

Worksheet -3

Subject: - Mathematics

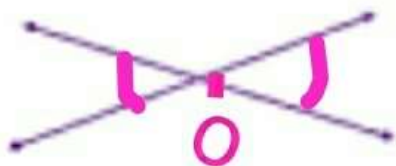
Class: - VII

Teacher: - Ms. Neeru

Name: _____ Class & Sec: _____ Roll No. _____ Date: 29.07.2020

Types of Lines

Intersecting Lines



Perpendicular Lines



Parallel Lines



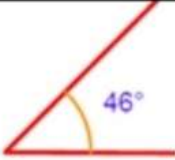
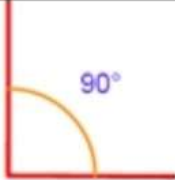
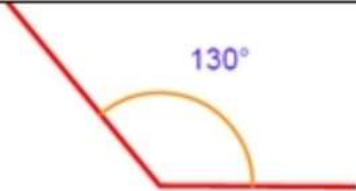

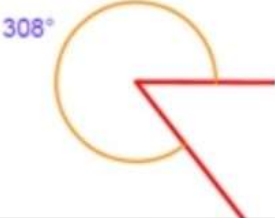
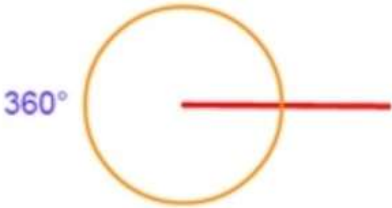
Definitions

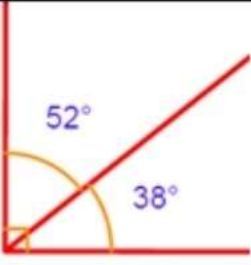
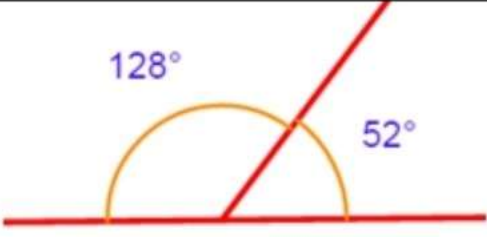
Intersecting Lines:
Two lines that cross paths (have a common point) O .

Perpendicular Lines:
Lines that meet to form right angles.

Parallel Lines:
Two lines that never meet and are always the same distance apart.

Types Of Angles

Type of Angle	Description	Example
Acute Angle	An angle that is less than 90°	 A diagram showing an acute angle of 46° . It consists of two red rays meeting at a vertex, with a yellow arc indicating the angle.
Right Angle	An angle that is exactly 90°	 A diagram showing a right angle of 90° . It consists of two red rays meeting at a vertex, forming a square corner, with a yellow arc indicating the angle.
Obtuse Angle	An angle that is greater than 90° and less than 180°	 A diagram showing an obtuse angle of 130° . It consists of two red rays meeting at a vertex, with a yellow arc indicating the angle.
Straight Angle	An angle that is exactly 180°	 A diagram showing a straight angle of 180° . It consists of a single red line with a yellow arc indicating the angle.
Reflex Angle	An angle that is greater than 180° and less than 360°	 A diagram showing a reflex angle of 308° . It consists of two red rays meeting at a vertex, with a yellow arc indicating the angle.
Full Angle	An angle that is exactly 360°	 A diagram showing a full angle of 360° . It consists of a single red ray with a yellow circle indicating the angle.

Type of Angles	Description	Example
Complementary Angles	Angles that add up to 90°	 A right-angled corner is formed by a vertical red line on the left and a horizontal red line at the bottom. A diagonal red line extends from the vertex to the upper right. Two yellow arcs are drawn at the vertex: one between the vertical and diagonal lines, labeled 52° , and another between the diagonal and horizontal lines, labeled 38° . A small square symbol at the vertex indicates the total angle is 90° .
Supplementary Angles	Angles that add up to 180°	 A straight horizontal red line is shown. A diagonal red line intersects it from the bottom-left to the top-right. Two yellow arcs are drawn at the intersection: one for the obtuse angle on the left, labeled 128° , and one for the acute angle on the right, labeled 52° .

Complementary Angles

Sheet 1

A) Find the complement of each angle.

1) 63°

Complement of $63^\circ = \underline{27^\circ}$

2) 38°

Complement of $38^\circ = \underline{52^\circ}$

3) 87°

Complement of $87^\circ = \underline{3^\circ}$

4) 71°

Complement of $71^\circ = \underline{19^\circ}$

5) 9°

Complement of $9^\circ = \underline{81^\circ}$

6) 50°

Complement of $50^\circ = \underline{40^\circ}$

B) State whether the given pairs are complementary or not.

1) $36^\circ, 54^\circ$

complementary

2) $46^\circ, 45^\circ$

not complementary

3) $79^\circ, 17^\circ$

not complementary

4) $23^\circ, 67^\circ$

complementary

5) $5^\circ, 85^\circ$

complementary

6) $52^\circ, 30^\circ$

not complementary

Supplementary Angles

sheet 1

A) Find the supplement of each angle.

1) 108°

Supplement of $108^\circ = \underline{72^\circ}$

2) 36°

Supplement of $36^\circ = \underline{144^\circ}$

3) 5°

Supplement of $5^\circ = \underline{175^\circ}$

4) 161°

Supplement of $161^\circ = \underline{19^\circ}$

5) 90°

Supplement of $90^\circ = \underline{90^\circ}$

6) 57°

Supplement of $57^\circ = \underline{123^\circ}$

B) State whether the given pairs are supplementary or not.

1) $24^\circ, 156^\circ$

supplementary

2) $135^\circ, 102^\circ$

not supplementary

3) $99^\circ, 83^\circ$

not supplementary

4) $31^\circ, 149^\circ$

supplementary

5) $112^\circ, 68^\circ$

supplementary

6) $70^\circ, 100^\circ$

not supplementary

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Exercise 5.1

Question 1:

Find the complement of each of the following angles:

Answer 1:Complementary angle = 90° - given angle

- (i) Complement of $20^\circ = 90^\circ - 20^\circ = 70^\circ$
 (ii) Complement of $63^\circ = 90^\circ - 63^\circ = 27^\circ$
 (iii) Complement of $57^\circ = 90^\circ - 57^\circ = 33^\circ$

**Question 2:**

Find the supplement of each of the following angles:

Answer 2:Supplementary angle = 180° - given angle

- (i) Supplement of $105^\circ = 180^\circ - 105^\circ = 75^\circ$
 (ii) Supplement of $87^\circ = 180^\circ - 87^\circ = 93^\circ$
 (iii) Supplement of $154^\circ = 180^\circ - 154^\circ = 26^\circ$

**Question 3:**

Identify which of the following pairs of angles are complementary and which are supplementary:

- (i) $65^\circ, 115^\circ$ (ii) $63^\circ, 27^\circ$ (iii) $112^\circ, 68^\circ$
 (iv) $130^\circ, 50^\circ$ (v) $45^\circ, 45^\circ$ (vi) $80^\circ, 10^\circ$

Answer 3:If sum of two angles is 180° , then they are called supplementary angles.If sum of two angles is 90° , then they are called complementary angles.

- (i) $65^\circ + 115^\circ = 180^\circ$ These are supplementary angles.
 (ii) $63^\circ + 27^\circ = 90^\circ$ These are complementary angles.
 (iii) $112^\circ + 68^\circ = 180^\circ$ These are supplementary angles.
 (iv) $130^\circ + 50^\circ = 180^\circ$ These are supplementary angles.
 (v) $45^\circ + 45^\circ = 90^\circ$ These are complementary angles.
 (vi) $80^\circ + 10^\circ = 90^\circ$ These are complementary angles.

Question 4:

Find the angle which is equal to its complement.

Answer 4:Let one of the two equal complementary angles be x .

$$\therefore x + x = 90^\circ$$

$$\Rightarrow 2x = 90^\circ$$

$$\Rightarrow x = \frac{90^\circ}{2} = 45^\circ$$

Thus, 45° is equal to its complement.

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Question 5:

Find the angle which is equal to its supplement.

Answer 5:Let x be two equal angles of its supplement.Therefore, $x + x = 180^\circ$ [Supplementary angles]

$$\Rightarrow 2x = 180^\circ$$

$$\Rightarrow x = \frac{180^\circ}{2} = 90^\circ$$

Thus, 90° is equal to its supplement.**Question 6:**In the given figure, $\angle 1$ and $\angle 2$ are supplementary angles. If $\angle 1$ is decreased, what changes should take place in $\angle 2$ so that both the angles still remain supplementary?**Answer 6:**If $\angle 1$ is decreased then, $\angle 2$ will increase with the same measure, so that both the angles still remain supplementary.**Question 7:**

Can two angles be supplementary if both of them are:

- (i) acute (ii) obtuse (iii) right?

Answer 7:

- (i) No, because sum of two acute angles is less than 180° .
 (ii) No, because sum of two obtuse angles is more than 180° .
 (iii) Yes, because sum of two right angles is 180° .

Question 8:An angle is greater than 45° . Is its complementary angle greater than 45° or equal to 45° or less than 45° ?**Answer 8:**Let the complementary angles be x and y , i.e., $x + y = 90^\circ$ It is given that $x > 45^\circ$ Adding y both sides, $x + y > 45^\circ + y$

$$\Rightarrow 90^\circ > 45^\circ + y$$

$$\Rightarrow 90^\circ - 45^\circ > y$$

$$\Rightarrow y < 45^\circ$$

Thus, its complementary angle is less than 45° .