4th Basic

5th Advanced

Helping With Math

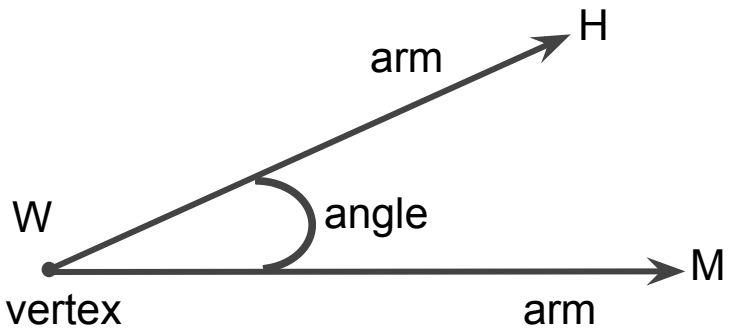
USA GRADES

Angles

Suitable for students
aged 8-10

This pack is suitable for learners aged 8 to 10 years old or 4th to 5th graders (USA). The content covers fact files and relevant basic and advanced activities involving angles.

In geometry, an angle can be defined as the figure formed by two rays meeting at a common endpoint called vertex. Angle measures the amount of turn of its rays in degrees.

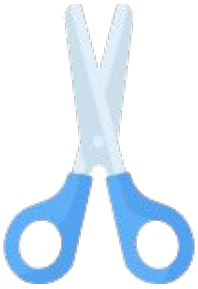


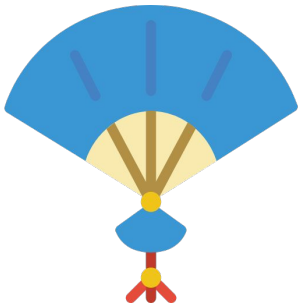
This is angle HWM or ∠HWM.

- **<u>Arms</u>:**
  - The two rays joining to form an angle are called arms of an angle. Here, WH and WM are the arms of the ∠HWM.
- **<u>Vertex</u>:**
  - The common end point at which the two rays meet to form an angle is called the vertex. Here, the point W is the vertex of ∠HWM.

ANGLES

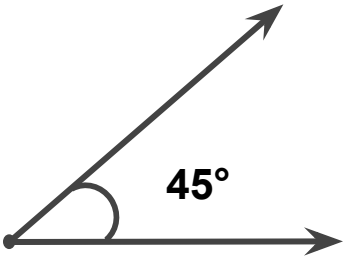
ANGLES IN REAL-LIFE



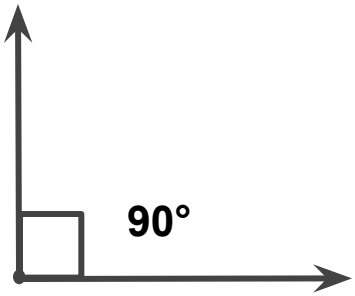


Angles can be classified in terms of their measurements as:

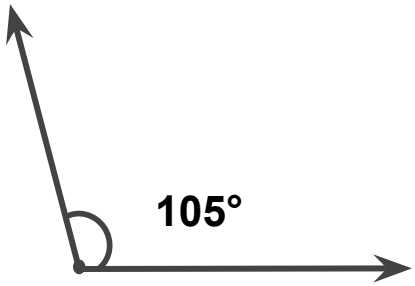
- Acute Angles
- Right Angles
- Obtuse Angles
- Straight Angles
- Reflex Angles
- Complete Angles



Acute Angle



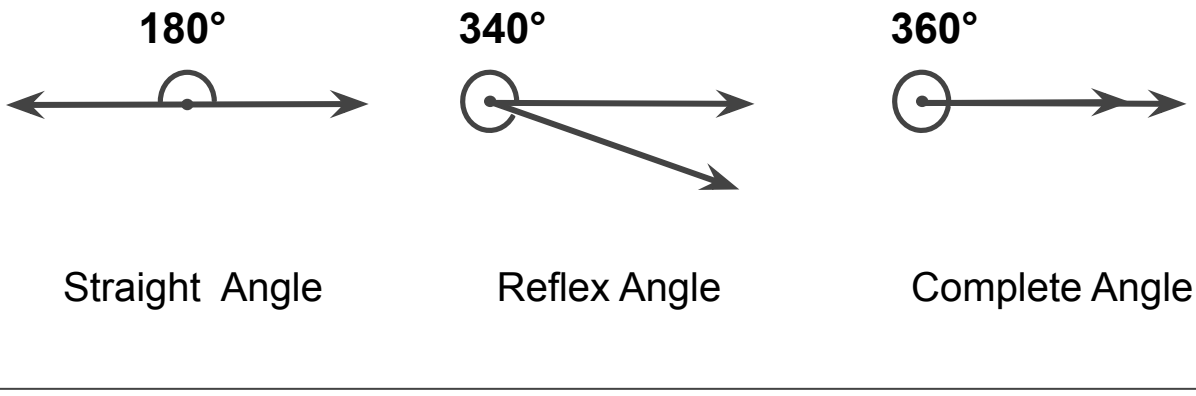
Right Angle



Obtuse Angle

<u>Trivia:</u> We name angles using uppercase letters.

TYPES OF ANGLES



REMEMBER!

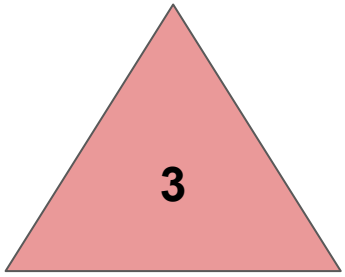
- ★ **Acute Angles:** angles that are smaller than 90°
- ★ **Right Angles:** angles that measure exactly 90°
- ★ **Obtuse Angles:** angles that measure more than 90° but less than 180°.
- ★ **Straight Angles:** angles that measure exactly 180°
- ★ **Reflex Angles:** angles that measure more than 180° but less than 360°
- ★ **Full Rotation:** angles that measure exactly 360°

ANGLES IN POLYGONS

Regular Polygons

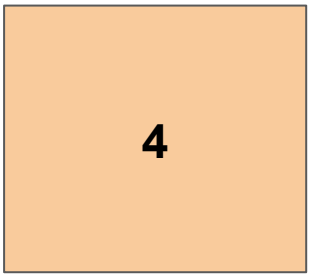
A polygon is considered regular if the measures of all its sides are equal and the angle measurements are also the same.

REGULAR POLYGONS



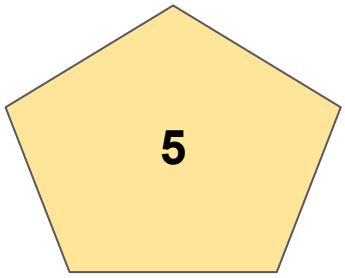
EQUILATERAL TRIANGLE

- Each angle measures 60°.
- The sum of its interior angles is 180°.



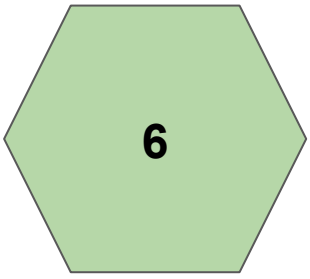
SQUARE

- Each angle measures 90°.
- The sum of its interior angles is 360°.



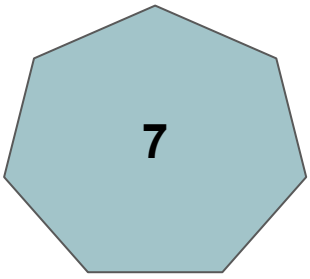
REGULAR PENTAGON

- Each angle measures 108°.
- The sum of its interior angles is 540°.



REGULAR HEXAGON

- Each angle measures 120°.
- The sum of its interior angles is 720°.



REGULAR HEPTAGON

- Each angle measures 128.5°.
- The sum of its interior angles is 900°.

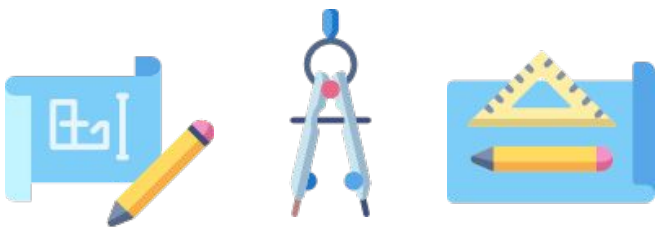
TABLE OF ACTIVITIES

ARCHIE THE ARCHITECT

G4
Basic

As an aspiring architect, Archie would like to make sure that he knows the basic concepts of angles. Help him identify the type of angle being described on each number.

	1. An angle that measures exactly 360°.
	2. An angle that measures exactly 90°.
	3. An angle that measures exactly 180°.
	4. This is an angle whose measurement is greater than 90° but less than 180°.
	5. 350° is a type of what angle?.
	6. 36° is a type of what angle?.

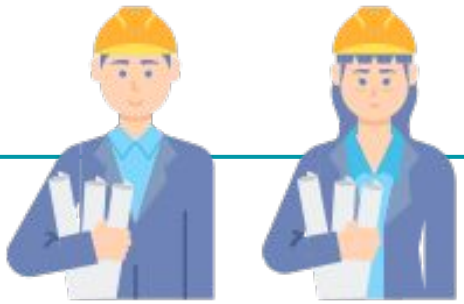


ARCHITECTURE 101

G4
Basic

Do you have what it takes to be a successful architect? Then do these tasks below!

1. Select an object at home that displays an angle.
2. Draw the object on the space provided.
3. Label the parts of the object that act as vertex and arms.
4. Estimate the angle measurement.
5. identify what type of angle is made.

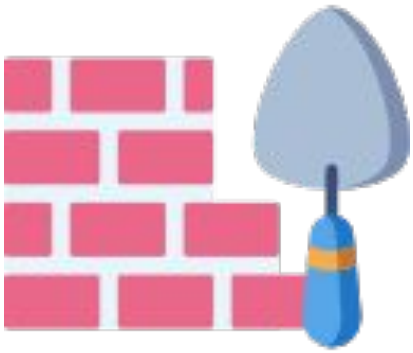


HOUSE PROJECT

G4
Basic

The house project is about to start! Help Archie accomplish the house tasks below.

Task 1: Give five angle measurements that are classified as acute angles.



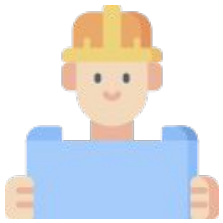
Task 2: Draw an angle whose measure is 90 degrees.

IDENTIFYING ANGLES

G4 Basic

Look at these angles below. Archie is asked by his supervisor to classify them based on their measurement. According to him, angle measurement is an essential lesson that an architect should know.

	1. 90°		6. 13°
	2. 45°		7. 91°
	3. 100°		8. 90.5 °
	4. 185°		9. 360°
	5. 270°		10. 150°



	11. 2.5°		16. 119°
	12. 105°		17. 281°
	13. 312°		18. 355°
	14. 48°		19. 200°
	15. 21°		20. 66°

CONSTRUCTING PLATES

G4
Basic

One of the works of an architect is creating plates. Plates are written plan of their project. Today, your plate is constructing angles based on its type.

1. Acute angle	2. Right angle
3. Obtuse Angle	4. Straight Angle
5. Reflex Angle	6. Full Rotation angle

LOCATING THE RIGHT ANGLES

G5 Advanced

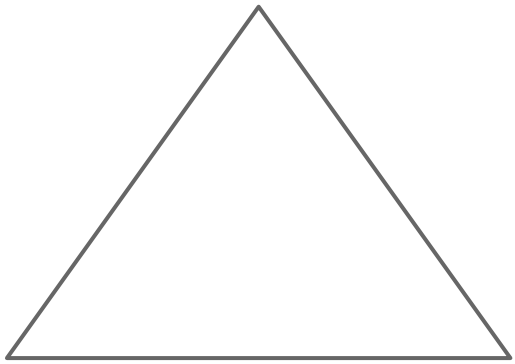
Can you locate any right angle at your house right now? Take a picture of it, print and paste it below. Think of a creative title for the picture. Provide a caption by explaining the reason why the image is an example of right angle in real life.

Caption:

ARCHIE GOT IT RIGHT

G5 Advanced

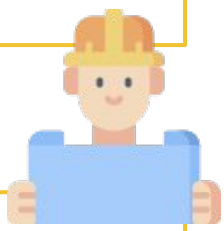
Archie needs to get the new project. Label the angles present on each polygon and write the sum of its interior angles.



Name of polygon:

Measurement of each angle:

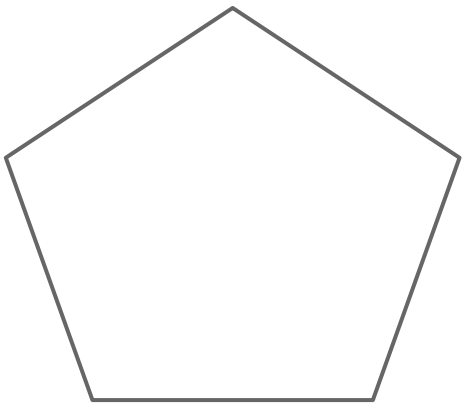
Sum of the interior angles:



Name of polygon:

Measurement of each angle:

Sum of the interior angles:



Name of polygon:

Measurement of each angle:

Sum of the interior angles:

ARCHITECTURAL SHAPES

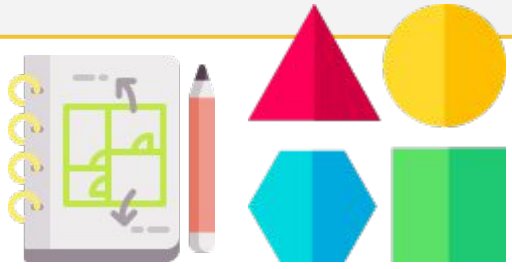
G5 Advanced

These shapes are needed for Archie's current project. Read and answer each word problem. Use your understanding of angles and polygons to complete each given.

1. One of Archie's staff has to draw a regular pentagon. Given that, what should be the measurement of each interior angle? How about its sum?

2. A hexagon-shaped structure has to be built at the center of the new presentation room. It is said that this hexagon must be a regular type. What should be the measurement of each interior angle?

3. Archie's client is fascinated with heptagon- inspired designs. If Archie needs to create a regular heptagon, how many degrees should each interior angle must have?

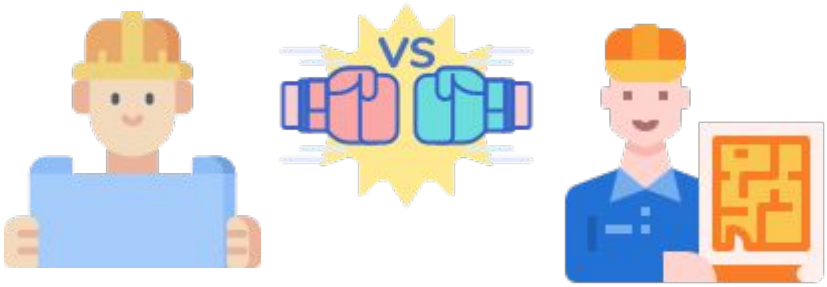


DESCRIBE YOUR DESIGN

G5 Advanced

Archie and his best friend, Kenny, are challenging each other about architecture, shapes, and angles. The following are the statements. Write TRUE if it a correct statement. If not, encircle the invalid word and correct the statement.

	1. A square has a 360 degrees as the sum of its interior angles.
	2. The sum of the interior angles of a seven-sided polygon is 950 degrees.
	3. A triangle that has 60° on each angle is called isosceles triangle.
	4. Trapezoid is a type of regular polygon.
	5. A regular hexagon has 120° on each six angles.
	6. A heptagon is considered regular is each of its angles measures 128°.



ARCHITECTURAL PLATE NO.1

G5 Advanced

Be an aspiring architect today. You have a plate to complete and you need to accomplish the tasks given below.

Task 1: Choose two architectural pieces at your house. If none, anything that has a stunning design. Note: the objects must be polygon-shaped.

Task 2: Draw the outline of the object. You are expected to draw a polygon-shaped outline. Using a protractor, measure the angle that each vertex is producing. Use that to label your drawing.

Task 3: Based on the angle measures, are the objects can be considered as regular polygons? Why or why not?

ANSWER GUIDE

Activity 1

1. Full rotation angle	2. Right angle	3. Straight angle
4. Obtuse angle	5. Reflex angle	6. Acute angle

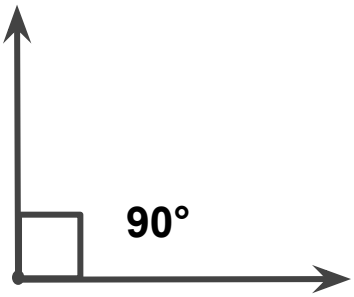
Activity 2

Answers may vary.

Activity 3

Task 1 sample answers: 89°, 45°, 30°, 21°, 18°

Task 2 :



Right Angle

Activity 4

1. Right	2. Acute	3.obtuse	4. Reflex
5. Reflex	6. Acute	7. Obtuse	8. Obtuse
9. Full rotation	10. Obtuse	11. Acute	12. Obtuse
13. Reflex	14. Acute	15. Acute	16. Obtuse
17. Reflex	18. Reflex	19. Reflect	20. acute

ANSWER GUIDE

Activity 5

Answers may vary.

Activity 6

Answers may vary.

Activity 7

1. Triangle, 60 degrees, 180 degrees
2. Square, 90 degrees, 360 degrees
3. Pentagon, 108 degrees, 540 degrees

Activity 8

1. Each angle must be 108 degrees and the sum is 540 degrees.
2. 120 degrees
3. 128.5 degrees

Activity 9

1. TRUE
2. 950 -- 900
3. Isosceles --- equilateral
4. Trapezoid --- square
5. TRUE
6. 128 --- 128.5 degrees

Activity 10

Answers may vary.

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