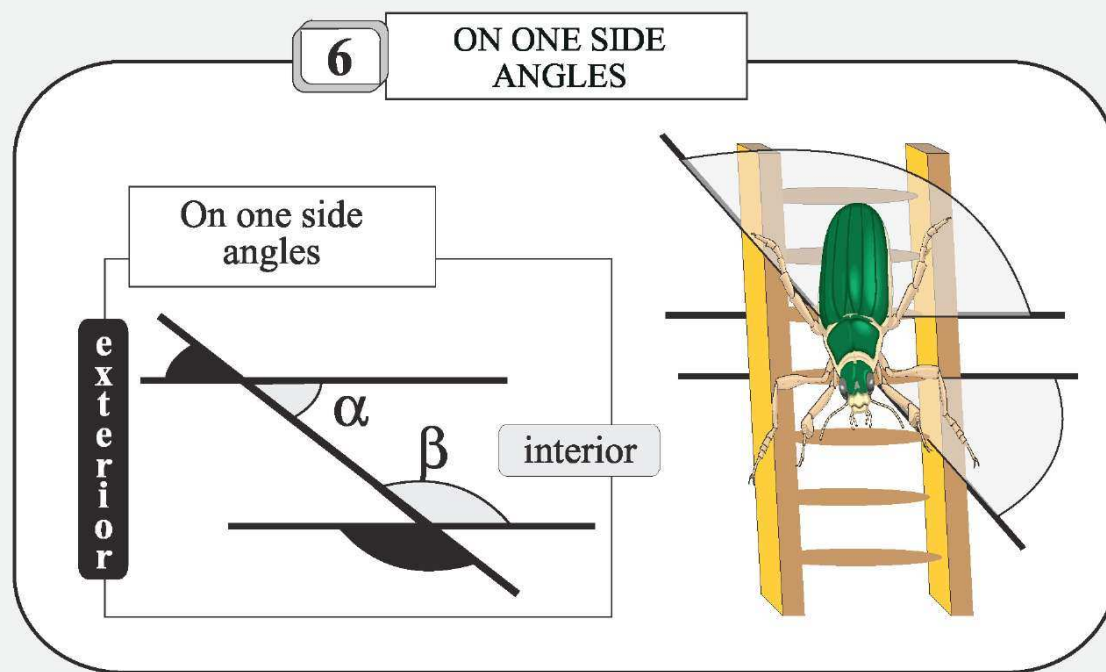
Find the equal angles			
	α	β	γ
1			
2			
3			
4			
5			
6			
7			
8			
9			

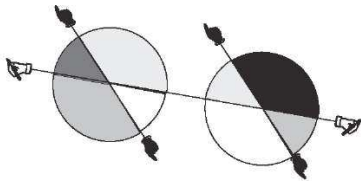


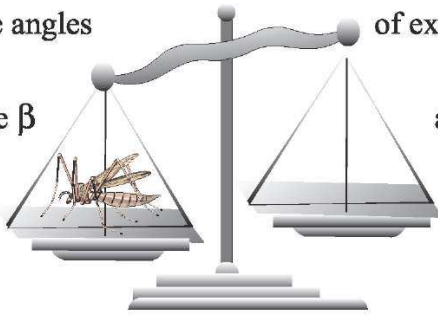


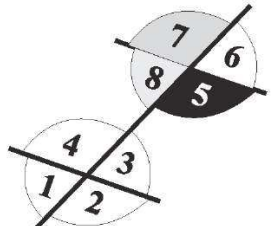
9	CHOOSE THE ANSWER	A	only one pair of like-directed sides	
		B	two pairs of like-directed sides	
		C	only one pair of opposite sides	
		D	two pairs of opposite sides	
		F	at least one pair of opposite sides	
Corresponding angles have				

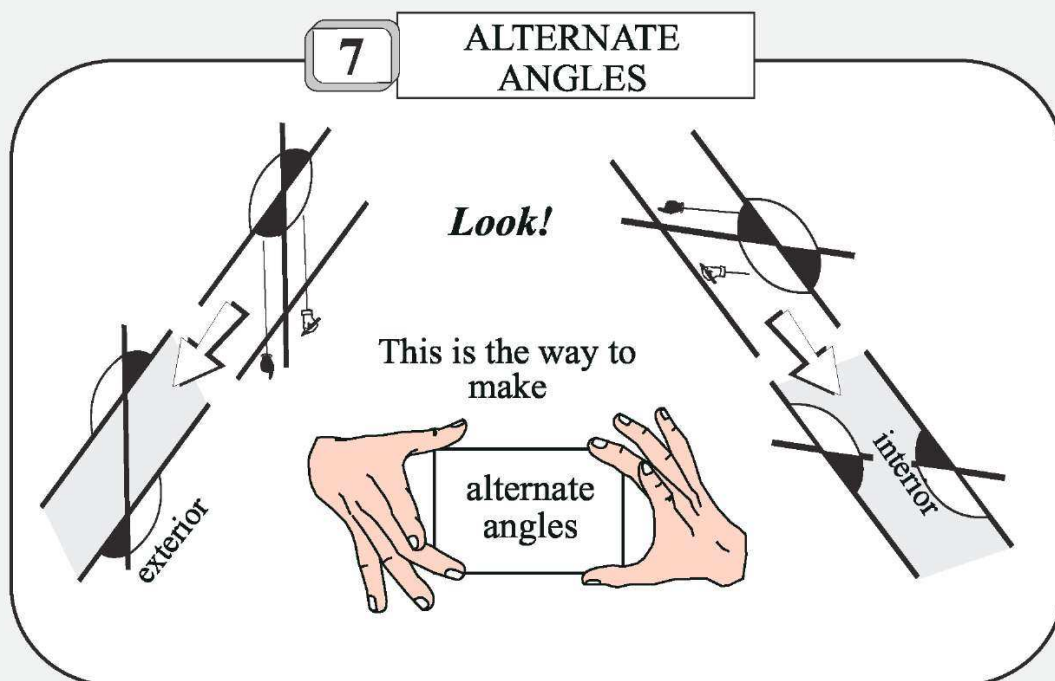




the sum of exterior on one side angles is 180°	7	Looking at the picture, prove that	8	the sum of interior on one side angles is 180°
				

(draw) a pair of interior on one side angles and mark them as angle α and angle β	9	LOOK AND FIND	10	(draw) a pair of exterior on one side angles and mark them as angle α and angle β
				
(crosshatch) one pair of corresponding angles	11	LOOK AND FIND	12	(tint) the second pair of corresponding angles

13	LOOK AND DETERMINE	
		A
		B
		C
		D
		E
		the angles which are equal to angle 4
		the angles less than 150°
		the measure of angle 1
		the numbers of the angles which are equal to 150°
		the sum of angles 5, 6 and 7

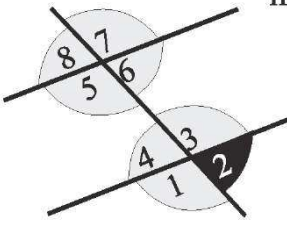


1	LOOK AND FIND	2
interior alternate	the angles	exterior alternate

Using preset angles α and β , determine the measure of angle		3 S t i m u l a t o r
1	$\angle A$	
2	$\angle B$	
3	$\angle C$	
4	$\angle D$	
5	$\angle E$	

Series 4

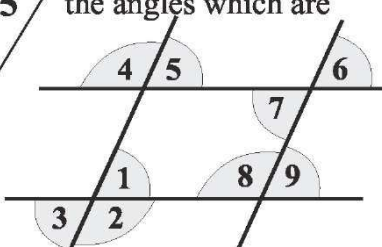
Find
angle 2
if



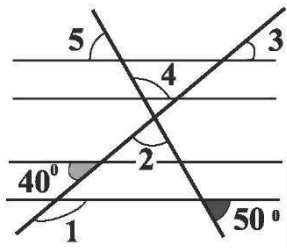
1	$\angle 1 = 120^\circ$
2	$\angle 6 = 30^\circ$
3	$\angle 5 = 135^\circ$
4	$\angle 8 = 45^\circ$
5	$\angle 8 + \angle 6 = 90^\circ$

**LOOK
AND DETERMINE**

5 the angles which are



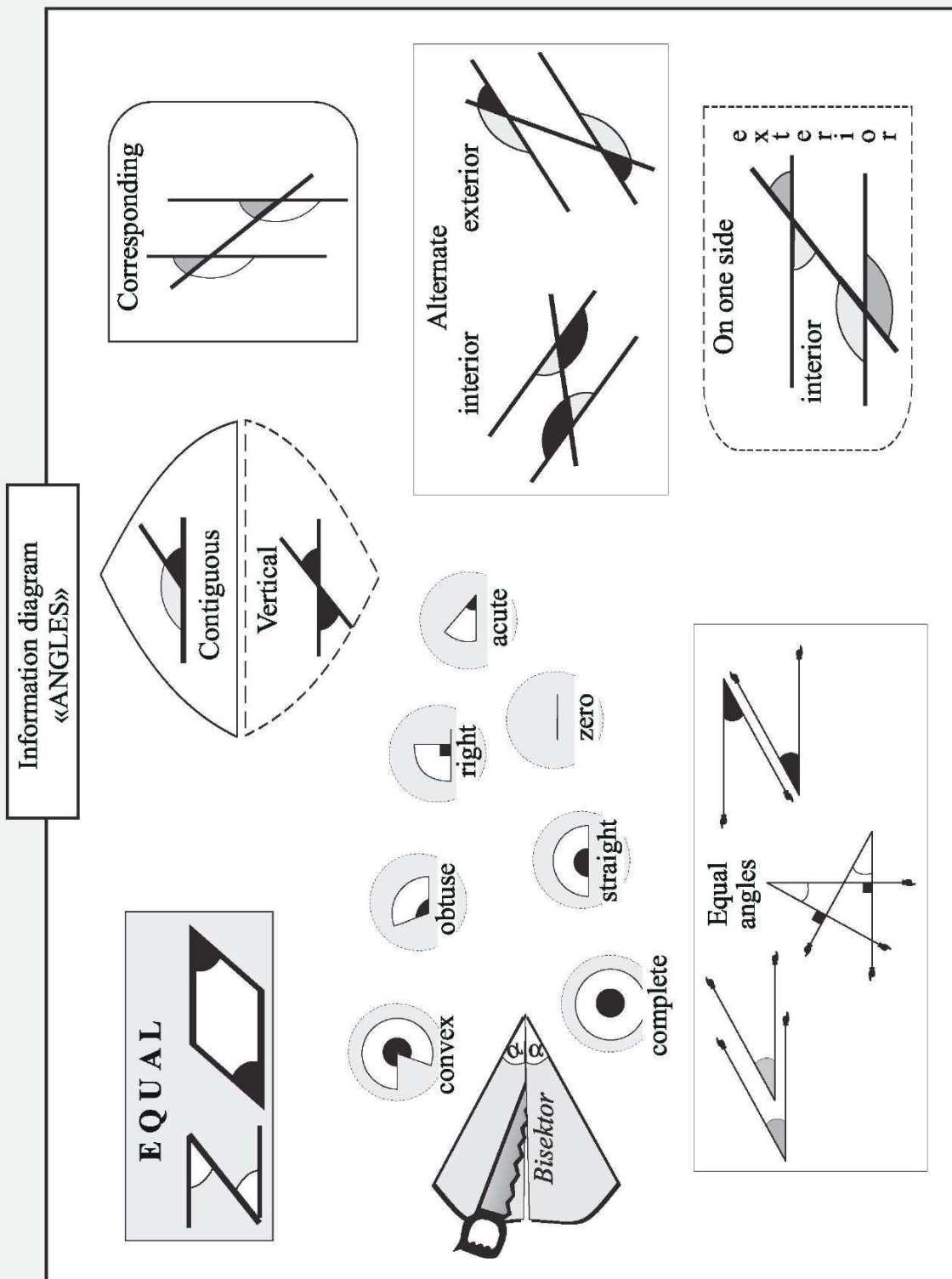
A	corresponding	
B	interior on one side	
C	exterior on one side	
D	interior alternate	
E	exterior alternate	



Test 6

Determine how many degrees are in

	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°	170°
angle 1																	
angle 2																	
angle 3																	
angle 4																	
angle 5																	



MATRIX	Determine for every case			
	marking of angle α by the Latin letters	the type of angle β	the type of , the angle which is contiguous to angle γ	the angle, which is vertical with angle α
RELATIONS BETWEEN ANGLES				
