

## COMMON CORE STANDARDS ADDRESSED IN THIS RESOURCE

5.G.3 - Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.  
Activity page: 17

5.G.4 - Classify two-dimensional figures in a hierarchy based on properties.  
Activity page: 9

6.G.1 - Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.  
Activity pages: 25, 26, 27, 28, 29, 33

6.RP.3 - Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.  
Activity page: 21

7.G.4 – Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.  
Activity pages: 31, 32

7.G.5 - Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.  
Activity pages: 3, 4

7.G.6 – Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.  
Activity pages: 34, 36, 37, 38, 39, 40

8.G.2 - Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.  
Activity pages: 13, 14, 15

8.G.4 - Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.  
Activity page: 22

8.G.5 - Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.  
Activity pages: 6, 7, 8

8.G.6 – Explain a proof of the Pythagorean Theorem and its converse.  
Activity page: 12

8.G.7 – Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.  
Activity pages: 10, 11, 20, 24

8.G.9 – Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.  
Activity pages: 41, 42, 43

G-CO.9 - Prove theorems about lines and angles.  
Activity page: 19

G-CO.11 – Prove theorems about parallelograms.  
Activity page: 18

G-SRT.8 – Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.  
Activity page: 23

# Geometry Workbook

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## Reading Mathematics

**Remember:**

Learning the correct meaning and use of mathematical symbols is necessary for reading and understanding mathematics. In geometry, the order of the letters is important in some cases, like when naming rays and angles.

Find the corresponding symbols and shade their areas to reveal a number that is neither prime nor composite.

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. line AB</li> <li>2. segment AB</li> <li>3. angle with vertex at B</li> <li>4. triangle ABC</li> <li>5. cube root</li> <li>6. arc AB</li> <li>7. ray AB</li> <li>8. circle with center A</li> <li>9. tangent of angle X</li> <li>10. not equal to</li> <li>11. is parallel to</li> <li>12. right angle</li> <li>13. measure of angle A</li> </ol> | <ol style="list-style-type: none"> <li>14. angle with vertex at C</li> <li>15. cosine of angle X</li> <li>16. is approximately equal to</li> <li>17. is similar to</li> <li>18. greater than</li> <li>19. square root</li> <li>20. is congruent to</li> <li>21. pi</li> <li>22. is perpendicular to</li> <li>23. parallelogram ABCD</li> <li>24. sine of angle X</li> <li>25. less than</li> <li>26. ordered pair</li> </ol> |
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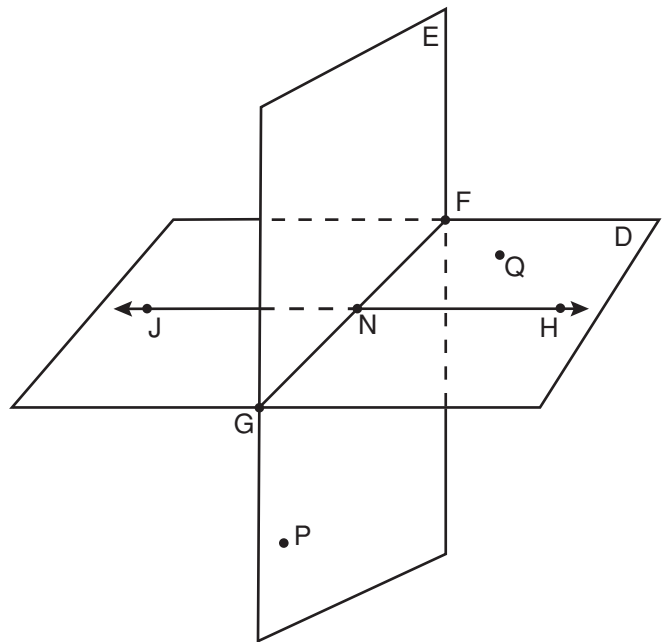
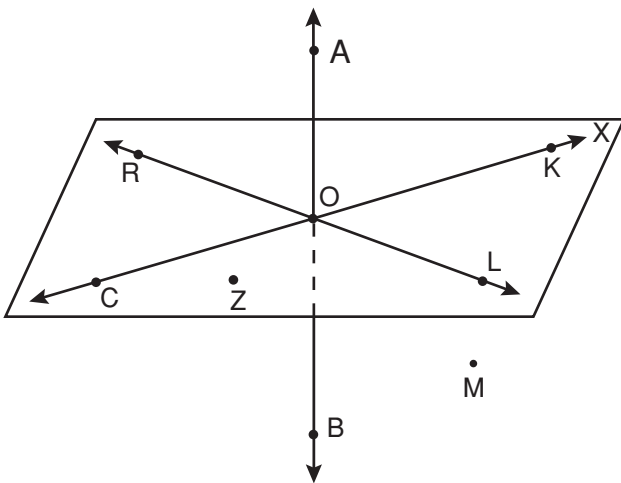
$\pm$	$\ln$	$\neq$	$\Delta$	$ x $	$\sqrt[3]{\quad}$	$\csc x$	$\perp$	$\int$	$\tan x$	$\sqrt{\quad}$	$\leftrightarrow$
$\nabla$	$\theta$	$\angle ABC$	$\phi$	$\geq$	$\cos x$	LCD	$\int$	$\tan x$	$\sim$	$=$	$\therefore$
$2\pi r^2 h$	$\sin X$	$\beta$ $\alpha \leftrightarrow b$ $\psi$	$\parallel$	$\{ \}$	$\diamond ABCD$	$\angle BCA$	$x^{-1}$	$\frac{a}{b}$	$m \angle A$	$45^\circ$	$\epsilon$
$\frac{d}{d \cdot r}$	$\cup$	$\perp$	$\leftrightarrow$	$\cdot$	$\Sigma$	$3!$	$\text{cm}^2$	$\overline{AB}$	$\vec{AB}$	$\odot A$	$\sec X$
$bh$	$i$	$\vec{AB}$	$\log$	$\cap$	$\approx$	$a : b$	$\cot x$	$(a, b)$	$\cong$	$\cup$	$\pi$
										$e$	$\Delta ABC$
											$\subset$

## Undefined Terms and Basic Definitions

Geometry is based on the undefined terms point, line, and plane.  
 Points can be collinear (lie on the same line).  
 Points and lines can be coplanar (lie in the same plane).  
 A ray is part of a line with one endpoint.  
 An angle is formed by two rays that have the same endpoint.

Refer to the diagrams and determine whether the statement is true or false. If it is true, place its corresponding letter in the puzzle to reveal the name of a famous mathematician and his collection of books about geometry, number theory, and geometric algebra.

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| <p>1. <math>\overleftrightarrow{CK}</math> intersects <math>\overleftrightarrow{RL}</math> at O.      (E)</p>                  | <p>14. <math>\overrightarrow{NJ}</math> and <math>\overrightarrow{NH}</math> are opposite rays.      (E)</p>   |
| <p>2. M lies in plane X.      (A)</p>  | <p>15. <math>\overleftrightarrow{ZL}</math> intersects <math>\overleftrightarrow{RO}</math> at O.      (F)</p> |
| <p>3. R, O, K, and A are coplanar.      (R)</p>  | <p>16. <math>\overline{GF}</math> intersects <math>\overleftrightarrow{JH}</math> at N.      (L)</p>           |
| <p>4. <math>\overrightarrow{OR}</math> and <math>\overrightarrow{OK}</math> are sides of <math>\angle ROK</math>.      (U)</p> | <p>17. Plane E contains <math>\angle JNF</math>.      (I)</p>  |
| <p>5. A, O, and B are collinear.      (C)</p>  | <p>18. Plane D and Plane E intersect in <math>\overleftrightarrow{GF}</math>.      (E)</p>                     |
| <p>6. O, L, K, and M are coplanar.      (H)</p>  | <p>19. G, N, F, and P are coplanar.      (M)</p>   |
| <p>7. C, O, A, and B are coplanar.      (L)</p>  | <p>20. Q, H, N, and F are coplanar.      (E)</p>   |
| <p>8. Plane D contains P.      (P)</p>   | <p>21. N and P are in plane D.      (I)</p>  |
| <p>9. Plane X intersects <math>\overleftrightarrow{AB}</math> at O.      (I)</p>   | <p>22. <math>\angle GNH</math> lies in plane D.      (N)</p>   |
| <p>10. A, B, and M are coplanar.      (D)</p>  | <p>23. G, N, and F are collinear.      (T)</p>   |
| <p>11. Plane X contains Z.      (S)</p>  | <p>24. Plane D contains <math>\overleftrightarrow{PQ}</math>.      (B)</p>                                     |
| <p>12. J, N, F, and P are coplanar.      (A)</p>   | <p>25. <math>\overrightarrow{NF}</math> and <math>\overrightarrow{NG}</math> are opposite rays.      (S)</p>   |
| <p>13. <math>\angle CBO</math> lies in plane X.      (K)</p>   |  |



## Types of Angles

An acute angle measures between  $0^\circ$  and  $90^\circ$ .  
 A right angle measures exactly  $90^\circ$ .  
 An obtuse angle measures between  $90^\circ$  and  $180^\circ$ .  
 A straight angle measures exactly  $180^\circ$ .

Refer to the diagram and classify each expression as acute, right, obtuse, or straight.

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|--|---|
| <p>1. <math>\angle CDL</math> _____</p> <p>2. <math>\angle EAD</math> _____</p> <p>3. <math>\angle DAB</math> _____</p> <p>4. <math>\angle CLD</math> _____</p> <p>5. <math>\angle ABI</math> _____</p> <p>6. <math>\angle CLI</math> _____</p> <p>7. <math>\angle UCL</math> _____</p> <p>8. <math>\angle ABL</math> _____</p> <p>9. <math>\angle ECL</math> _____</p> <p>10. <math>\angle AED</math> _____</p> | <p>11. <math>\angle EDA + \angle ADL</math> _____</p> <p>12. <math>\angle ECD + \angle DCL</math> _____</p> <p>13. <math>\angle ADE + \angle EDC</math> _____</p> <p>14. <math>\angle UEC + \angle CEL</math> _____</p> <p>15. <math>\angle EDC + \angle CDL</math> _____</p> <p>16. <math>\angle ABD + \angle DBL</math> _____</p> <p>17. <math>\angle CDE + \angle EDB</math> _____</p> <p>18. <math>\angle EDA + \angle ADB</math> _____</p> <p>19. <math>\angle EDA + \angle ADB + \angle EDC</math> _____</p> <p>20. <math>\angle LDB + \angle BDA + \angle ADE</math> _____</p> |
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