SKILLS FOR SUCCESS

Grades **4-5**

GEOMETRY

INCLUDES:
EXAMPLES AND DEFINITIONS

- **SKILL REINFORCEMENT AND REVIEW**
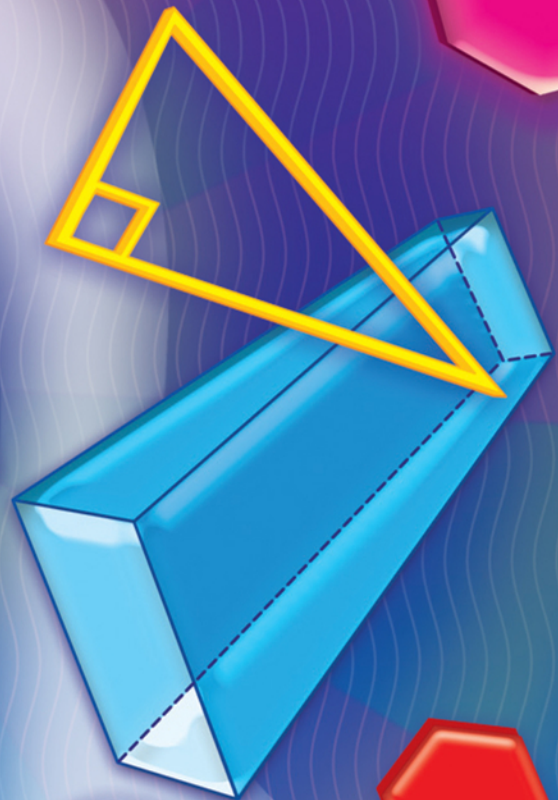- **OVER 100 REPRODUCIBLE ACTIVITY PAGES**
- **ANSWER KEY**

BY **TIFFANY MOORE**

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Coordinate Graphing

References, Final Review, Answer Key

Introduction

The main objective of *Geometry 4–5* is to give students focused, grade-level appropriate practice to help them develop and reinforce geometry skills. To aid in this experience, the book offers an explanation of each individual skill followed by a variety of activities. These activities will ensure a greater understanding of each skill that is introduced.

Geometry 4–5 is divided into five sections. Each section is designed to lead students through the fundamentals of a skill to a challenging review. The concepts covered in this book include measuring angles; identifying polygons; calculating area, perimeter, and volume; coordinate graphing; and more. Included on page 109 is a list and explanation of common geometric formulas. A glossary of geometric terms is provided on pages 110–113.

Geometry 4–5 is a great way to challenge students and to aid those in need of extra practice. Either focus for this book will yield the same result—an increased interest and understanding of valuable geometric concepts. Observe as your students experience how stimulating geometry can be.

Some Helpful Geometry Symbols

$\longleftrightarrow$ This is the symbol for **line**. It is used above the letters that name a line. For example, $\overleftrightarrow{AB}$ is read **line AB**. Any points on the line may be used to name it.

$\longrightarrow$ This is the symbol for **ray**. It is used above the letters that name a ray. For example, $\overrightarrow{CD}$ is read **ray CD**. The endpoint of the ray is written first, and any point on the ray may be used next.

$\overline{}$ This is the symbol for **line segment**. It is used above the letters that name a line segment. For example, $\overline{DE}$ is read **line segment DE**. The line segment must be named by its endpoints.

$\angle$ This is the symbol for **angle**. It is used in front of the letters that name an angle. For example, $\angle XYZ$ is read **angle XYZ**. Three points are used to name an angle: an endpoint first, the vertex (middle point) second, and the other endpoint last.
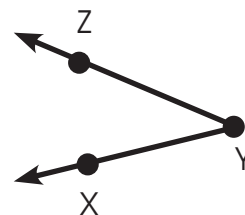
Identifying Points and Lines   Points, Lines, and Angles

A **point** is a position in a plane or in space that has no dimensions.
The points to the right are named Points A, B, and C, or Point A, Point
B, and Point C.

A **line** is a set of points in a straight path that extends infinitely
in two directions. The line to the right is named $\overleftrightarrow{AB}$. Any points
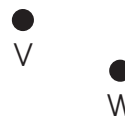on the line may be used to name it.

Identify the following as a *point*, *points*, or a *line*.

1.

_____

2.

_____

3.

_____

4.

_____
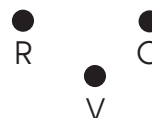
5.

_____

6.

_____

7.

_____

8.

_____

Identifying Rays, Line Segments, and Lines

A **ray** is a portion of a line that extends from one **endpoint** infinitely in one direction. The ray to the right is named $\overrightarrow{AB}$, with the endpoint written first and any point on the ray written next.

A **line segment** is a finite portion of a line that contains two endpoints. The segment to the right is named $\overline{AB}$. The segment must be named by its two endpoints.
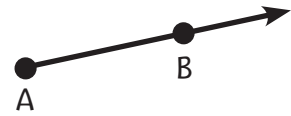
Identify the following as a *line*, *ray*, *line segment*, or *points*.

1.

_____

2.

_____

3.

_____

4.

_____
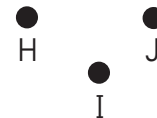
5.

_____

6.

_____

7.

_____

8.

_____

Drawing and Identifying Points, Rays, Line Segments, and Lines

Points, Lines, and Angles

Draw and label each of the following.

1. $\overrightarrow{AB}$

2. Points C and D

3. $\overline{RS}$

4. Points L, M, and N

5. $\overleftrightarrow{MN}$
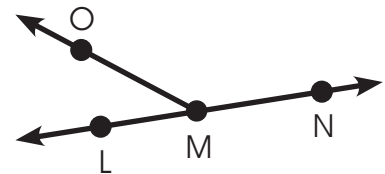
6. $\overrightarrow{JK}$

Use the figure to the right to answer each question.

7. Name four points. _____

8. Name two line segments. _____

9. Name the line three different ways. _____
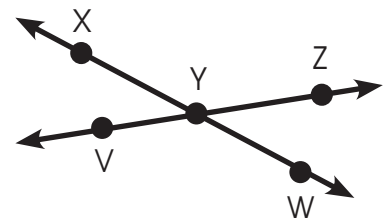
10. Name three rays. _____

Use the figure to the right to answer each question.

11. Name three points. _____

12. Name the two lines. _____
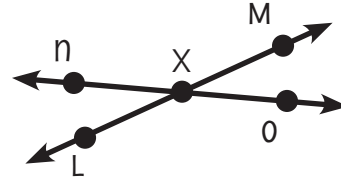
**13.** Name four line segments. _____

14. Name four rays. _____

Identifying Intersecting, Perpendicular, and Parallel Lines

Points, Lines, and Angles

Intersecting lines are lines that cross each other at one point, called the **point of intersection**. X is the point of intersection of lines LM and NO.
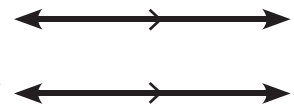
Perpendicular lines are two lines that form a right angle at the point of intersection. A small box is used to show that an angle is a right angle (90°).
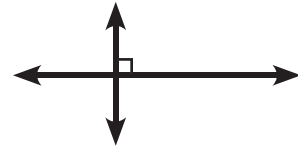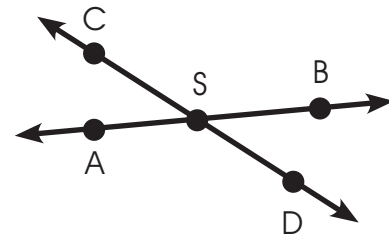
Parallel lines are two lines in the same plane that do not intersect. Small arrows are used to show that lines are parallel.

Solve.

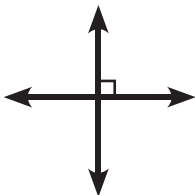**1.** What is the point of intersection of $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$?

_____

Draw and label.

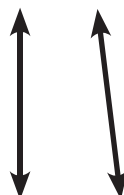**2.** $\overleftrightarrow{LN}$ intersects $\overleftrightarrow{MK}$ at point B.

3. Y is the point at which $\overleftrightarrow{XZ}$ intersects $\overleftrightarrow{WV}$.

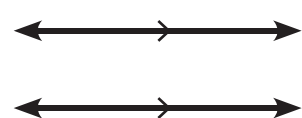Identify the lines as *parallel*, *perpendicular*, or *neither*.

4.

5.

6.

_____ _____ _____

Lines: Mixed Practice   Points, Lines, and Angles

Circle the correct name for each figure.

1. T━━━━━U   line segment T   line segment TU   line TU

2. X━━━━━Y   line segment XY   line Y   line XY

3. ←N━━━━━M   line segment MN   line M   ray MN

4. R━━━━━P   line R   line segment RP   line RP

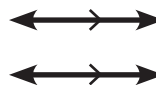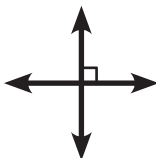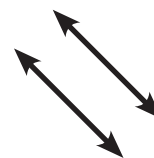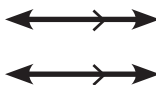**5.** ←B━━━━A→   line AB   line segment BA   line CA

6. ←F━━━━G→   line segment FG   line GF   ray FG

7. C━━━━E→   line CD   line segment CE   ray CE

8. ←M━━━━N   line segment MN   ray NM   line MN
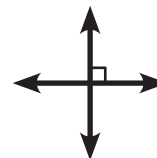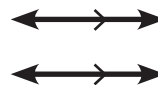
Circle the correct set of lines.

9. Which lines are perpendicular?

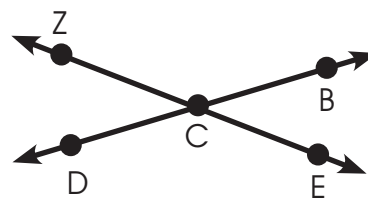**10.** Which lines intersect?

11. Which lines are parallel?

Use the figure to the right to answer each question.

12. Name the point of intersection. _____

13. Name the two lines that intersect. _____

14. Name four line segments. _____

15. Name four rays. _____
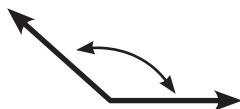
Name: _____   Date: _____

Identifying Angles

Points, Lines, and Angles

An **angle** is formed when two rays share an endpoint.

A **right angle** is an angle that measures 90 degrees.

An **obtuse angle** is an angle that measures more than 90 degrees but less than 180 degrees.
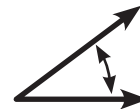
An **acute angle** is an angle that measures less than 90 degrees.

Identify each angle as *right*, *obtuse*, or *acute*.

1.

_____

2.

_____

3.

_____

4.

_____

5.

_____

6.

_____

7.

_____

8.

_____
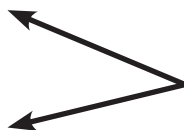
9.

_____

10.

_____

11.

_____
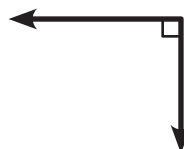
12.

_____

Drawing and Identifying Angles   Points, Lines, and Angles
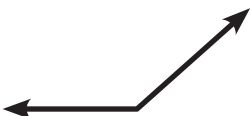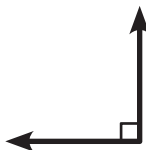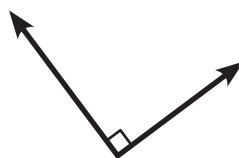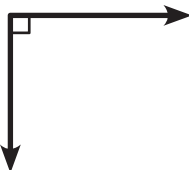
Draw the following angles.

1. right angle   **2.** obtuse angle   **3.** acute angle

Below are examples of things you may find around your home. Look at each bolded angle and identify it as *right*, *obtuse*, or *acute*.

4.

5.

6.

_____   _____   _____

7.

8.

9.

_____   _____   _____

10.
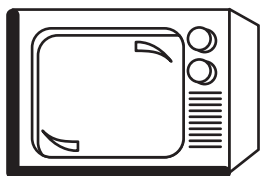
11.
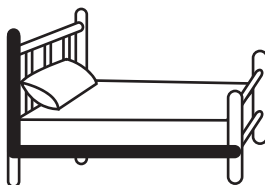
12.

_____   _____   _____
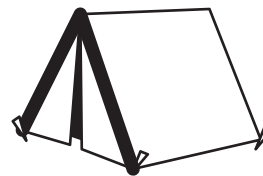
13.

14.
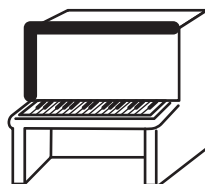
15.

_____   _____   _____

Answer Key

Page 6

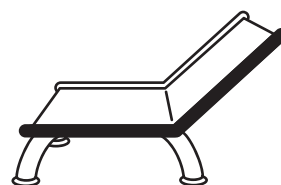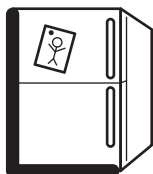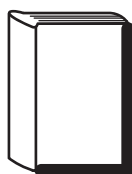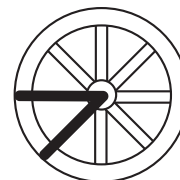1. line AB; 2. points V and W; 3. point T; 4. line XZ; 5. line CD; 6. line WX; 7. line JK; 8. points R, V, and O

Page 7

1. ray XY; 2. line segment DE; 3. points S and T; 4. line WX; 5. line CD; 6. points H, I, and J; 7. line segment JK; 8. ray LM

Page 8

7. L, M, N, O; 8. Answers will vary but may include $\overline{LM}$, $\overline{MN}$, $\overline{OM}$, $\overline{LN}$; 9. $\overleftrightarrow{LM}$, $\overleftrightarrow{LN}$, $\overleftrightarrow{MN}$; 10. Answers will vary but may include $\overrightarrow{ML}$, $\overrightarrow{LN}$, $\overrightarrow{MO}$, $\overrightarrow{ML}$, $\overrightarrow{MN}$, $\overrightarrow{NM}$, $\overrightarrow{NL}$; 11. Answers will vary but may include X, Y, Z, V, W; 12. Answers will vary but may include $\overleftrightarrow{XW}$, $\overleftrightarrow{XY}$, $\overleftrightarrow{YW}$, $\overleftrightarrow{VY}$, $\overleftrightarrow{YZ}$, $\overleftrightarrow{VZ}$; 13. Answers will vary but may include $\overline{YX}$, $\overline{VZ}$, $\overline{YW}$, $\overline{ZY}$, $\overline{VY}$, $\overline{XW}$; 14. Answers will vary but may include $\overrightarrow{YX}$, $\overrightarrow{YV}$, $\overrightarrow{YW}$, $\overrightarrow{YZ}$, $\overrightarrow{ZV}$, $\overrightarrow{XW}$, $\overrightarrow{VZ}$, $\overrightarrow{WX}$

Page 9

1. point S; 2. ; 3. ; 4. perpendicular; 5. neither; 6. parallel

Page 10

1. line segment TU; 2. line segment XY; 3. ray MN; 4. line segment RP; 5. line AB; 6. line FG; 7. ray CE; 8. ray NM;

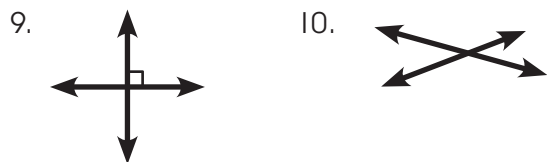9. 10.

11. 12. point C

13. Answers will vary but may include $\overleftrightarrow{ZE}$, $\overleftrightarrow{ZC}$, $\overleftrightarrow{CE}$, $\overleftrightarrow{DC}$, $\overleftrightarrow{CB}$, $\overleftrightarrow{DB}$; 14. Answers will vary but may

include $\overline{CZ}$, $\overline{CE}$, $\overline{ZE}$, $\overline{DB}$, $\overline{DC}$, $\overline{CB}$; 15. Answers will vary but may include $\overrightarrow{CZ}$, $\overrightarrow{CD}$, $\overrightarrow{CE}$, $\overrightarrow{CB}$, $\overrightarrow{EZ}$, $\overrightarrow{DB}$, $\overrightarrow{ZE}$, $\overrightarrow{BD}$

Page 11

1. obtuse; 2. right; 3. acute; 4. acute; 5. right; 6. right; 7. right; 8. acute; 9. acute; 10. obtuse; 11. right; 12. acute
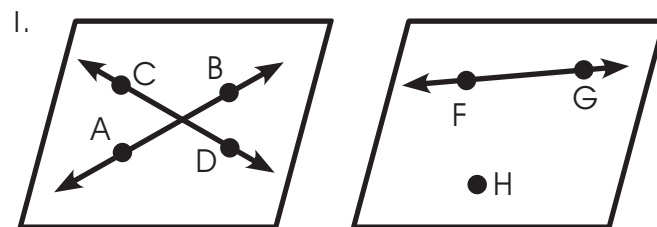
Page 12

1.–3. Answers will vary; 4. acute; 5. right; 6. obtuse; 7. right; 8. right; 9. acute; 10. right; 11. right; 12. acute; 13. acute; 14. right; 15. acute

Page 13

1. 160°, obtuse; 2. 95°, obtuse; 3. 130°, obtuse; 4. 40°, acute; 5. 90°, right; 6. 70°, acute

Page 14

1.

2. Answers will vary but must include three noncollinear points; 3. Answers will vary

Page 15

1. $\overleftrightarrow{AC}$ and $\overleftrightarrow{DF}$; 2. Answers will vary but may include ∠ABG, ∠DEH, ∠IEF, ∠CBL, ∠KBL, ∠KBG, ∠BEH; 3. ∠ABK, ∠KBC, ∠BED, ∠ABE, ∠EBC, ∠BEF, ∠DEM, ∠MEF; 4. Answers will vary but may include ∠ABL, ∠GBC, ∠HEF, ∠EBL, ∠MEH, ∠EBG; 5. acute; 6. right; 7. $\overleftrightarrow{AC}$ and $\overleftrightarrow{DF}$; 8. Answers will vary but may include $\overleftrightarrow{HI}$ and $\overleftrightarrow{DF}$, $\overleftrightarrow{BE}$ and $\overleftrightarrow{DF}$, $\overleftrightarrow{AC}$ and $\overleftrightarrow{BE}$; 9. Answers will vary but may include M, L, T, W, K, S, R, U; 10. Answers will vary but may include $\overleftrightarrow{ML}$, $\overleftrightarrow{MT}$, $\overleftrightarrow{MW}$, $\overleftrightarrow{KU}$, $\overleftrightarrow{KL}$, $\overleftrightarrow{LU}$, $\overleftrightarrow{RU}$, $\overleftrightarrow{RS}$, $\overleftrightarrow{RT}$, $\overleftrightarrow{ST}$; 11. $\overleftrightarrow{MW}$ and $\overleftrightarrow{RU}$; 12. Answers will vary but may include $\overline{ML}$, $\overline{LT}$, $\overline{TW}$, $\overline{KL}$, $\overline{LU}$, $\overline{RS}$, $\overline{ST}$, $\overline{TU}$, $\overline{SW}$; 13. $\overline{SW}$ and $\overline{KU}$;