



Sri Sathya Sai
VIDYA VAHINI
श्री सत्यसाई विद्या वाहिनी

Master Lesson Plan

for

03 - Lines and angles (ମୌଳିକ ଉତ୍ସାହିତକ ଚିତ୍ର)

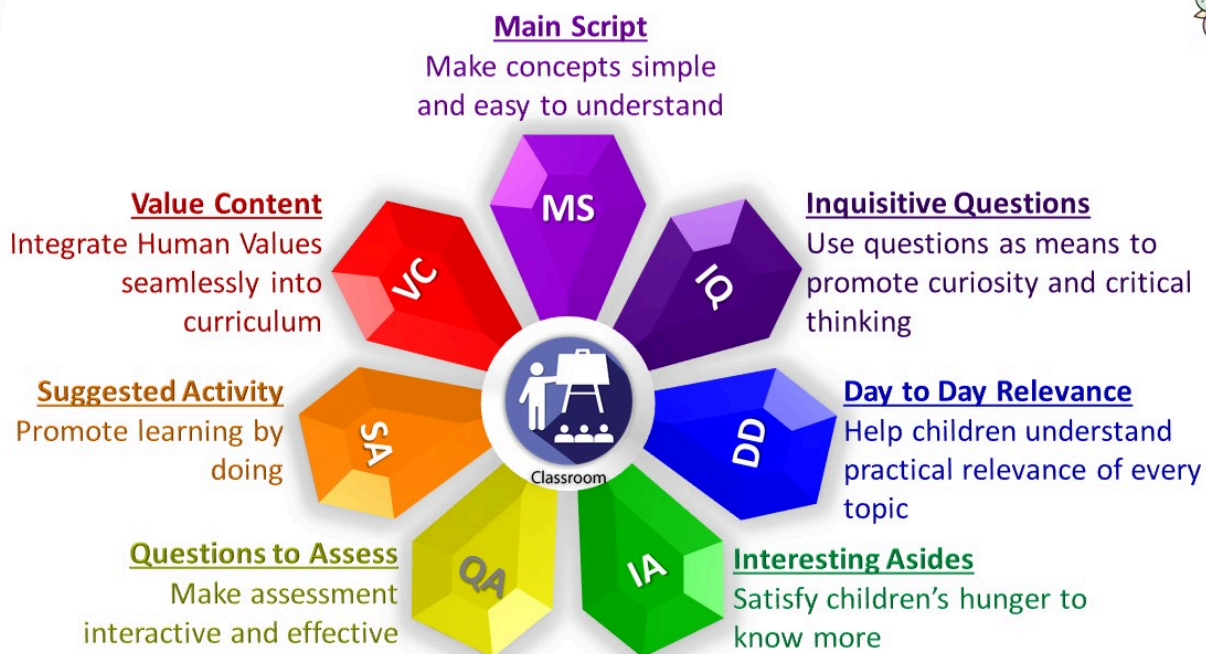
Board	Standard	Subject	Chapter	Language	Creation date
Odisha (English)	STD VII	Mathemat ics	03 - Lines and angles (ମୌଳିକ ଉତ୍ସାହିତକ ଚିତ୍ର)	English	26-03-2024 22:19:02

DISCLAIMER

- 1.Strictly not for Commercial use.
- 2.Provided on **as is** basis with no warranties of any kind.
- 3.Content that falls in Public Domain or common Knowledge facts can be used freely.
- 4.Some of the contents are owned by the Third parties and are used in compliance with their licensing conditions. Any one infringing the Copyright of such Third parties will be doing so at their own risks and costs.
- 5.Content can be downloaded and used for Personal, educational and informational purposes only. Any attempt to remove, alter, circumvent or distort the data that is accessed is Illegal and strictly prohibited.



Master Lesson Plan (MLP) - Covers the entire chapter with the help of these 7 asset types



For more information on how to use the lesson plan effectively, please scroll to the guidelines at the end of this document.

MS_Objectives_Lines and Angles

Notes to the teacher: This asset lays down the proposed plan for transacting this chapter. It states the asset objectives of the MLP.

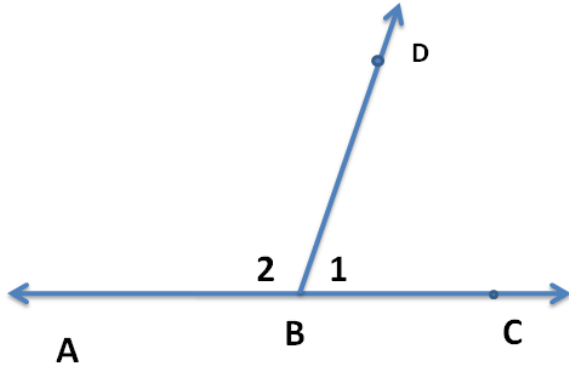
This asset is for the teacher's reference and need not be taught to the students.

Students will be able to

- identify lines and angles in daily life
- describe the basic geometrical concepts
- explain the meaning of complementary angles and supplementary angles
- solve problems on complementary and supplementary angles
- gain conflict management skills and leadership skills
- define adjacent angles with examples
- interesting facts about measuring angles
- analyze problems based on adjacent angles
- identify linear pair angles
- solve problems on Linear Pair
- show that vertically opposite angles are always equal
- define and identify intersecting lines
- identify angles made by a transversal on intersecting non-parallel lines
- identify the angles formed by parallel lines and the transversal
- solve problems based on angles made by the transversal

Time to teach	Asset type	Theme	Sub Theme
5 minutes	Main Script	Line, Curve & Angle	Adjacent angles

MS_Linear Pair definition with examples



Angle ABD and angle DBC are adjacent angles having one common side BD. Non-common sides BA and BC are opposite rays.

Also, ABC is a straight line. Hence angle ABD and angle DBC form a linear pair.

Example: If angle 2 = 140 degrees and angle DBC = 40 degrees, then

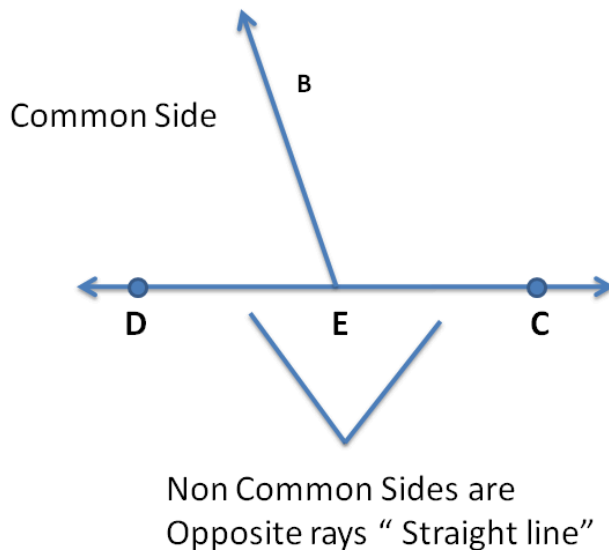
Angle ABD + angle DBC = 180 degrees

Hence Angle ABD and angle DBC form a linear pair.

Linear Pair

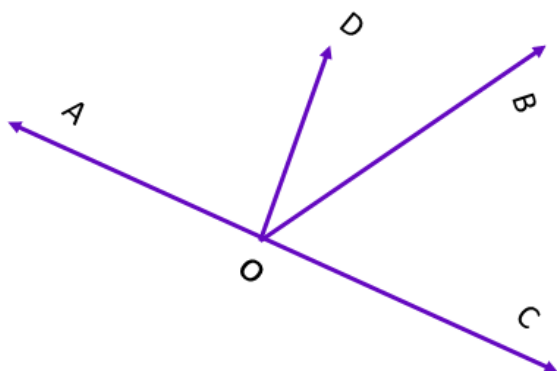
- Is a pair of adjacent angles
- Whose common sides are opposite rays
- The angles of a linear pair forms a straight line

Example: $\angle BED$ and $\angle BEC$



Definition:

A linear pair is a pair of adjacent angles whose non-common sides are opposite rays.



In the above figure, none of the adjacent pairs is a linear pair.

Angle BOD and angle BOC are adjacent angles but their non-common arms are not opposite rays.

Angle AOB and angle BOC form a linear pair since OA and OC are in opposite direction.

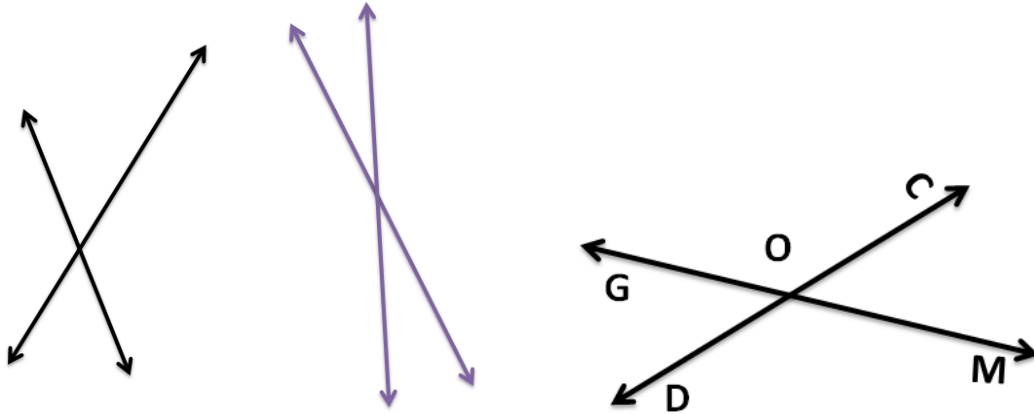
Similarly, angle AOD and angle DOC also form a linear pair.

Image Source: All original contribution by rajeswariraju.tr@gmail.com

Time to teach	Asset type	Theme	Sub Theme
10 minutes	Main Script	Line, Curve & Angle	Linear pair

MS_Pair of Lines - Intersecting Lines

Intersecting Lines



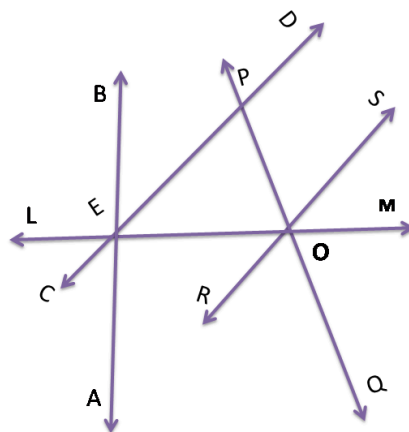
Two lines are drawn in the figure.

- GM and CD are two lines that meet each other at a single point O.
- GM and CD are called intersecting lines.
- No matter however much we produce or extend both the lines in any direction, these lines would intersect only at a single point.
- It is read as GM intersects CD at O or CD intersects GM at O. The common point O is called the point of intersection.

Intersecting lines in mathematics are lines that cross or meet at some point.

The common point at which the lines meet is called **the point of intersection**.

Basically, intersecting lines are lines that cross each other at least once and at only one point.



O and E are points of intersection. Lines LM, PQ & SR are intersecting lines.

Lines AB, LM & CD are intersecting lines.

Note: A line can intersect more than one line.

Crossroads, the alphabet X, a pair of scissors, a seesaw in the playground are classic examples of interesting lines,

that meet at a common point. When two or more lines meet at some point, we get intersecting lines.

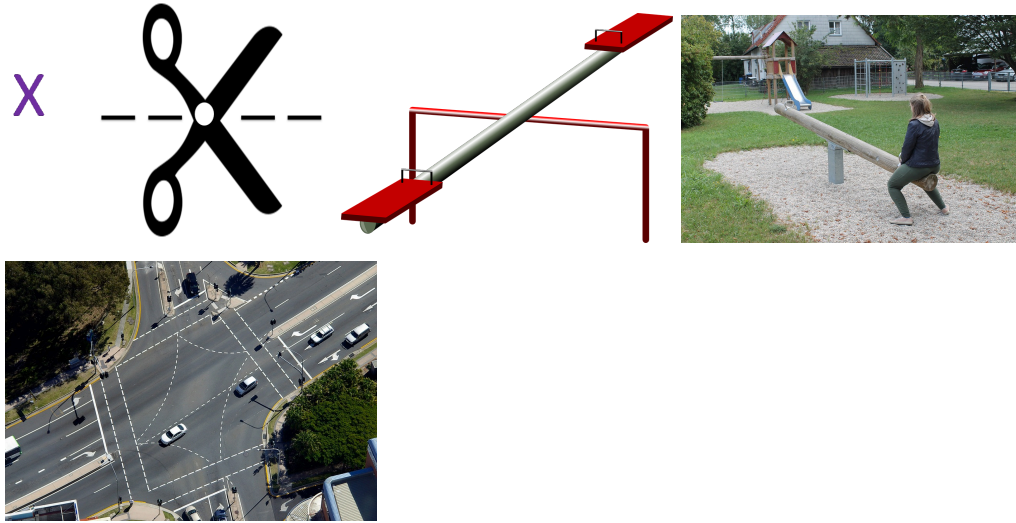


Image Source:

<https://pixabay.com/en/scissors-clipping-sharp-blades-162091/>

<https://pixabay.com/en/seesaw-teeter-totter-teeter-totter-41961/>

<https://pixabay.com/en/see-saw-playground-play-3670827/>

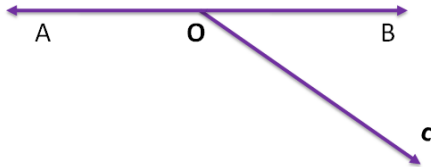
<https://pixabay.com/en/cross-road-junction-road-traffic-425054/>

Time to teach	Asset type	Theme	Sub Theme
10 minutes	Main Script	Line, Curve & Angle	Intersecting lines

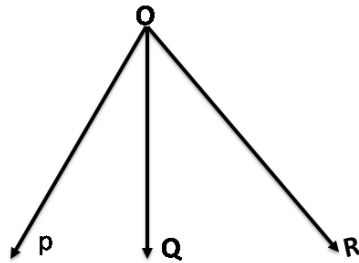
QA_Questions on Linear Pair

1. Which of the following form a linear pair of angles and which one of these form only adjacent angles and justify.

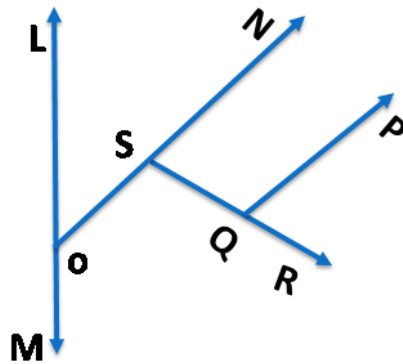
1.



2.

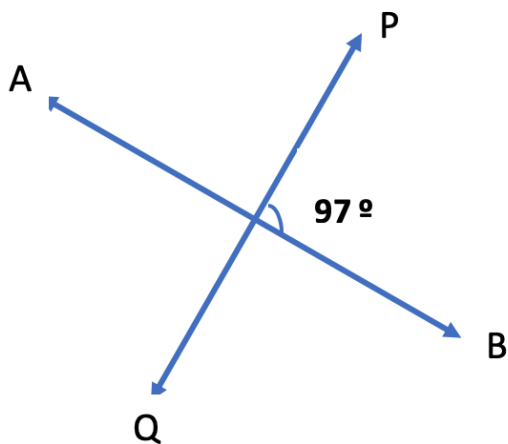


3.

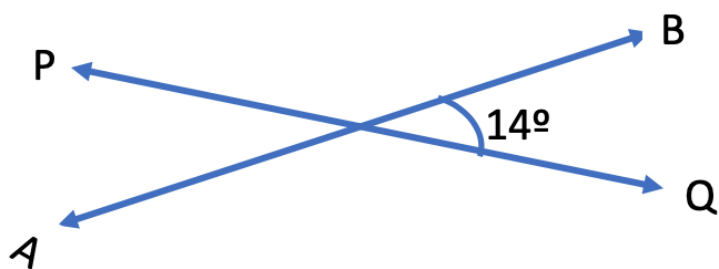


(Answer: 1 and 3 forms linear pair and 2 form adjacent angles since OP and OR are not opposite rays)

1. AOC and BOC form a linear pair as they are forming the straight angle.
 2. POQ and ROQ is not a linear pair as the straight angle is not formed.
 3. LON, MON, and NSQ, OSQ and PQS, PQR are the pairs of adjacent angles forming linear pairs.
2. The measure of one angle is given in the following figures. Find all the other angles.



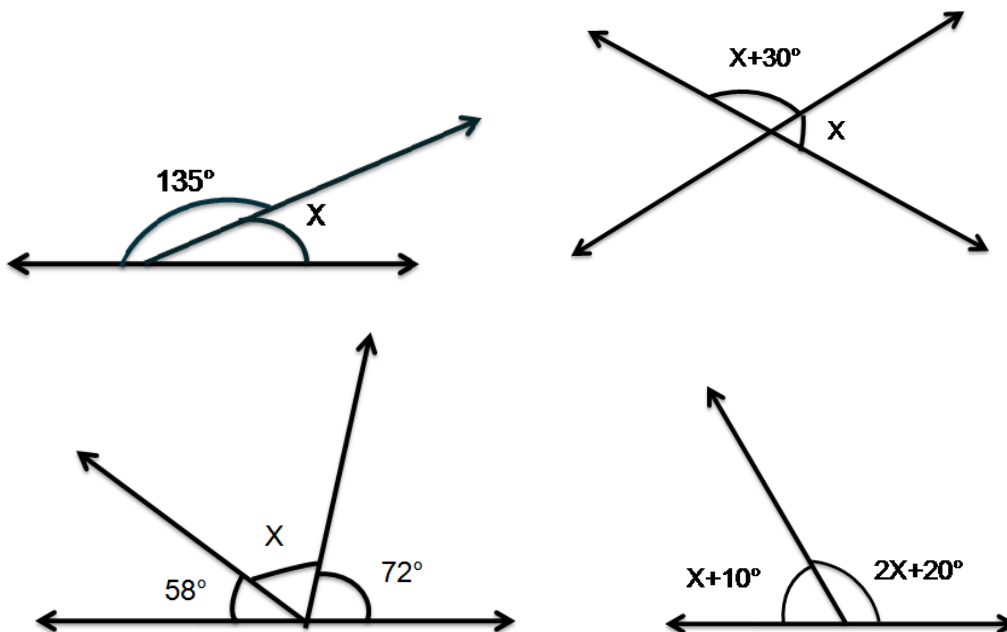
1)



2)

Answer: 1) 83° , 97° , 83° 2) 166° , 14° , 166°

3. Find the value of x in the following figures.



Answer: 1) 45° , 2) $x^\circ = 75^\circ$ 3) $x^\circ = 50^\circ$ 4) $x^\circ = 50^\circ$

All images original contribution by **rajeswariraju.tr@gmail.com**

Time to teach	Asset type	Theme	Sub Theme
15 minutes	Questions to Assess	Line, Curve & Angle	Linear pair

MS_Complementary and Supplementary Angles

Complementary angles and Supplementary Angles

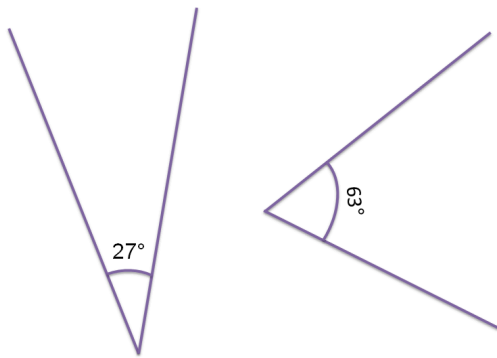
Complementary angles

Definition

If the sum of the measures of two angles is 90° , then the angles are called complementary angles and each angle is the complement of the other.

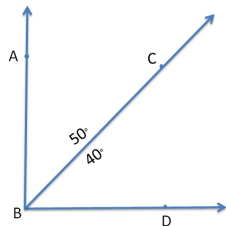
If two angles add to 90° , we say they complement each other in the given figure.

Complementary comes from Latin "completum" meaning completed.



But the angles don't have to be together.

These two are complementary because $27^\circ + 63^\circ = 90^\circ$

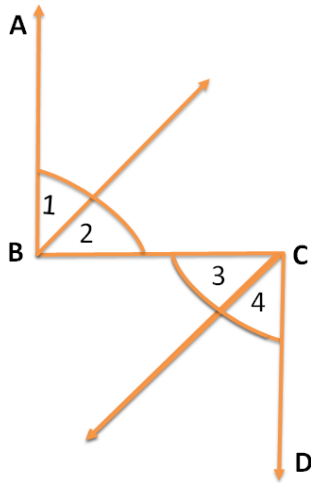


These two angles (40° and 50°) are **Complementary Angles** because they add up to 90° :
Notice that together they make a right angle.

Examples:

60° and 30° are complementary angles.

5° and 85° are complementary angles.



In angle ABC, angle 1 + angle 2 = 90° ,
 In angle BCD, angle 3 + angle 4 = 90°
 Angles 1 & 2, angles 3 & 4 are complementary angles.

For example:

The measure of an angle is 34 degrees more than its complement. Find the measure of each angle.

Let the angle be angle A and its complement be angle C

Angle A + Complement of angle A = 90°

So, angle A + angle C = 90° (1)

But, angle A = 34° + angle C (2)

Solving the two equations we get,

$$(34^\circ + \text{angle C}) = \text{angle C} = 90^\circ$$

$$34^\circ + 2 \text{ angle C} = 90^\circ$$

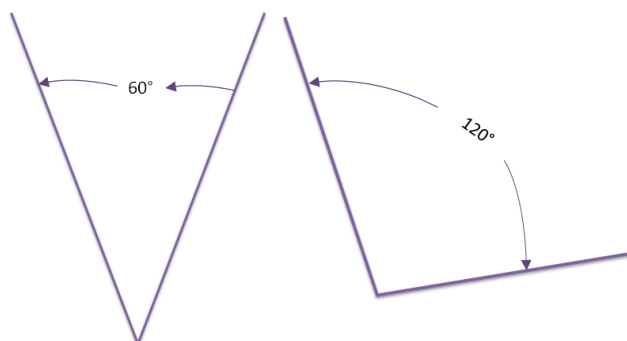
Therefore, $2 \text{ angle C} = 90^\circ - 34^\circ = 56^\circ$

Hence, angle C = 28° and angle A = 62°

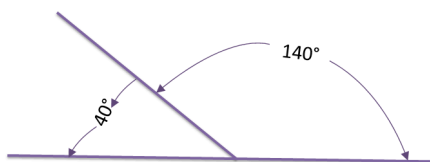
Supplementary Angles

If the sum of the measures of two angles is 180° , then the angles are called supplementary angles and each angle is the supplement of the other.

Two Angles are Supplementary if they add up to 180 degrees.



These two are supplementary because $60^\circ + 120^\circ = 180^\circ$



These two angles (140° and 40°) are supplementary angles because they add up to 180° .

Notice that together they make a straight angle.

90° and 90° , 45° and 135° , 150° , and 30° are supplementary angles, but the angles don't have to be together.

Easy to remember:

"C" of Complementary stands for "Corner" (a Right Angle), and

"S" of Supplementary stands for "Straight" (180 degrees is a straight line)

C	Complementary		(Right Angle)
S	Supplementary		(Straight Angle)

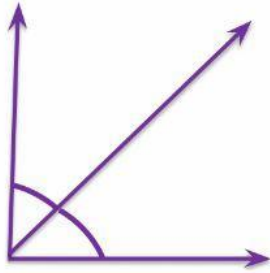
Image Source: rajeswariraju.tr@gmail.com

Time to teach	Asset type	Theme	Sub Theme
10 minutes	Main Script	Line, Curve & Angle	Complimentary and Supplementary angles

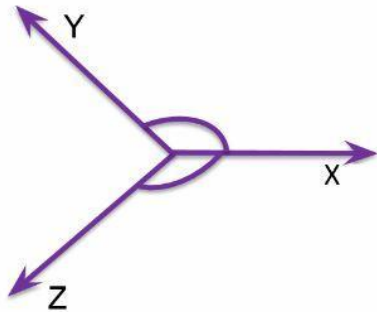
QA_Questions on Related Angles

1) Answer the following:

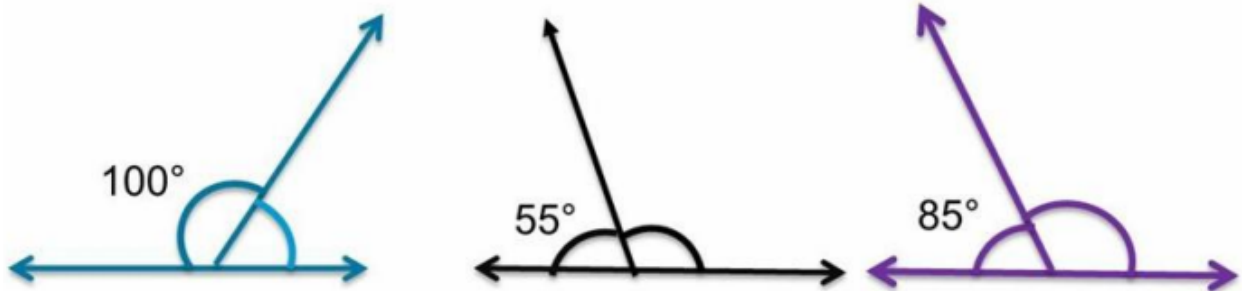
1. Can two acute angles be complementary to each other?



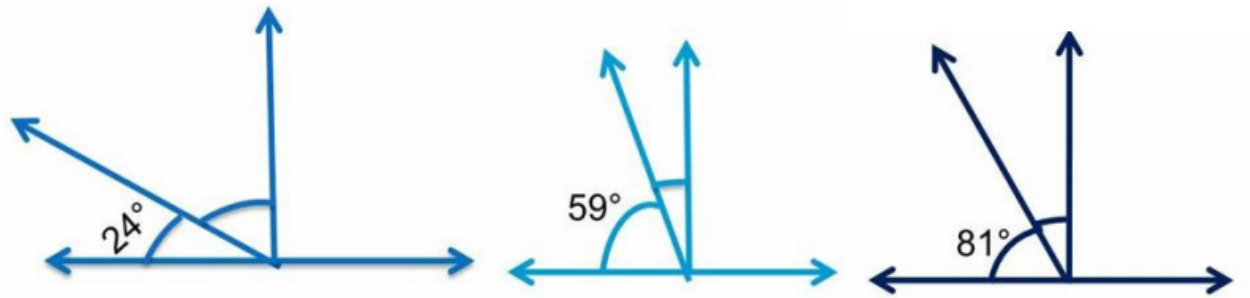
2. Can two obtuse angles be supplementary to each other?



3. What will be the measure of the supplement of the angles 100° , 55° and 85° ?



4. What will be the measure of the complement of the angles 24° , 59° , 81° ?



2) Classify the following pairs of angles into complementary and supplementary angles:

(57° , 33°), (96° , 84°), (108° , 72°), (37° , 143°), (132° , 48°)
 (18° , 72°), (100° , 80°), (102° , 78°), (70° , 20°), (46° , 44°)

Answers: 1) 1. Yes 2) No 3) 80° , 125° and 95° 4) 66° , 31° and 9°

2) Complementary angles - (57° , 33°), (18° , 72°), (70° , 20°) and (46° , 44°)

Supplementary angles - (96° , 84°), (108° , 72°), (37° , 143°), (132° , 48°), (100° , 80°) and (102° , 78°)

Image Source: rajeswariraju.tr@gmail.com

Time to teach	Asset type	Theme	Sub Theme
15 minutes	Questions to Assess	Line, Curve & Angle	Complimentary and Supplementary angles

DD_Lines and Angles around us

Introduction to Pair of Lines

We see lines and angles all around us on an everyday basis. The crossing of roads, railway lines, the way a ladder rests against the wall, and the inclination of a hill - all have lines and angles that can be measured. There are lines in the pictures of window grills, wall, doors, railway crossing and in buildings.

Lines and Pair of lines

1. The vertical and horizontal lines of the window grill meet and cross each other and form angles.



2. Angles formed when two lines meet each other.



Parallel Lines and Intersecting Lines

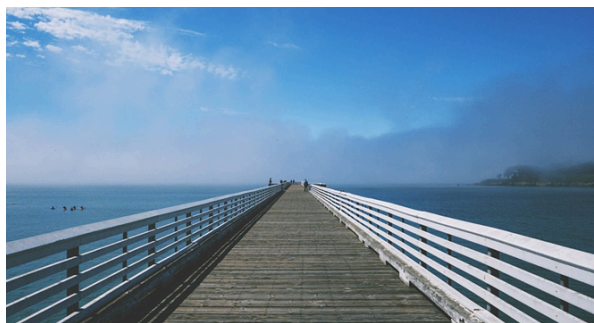
3. The horizontal lines of a railway crossing meet and cross each other.



4. Parallel lines are seen in railway tracks.



5. Parallel lines in Bridge barrier.



6. Intersecting and Parallel lines are seen in the Electric pole.



We can identify lines and angles in our day to day life.

Image Source:

<https://pixabay.com/en/power-poles-upper-lines-power-lines-503935/>

<https://pixabay.com/en/window-prague-twins-facade-wall-941625/>

<https://pixabay.com/en/boardwalk-pier-bridge-deck-water-828812/>

<https://pixabay.com/en/railway-rails-rails-gleise-train-711567/>

<https://pixabay.com/en/railways-routes-tracks-sidings-1377329/>

<https://pixabay.com/en/indoors-door-house-wood-window-3117027/>

Time to teach	Asset type	Theme	Sub Theme
5 minutes	Day-to-day Relevance	Line, Curve & Angle	Line

IA_Egyptian Groma

The history of the mathematical measurement of angles possibly dates back to **1500 BC in Egypt**, where measurements were taken of the Sun's shadow against graduations marked on stone tables.

The **first known instrument** for measuring angle was possibly the **Egyptian Groma** an instrument used in the construction of massive works such as the pyramids.

How did a Groma look like?

A Groma consisted of 4 stones, hung on cords from sticks set at right angles:



Model of Egyptian Groma

It was rather limited in its application due to the fact that it could only be used on fairly flat terrain and its accuracy was limited by distance.

The Groma continued to be the instrument used for setting out right angles for many thousands of years. The Romans used them in their construction works, particularly for building roads, which were always set out in straight lines. Groma was ideally suited for these purposes.

Image Source:

https://commons.wikimedia.org/wiki/File:3_Groma_stap3_uitzetten_lijnen_IMG_0745_fotoMvdOord.jpg (By Maartje van der Oord) CC BY 4.0

Time to teach	Asset type	Theme	Sub Theme
5 minutes	Interesting Asides	Line, Curve & Angle	Arm, Vertex and

			Angle
--	--	--	-------

MS_Angles made by Transversal

Pair of Lines

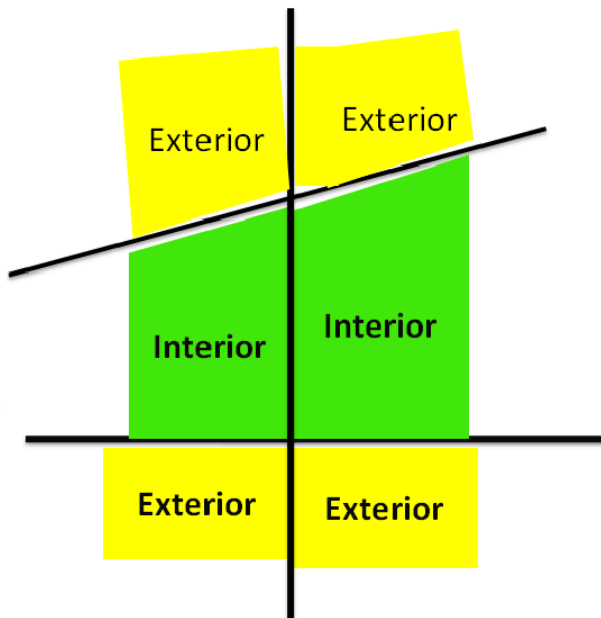
Transversal

You might have seen a road crossing two or more roads or a railway line crossing several other lines.

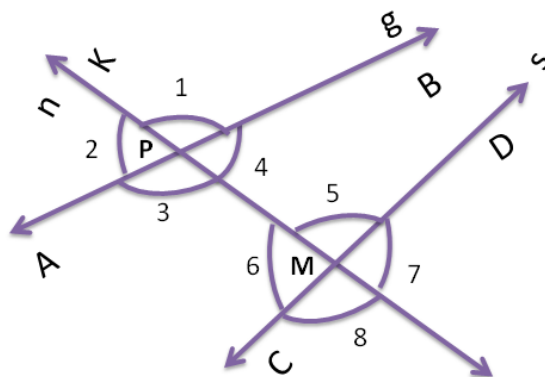
Normally that crossing line intersects the other lines in distinct points.

A line that intersects two or more lines at distinct points is called a transversal.

The area covered in between the non-parallel lines is called the interior portion and the area outside the lines is known as the exterior.



Angles of Transversals



A line which intersects two or more given lines at distinct points is called a transversal of the given lines.

g and s are two lines intersected by a transversal n.

The lines **n**, **g** and **s** determine eight angles, four angles at P and the remaining four at M.

Exterior angles: Angle 1, Angle 2, Angle 7 and Angle 8 are lying outside lines g and s.

Hence they are called exterior angles.

Interior angles: Angle 3, Angle 4, Angle 5 and Angle 6 are lying between lines g and s.

Hence they are called interior angles.

Corresponding angles: The angles on the same side of a transversal one of which is an exterior angle and the other is an interior angle. Both of them do not form a linear pair are called corresponding angles.

Angle 1 and Angle 5, Angle 2 and Angle 6, Angle 3 and Angle 8, Angle 4 and Angle 7 are the pairs of corresponding angles.

Alternate angles: The angles which are on the opposite sides of the transversal and do not form a linear pair are called alternate angles.

Alternate interior angles: Angle 3 and Angle 5, Angle 4 and Angle 6 are pairs of alternate interior angles.

Alternate exterior angles: Angle 1 and Angle 8, Angle 2 and Angle 7 are pairs of alternate exterior angles.

Co – interior angles: Interior angles on the same side of the transversal are called co-interior angles or consecutive interior angles. Angle 3 and Angle 6, Angle 4 and Angle 5 are pairs of co - interior angles.

All images original contribution by rajeswariraju.tr@gmail.com

Time to teach	Asset type	Theme	Sub Theme
15 minutes	Main Script	Line, Curve & Angle	Transversal of parallel lines

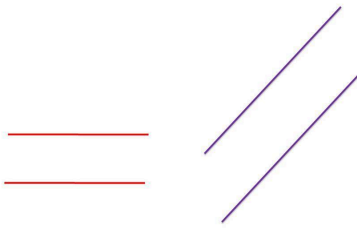
MS_Transversal and Parallel Lines

Parallel Lines and Transversal

Parallel Lines

The Lines are parallel if they are always at the same distance apart (called equidistant), and will never meet.

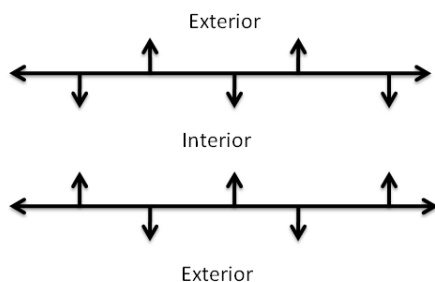
The red lines and blue lines are parallel lines.



Transversal of Parallel Lines

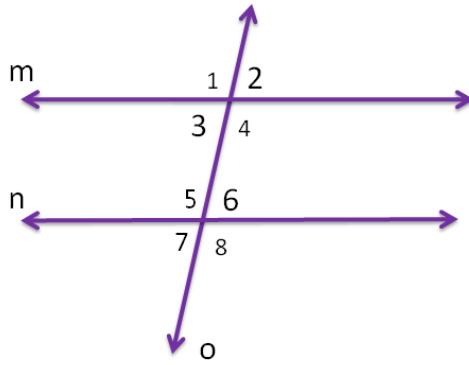
Angle pairs formed by parallel lines cut by a transversal

When two parallel lines are given in a figure, there are two main areas: the interior and the exterior.



When two parallel lines are cut by a third line, the third line is called the *transversal*.

In the example below, eight angles are formed when parallel lines m and n are cut by a transversal line, 'o'.



There are several special pairs of angles formed from this figure.

Vertical pairs: $\angle 1$ and $\angle 4$, $\angle 2$ and $\angle 3$, $\angle 5$ and $\angle 8$ and $\angle 6$ and $\angle 7$
Recall that all pairs of vertical angles are congruent.

Supplementary pairs: $\angle 1$ and $\angle 2$, $\angle 2$ and $\angle 4$, $\angle 3$ and $\angle 4$, $\angle 1$ and $\angle 3$,
 $\angle 5$ and $\angle 6$, $\angle 6$ and $\angle 8$, $\angle 7$ and $\angle 8$ and $\angle 5$ and $\angle 7$.

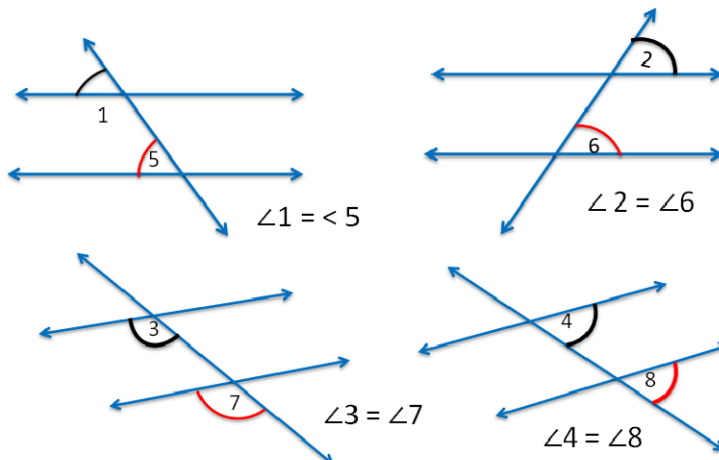
Recall that supplementary angles are angles whose angle measure adds up to 180° .

All of these supplementary pairs are linear pairs.

There are three other special pairs of angles. These pairs are congruent pairs.

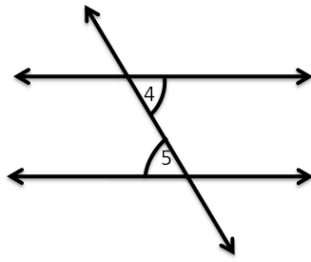
1. **Corresponding angles:** Two angles, one in the interior and one in the exterior, that are on the same side of the transversal.

Corresponding angles are non-adjacent and congruent.

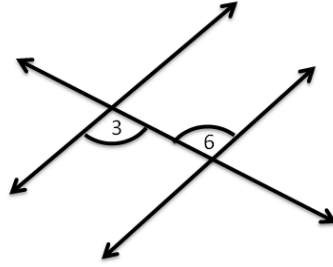


2. **Alternate interior angles:** Two angles in the interior of the parallel lines, and on opposite (alternate) sides of the transversal.

Alternate interior angles are non-adjacent and congruent.



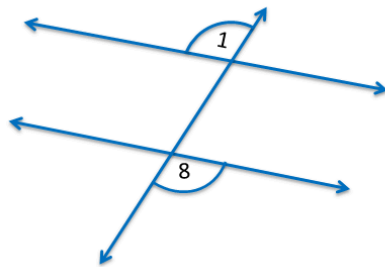
$$\angle 4 = \angle 5$$



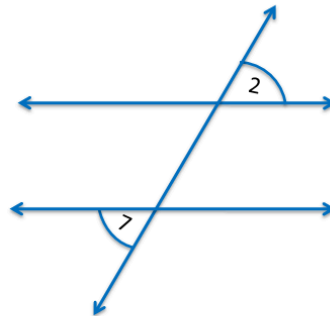
$$\angle 3 = \angle 6$$

3. Alternate exterior angles: Two angles in the exterior of the parallel lines, and on opposite (alternate) sides of the transversal.

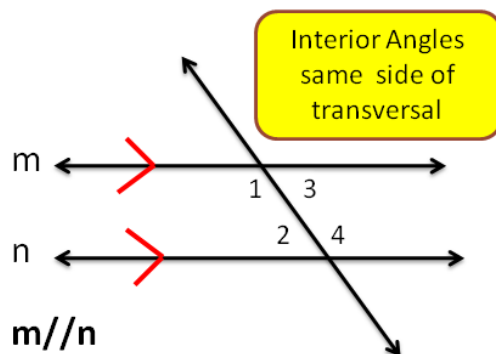
Alternate exterior angles are non-adjacent and congruent.



$$\angle 1 = \angle 8$$



$$\angle 2 = \angle 7$$



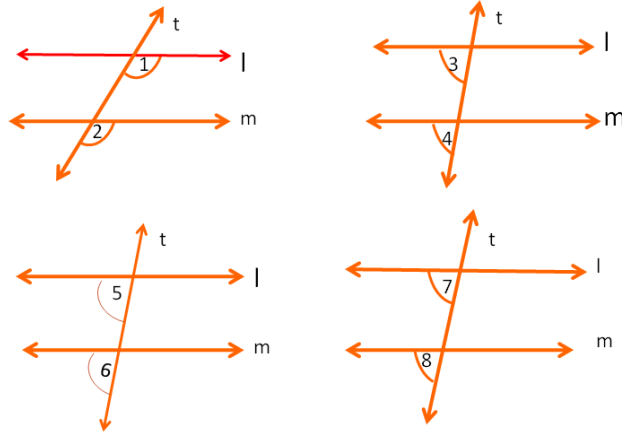
4. Co-interior angles:

The interior angles on the same side of the transversal are supplementary.

$$\text{angle } 1 + \text{angle } 2 = 180^\circ, \text{ angle } 3 + \text{angle } 4 = 180^\circ$$

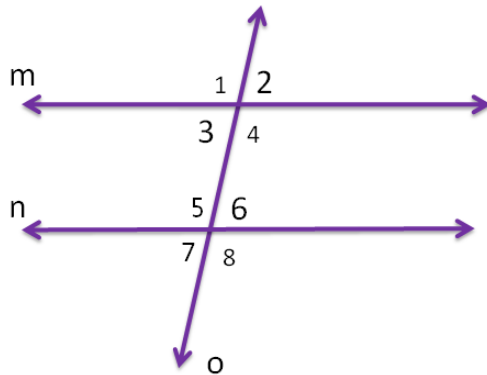
Angles 1 and 2, angles 3 and 4 are interior angles which lie on the same side of the transversal.

CHECKING FOR ANGLES FORMED BY PARALLEL LINES



- Draw a transversal t , to the lines l and m . Label angle 1 and angle 2.
- Place a tracing paper over the figure drawn.
- Trace the lines, l , m and t .
- Slide the tracing paper along t , until l coincides with m .
- We will find angle 1 on the tracing paper coincides with angle 2 on the original sheet.
- Same way, by sliding activity we prove angle 3 = angle 4, angle 5 = angle 6 and angle 7 = angle 8. So,

If two parallel lines are cut by a transversal, each pair of corresponding angles are equal.



1. When line o cuts the parallel lines m and n , we get, angle 2 = angle 3. (Vertically Opposite Angles)
2. But angle 2 = angle 6 (Corresponding Angles),
3. Therefore, angle 3 = angle 6
4. Similarly, we can prove angle 4 = angle 5.

If two parallel lines are cut by a transversal, each pair of alternate interior angles are equal.

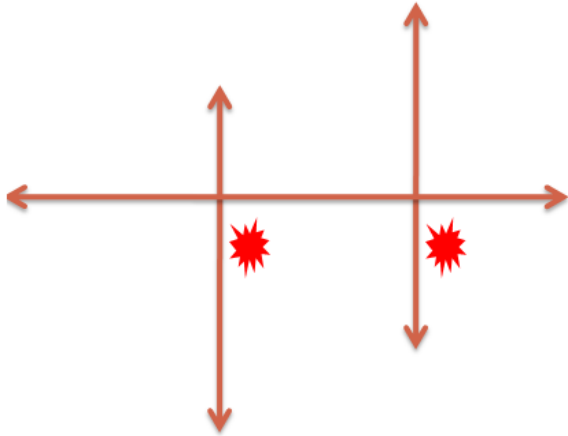
1. Angle 3 + angle 4 = 180° (angle 3 and angle 4 form a linear pair)
2. But angle 4 = angle 5 (a pair of alternate interior angle)
3. So, angle 3 + angle 5 = 180° ,

4. Similarly, angle 4 + angle 6 = 180° . So

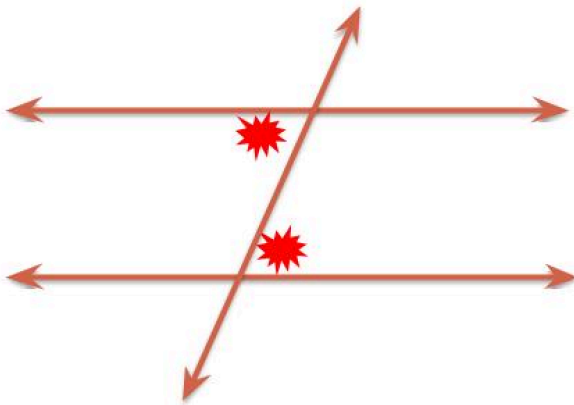
If two parallel lines are cut by a transversal, then each pair of interior angles on the same side of the transversal are supplementary.

CHECKING FOR PARALLEL LINES

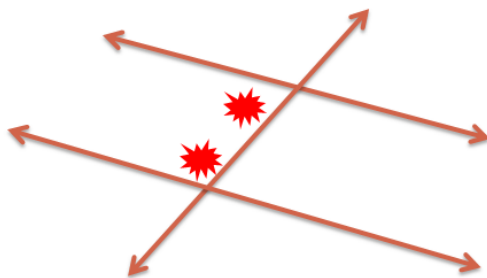
We can use these above-mentioned rules to check if the lines intersected by the transversal are parallel. That is,



“When a transversal cuts two lines, such that pairs of corresponding angles are equal, then the lines have to be parallel”.



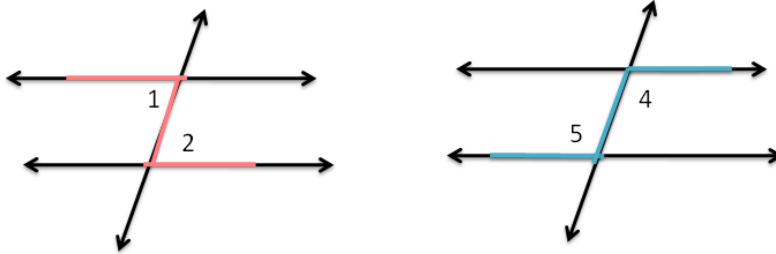
“When a transversal cuts two lines, such that pairs of alternate interior angles are equal, the lines have to be parallel”.



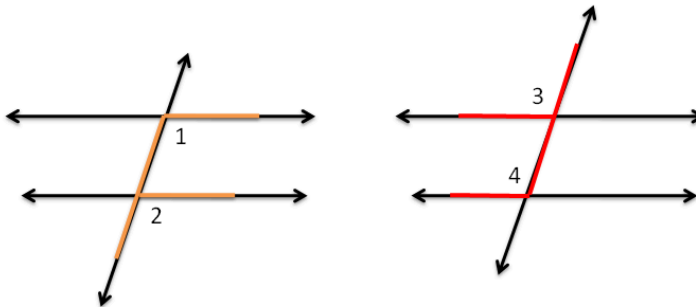
“Thus, when a transversal cuts two lines, such that pairs of interior angles on the same side of

the transversal are supplementary, the lines have to be parallel”.

If you draw a Z on the diagram, the alternate interior angles can be found in the corners of the Z. The Z may also be backward: Σ .



If you draw a F on the diagram, the corresponding angles can be found in the corners of the F. The F may also be backward and/or upside-down: $\mathbb{F}$ $\mathbb{E}$ $\mathbb{J}$.



All images original contribution by rajeswariraju.tr@gmail.com

Time to teach	Asset type	Theme	Sub Theme
20 minutes	Main Script	Line, Curve & Angle	Parallel lines

SA_Vertically Opposite angles through activity

Aim: To prove vertically opposite angles are equal.

Materials required: Two sticks or straws per child, protractor, gum/glue, paper

Instruction to the teacher : Please ask students to bring materials on the day of activity.

Type of activity- Individual activity

Setting: Indoor

Questions to recall:

1. What are vertically opposite angles?

When two lines intersect, the angles formed are vertically opposite angles and they are equal.

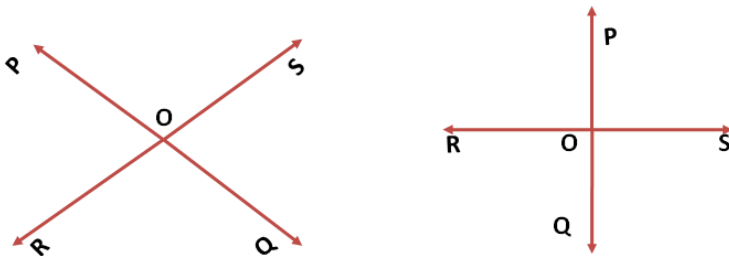
2. What is a linear pair of angles?

Two adjacent angles with one common side and whose non-common sides are opposite rays form a linear pair.

Procedure:

Step 1: Place the two straws in a manner that they intersect each other to approximately make them into two halves.

Step 2: The students could be asked to stick the straws on paper so that it would be easy to measure.



(These are the two most common forms you will arrive at)

Step 2: Name the lines appropriately as shown in the picture.

Step 3: Measure the angles by using a protractor

Let Angles POS be Angle 1, Angle SOQ be Angle 2, Angle ROQ be Angle 3 and Angle POR be Angle 4.

They should get Angle 1 and Angle 3, Angle 2 and Angle 4 equal.

Observation: The students to write the measure of all the 4 angles.

We find, Angle POS = Angle ROQ, i.e., Angle 1 = Angle 3

Angle POR = Angle SOQ, i.e., Angle 2 = Angle 4

The teacher can draw on board and ask students to copy and use it to record the observation.

Angle	Measure
Angle 1	
Angle 2	
Angle 3	
Angle 4	
Angle 1 + Angle 2	
Angle 2 + Angle 3	
Angle 3 + Angle 4	
Angle 3 + Angle 4	

Angle 1 = Angle 3, Angle 2 = Angle 4

Angle 1 + Angle 2 = Angle 2 + Angle 3

Angle 2 + Angle 3 = Angle 3 + Angle 4

Angle 3 + Angle 4 = Angle 4 + Angle 1

Angles 1 & 2, Angles 2 & 3, Angles 3 & 4 and Angles 1 & 4 form a linear pair.

Conclusion: "Vertically opposite angles are always equal" and

"Adjacent angles form a linear pair".

All images original contribution by rajeswariraju.tr@gmail.com

Time to teach	Asset type	Theme	Sub Theme
15 minutes	Suggested Activity	Line, Curve & Angle	Vertically opposite angle

QA_Questions on angles made by transversal

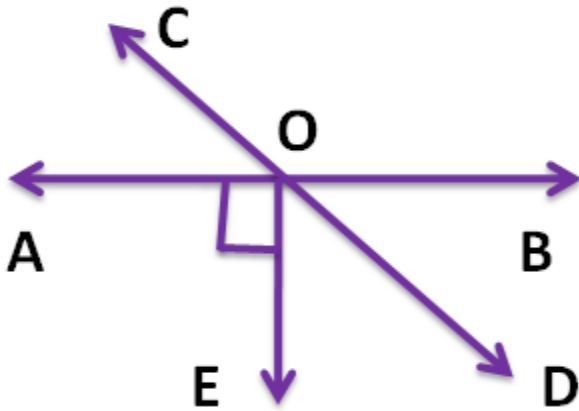
I. Answer true or false

1. When a transversal intersects two lines, interior alternate angles are equal. (T/F)
2. When a transversal intersects two lines, the two lines will be parallel if interior alternate angles are equal. (T/F)
3. When a transversal intersects two lines, exterior alternate angles are not equal. (T/F)
4. The sum of the interior angles that are on the same side of the transversal is 180 degrees. (T/F)

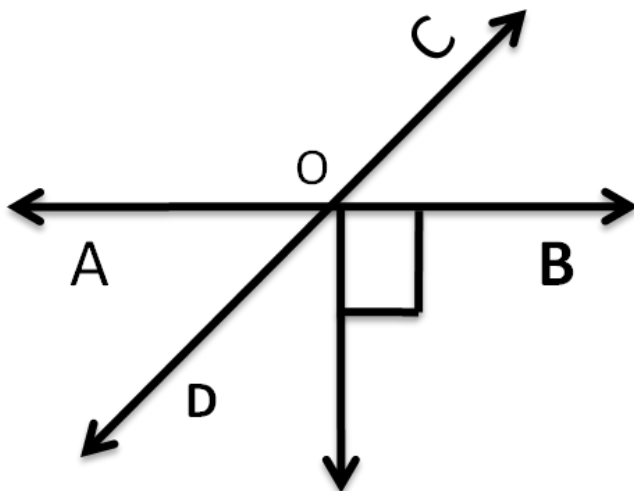
Answer: 1. F 2. T 3. T 4. T

II. Name the angles:

1. Name a pair of Supplementary angles

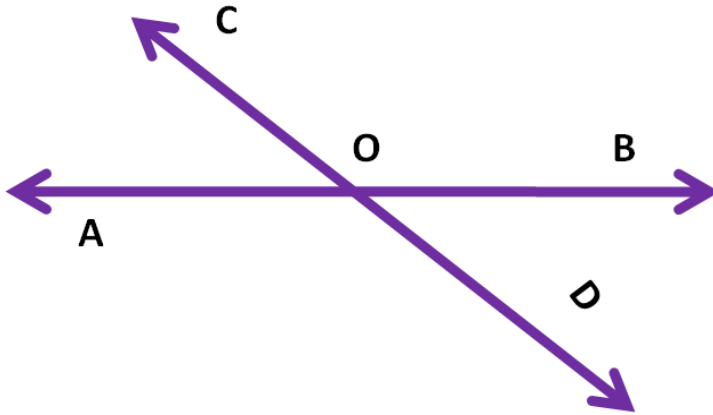


2. Name a pair of adjacent angles



E

3. Name a pair of Vertically opposite angles

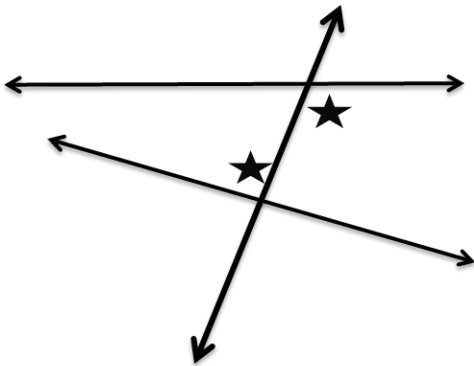


Answer: 1. Angles AOC and COB, Angles COB and BOD, Angles BOD and DOA, Angles AOD and DOB, AOE and EOB

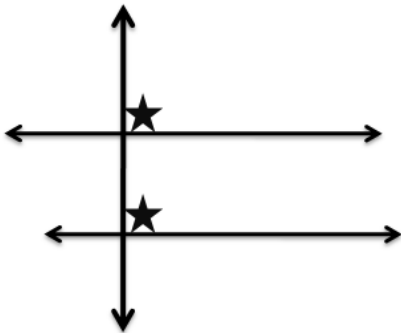
2. Angles AOC and COB, Angles COB and BOE, Angles BOE and EOD, angles EOD and DOA, angles DOA and AOC.

3. Angles BOC and AOD, angles COA and BOD

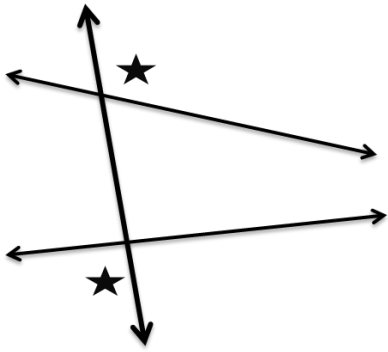
III. Identify the pair of angles marked in the following figures.



1.



2.

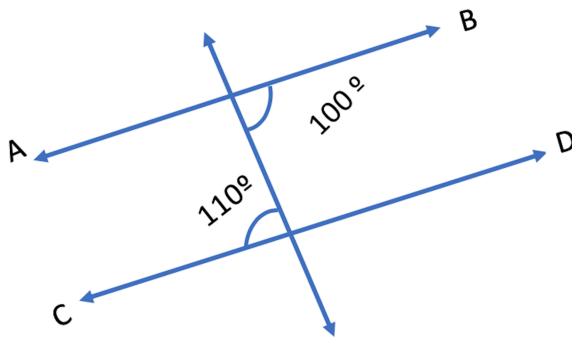


3.

Answer: 1. Alternate interior angles 2. Corresponding angles 3. Alternate exterior angles

IV. Choose the correct answer:

Question 1:



The straight lines AB and CD:

A: are parallel

B: are not parallel because the two given consecutive interior angles do not add to 180°

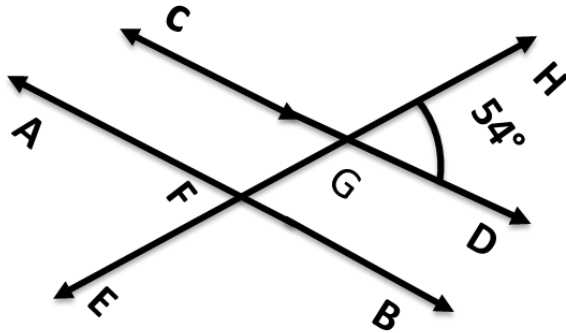
C: are not parallel because the two given corresponding angles are not equal

D: are not parallel because the two given alternate angles are not equal

Solution: D is the right answer.

The two given angles, 100° , and 110° , are alternate but are not equal. Therefore the lines AB and CD are not parallel.

Question 2:



AB and CD are parallel lines and EH is a transversal.

What is the size of angle EFB?

A: 54°

B: 126°

C: 136°

D: 144°

solution: B is the right answer

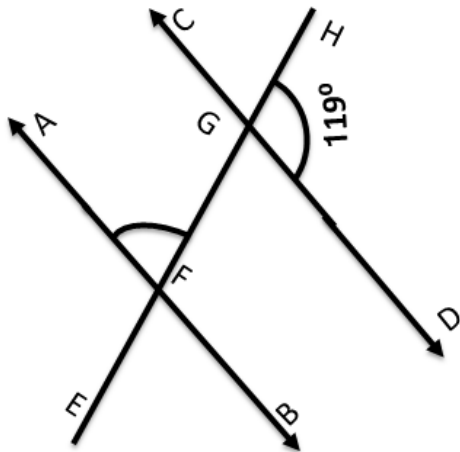
Angles HGD and FGD are adjacent angles on a straight line, so add to 180°

So $\angle FGD = 180^\circ - 54^\circ = 126^\circ$

Angles EFB and FGD are corresponding angles and, since AB is parallel to CD, they must be equal

So $\angle EFB = 126^\circ$ also

Question 3:



AB and CD are parallel lines and EH is a transversal.

What is the size of angle AFG?

A: 51°

B: 59°

C: 61°

D: 119°

Solution: C is the right answer

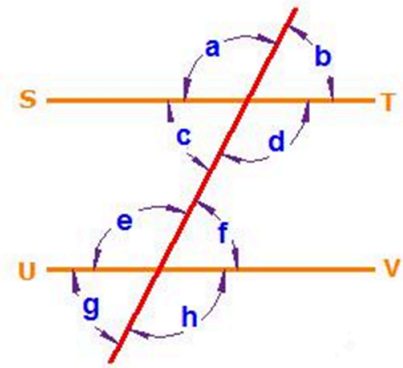
Angles HGD and FGD are adjacent angles on a straight lines, so add to 180°

So $\angle FGD = 180^\circ - 119^\circ = 61^\circ$

Angles AFG and FGD are alternate angles and, since AB is parallel to CD, they must be equal

So $\angle AFG = 61^\circ$ also

Question 4:



ST and UV are parallel lines.

c and e are:

A: consecutive interior angles

B: alternate angles

C: vertical angles

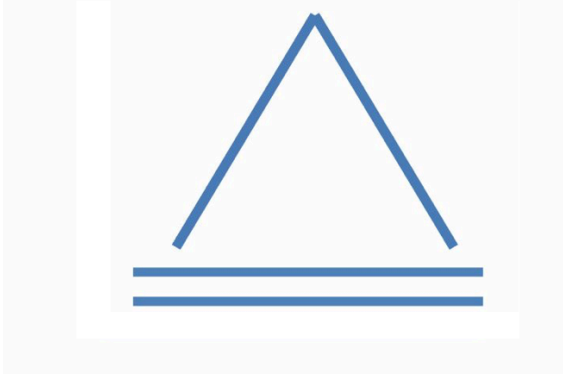
D: corresponding angles

Solution: A is the correct answer and c & e are consecutive interior angles because they lie between the parallel lines on the same side of the transversal, and they add to 180°

All images original by rajeswariraju.tr@gmail.com

Time to teach	Asset type	Theme	Sub Theme
15 minutes	Questions to Assess	Line, Curve & Angle	Parallel lines

VC_Non-violent ways of conflict resolution



When two lines meet, we say they intersect; the meeting point is called the point of intersection. When lines drawn on a sheet of paper do not meet, however far produced, we call them to be parallel lines.

In life certain times we may agree / meet with ideas of other people and at times we do not meet / agree with others but tend to have different views.

Conflicts arise when two people do not agree. How to deal with such situations?

Activity: Who is right?

The teacher can give the following situation where the students have conflicts:



Cricket is your favourite game. You feel that it requires lot of physical stamina to play that game. Your friend on the other hand loves Football. He feels that the game requires mental alertness & strategic planning to manoeuvre the ball and take a goal.

Both of you argue that each one is right and fail to come to an agreement. One day the argument reaches a level that it ends in a fight.

How would you resolve this situation?

The students can come up with their own answers and the teacher can write them on the board.

At the end, the teacher can explain:

1. Conflicts are part of human nature.
2. When a conflict arises, think critically about how to approach the situation.
3. Communicate your views without raising voice or being aggressive.
4. Politely make the other person understand your viewpoint.
5. Try to listen so that you don't miss the meaning of what the other person is saying.

Children. When you adopt a positive attitude while engaging with people who have different views, understand that it actually helps you to gain conflict management skills and leadership skills which will serve you throughout your life.

Image Source:

SSSVV Gallery-keyword-outdoor games

SSSVV Gallery- key word- football

Time to teach	Asset type	Value	Sub Value
5 minutes	Value Content	Peace	Understanding

MS_Summary_Lines and Angles

1. We recall that

- A line segment has two endpoints.
- A ray has only one endpoint (its vertex)
- A line has no endpoints on either side.

2. An angle is formed when two lines (or rays or line-segments) meet.

Pairs of Angles Condition

Two complementary angles Measures add up to 90°

Two supplementary angles Measures add up to 180°

Two adjacent angles Have a common vertex and a common arm but no common interior

Linear pair Adjacent and supplementary

3. When two lines l and m meet, we say they *intersect*; the meeting point is called the point of intersection.

When lines drawn on a sheet of paper do not meet, however far produced, we call them to be *parallel* lines.

4. (i) When two lines intersect (looking like the letter X) we have two pairs of opposite angles. They are called *vertically opposite angles*. They are equal in measure.

(ii) A transversal is a line that intersects two or more lines at distinct points.

(iii) A transversal gives rise to several types of angles.

(iv) We have different types of angles, they are

Interior angles

Exterior angles

Corresponding angles

Alternate interior angles

Alternate exterior angles

Interior, angles on the same side of transversal

(v) When a transversal cuts two *parallel* lines, we have the following interesting relationships:

- Each pair of corresponding angles are equal.
- Each pair of alternate interior angles are equal

- *Each pair of interior angles on the same side of the transversal are supplementary*

Time to teach	Asset type	Theme	Sub Theme
5 minutes	Main Script	Line, Curve & Angle	Adjacent angles

Master Lesson Plan

Seven Asset Methodology for MLP

What is the purpose of this Master lesson Plan?	This Master Lesson Plan (MLP) prepared by Sri Sathya Sai Vidya Vahini (SSSVV), covers the entire chapter for the given board. The MLP for the chapter given in the textbook is broken down into smaller modules known as assets. Any chapter can be taught using the 7 asset types in SSSVV methodology. Several different assets together complete the entire chapter. Depending on the requirement, each asset is supported by teaching aids such as animated presentation, audio, video, and learning aids such as worksheets. The MLP is for the teacher's preparation and the teaching aids are for use in the classroom.
How to use it?	You can prepare for your class with this MLP by following 3 simple steps: 1. Read your textbook; 2. Go through the information given in the assets (document & multimedia); 3. Prepare your teaching notes. Great! Now you are ready to transact the chapter.
Duration	Kindly note the duration given for each asset. Due care has been taken in planning the assets, to ensure the chapter is completed within the time specified by the Board. Note: Preparation time is not included in the asset duration. The teaching time depends on the duration of the teaching aids and is not impacted by the length of the MLP.
What is a 'Main Script' (MS) Asset?	The Main Script asset is there for explaining the main concepts of the chapter clearly. The information given in the textbook is simplified, organised and structured to give more clarity. Additionally, you may find a video or mnemonics or a graphic organiser to deepen the understanding of the concept.
How to teach using the MS asset?	Please use the blackboard, slides and interaction to develop the concept.
What is an 'Inquisitive Questions' (IQ) asset?	The Inquisitive Questions asset uses questions to promote higher order thinking like the n^{th} why, what-if, new perspectives, cause-effect, and others, creating curiosity.
How to teach using the IQ asset?	You may use the questions to connect with the students, encourage exploration to engage them in the learning process. You may allow multiple responses and instead of rejecting any of the responses, ask why, before revealing the suggested answer or hints.
What is a 'Day to day Relevance' (DD) Asset?	The Day to Day Relevance asset helps students understand the practical relevance of every topic, making them eager participants in the classroom. If students connect the concepts to their environment, they would learn meaningfully without dislike or simply memorizing for exams.

How to teach using the DD asset?	You may use the asset by asking questions about their experience and use it to establish why they are learning the topic. If necessary you may substitute with a recent or local example.
What is an 'Interesting Aside' (IA) asset?	The Interesting Aside asset uses attention grabbing tidbits or anecdotes to bring joy and satisfy the child's hunger to know more. This is a quick/short asset intended to bring attention back to the main concept being taught.
How to teach using the IA asset?	You may use this asset to give a piece of interesting information relevant to the topic, without prolonged explanation/discussion. You may suggest appropriate books for further reading.
What is a 'Suggested Activity' (SA) Asset?	The Suggested Activity asset provides a detailed step by step procedure for the teacher to conduct a hands-on activity. This promotes Activity Based Learning.
How to teach using the SA asset?	You may use this asset to energise your students to learn by doing simple, fun-filled activities based on the topic. The asset includes - preparation, activity, and follow-up. You may engage the students in the preparation and follow-up stages to develop collaboration and responsibility. You could try it once, yourself, before the actual delivery to be more comfortable with it. Note: The duration mentioned in the asset is usually for the activity part only.
What is a 'Value Content' (VC) Asset?	The Value Content asset integrates Universal Human Values (such as empathy, inclusivity, respect for nature that translates into responsible behaviour) seamlessly into the curriculum, as the "End of education is character".
How to teach using the VC asset?	You may use this asset to engage with the students to bring out their innate values and connect with the intrinsic values in the topic/concept. The asset includes pointers on the specific pedagogical technique followed.
What is a 'Questions to Assess' (QA) asset?	The Questions to Assess asset uses an interactive approach to check learning of different types of learners, and provides feedback to the teacher for appropriate action. The questions cater to all the levels of Bloom's Taxonomy. Questions from 'Apply' level and above enable students to reflect on their learning.
How to teach using the QA asset?	You may go through the slides to understand its flow and know when to click for the answer (slides include suggested answers). While presenting in the class, you may display the question and encourage multiple responses, before revealing the answer. In some cases, this asset may include extra questions/worksheet that can be given as homework.