

CH 5 Final Review

Multiple Choice

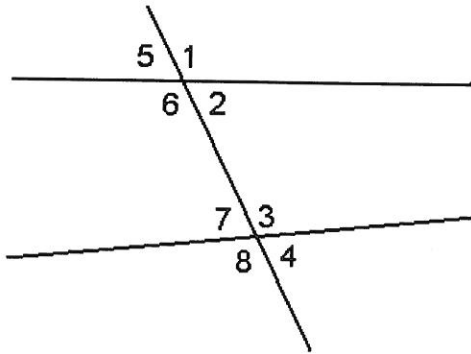
Identify the choice that best completes the statement or answers the question.

- _____ 1. An angle of 134° is a(n) _____ angle.
- | | |
|----------|-----------|
| a. acute | c. reflex |
| b. right | d. obtuse |
- _____ 2. Adding 90° to an acute angle will always produce a(n) _____ angle.
- | | |
|----------|-----------|
| a. acute | c. reflex |
| b. right | d. obtuse |
- _____ 3. Two lines are perpendicular when:
- | | |
|--------------------------------------|---|
| a. The angle between them is acute. | c. The angle between them is 45° . |
| b. The angle between them is obtuse. | d. The angle between them is 90° . |
- _____ 4. If the complement of an angle of 25° is bisected, what will each resulting angle measure?
- | | |
|-----------------|-----------------|
| a. 65.0° | c. 44.5° |
| b. 16.3° | d. 32.5° |
- _____ 5. An angle of 50° is bisected. What is the measure of each resulting angle?
- | | |
|---------------|----------------|
| a. 21° | c. 25° |
| b. 8° | d. 100° |
- _____ 6. A transversal intersects two parallel lines. If one angle is 64° , what will the corresponding angle be?
- | | |
|---------------|----------------|
| a. 68° | c. 116° |
| b. 64° | d. 26° |
- _____ 7. Two interior angles lie on the same side of a transversal that intersects two parallel lines. If one angle is 60° , what will the other angle be?
- | | |
|---------------|----------------|
| a. 30° | c. 120° |
| b. 30° | d. 67° |
- _____ 8. An unknown angle is bisected. Each resulting angle measures 39° . What is the unknown angle?
- | | |
|---------------|---------------|
| a. 68° | c. 78° |
| b. 39° | d. 73° |
- _____ 9. A bearing of 49° east of north is closest to which of the following standard bearings?
- | | |
|-------|--------|
| a. E | c. NNE |
| b. NE | d. ENE |

Name: _____

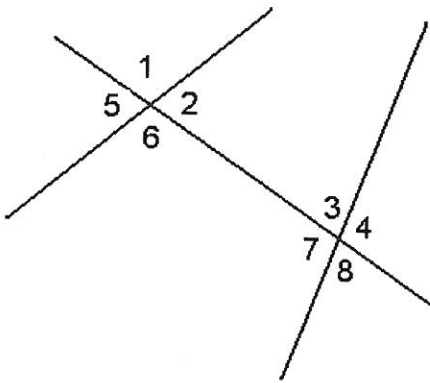
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___ 10. In the diagram below, which angle is vertically opposite $\angle 7$?



- a. $\angle 1$
- b. $\angle 2$
- c. $\angle 6$
- d. $\angle 4$

___ 11. In the diagram below, what is the alternate interior angle to $\angle 2$?



- a. $\angle 8$
- b. $\angle 3$
- c. $\angle 7$
- d. $\angle 2$

___ 12. The complementary angle to 40° is _____ and the supplementary angle is _____.

- a. $120^\circ, 50^\circ$
- b. $320^\circ, 60^\circ$
- c. $50^\circ, 140^\circ$
- d. $60^\circ, 140^\circ$

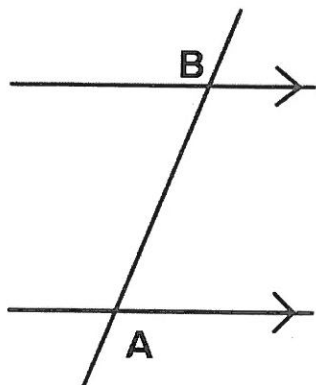
___ 13. What conditions are required for two lines, intersected by a transversal, to be parallel?

- a. The vertically opposite angles must be equal to each other.
- b. The alternate exterior angles must be supplementary.
- c. The corresponding angles must be equal to each other.
- d. All of the above.

Name: _____

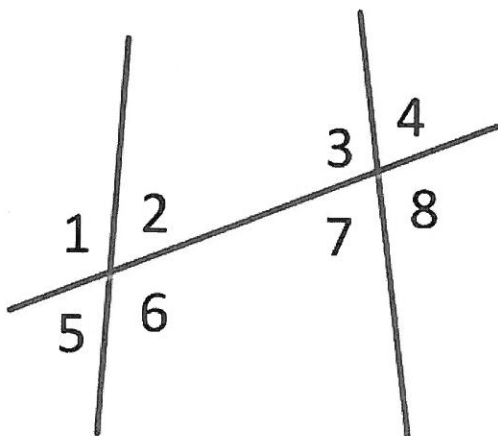
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___ 14. If $\angle A$ is 160° , what is the measure of $\angle B$?



- a. 20°
- b. 160°
- c. 106°
- d. 70°

___ 15. In the diagram below, what is the alternate exterior angle to $\angle 4$?



- a. $\angle 3$
- b. $\angle 6$
- c. $\angle 5$
- d. $\angle 7$

___ 16. A transversal intersects two parallel lines. If one angle is 153° , what will the alternate interior angle be?

- a. 146°
- b. 153°
- c. 77°
- d. 27°

Short Answer

1. A ship is sailing directly NE. What is its true bearing?

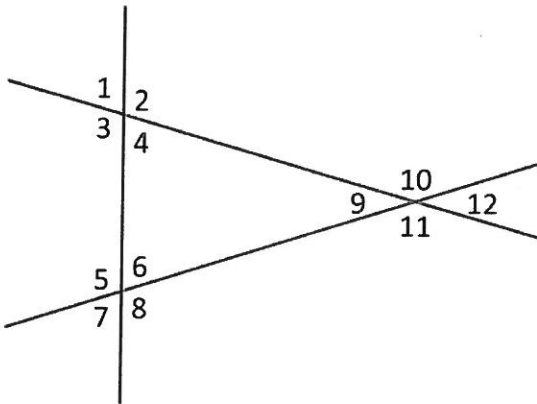
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2. The supplement of a 6° angle is bisected. What is the measure of the resulting angles?

3. An angle of 194° is bisected. Each of these angles is then bisected. What is the measure of the small angles?

4. In the diagram below, which angle is vertically opposite to $\angle 8$?



5. A transversal intersects two parallel lines. What will be the measure of an alternate interior angle to an angle of 49° ?

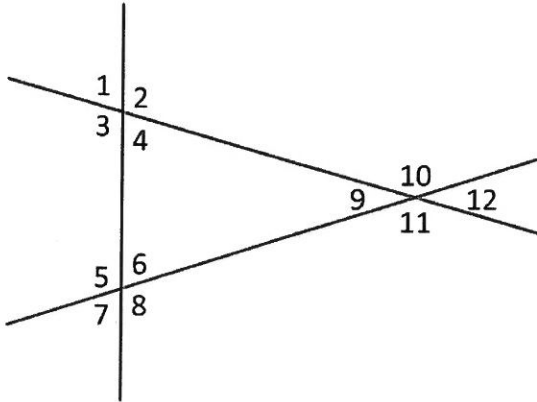
6. The complement of an angle is 22° . What type of angle is it and what is its size?

7. The supplement of an angle is 114° . What type of angle is it and what is its size?

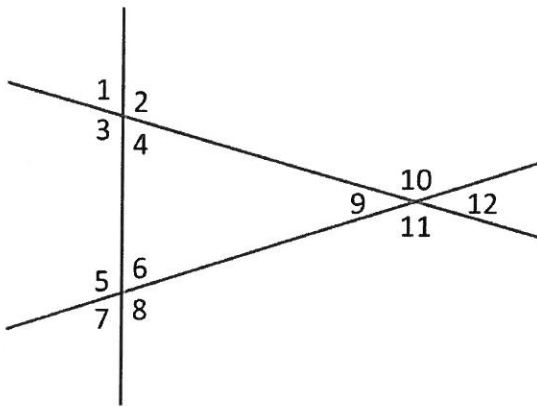
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8. In the diagram below, name two alternate exterior angles to $\angle 1$.



9. In the diagram below, name two corresponding angles to $\angle 2$.



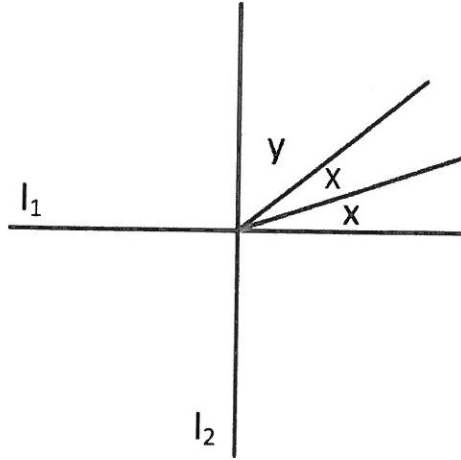
Problem

1. A ship captain sails his vessel at a true bearing of 58° before determining he must alter the course of his journey. He orders the vessel be turned due south. What is the change in angle between the old and new sailing directions?
2. A sailboat cruises at a bearing of ENE before being hit by a strong headwind that sends it on a new course at a true bearing of 171° . What is the change in angle between the old and new sailing directions?

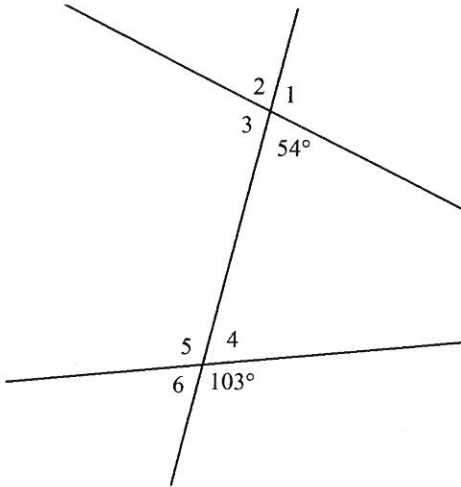
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3. In the figure below, if angle y is 53° , what must the value of x be to make l_1 and l_2 perpendicular?



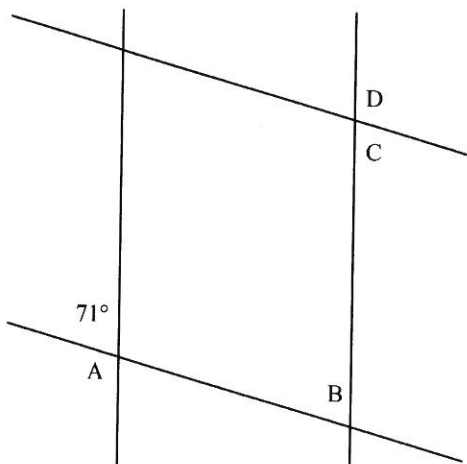
4. State the sizes of the six angles indicated in the figure below and explain your reasoning.



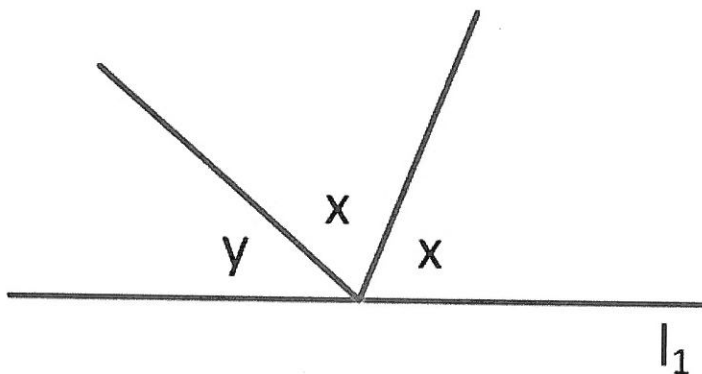
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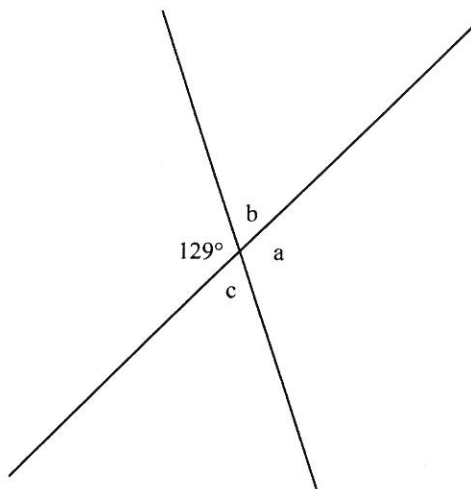
5. In the diagram below, opposing lines are parallel. Determine the value of $\angle A$. Explain your reasoning.



6. In the figure below, if angle y is 41° , what must the value of x be to make l_1 a straight angle?



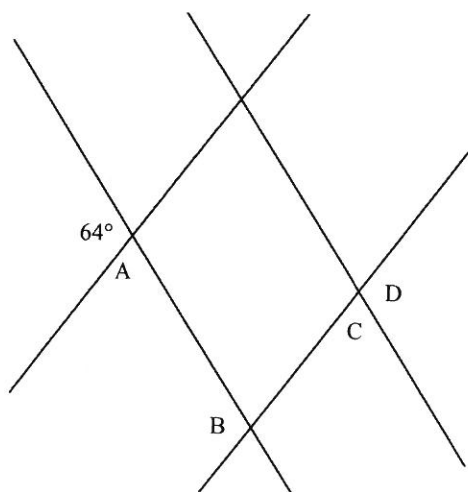
7. Calculate the sizes of $\angle a$, $\angle b$, and $\angle c$ in the diagram below.



Name: _____

ID: A

8. In the diagram below, opposing lines are parallel. Determine the value of $\angle D$. Explain your reasoning.



MULTIPLE CHOICE

1. ANS: D PTS: 1 DIF: Easy REF: 5.1
OBJ: Geometry LOC: G-S06
KEY: Naming angles
TOP: Measuring, Drawing, and Estimating Angles
2. ANS: D PTS: 1 DIF: Moderate REF: 5.1
OBJ: Geometry LOC: G-S06
KEY: Naming angles
TOP: Measuring, Drawing, and Estimating Angles
3. ANS: D PTS: 1 DIF: Easy REF: 5.2
OBJ: Geometry LOC: G-S05
KEY: Perpendicular angles
TOP: Angle Bisectors and Perpendicular Lines
4. ANS: D PTS: 1 DIF: Moderate REF: 5.2
OBJ: Geometry LOC: G-S06
KEY: Complementary angles | Bisecting angles
TOP: Angle Bisectors and Perpendicular Lines
5. ANS: C PTS: 1 DIF: Easy REF: 5.2
OBJ: Geometry LOC: G-S06
KEY: Bisecting angles
TOP: Angle Bisectors and Perpendicular Lines
6. ANS: B PTS: 1 DIF: Easy REF: 5.4
OBJ: Geometry LOC: G-S05
KEY: Corresponding angles
TOP: Parallel Lines and Transversals
7. ANS: C PTS: 1 DIF: Moderate REF: 5.4
OBJ: Geometry LOC: G-S05
KEY: Interior angles on the same side of the transversal
TOP: Parallel Lines and Transversals
8. ANS: C PTS: 1 DIF: Easy REF: 5.2
OBJ: Geometry LOC: G-S06
KEY: Bisecting angles
TOP: Angle Bisectors and Perpendicular Lines
9. ANS: B PTS: 1 DIF: Difficult REF: 5.1
OBJ: Geometry LOC: G-S06
KEY: Bearings
TOP: Measuring, Drawing, and Estimating Angles
10. ANS: D PTS: 1 DIF: Easy REF: 5.3
OBJ: Geometry LOC: G-S05
KEY: Vertically opposite angles
TOP: Non-Parallel Lines and Transversals
11. ANS: C PTS: 1 DIF: Easy REF: 5.3
OBJ: Geometry LOC: G-S05
KEY: Alternate interior angles
TOP: Non-Parallel Lines and Transversals
12. ANS: C PTS: 1 DIF: Easy REF: 5.1
OBJ: Geometry LOC: G-S05
KEY: Complementary angles | Supplementary angles
TOP: Measuring, Drawing, and Estimating Angles
13. ANS: C PTS: 1 DIF: Difficult REF: 5.4
OBJ: Geometry LOC: G-S05
KEY: Parallel Lines and Transversals
TOP: Parallel Lines and Transversals
14. ANS: B PTS: 1 DIF: Moderate REF: 5.4
OBJ: Geometry LOC: G-S05
KEY: Parallel Lines and Transversals
TOP: Parallel Lines and Transversals

1

SHORT ANSWER

15. ANS: C PTS: 1 DIF: Easy REF: 5.3
OBJ: Geometry LOC: G-S05
KEY: Alternate exterior angles
TOP: Non-Parallel Lines and Transversals
 16. ANS: B PTS: 1 DIF: Easy REF: 5.4
OBJ: Geometry LOC: G-S05
KEY: Alternate interior angles
TOP: Parallel Lines and Transversals
- SHORT ANSWER**
1. ANS: Calculate the angle from the vertical. Directly northeast is midway between north and east, so its true bearing will be half of 90° . The ship's true bearing is 45° .
PTS: 1 DIF: Moderate REF: 5.1 OBJ: Geometry
LOC: G-S06 TOP: Measuring, Drawing, and Estimating Angles
KEY: Bearings
 2. ANS: Find the supplement of 6° .
 $180^\circ - 6^\circ = 174^\circ$
 $174^\circ + 2 = 87^\circ$
The resulting angles measure 87° .
PTS: 1 DIF: Moderate REF: 5.2 OBJ: Geometry
LOC: G-S06 TOP: Angle Bisectors and Perpendicular Lines
KEY: Supplementary angles | Bisecting angles
 3. ANS: Bisect the 194° angle.
 $194^\circ \div 2 = 97^\circ$
Bisect the resulting 97° angle.
 $97^\circ \div 2 = 48.5^\circ$
The small angles measure 48.5° .
PTS: 1 DIF: Moderate REF: 5.2 OBJ: Geometry
LOC: G-S06 TOP: Angle Bisectors and Perpendicular Lines
KEY: Bisecting angles
 4. ANS: $\angle 5$
PTS: 1 DIF: Easy REF: 5.3 OBJ: Geometry
LOC: G-S05 TOP: Non-Parallel Lines and Transversals
KEY: Vertically opposite angles

2

2. ANS:

Calculate the true bearing of ENE by calculating the angle from the vertical. East-northeast is $\frac{3}{4}$ of the way from north to east.

$$\text{True bearing} = \frac{3}{4}(90^\circ)$$

$$\text{True bearing} = 67.5^\circ$$

ENE is a true bearing of 67.5° . The change in angle is equal to the new bearing minus the old bearing.
 $171^\circ - 67.5^\circ = 103.5^\circ$

The change in angle between the old and new sailing directions is 103.5° .

PTS: 1 DIF: Difficult REF: 5.1 OBJ: Geometry
 LOC: G-SO6 TOP: Measuring, Drawing, and Estimating Angles
 KEY: Bearings

3. ANS:

$$2x + y = 90^\circ$$

$$2x + 53^\circ = 90^\circ$$

$$2x = 90^\circ - 53^\circ$$

$$2x = 37^\circ$$

$$x = 37^\circ \div 2$$

$$x = 18.5^\circ$$

PTS: 1 DIF: Moderate REF: 5.2 OBJ: Geometry
 LOC: G-SO5 TOP: Angle Bisectors and Perpendicular Lines
 KEY: Bisecting angles | Perpendicular Lines

5. ANS:

When two parallel lines are intersected by a transversal, alternate interior angles are equal. Therefore, the alternate interior angle will be 49° .

PTS: 1 DIF: Easy REF: 5.4 OBJ: Geometry
 LOC: G-SO5 TOP: Parallel Lines and Transversals KEY: Alternate interior angles

6. ANS:

Calculate the angle measure.
 $90^\circ - 22^\circ = 68^\circ$

The angle is an acute angle of 68° .

PTS: 1 DIF: Easy REF: 5.1 OBJ: Geometry
 LOC: G-SO5 | G-SO6 TOP: Measuring, Drawing, and Estimating Angles
 KEY: Complementary angles

7. ANS:

Calculate the angle measure.
 $180^\circ - 114^\circ = 66^\circ$

The angle is an acute angle of 66 degrees.

PTS: 1 DIF: Easy REF: 5.1 OBJ: Geometry
 LOC: G-SO5 | G-SO6 TOP: Measuring, Drawing, and Estimating Angles
 KEY: Supplementary angles
 8. ANS:
 $\angle 8$ and $\angle 11$

PTS: 1 DIF: Moderate REF: 5.3 OBJ: Geometry
 LOC: G-SO5 TOP: Non-Parallel Lines and Transversals
 KEY: Alternate exterior angles

9. ANS:

PTS: 1 DIF: Moderate REF: 5.3 OBJ: Geometry
 LOC: G-SO5 TOP: Non-Parallel Lines and Transversals
 KEY: Corresponding angles

PROBLEM

1. ANS:

Due south is 180° . The change in angle is equal to the new bearing minus the old bearing.
 $180^\circ - 58^\circ = 122^\circ$

The change in angle between the old and new sailing directions is 122° .

PTS: 1 DIF: Moderate REF: 5.1 OBJ: Geometry
 LOC: G-SO6 TOP: Measuring, Drawing, and Estimating Angles
 KEY: Bearings

7. ANS:

$\angle a$ is vertically opposite to 129° .
 $\angle a = 129^\circ$

$\angle b$ is supplementary to 129° .

$$\angle b = 180^\circ - 129^\circ$$

$$\angle b = 51^\circ$$

$\angle c$ is vertically opposite, and therefore equal to, $\angle b$.
 $\angle c = 51^\circ$

PTS: 1

DIF: Easy

REF: 5.3

OBJ: Geometry

LOC: G-SOS TOP: Non-Parallel Lines and Transversals

KEY: Non-Parallel Lines and Transversals

8. ANS:

$\angle B$ is 64° because it is a corresponding angle to the 64° angle. When two parallel lines are intersected by a transversal, corresponding angles are equal.

$\angle C$ is an alternate interior angle to $\angle B$. When two parallel lines are intersected by a transversal, alternate interior angles are equal. Therefore, $\angle C$ is 64° .

$\angle D$ is supplementary to $\angle C$.

$$\angle D = 180^\circ - 64^\circ$$

$$\angle D = 116^\circ$$

PTS: 1

DIF: Difficult

REF: 5.4

OBJ: Geometry

LOC: G-SOS TOP: Parallel Lines and Transversals

KEY: Parallel Lines and Transversals

4. ANS:

$\angle 1$ is supplementary to 54° .

$$\angle 1 = 180^\circ - 54^\circ$$

$$\angle 1 = 126^\circ$$

$\angle 2$ is vertically opposite the given angle of 54° .
 $\angle 2 = 54^\circ$

$\angle 3$ is vertically opposite $\angle 1$.
 $\angle 3 = 126^\circ$

$\angle 4$ is supplementary to the given angle of 103° .

$$\angle 4 = 180^\circ - 103^\circ$$

$$\angle 4 = 77^\circ$$

$\angle 5$ is vertically opposite the given angle of 103° .
 $\angle 5 = 103^\circ$

$\angle 6$ is vertically opposite $\angle 4$.
 $\angle 6 = 77^\circ$

PTS: 1

DIF: Difficult

REF: 5.3

OBJ: Geometry

LOC: G-SOS TOP: Non-Parallel Lines and Transversals

KEY: Non-Parallel Lines and Transversals

5. ANS:

$\angle A$ is supplementary to the 71° angle.

$$\angle A = 180^\circ - 71^\circ$$

$$\angle A = 109^\circ$$

PTS: 1

DIF: Moderate

REF: 5.4

OBJ: Geometry

LOC: G-SOS TOP: Parallel Lines and Transversals

KEY: Supplementary angles

6. ANS:

$$2x + y = 180^\circ$$

$$2x + 41 = 180^\circ$$

$$2x = 180^\circ - 41$$

$$2x = 139^\circ$$

$$x = 139^\circ \div 2$$

$$x = 69.5^\circ$$

PTS: 1

DIF: Easy

REF: 5.2

OBJ: Geometry

LOC: G-SOS TOP: Angle Bisectors and Perpendicular Lines

KEY: Bisecting angles