G4-G5 Basic

G7 Advanced

Helping With Math

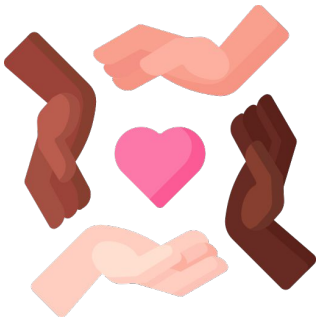
GRADES

Spatial Skills:
Angles

Suitable for students
aged 8-12

This pack is suitable for learners aged 8 to 12 years old or 4th to 7th grades. The content covers fact files and relevant basic and advanced activities of angles topics that aim to develop and strengthen the learners' spatial skills.

We are all equal!



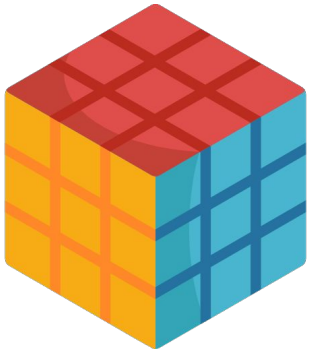
Human Rights Day is celebrated every 10th of December to commemorate the adaptation of Universal Declaration of Human Rights by the United Nations General Assembly which proclaims the rights of everyone regardless of race, color, religion, sex, language and other status.

Spatial Skills

Spatial skills enable us to mentally visualize, manipulate, and organize spatial relationships in real life. Using this skill, we are able to quantify the physical spaces of the objects around us.

CONCEPTS

SPATIAL SKILL



- This is the ability to reason, understand, and remember the spatial relationships among each objects.
- There are four types: *spatial perception, spatial visualization, mental folding, and mental rotation.*
- It is said that spatial skills are related to mathematical learning and performance.
- Young children can already learn spatial skills through words being used by their parents. Words that are used describe the size *(big, enormous, wide, etc.)*, shapes *(round, square, diamond,etc.)* and spatial concepts (*over, under, beside, etc.).*
- Having this skill allows us to be conscious of the things in our environment, like the following:

★ Location - This helps us identify the location of an object.

★ Movement - This skill helps you to navigate your surroundings and inform you how people and objects move.

★ Social - This can affect social functions by helping you identify the personal space of a person.

★ Reading & Writing - This helps us understand the sentence structure and grammar.

★ Mathematics - This helps us to understand geometry and arranging numbers

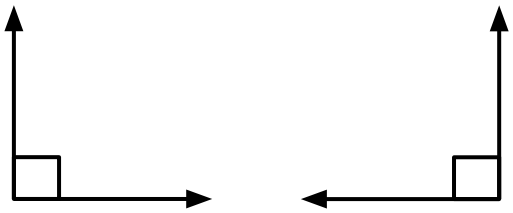
CONCEPTS

ANGLES

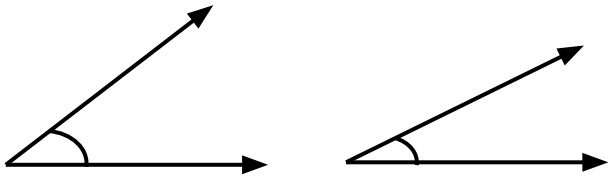
- These are the spaces made by two intersecting lines or surfaces.
- It has two parts: arms and vertex. Arms are the two lines that meet to form an angle, while vertex is the corner point where the arms meet.

TYPES OF ANGLES

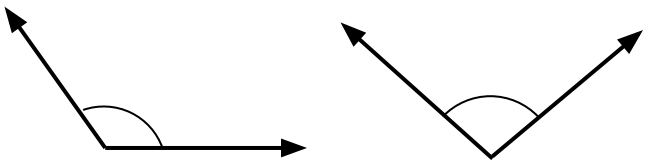
★ **Right Angles**
- Angle that measures at exactly 90º



★ **Acute Angles**
- Angle that measures less than 90º

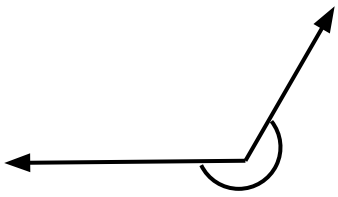


★ **Obtuse Angles**
- Angle that measures at more than 90º but less than 180º

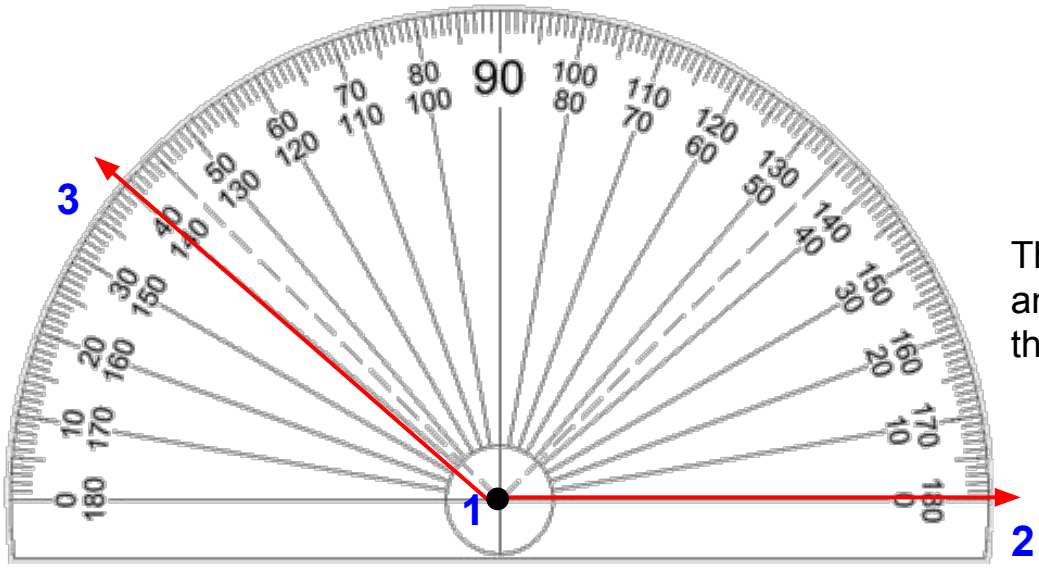


★ **Straight Angles**
- Angle that measures exactly 180º

★ **Reflex Angles**
- Angle that measures exactly more than 180º



USING A PROTRACTOR



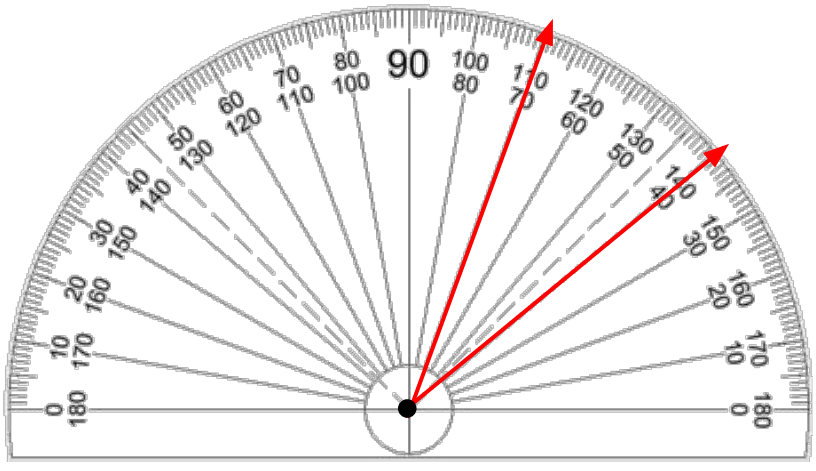
This is a 140° angle based on the protractor.

1. Place the vertex of the angle in the middle of the protractor.

2. One of its arm should lie along 0°.

3. Count the measurement of the angle starting from 0°, until it reaches the position of the other arm.

For reflex angle: Since a whole revolution is at 360°, you need to subtract the inner angle with 360° to get the measurement of a reflex angle.



If both arms won't fall on the baseline of the protractor, subtract the given degree measures of one arm to the other.

In this case, subtract 70° or 110° with 40° or 140°, respectively. Either ways, the measurement of this angle is 40°.

OTHER TYPES OF ANGLES

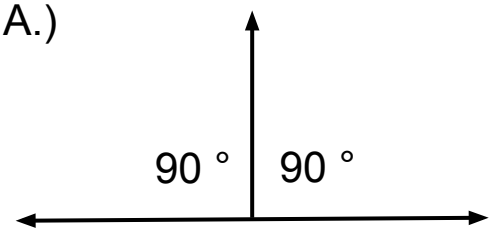
When two straight lines crossed each other, they form pairs of angles. In this worksheet, we will tackle four pairs of angles namely: **supplementary**, **complementary**, **vertical** and **adjacent angles**.

Supplementary Angles

- Supplementary Angles are angles that form a straight line or what we call a linear pair.
- Linear pair has an angle that measures 180 degrees. Thus, if you have 2 angles that are equal to 180 degrees when added together, you have supplementary angles.

Examples:

A.)



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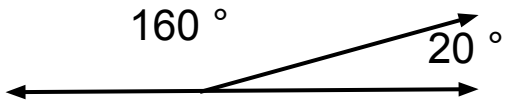
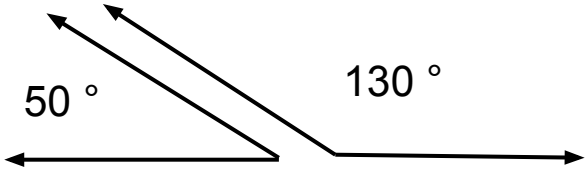


C.)



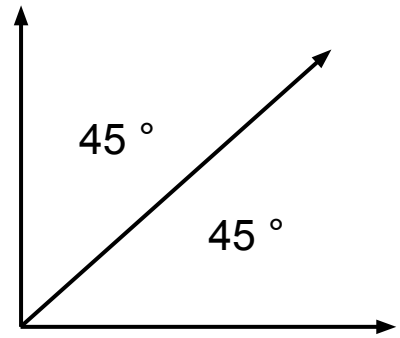
OTHER TYPES OF ANGLES

Complementary Angles

Complementary angles are angles, as the name itself, complement each others. These are angles that form a corner that measures 90 degrees.

Examples:

A.)



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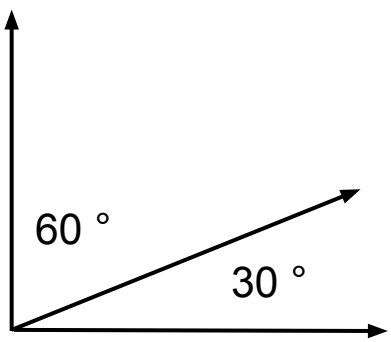

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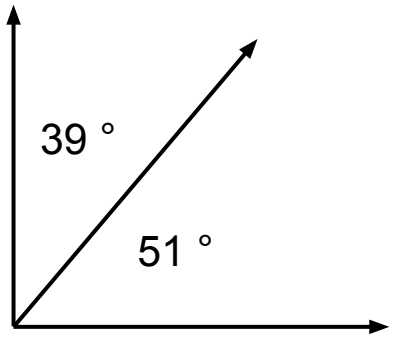


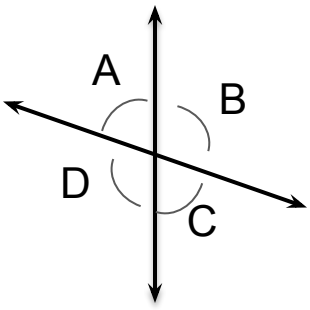
OTHER TYPES OF ANGLES

Vertical Angles

Vertical Angles are a pair of nonadjacent angles formed by two lines crossing each other.

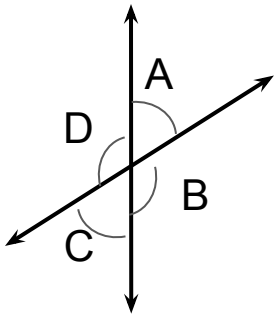
Examples:

A.)



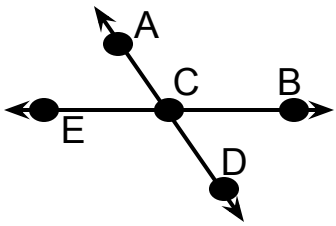
- ∠A and ∠ C are vertical angles
- ∠D and ∠B are vertical angles

B.)



- ∠A and ∠ C are vertical angles
- ∠D and ∠B are vertical angles

C.)



- ∠ACB and ∠ECD are vertical angles
- ∠ACE and ∠BCD are vertical angles

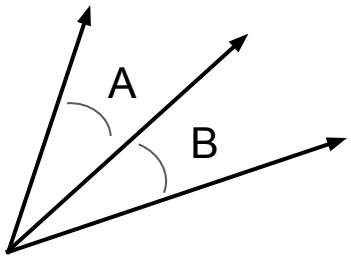
OTHER TYPES OF ANGLES

Adjacent Angles

Adjacent angles are angles that share the same vertex and lie on the same side but do not overlap.

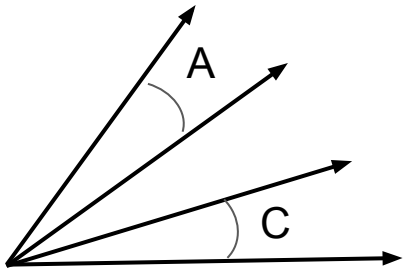
Examples:

A.)



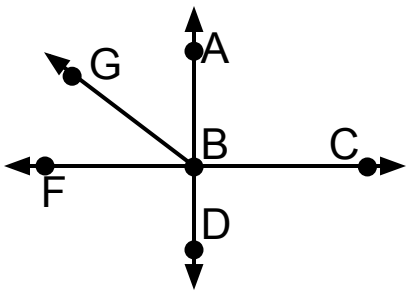
∠A and ∠B are adjacent angles because they share the same vertex, lie on the same side and do not overlap.

B.)



∠A and ∠C are NOT adjacent angles because they DO NOT share the same vertex.

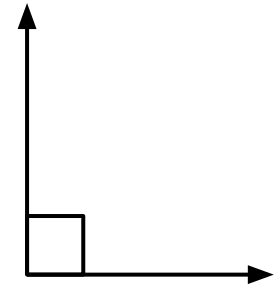
C.)

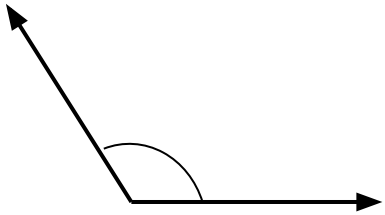


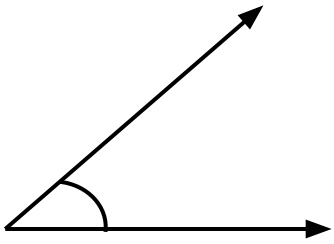
∠ABG and ∠GBF are adjacent angles because they share the same vertex, lie on the same side and do not overlap.

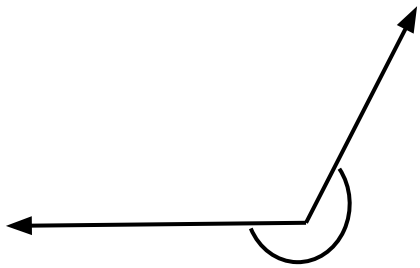
PRACTICE TIME!

Identify the types of angles below.

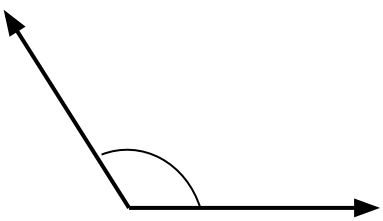


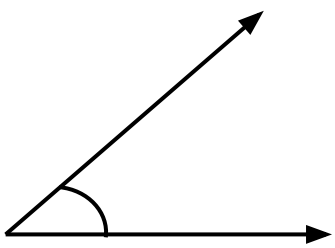






Find the measurement of the angles below.





PRACTICE TIME!

Read the following statements carefully and provide what is being asked.

1. What is the measure of the complement of m∠A= 45°

2. What is the measure of the supplement of m∠A= 95°

3. Angle A is opposite of angle B. If angle A measures 35 °. What is the measurement of ∠B?

4. What is the measure of the complement of m∠A= 45°

5. What is the measure of the supplement of m∠A= 108°

6. If angle A and angle B are vertical angles and angle B measures 76°, what is the measurement of angle A?

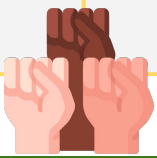
TABLE OF ACTIVITIES

NO TO RACISM

G4-G5
Basic

The color, gender or race of a person should not be a reason for him/her to be discriminated by other people. The angles, too, have different types. Illustrate the angles being described below.

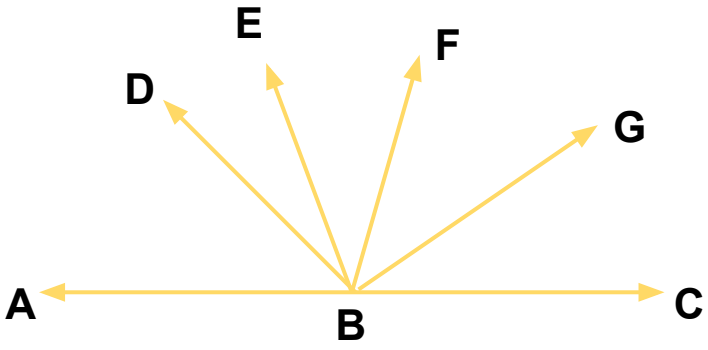
I am an angle that is measured at 160º, but I am equally divided into two parts. Can you illustrate and show my measurements?	
I am the angle that is perfectly measured at 90º. Can you illustrate me?	
I am an angle 60º. I am equally divided into 3 parts. Can you illustrate show my measurements?	
My equivalent angle is 120º. Can you illustrate me as a reflex angle?	



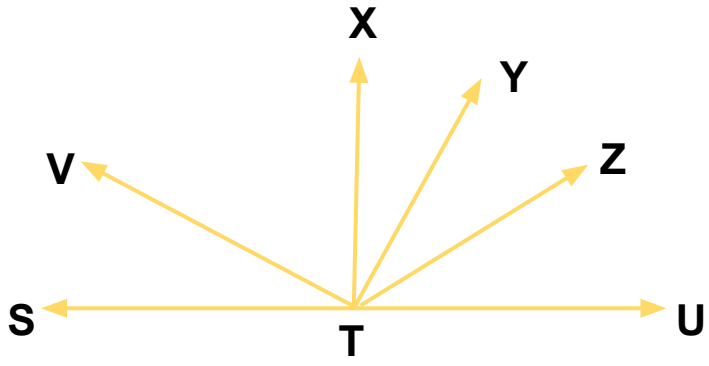
REMEMBER THE DAY

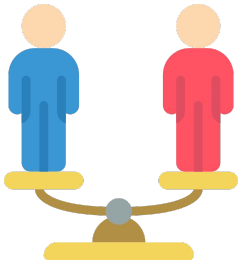
G4-G5
Basic

Human Rights Day is a very important occasion to remind us that we should all have fundamental human rights. Remember this day as you place the angles into its right group. Provide a maximum of 3 angles per type.



ACUTE	RIGHT	OBTUSE	STRAIGHT





ACUTE	RIGHT	OBTUSE	STRAIGHT

JOINING PROTESTS

G4-G5 Basic

Fight for equal rights for everyone. One way of celebrating this day is by joining protests to fight for human rights. While you are doing this, illustrate the given angle and identify its type.

1. **110º**	Draw:
Type:	

2. **50º**	Draw:
Type:	

3. **160º**	Draw:
Type:	

4. **210º**	Draw:
Type:	

5. **90º**	Draw:
Type:	

6. **180º**	Draw:
Type:	

TIME OF THE YEAR

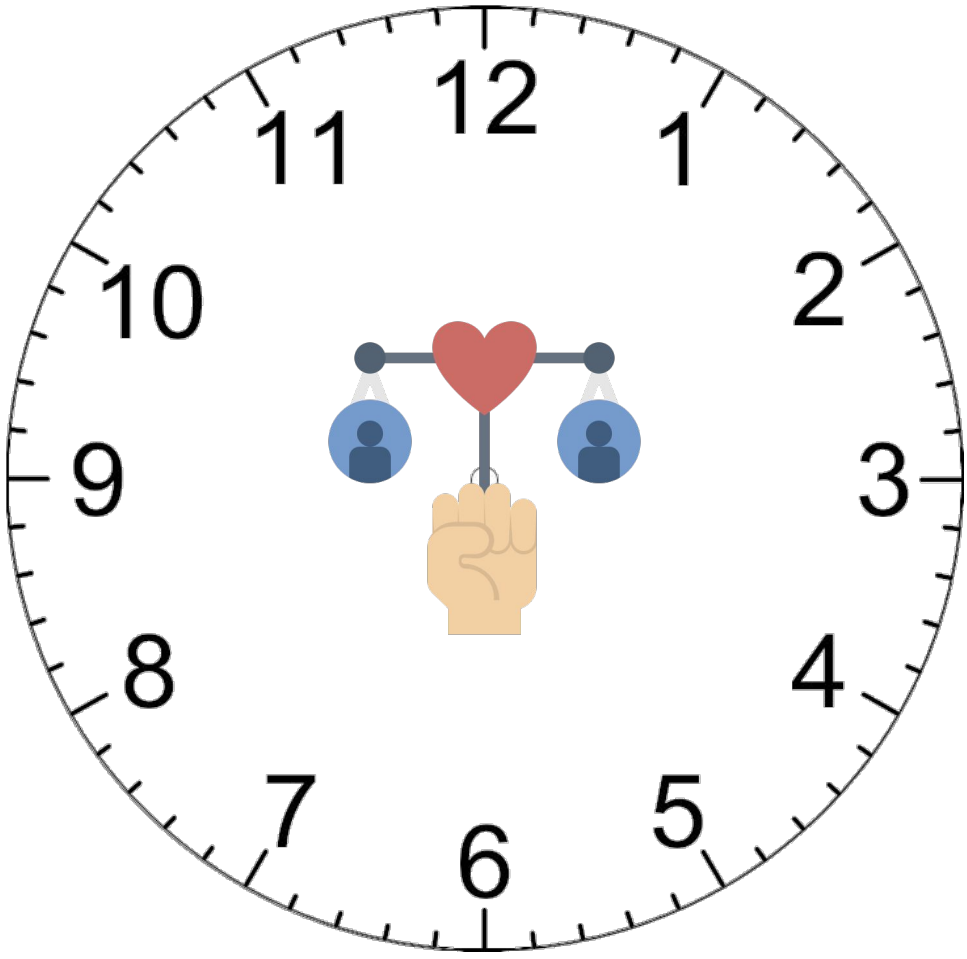
G4-G5
Basic

This is the time of the year that we celebrate our human rights. Provide the hands of the clock using the given time then identify the type of angles formed.

1. **5:00** =

2. **3:45** =

3. **1:20** =



4. **10:30** =

5. **8:55** =

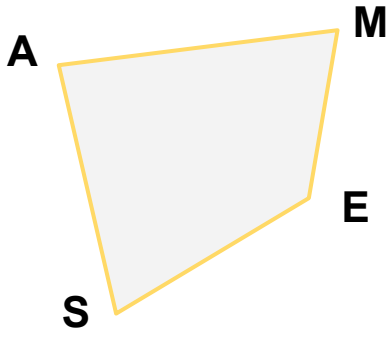
6. **9:00** =

KNOW YOUR RIGHTS

G4-G5
Basic

Learn more about your rights as a human. Never let anyone discriminate you. From the figures below, place a square if the angle is right, “a” if it is acute or “o” if it is obtuse.

1.



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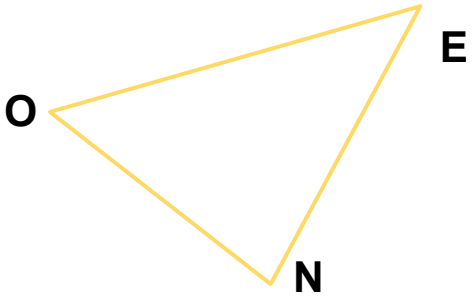

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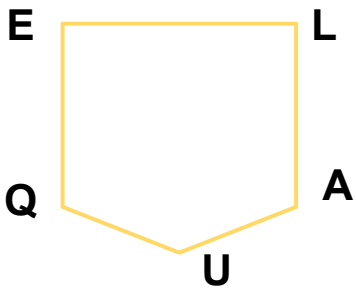

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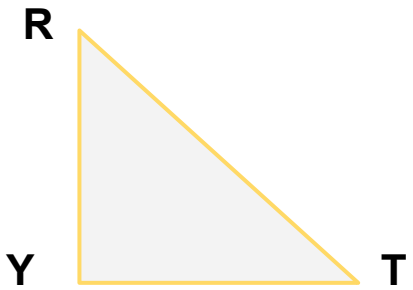

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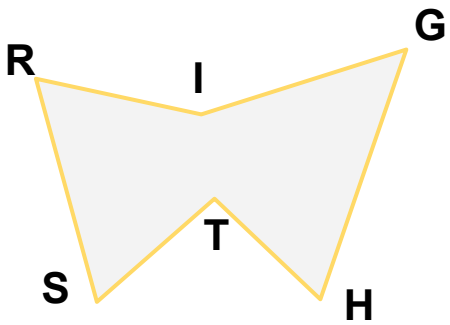
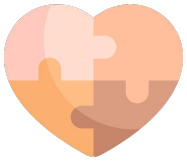
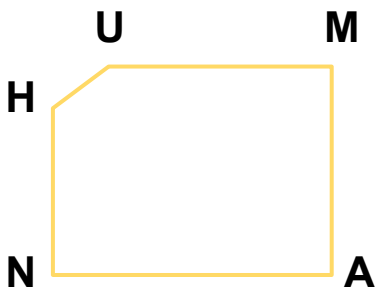




6.



500 LANGUAGES

G7 Advanced

The Universal Declaration of Human Rights is the most translated document. It has been translated for over 500 languages. Below are different types of angles. Find the measurement of their supplementary angles.

1. 85 degrees

_____

2. 104 degrees

_____

3. 13 degrees

_____

4. 60 degrees

_____

5. 121 degrees

_____

6. 156 degrees

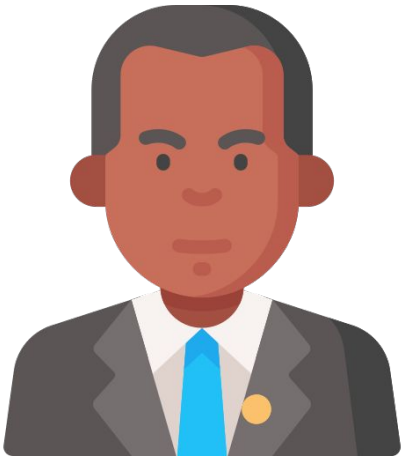
_____

ALL RACES ARE EQUAL

G7 Advanced

Martin Luther King, Jr. is one of the famous people known to fight for human rights. He fought to end racial segregation in the United States. Remember what he did, and find the measurements of the angles described below.

Do not forget to fight for your rights!



Martin Luther King, Jr.

1. If one arm of the angle falls on 10^o of a protractor and the other one is 100^o, what is the measurement of the angle?

_____

2. An arm of the angle falls on 70^o of a protractor and the other one is 120^o. Find the measurement of the angle.

_____

3. If one arm of the angle falls on 40^o of a protractor and the other one is 60^o, what is the measurement of the angle?

_____

4. An arm of the angle falls on 30^o of a protractor and the other one is 170^o. Find the measurement of the angle.

_____

CHARITY WORK

G7 Advanced

One way of celebrating Human Rights Day is by doing charitable works like doing donations. While thinking about where to donate, answer the following questions about reflex angles.

1. If a reflex angle is measured at 250º, what is the measurement of its equivalent angle?

_____

2. If a reflex angle is measured at 310º, what is the measurement of its equivalent angle?

_____

3. If a reflex angle is measured at 190º, what is the measurement of its equivalent angle?

_____

4. If a reflex angle is measured at 230º, what is the measurement of its equivalent angle?

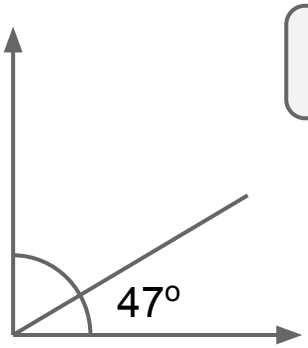
_____

PRESIDENTIAL ELECTION

G7 Advanced

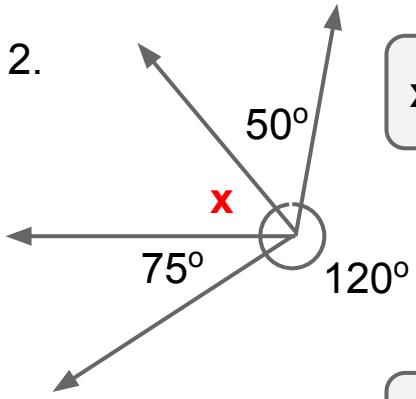
In Argentina, the inauguration of President Raul Alfonsin was on December 10, 1983 which ended the military dictatorship since 1976. Ever since this happened, the election in this country is done every December 10. Find the missing angles based on the given below. Remember that a whole rotation is made by 360º.

1.



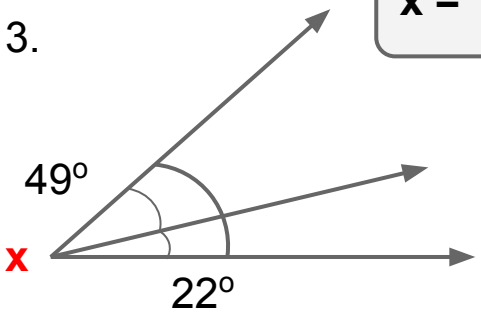
x =

2.



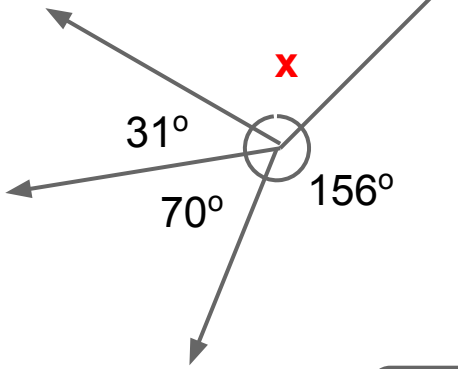
x =

3.



x =

4.



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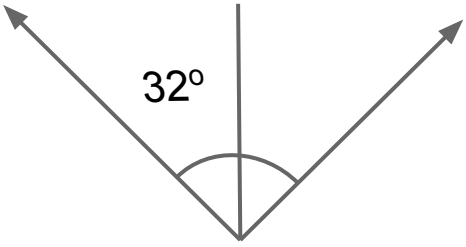

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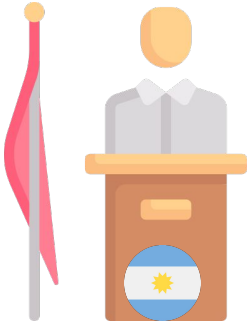

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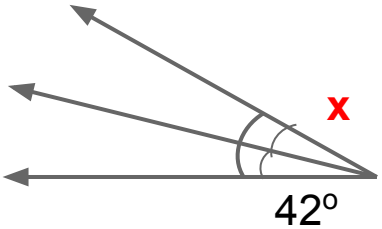


x =

FIGHT FOR HUMAN RIGHTS

G7 Advanced

There are certain groups who are active in fighting for human rights. Try to get to know these people and answer the following questions below.

1, A straight angle is divided into 3 parts. First part is 70º and second part is 60º. Find the missing part of the angle.

_____

2. A right angle is divided into two parts. One of its parts is measured at 50º. What the measurement of its complementary angle?

_____

We fight for human rights!

3. A 130º obtuse angle is divided into 3 parts - 30º and 60º. Find the missing part of the angle.

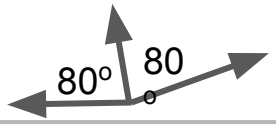
_____

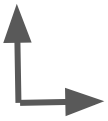
4. A 50º acute angle is divided into two equal parts. Find its measurements.

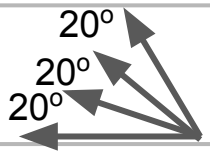
_____

ANSWER GUIDE

Activity 1

1. 

2. 

3. 

4. 

Activity 2

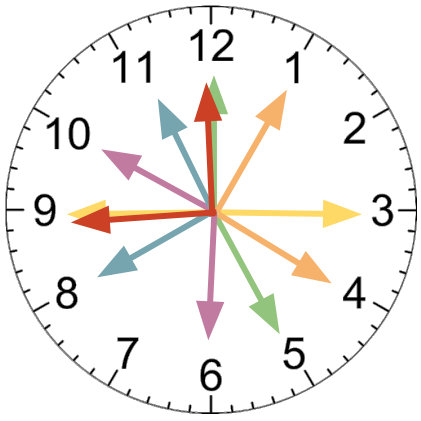
1. *Acute:* DBE, EBF, FBG, EBA, ABD, GBC | *Right:* None | *Obtuse:* DBG, ABF, ABG, DBC, EBC | *Straight:* ABC, CBA
2. *Acute:* STV, VTX, XTY, YTZ, ZTU, XTZ, YTU | *Right:* XTS, XTU | *Obtuse:* STY, STZ, VTU | *Straight:* STU, UTS

Activity 3

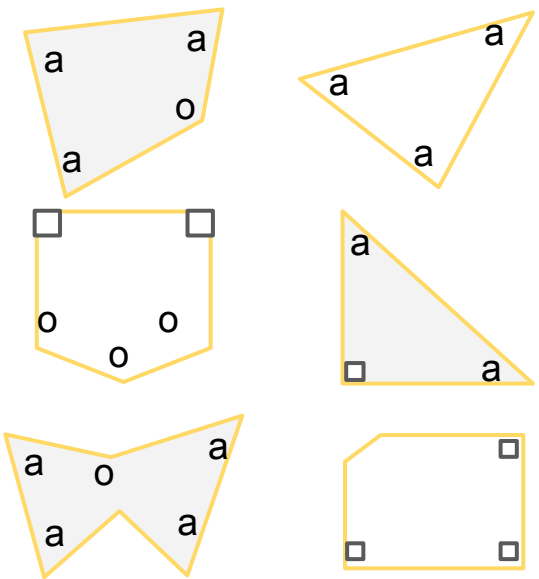
1. Obtuse 2. Acute 3. Obtuse 4. Reflex 5. Right 6. Straight
**Drawings may vary.*

Activity 4

1. Obtuse 2. Straight 3. Acute
4. Obtuse 5. Acute 6. Right



Activity 5



ANSWER GUIDE

Activity 6

1. 95 degrees	2. 76 degrees	3. 167 degrees
4. 120 degrees	5. 59 degrees	6. 24 degrees

Activity 7

1. 90º 2. 60º 3. 20º 4. 140º

Activity 8

1. 110º 2. 50º 3. 170º 4. 130º

Activity 9

1. 43º 2. 115º 3. 71º 4. 103º 5. 58º 6. 26º

Activity 10

1. 50º 2. 40º 3. 40º 4. 25º

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