COMMON CORE STANDARDS ADDRESSED IN THIS RESOURCE

5.G.4 - Classify two-dimensional figures in a hierarchy based on properties.
Activity page: 10

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 page: 29

6.G.2 – Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = l×w×h and V = b×h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
Activity page: 31

6.G.3 - Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
Activity page: 11

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 page: 32, 33

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: 4, 5

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 page: 28, 30

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: 26

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, 8

8.G.6 – Explain a proof of the Pythagorean Theorem and its converse.
Activity page: 18

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 page: 17, 27

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: 34, 40

G-C.2 – Identify and describe relationships among inscribed angles, radii, and chords.
Activity pages: 36, 37

G-C.5 – Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.
Activity page: 39

G-CO.1 – Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
Activity page: 23

G-CO.10 – Prove theorems about triangles.
Activity page: 13, 20

G-CO.11 – Prove theorems about parallelograms.
Activity page: 24

G-GPE.6 – Find the point on a directed line segment between two given points that partitions the segment in a given ratio.
Activity page: 12

G-GPE.7 – Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.
Activity page: 19

G-SRT.5 – Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
Activity pages: 14, 15, 16, 25

G-SRT.8 – Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.
Activity pages: 21, 22

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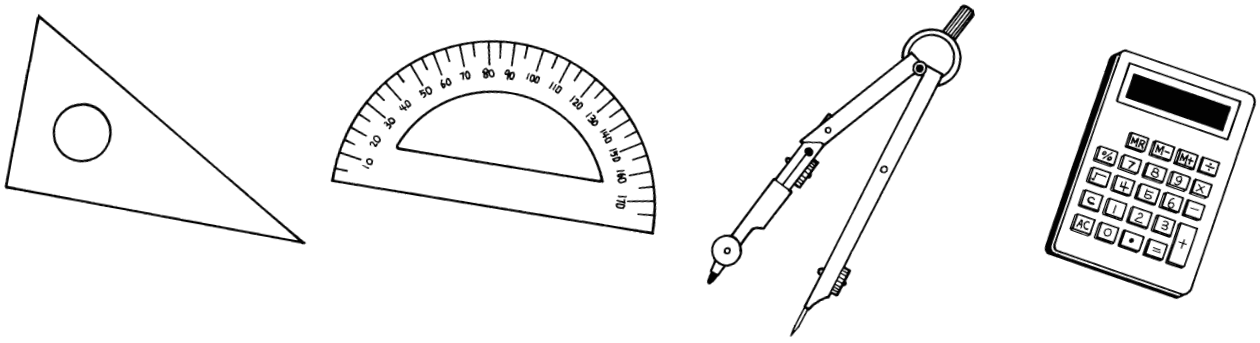
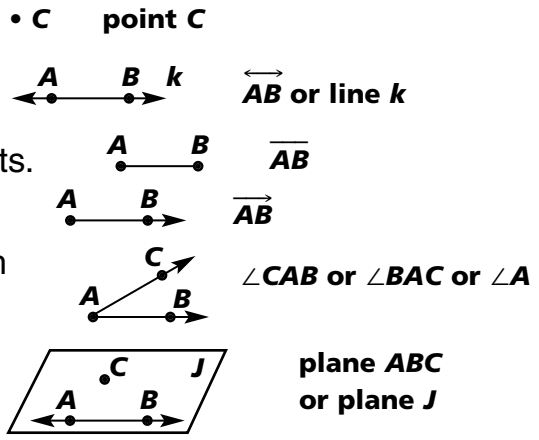


Name _____

Geometry Basics

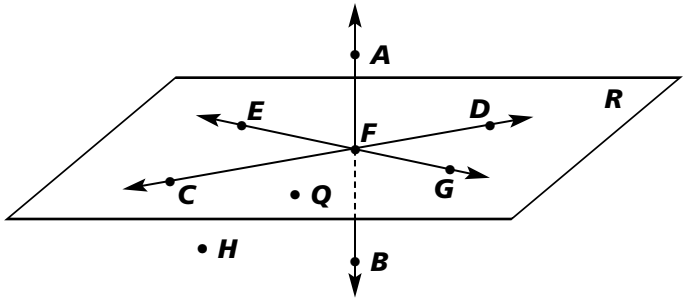
Remember

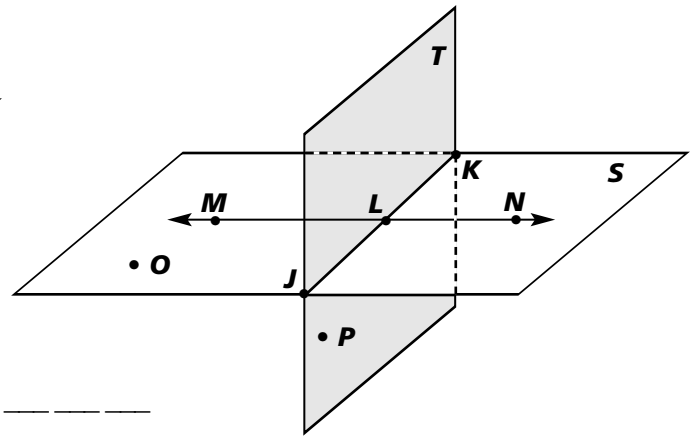
1. A *point* has position, but no dimension.
2. A *line* extends in one dimension. Points that lie on the same line are *collinear*.
3. A *line segment* is part of a line with two endpoints.
4. A *ray* is part of a line with one endpoint.
5. An *angle* is formed by two rays or segments with the same endpoint. The endpoint is the *vertex*.
6. A *plane* extends in two dimensions. Points that lie in the same plane are *coplanar*.



Refer to the diagrams and decide if each statement is true or false. If it is true, shade in the circle and write the letter on the puzzle blank. The puzzle answer is the name of a Greek mathematician and his books about geometry, number theory, and geometric algebra.

1. $\overleftrightarrow{EG}$ lies in plane *R*. (E)
2. $\overleftrightarrow{AB}$ lies in plane *R*. (B)
3. $\overleftrightarrow{MN}$ lies in plane *S*. (U)
4. *D* lies in plane *R*. (C)
5. *H* lies in plane *R*. (A)
6. *C* and *E* are coplanar. (L)
7. *C* and *E* are collinear. (Y)
8. *M* and *O* are collinear. (G)
9. *M* and *L* are collinear. (I)
10. ∠*CFE* lies in plane *R*. (D)
11. ∠*JLM* lies in plane *S*. (S)
12. Plane *S* intersects plane *T* at $\overline{JK}$. (E)
13. $\overleftrightarrow{AB}$ intersects plane *R* at *F*. (L)
14. *L* and *P* are in plane *S*. (P)
15. *L* and *P* are in plane *T*. (E)
16. $\overline{JK}$ is in plane *S* and plane *T*. (M)
17. $\overrightarrow{LN}$ is in plane *S* and plane *T*. (H)
18. *L* is the vertex of ∠*KLM*. (E)
19. ∠*BFD* lies in plane *R*. (R)
20. $\overrightarrow{FC}$ and $\overrightarrow{FG}$ are sides of ∠*CFG*. (N)
21. ∠*DFG* and ∠*GFD* are the same angle. (T)
22. $\overline{LK}$ and $\overrightarrow{LN}$ are sides of ∠*KLN*. (S)





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_____ _____ _____

Name _____

Types of Angles

Remember

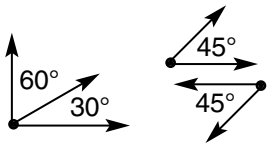
Acute—less than 90°

Right—exactly 90°

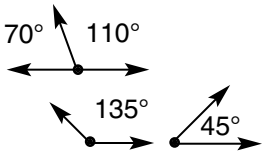
Obtuse—greater than 90° and less than 180°

Straight—exactly 180°

Complementary—two angles whose measures add up to 90°



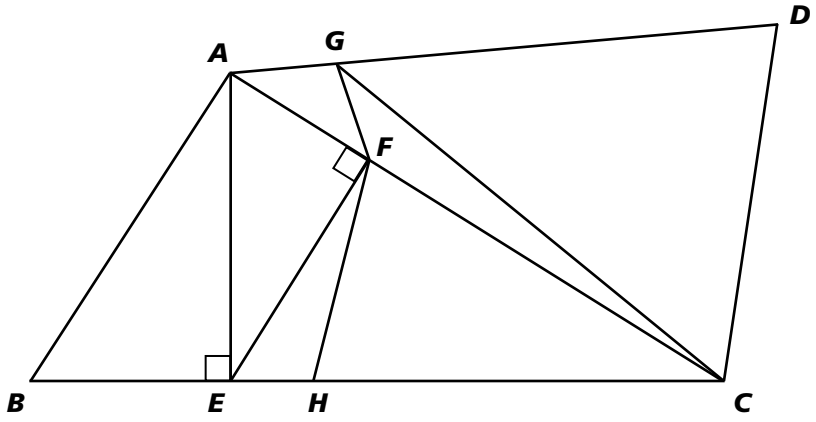
Supplementary—two angles whose measures add up to 180°



Refer to the diagram and classify the angles. For 1–8, determine whether each angle is acute, right, obtuse, or straight. For 9–16, determine whether the two angles are complementary, supplementary, or neither. Circle the corresponding column letter and copy it onto the matching blanks below to complete the sentence.

		Acute	Right	Obtuse	Straight
1.	∠*BEA*	s	m	e	g
2.	∠*EAF*	e	l	x	a
3.	∠*AGD*	p	n	o	a
4.	∠*GFC*	r	p	s	m
5.	∠*FHC*	u	e	g	s
6.	∠*EFC*	s	r	t	a
7.	∠*BHC*	r	i	y	e
8.	∠*ECD*	e	l	c	o

		Complementary	Supplementary	Neither
9.	∠*AEF* and ∠*FEC*	o	t	n
10.	∠*BEA* and ∠*AEC*	r	n	i
11.	∠*EFH* and ∠*HFC*	g	o	n
12.	∠*HFE* and ∠*EFA*	o	m	r
13.	∠*FGC* and ∠*CGD*	e	t	u
14.	∠*EHF* and ∠*FHC*	r	e	i
15.	∠*GFA* and ∠*AFE*	c	a	n
16.	∠*AFH* and ∠*HFC*	y	t	r



Angles that have the same

__ __ __ __ __ __ __
1 2 3 4 5 6 7

are called

__ __ __ __ __ __ __ __ __
8 9 10 11 12 13 14 15 16

angles.

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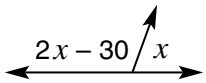
Name _____ **Algebra Angle Measures**

Example

The supplement of an angle is 30° less than twice the measure of the angle itself. Find the angle.

1. Make a sketch, using *x* to represent the angle. (Complementary angles add up to 90°; supplementary angles add up to 180°.)



2. Write an equation. $x + 2x - 30 = 180$

3. Solve for *x*.

$$x + 2x - 30 = 180$$
$$3x - 30 = 180$$
$$3x = 210$$
$$x = 70°$$

4. Check your answer.

The measure of the angle is 70°.
The supplement is (2 x 70) – 30 = 110°.
70° + 110° = 180°

Read each problem and draw a line to its matching sketch. Write an equation for the problem, using x for the angle. Solve for x. When you finish, find and circle your answer in the box below.

1. The supplement of an angle is twice the measure of the angle itself. Find the angle.

2. The complement of an angle is five times the measure of the angle itself. Find the angle.

3. The complement of an angle is 10° less than the measure of the angle itself. Find the angle.

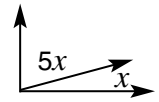
4. The supplement of an angle is 20° more than the measure of the angle itself. Find the angle.

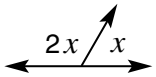
5. Two angles are congruent and complementary. Find their measures.

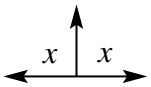
6. Two angles are congruent and supplementary. Find their measures.

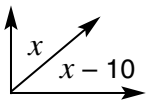
7. The supplement of an angle is 20° more than three times the measure of the angle itself. Find the angle.

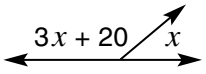
8. The complement of an angle is 6° less than twice the measure of the angle itself. Find the angle.

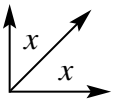


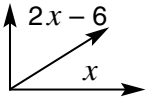


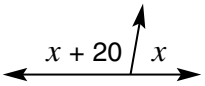












15°	32°	40°	45°	50°	60°	(70°)	80°	90°

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