



Helping With Math

Understanding Angles and Its Measures

GRADE 4



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.

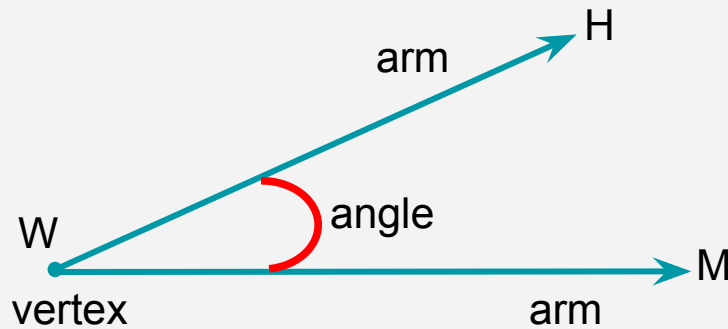


Did you know that....

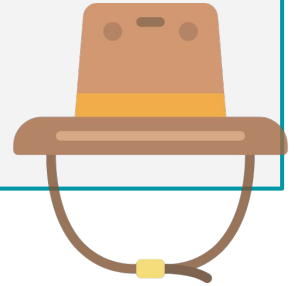
Slope angles in the 35-45 degree range will be more like climbing than hiking, requiring the use of your hands as well as feet to ascend.



RECOGNIZING ANGLES



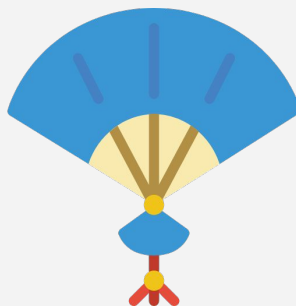
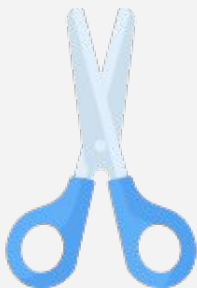
This is angle HWM or $\angle HWM$.



PARTS OF AN ANGLE

- Arms:
 - The two rays joining to form an angle are called arms of an angle. Here, WH and WM are the arms of the $\angle HWM$.
- Vertex:
 - 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 $\angle HWM$.

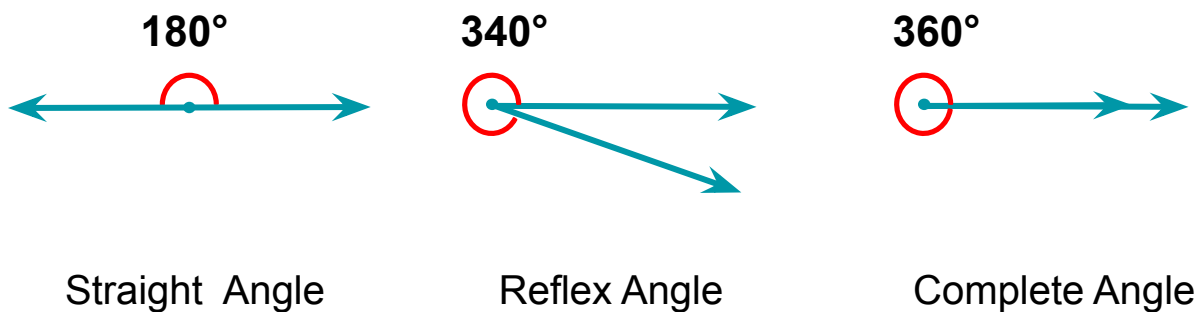
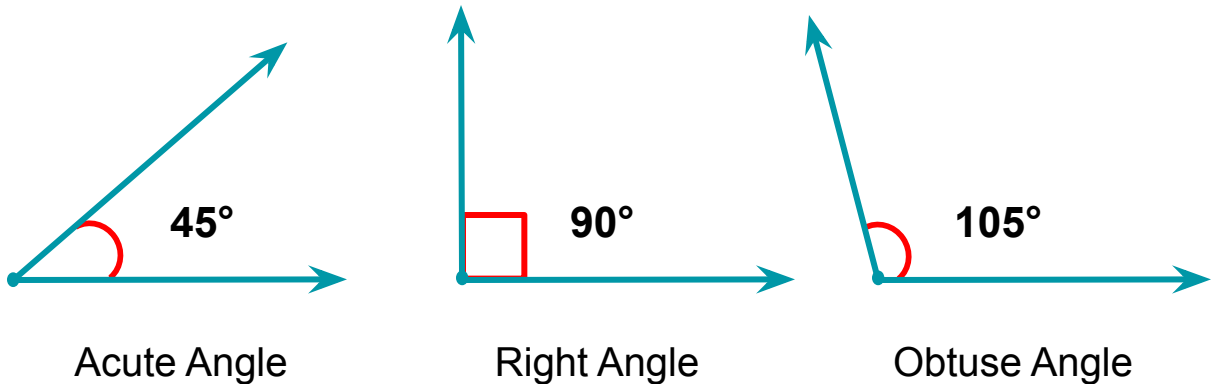
ANGLES IN LIFE



TYPES OF ANGLES

Angles can be classified in terms of their measurements as:

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



Trivia: We name angles using uppercase letters.



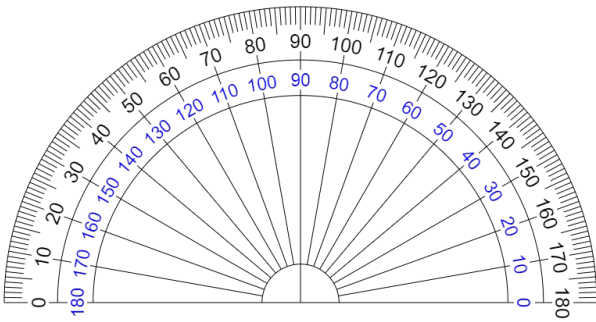
MEASURING ANGLES

REMEMBER!



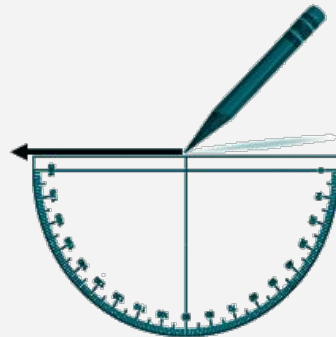
- ★ **Acute Angles:** angles that are smaller than 90°
- ★ **Right Angles:** angles that measure exactly 90°
- ★ **Obtuse Angles:** angles that measure more than 90°
- ★ **Straight Angles:** angles that measure exactly 180°
- ★ **Reflex Angles:** angles that measure more than 180°
- ★ **Full Rotation:**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

DRAWING ANGLES USING PROTRACTOR



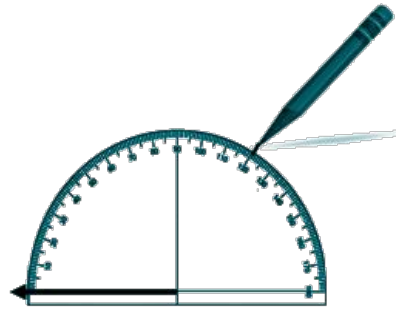
Protractor is an instrument for measuring angles, typically in the form of a flat semicircle marked with degrees along the curved edge.

1. Begin by using the protractor's straight edge to draw the first ray.

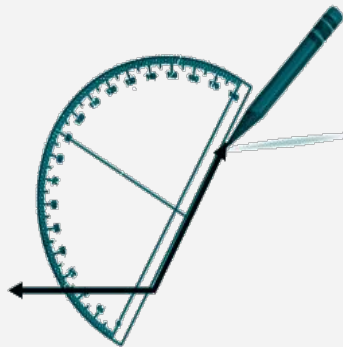


DRAWING ANGLES

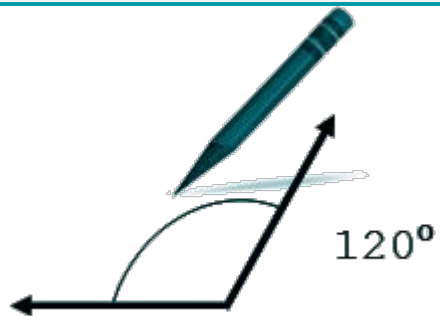
- Line up the endpoint of the ray with the crossed lines on the straight edge of the protractor. Follow the numbers on the curve and make a mark by the number of the angle you want to draw.



- Use the straight edge to connect the mark with the endpoint of the first ray.



- Label the angle with the correct measurement.



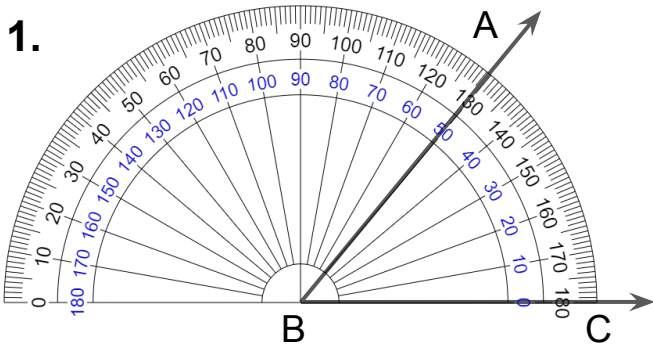
Measuring Angles Using a Protractor

- Identify the vertex, or center point, of the angle.
- Place the origin/center-point of the protractor over the vertex.
- Line up the bottom edge of the protractor with one of the edges, or rays of the angle.
- Read the measurement of the angle.

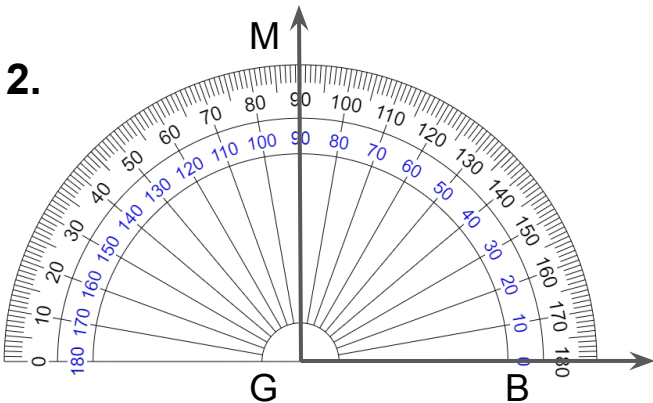


PRACTICE EXERCISES

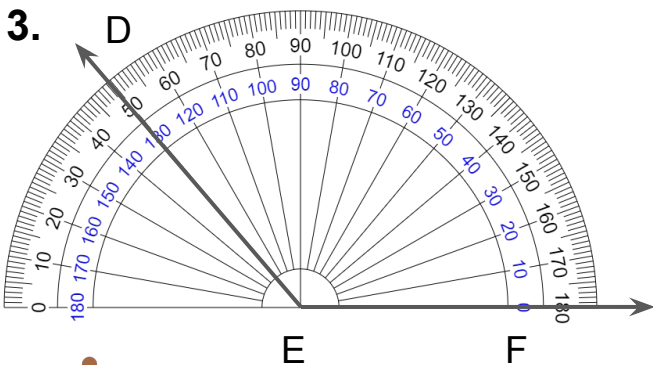
Complete the following details of the given angles below.



Name of the angle: _____
Measure of the Angle: _____
Classification of Angle: _____



Name of the angle: _____
Measure of the Angle: _____
Classification of Angle: _____



Name of the angle: _____
Measure of the Angle: _____
Classification of Angle: _____

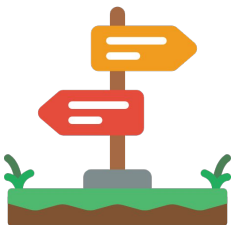


TABLE OF ACTIVITIES

1. Hiker's Reminders
2. The Hiker's ID
3. What Do You See?
4. Camping Site
5. Following the Map
6. Camping Bags
7. The Bonfire
8. Tent Measurement
9. Hiking Steps
10. Hiking Stuff



HIKER'S REMINDERS

Don't forget the important reminders before going to a hike! Alongside, identify the terms being described in each number.

It is the figure formed by two rays meeting at a common endpoint.



1. _____

This is the term used to describe the common endpoint of two rays of an angle.



2. _____

An angle whose measurement is less than 90° .



3. _____

This is the angle measure of a complete rotation.



4. _____

An instrument used for drawing and measuring angles.

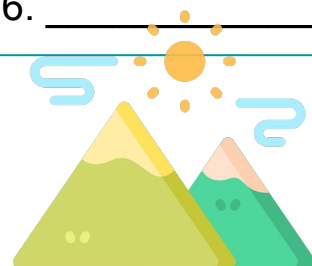
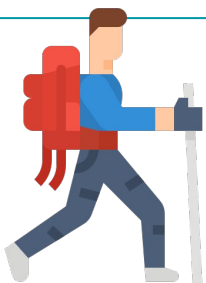


5. _____

This angle measure means half of a circle.



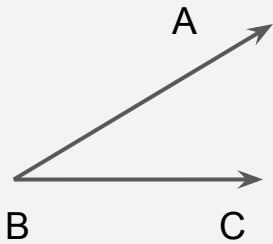
6. _____



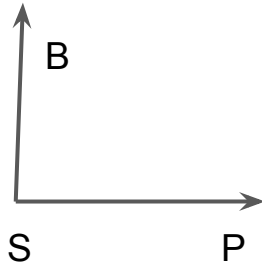
HIKER'S ID

As the hiker is looking for his ID, help these angles to know their names too! You may also create your own!

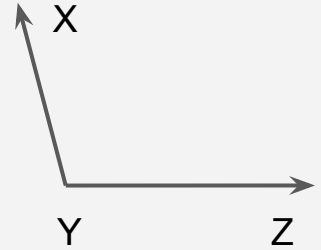
1.



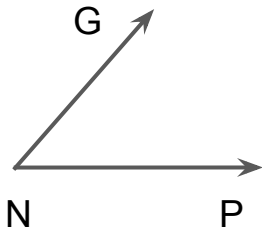
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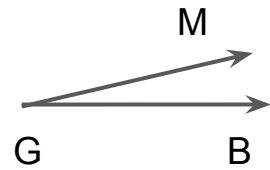
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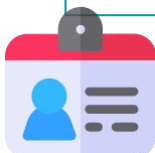
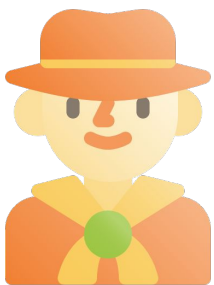


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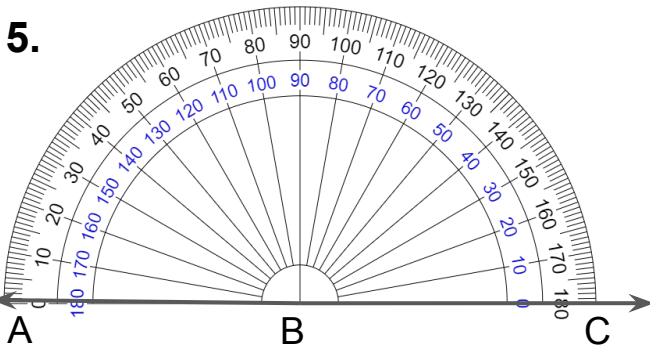
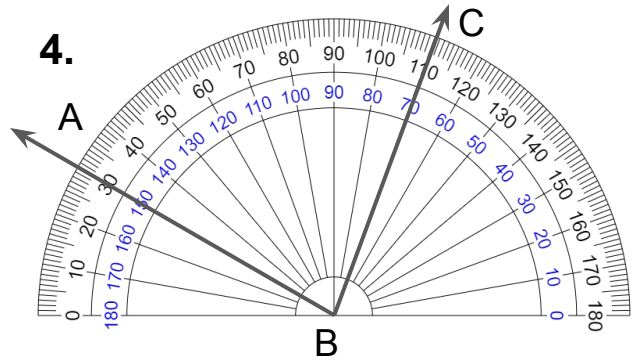
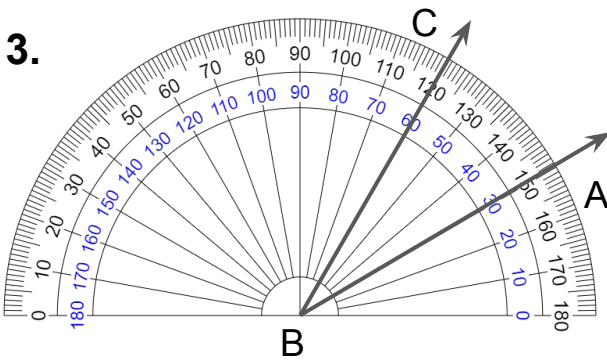
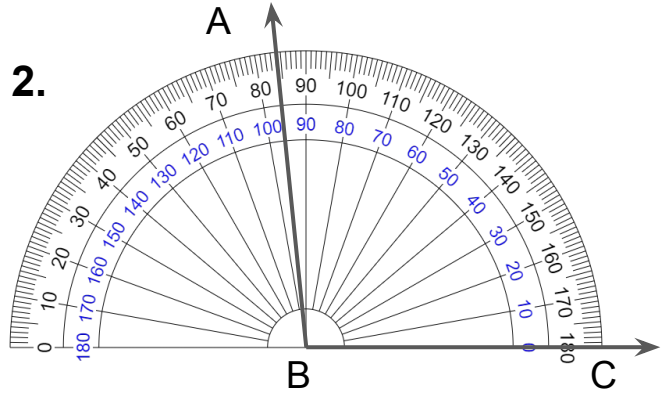
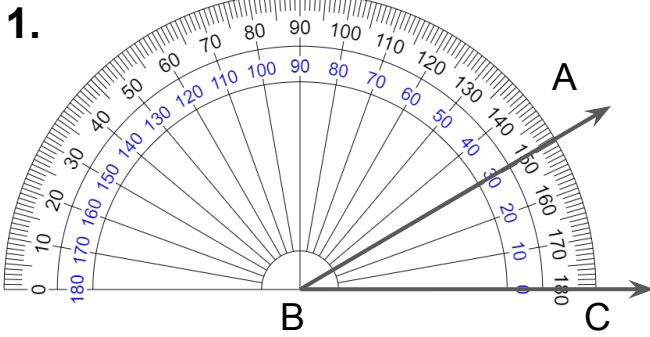
BONUS ROUND!
Create your own
angle and name it!

Do it here.



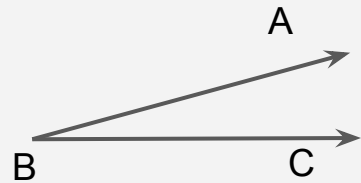
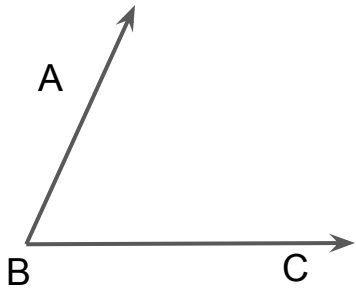
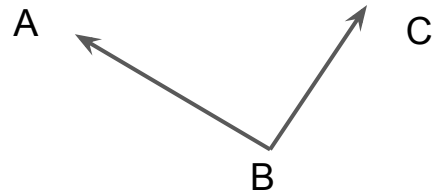
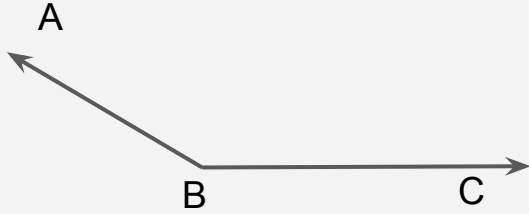
THE HIKING TRAIL

Do you see the hiking trail for today? Try to read these angle measures too! Write your answer on the space provided.



CAMPING SITE

Look at this undiscovered angles on our camping site. Unleash these angles by writing their degree measure. Use protractor for accuracy.



FOLLOWING THE MAP

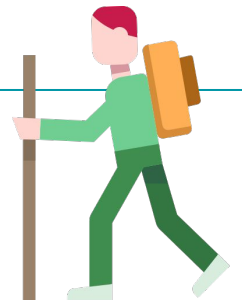
Arrive at the camping site by following the given map. Draw the given angle. Use protractor for accuracy.

1. $\angle BOM = 45^\circ$

2. $\angle ADM = 72^\circ$

2. $\angle HWM = 100^\circ$

4. $\angle LED = 215^\circ$



CAMPING BAGS

Look what's inside these camping bags! Classify these angles based on their measurements.



1. 105°

2. 90°

3. 45°

1.

2.

3.



340°

180°

360°

4.

5.

6.



THE BONFIRE

Keep the fire burning as you classify these angles. Group these angles based on their measurements.

Acute Angles	Right Angles	Obtuse Angles
Straight Angles	Reflexive Angles	Complete Rotation

- $\angle AOB = 45^\circ$
- $\angle MOP = 108^\circ$
- $\angle RSY = 300^\circ$
- $\angle APC = 90^\circ$
- $\angle LMN = 2^\circ$
- $\angle FYI = 180^\circ$

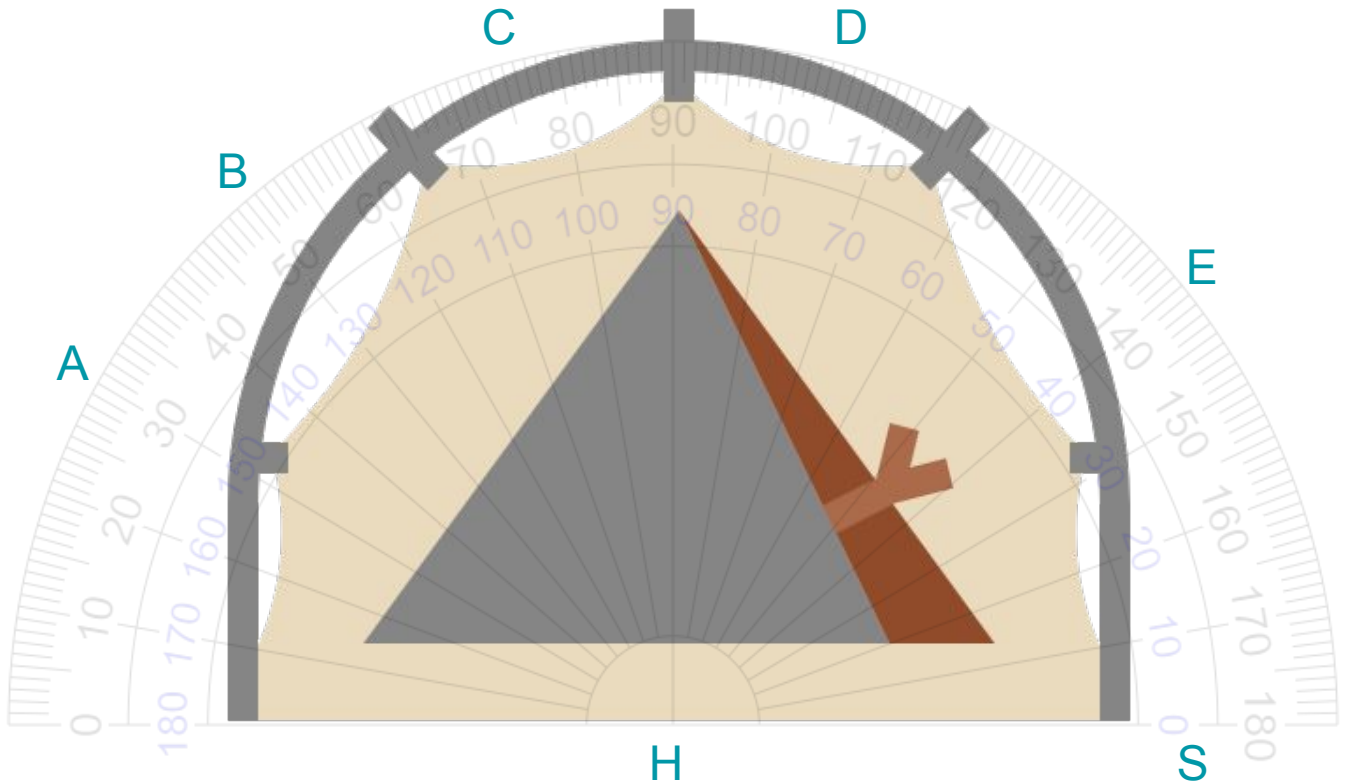
- $\angle NGI = 180^\circ$
- $\angle SOC = 360^\circ$
- $\angle TLE = 250^\circ$
- $\angle MAT = 21^\circ$
- $\angle SCI = 120^\circ$
- $\angle FIL = 201^\circ$

- $\angle LGU = 360^\circ$
- $\angle LIP = 90^\circ$
- $\angle MGB = 89^\circ$
- $\angle IJA = 350^\circ$
- $\angle LTE = 36^\circ$
- $\angle COM = 50^\circ$



TENT MEASUREMENT

Examine the camping tent. Determine the measure of the given angles below.



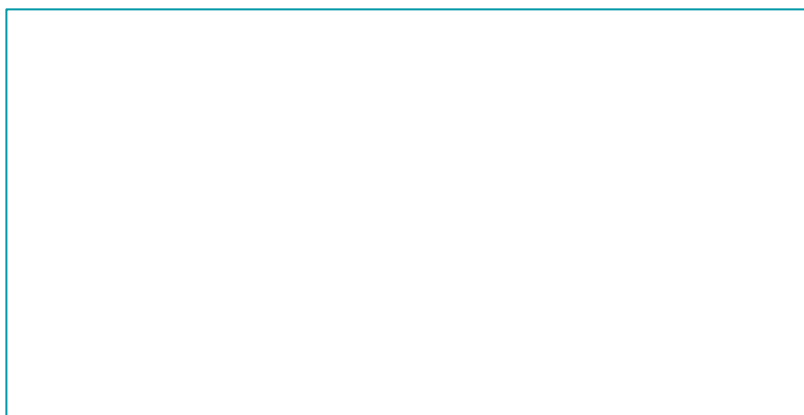
1. $\angle CHS$	2. $\angle SHE$	3. $\angle SHB$	4. $\angle AHS$	5. $\angle DHS$
6. $\angle AHB$	7. $\angle AHC$	8. $\angle DHE$	9. $\angle BHD$	10. $\angle AHE$



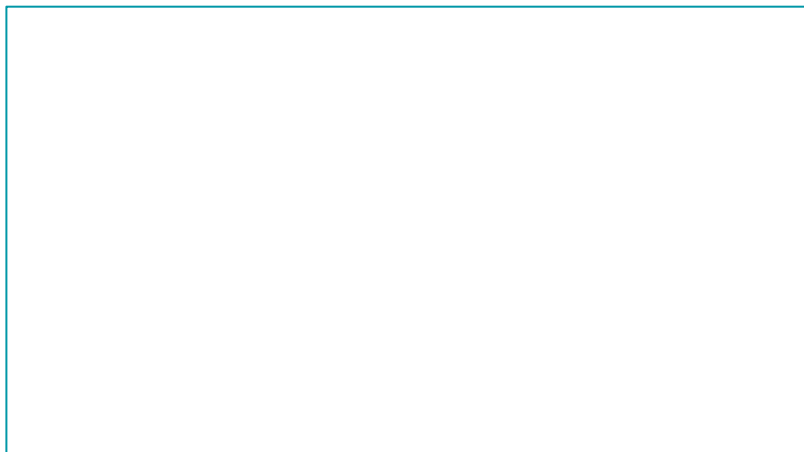
HIKING STEPS

Hiking is so fun to do! Can we make it more challenging by following these steps?

1. Draw two rays and name them as ST and HT.
2. These two rays should meet at a common point, T.
3. Have this figure equal to an obtuse angle.



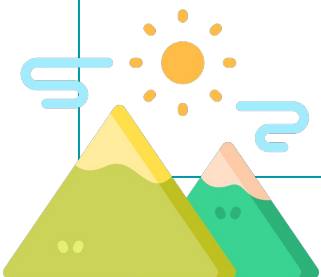
1. Draw two rays and name them as HW and MW.
2. These two rays should meet at a common point, T.
3. Have this figure equal to a right angle.



HIKING STUFF

Look around your house. Find four things that are useful when you do hiking or camping. Using your protractor, find the measurement of the angle made by the two consecutive sides of it. A table is provided for your answer.

Hiking/Camping Object (You may draw it here)	Angle Measures



ANSWER GUIDE

Activity 1

- | | | |
|----------------|---------------|----------------|
| 1. Angle | 2. Vertex | 3. Acute angle |
| 4. 360 degrees | 5. Protractor | 6. 180 degrees |

Activity 2

- | | | |
|-----------------|-----------------|-----------------|
| 1. $\angle AOC$ | 2. $\angle BSP$ | 3. $\angle XYZ$ |
| 4. $\angle GNP$ | 5. $\angle PQR$ | 6. $\angle MGB$ |

Activity 3

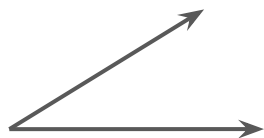
- | | | | | |
|---------------|---------------|---------------|---------------|----------------|
| 1. 30° | 2. 95° | 3. 30° | 4. 80° | 5. 180° |
|---------------|---------------|---------------|---------------|----------------|

Activity 4

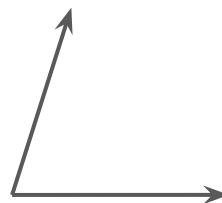
- | | | | |
|----------------|---------------|---------------|---------------|
| 1. 150° | 2. 92° | 3. 65° | 4. 15° |
|----------------|---------------|---------------|---------------|

Activity 5

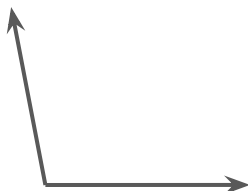
1.



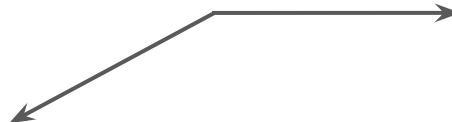
2.



3.



4.



ANSWER GUIDE

Activity 6

- | | | |
|-----------|-------------|----------------------|
| 1. Obtuse | 2. Right | 3. Acute |
| 4. Reflex | 5. Straight | 6. Complete rotation |

Activity 7

Acute angles: $\angle AOB$, $\angle LMN$, $\angle MAT$, $\angle MGB$, $\angle LTE$, $\angle COM$

Right angles: $\angle APC$, $\angle LIP$

Obtuse angles: $\angle MOP$, $\angle SCI$

Straight angles: $\angle FYI$, $\angle NGI$

Reflex angles: $\angle RSY$, $\angle TLE$, $\angle FIL$, $\angle IJA$

Complete rotation: $\angle SOC$, $\angle LGU$

Activity 8

- | | | | | |
|----------------|---------------|----------------|----------------|----------------|
| 1. 105° | 2. 40° | 3. 130° | 4. 150° | 5. 75° |
| 6. 20° | 2. 45° | 3. 35° | 4. 55° | 5. 110° |

Activity 9 & 10

Answers may vary.



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