

CBSE Class 6 Mathematics

Lines and Angles — Case Study Based Worksheets (3 Sets with Answer Keys)

Case Study Worksheet — Set 1

Lines and Angles

Name: _____ Class: 6 _____ Section: _____ Date: _____

Case Study 1: The Kite Festival

Every year on Makar Sankranti, Aryan and his friends fly kites from their terrace. Aryan notices that the string of his kite forms different angles with the terrace floor as the kite rises higher. When the kite is close to the ground, the string makes a small angle with the floor. As the kite climbs higher, the angle between the string and the floor increases. When the kite is directly overhead, the string is almost vertical, making an angle close to 90° with the floor. His friend Meera points out that the two strings of two different kites crossing each other in the sky form a pair of vertically opposite angles.

1. When the kite is close to the ground, is the angle formed with the floor more likely to be acute, right, or obtuse? [1 mark]

2. What type of angle does the string make with the floor when the kite is directly overhead? [1 mark]

3. If two kite strings cross each other and one of the angles formed is 55° , what is the measure of the angle vertically opposite to it? [1 mark]

4. Name the type of angle formed when the string makes an angle of 100° with the floor. [1 mark]

5. As the kite rises from near the ground to directly overhead, does the angle between the string and the floor increase or decrease? [1 mark]

Answer Key — Set 1 — Case Study 1: The Kite Festival

1. Acute angle (small angle, less than 90°).
2. A right angle (approximately 90°).
3. 55° , since vertically opposite angles are always equal.
4. Obtuse angle (between 90° and 180°).
5. The angle increases from a small acute angle towards 90° .

Case Study Worksheet — Set 2

Lines and Angles

Name: _____

Section: _____

Class: 6 _____

Date: _____

Case Study 2: Designing a Playground

The municipal corporation is designing a new rectangular playground for children. The engineer draws the boundary using perpendicular lines so that all four corners form right angles. In the centre, two straight pathways cross each other, dividing the ground into four sections, and the two pathways are perpendicular to each other. A slide is installed such that its ladder makes an angle of 70° with the ground, and a see-saw pivot forms two equal angles of 90° each when balanced horizontally. The corner flagpole casts a shadow that makes a 35° angle with the ground at a certain time of day.

1. What is the measure of each angle at the corners of the rectangular playground? [1 mark]

2. What is the angle between the two straight pathways crossing at the centre of the ground? [1 mark]

3. Classify the angle made by the slide's ladder with the ground (70°). [1 mark]

4. If the see-saw's pivot forms two equal angles of 90° each, what type of angle is each one? [1 mark]

5. Classify the angle made by the flagpole's shadow with the ground (35°). [1 mark]

Answer Key — Set 2 — Case Study 2: Designing a Playground

1. 90° (right angle) at each of the four corners.
2. 90° , since the pathways are perpendicular to each other.
3. Acute angle, since 70° is less than 90° .
4. Right angle, since each measures exactly 90° .
5. Acute angle, since 35° is less than 90° .

Case Study Worksheet — Set 3

Lines and Angles

Name: _____

Section: _____

Class: 6 _____

Date: _____

Case Study 3: The Clock Tower

The old clock tower in Meera's town has a large analogue clock face visible from far away. During a school project on angles, her class observes the clock at different times of the day. At 12 o'clock, both hands point straight up, overlapping completely. At 3 o'clock, the hands form a perfect corner shape. At 6 o'clock, the hour and minute hands point in exactly opposite directions, forming a straight line. The teacher explains that the angle between the two hands changes continuously as time passes, and asks the students to calculate a few of these angles.

1. What is the angle between the hands of the clock at 12 o'clock? [1 mark]

2. What is the angle between the hands of the clock at 3 o'clock, and what type of angle is this? [1 mark]

3. What is the angle between the hands of the clock at 6 o'clock, and what type of angle is this? [1 mark]

4. What is the angle between the hands of the clock at 9 o'clock? [1 mark]

5. In 60 minutes, the minute hand completes one full round of the clock face. What is the total angle it turns through? [1 mark]

Answer Key — Set 3 — Case Study 3: The Clock Tower

1. 0° , since both hands overlap.
2. 90° , which is a right angle.
3. 180° , which is a straight angle.
4. 270° (or, measured the short way, 90°) — commonly taken as 270° reflex angle between the hour numeral positions.
5. 360° , one complete rotation.

