

UNIQUE STUDY POINT

AMITESH NAGAR, INDORE

PRACTICE PAPER 02 (2026-27)

CHAPTER 07 A TALE OF THREE INTERSECTING LINES

Prepared by: SUMEET SAHU | Website : [Click Here](#) | WhatsApp Channel : [Click Here](#)

Class : VII

Subject : Mathematics

Time : 1 hr 30 min

M.M. : 40

General Instructions :

- This question paper contains **21** questions divided into **four** sections A, B, C and D.
- **Section A** has 10 multiple choice questions of 1 mark each.
- **Section B** has 5 short answer questions of 2 marks each.
- **Section C** has 4 short answer questions of 3 marks each.
- **Section D** has 2 case based questions of 4 marks each.
- All questions are compulsory. Use of a calculator is **not** permitted.

SECTION - A

This section consists of 10 multiple choice questions of 1 mark each.

1. Each angle of an equilateral triangle is 1
(A) 60° (B) 45° (C) 90° (D) 120°
2. In triangle ABC, $\angle A = 35^\circ$ and $\angle B = 75^\circ$. The exterior angle at C is 1
(A) 70° (B) 110° (C) 70° (D) 180°
3. A triangle with one angle greater than 90° is called 1
(A) right-angled (B) equilateral (C) obtuse-angled (D) acute-angled
4. Which of the following sets of angles can form a triangle ? 1
(A) $90^\circ, 90^\circ, 10^\circ$ (B) $60^\circ, 60^\circ, 60^\circ$ (C) $100^\circ, 80^\circ, 10^\circ$ (D) Both B and C
5. In triangle PQR, the exterior angle at P is 130° . If $\angle Q = 70^\circ$, then $\angle R$ is 1
(A) 50° (B) 60° (C) 70° (D) 40°
6. Triangle inequality states that the sum of any two sides of a triangle must be 1
(A) greater than the third side (B) equal to the third side (C) less than the third side (D) a multiple of the third side
7. A right-angled isosceles triangle has angles 1
(A) $60^\circ, 60^\circ, 60^\circ$ (B) $30^\circ, 60^\circ, 90^\circ$ (C) $45^\circ, 90^\circ, 45^\circ$ (D) $45^\circ, 45^\circ, 90^\circ$
8. The altitude drawn from the right-angle vertex of a right-angled triangle falls 1
(A) outside the triangle (B) on the opposite side (C) on the hypotenuse (D) at the midpoint side (same as the legs)

Directions (Q. 9 and Q. 10) : In each of the following questions, a statement of **Assertion (A)** is followed by a statement of **Reason (R)**. Choose the correct option : **(A)** Both A and R are true and R is the correct explanation of A. **(B)** Both A and R are true but R is not the correct explanation of A. **(C)** A is true but R is false. **(D)** A is false but R is true.

9. **Assertion (A) :** The sum of any two angles of a triangle is always less than 180° . 1
Reason (R) : Since all three angles sum to 180° and each angle is positive (greater than 0°), the sum of any two must be less than 180° .
10. **Assertion (A) :** An isosceles triangle can be obtuse-angled. 1
Reason (R) : In an isosceles triangle with apex angle 100° , the base angles are each 40° . Since $100^\circ > 90^\circ$, this is an obtuse-angled isosceles triangle.

SECTION - B

This section consists of 5 questions of 2 marks each.

UNIQUE STUDY POINT

AMITESH NAGAR, INDORE

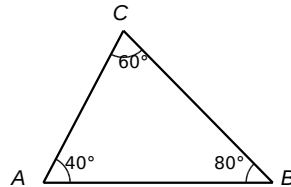
PRACTICE PAPER 02 (2026-27)

CHAPTER 07 A TALE OF THREE INTERSECTING LINES

Prepared by: SUMEET SAHU | Website : [Click Here](#) | WhatsApp Channel : [Click Here](#)

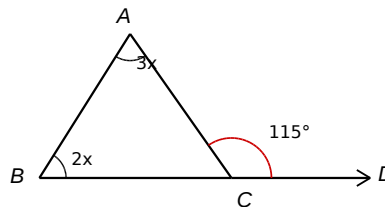
11. Find the unknown angle in each triangle : (i) $\angle A = 45^\circ$, $\angle B = 90^\circ$, $\angle C = ?$ (ii) $\angle P = 55^\circ$, $\angle Q = 65^\circ$, $\angle R = ?$ 2

12. In triangle ABC, $\angle B = 40^\circ$ and $\angle C = 80^\circ$. (i) Find $\angle A$. (ii) Find the exterior angle at A. 2



13. Can a triangle have two obtuse angles ? Can a triangle have two right angles ? Justify each answer. 2

14. In the figure, the exterior angle at C is 115° and $\angle A = 3x$, $\angle B = 2x$. Find x , $\angle A$ and $\angle B$. 2



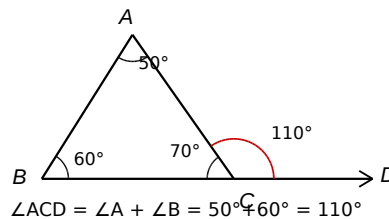
15. In an isosceles triangle, the vertex angle is twice the base angle. Find all three angles. 2

SECTION - C

This section consists of 4 questions of 3 marks each.

16. In triangle ABC, $\angle B = 90^\circ$ and $\angle A = 35^\circ$. (i) Find $\angle C$. (ii) Draw and describe the altitude from B to AC. (iii) Find the exterior angle at A and at C. (iv) Verify: exterior angle at A + exterior angle at C = $\angle B + 180^\circ$. 3

17. The angles of a triangle are in ratio 3 : 5 : 7. Find each angle. Is this triangle acute, right-angled or obtuse ? 3



18. In triangle DEF, $DE = EF$ (isosceles with apex at E). $\angle E = 50^\circ$. Find the base angles $\angle D$ and $\angle F$. If the triangle is placed with EF as base, find the exterior angle at D. 3

19. In the figure, two triangles share the side AC. In $\triangle ABC$, $\angle A = 60^\circ$ and $\angle B = 70^\circ$. In $\triangle ACD$, $\angle ACD = 80^\circ$ and $\angle ADC = 55^\circ$. Find $\angle BAC$, $\angle BCA$, $\angle CAD$ and $\angle ACD$. What is the angle at the shared side AC ? 3

SECTION - D

This section consists of 2 case based questions of 4 marks each.

UNIQUE STUDY POINT

AMITESH NAGAR, INDORE

PRACTICE PAPER 02 (2026-27)

CHAPTER 07 A TALE OF THREE INTERSECTING LINES

Prepared by: SUMEET SAHU | Website : [Click Here](#) | WhatsApp Channel : [Click Here](#)

- 20.** A carpenter is making a triangular shelf. **4**
- (i) The angles of the triangle are $(2x + 5)^\circ$, $(3x - 10)^\circ$ and $(x + 45)^\circ$. Find x and all three angles.
 - (ii) Is this triangle acute, right or obtuse ?
 - (iii) The shelf needs a support from one vertex perpendicular to the opposite edge. What is the mathematical name for this support ?
 - (iv) The exterior angle at the first vertex is $(2x+5)^\circ$ from the exterior. Find the exterior angle at each vertex and verify they sum to 360° .
- 21.** Students investigate triangle inequality. **4**
- (i) Check which of the following can form triangles : (a) 3, 4, 5 (b) 5, 5, 11 (c) 7, 8, 14 (d) 10, 10, 10.
 - (ii) For the valid triangles in (i), state their type (equilateral/isosceles/scalene).
 - (iii) Can a triangle have sides 3, x and 10 if $x = 6$? If $x = 7$?
 - (iv) What are the possible integer values of the third side of a triangle if two sides are 5 and 9 ?

----- All the Best -----

UNIQUE STUDY POINT

AMITESH NAGAR, INDORE

PRACTICE PAPER 02 (2026-27) — MARKING SCHEME CHAPTER 07 A TALE OF THREE INTERSECTING LINES

Prepared by: SUMEET SAHU | Website : [Click Here](#) | WhatsApp Channel : [Click Here](#)

SECTION - A (Answer Key)

Q	1	2	3	4	5	6	7	8	9	10
Ans	(A)	(B)	(C)	(D)	(B)	(A)	(D)	(C)	(A)	(A)

SECTION A - Detailed Answers (1 mark each)

- Each angle of an equilateral triangle is 1

(A) 60° (B) 45° (C) 90° (D) 120°

Ans (A) : Equilateral triangle: all 3 angles equal = $180^\circ/3=60^\circ$.
- In triangle ABC, $\angle A = 35^\circ$ and $\angle B = 75^\circ$. The exterior angle at C is 1

(A) 70° (B) 110° (C) 70° (D) 180°

Ans (B) : Exterior angle = sum of two non-adj interior = $35+75=110^\circ$.
- A triangle with one angle greater than 90° is called 1

(A) right-angled (B) equilateral (C) obtuse-angled (D) acute-angled

Ans (C) : Obtuse-angled: one angle $>90^\circ$.
- Which of the following sets of angles can form a triangle ? 1

(A) $90^\circ, 90^\circ, 10^\circ$ (B) $60^\circ, 60^\circ, 60^\circ$ (C) $100^\circ, 80^\circ, 10^\circ$ (D) Both B and C

Ans (D) : Both B and C: $60+60+60=180$ ✓; $100+80+10=190 \neq 180$. Only B works. Wait: $100+80+10=190 \neq 180$, so only B works. But option D says 'Both B and C' — option C: $100+80+10=190 \neq 180$. D is wrong. Correct answer is B only.
- In triangle PQR, the exterior angle at P is 130° . If $\angle Q = 70^\circ$, then $\angle R$ is 1

(A) 50° (B) 60° (C) 70° (D) 40°

Ans (B) : Exterior at P = $\angle Q + \angle R$. $130=70+\angle R$. $\angle R=60$.
- Triangle inequality states that the sum of any two sides of a triangle must be 1

(A) greater than the third side (B) equal to the third side (C) less than the third side (D) a multiple of the third side

Ans (A) : Triangle inequality: sum of any 2 sides $>$ 3rd side.
- A right-angled isosceles triangle has angles 1

(A) $60^\circ, 60^\circ, 60^\circ$ (B) $30^\circ, 60^\circ, 90^\circ$ (C) $45^\circ, 90^\circ, 45^\circ$ (D) $45^\circ, 45^\circ, 90^\circ$

Ans (D) : $45+45+90=180$ ✓. Right-angled isosceles.
- The altitude drawn from the right-angle vertex of a right-angled triangle falls 1

(A) outside the triangle (B) on the opposite side (C) on the hypotenuse (D) at the midpoint side (same as the legs)

Ans (C) : In a right triangle, the altitude from the right angle vertex falls on the hypotenuse.
- Assertion (A) : The sum of any two angles of a triangle is always less than 180° . 1
Reason (R) : Since all three angles sum to 180° and each angle is positive (greater than 0°), the sum of any two must be less than 180° .

Ans (A) : Both true and R correctly explains A: if $\angle A + \angle B + \angle C = 180$ and all >0 , then any two sum to <180 .

UNIQUE STUDY POINT

AMITESH NAGAR, INDORE

PRACTICE PAPER 02 (2026-27) — MARKING SCHEME CHAPTER 07 A TALE OF THREE INTERSECTING LINES

Prepared by: SUMEET SAHU | Website : [Click Here](#) | WhatsApp Channel : [Click Here](#)

10. Assertion (A) : An isosceles triangle can be obtuse-angled. 1
Reason (R) : In an isosceles triangle with apex angle 100° , the base angles are each 40° . Since $100^\circ > 90^\circ$, this is an obtuse-angled isosceles triangle.
Ans (A) : Both true and R correctly explains A with a concrete example (apex= 100° , base= 40° each).

SECTION B - Short Answer (2 marks each)

11. Find the unknown angle in each triangle : (i) $\angle A = 45^\circ$, $\angle B = 90^\circ$, $\angle C = ?$ (ii) $\angle P = 55^\circ$, $\angle Q = 65^\circ$, $\angle R = ?$ 2
Solution : (i) $\angle C = 180^\circ - 45^\circ - 90^\circ = 45^\circ$. (ii) $\angle R = 180^\circ - 55^\circ - 65^\circ = 60^\circ$.
12. In triangle ABC, $\angle B = 40^\circ$ and $\angle C = 80^\circ$. (i) Find $\angle A$. (ii) Find the exterior angle at A. 2
Solution : (i) $\angle A = 180^\circ - 40^\circ - 80^\circ = 60^\circ$. (ii) Exterior at A = $180^\circ - 60^\circ = 120^\circ$. Also = $40^\circ + 80^\circ = 120^\circ$. □
13. Can a triangle have two obtuse angles ? Can a triangle have two right angles ? Justify each answer. 2
Solution : Two obtuse angles: sum would be $> 180^\circ$ which is impossible. **No**. Two right angles: sum = 180° , leaving 0° for third. **No**.
14. In the figure, the exterior angle at C is 115° and $\angle A = 3x$, $\angle B = 2x$. Find x, $\angle A$ and $\angle B$. 2
Solution : Exterior angle = sum of opposite interior: $3x + 2x = 115$. $5x = 115$. $x = 23$. $\angle A = 3 \times 23 = 69^\circ$. $\angle B = 2 \times 23 = 46^\circ$.
15. In an isosceles triangle, the vertex angle is twice the base angle. Find all three angles. 2
Solution : Let base angle = x. Vertex = $2x$. $2x + x + x = 180$. $4x = 180$. $x = 45^\circ$. Angles: 45° , 45° , 90° . (Right-angled isosceles!)

SECTION C - Short Answer (3 marks each)

16. In triangle ABC, $\angle B = 90^\circ$ and $\angle A = 35^\circ$. (i) Find $\angle C$. (ii) Draw and describe the altitude from B to AC. (iii) Find the exterior angle at A and at C. (iv) Verify: exterior angle at A + exterior angle at C = $\angle B + 180^\circ$. 3
Solution : (i) $\angle C = 180^\circ - 90^\circ - 35^\circ = 55^\circ$. (ii) Altitude from B falls on hypotenuse AC — it is the perpendicular from B to AC. (iii) Exterior at A = $180^\circ - 35^\circ = 145^\circ$. Exterior at C = $180^\circ - 55^\circ = 125^\circ$. (iv) $145^\circ + 125^\circ = 270^\circ = 90^\circ + 180^\circ$. □
17. The angles of a triangle are in ratio 3 : 5 : 7. Find each angle. Is this triangle acute, right-angled or obtuse ? 3
Solution : Ratio 3:5:7, sum = 15 parts = 180° . Part = 12° . Angles: 36° , 60° , 84° . Largest = $84^\circ < 90^\circ$. **Acute triangle**.
18. In triangle DEF, $DE = EF$ (isosceles with apex at E). $\angle E = 50^\circ$. Find the base angles $\angle D$ and $\angle F$. If the triangle is placed with EF as base, find the exterior angle at D. 3
Solution : Base angles = $(180^\circ - 50^\circ)/2 = 65^\circ$ each. Exterior at D = $180^\circ - 65^\circ = 115^\circ$. Also = $50^\circ + 65^\circ = 115^\circ$. □
19. In the figure, two triangles share the side AC. In $\triangle ABC$, $\angle A = 60^\circ$ and $\angle B = 70^\circ$. In $\triangle ACD$, $\angle ACD = 80^\circ$ and $\angle ADC = 55^\circ$. Find $\angle BAC$, $\angle BCA$, $\angle CAD$ and $\angle ACD$. What is the angle at the shared side AC ? 3
Solution : $\angle BAC = 60^\circ$. $\angle BCA = 180^\circ - 60^\circ - 70^\circ = 50^\circ$. $\angle CAD$: $\angle ACD = 80^\circ$, $\angle ADC = 55^\circ$. $\angle CAD = 180^\circ - 80^\circ - 55^\circ = 45^\circ$. Angle at AC from both triangles: $\angle BCA + \angle ACD = 50^\circ + 80^\circ = 130^\circ$.

SECTION D - Case Based (4 marks each)

UNIQUE STUDY POINT

AMITESH NAGAR, INDORE

PRACTICE PAPER 02 (2026-27) — MARKING SCHEME CHAPTER 07 A TALE OF THREE INTERSECTING LINES

Prepared by: SUMEET SAHU | Website : [Click Here](#) | WhatsApp Channel : [Click Here](#)

20. A carpenter is making a triangular shelf.

4

(i) The angles of the triangle are $(2x + 5)^\circ$, $(3x - 10)^\circ$ and $(x + 45)^\circ$. Find x and all three angles.

Ans : $(2x+5)+(3x-10)+(x+45)=180$. $6x+40=180$. $6x=140$. $x=23.33^\circ$. Angles: $2(23.33)+5=51.67^\circ$, $3(23.33)-10=60^\circ$, $23.33+45=68.33^\circ$.

(ii) Is this triangle acute, right or obtuse ?

Ans : All angles $< 90^\circ \rightarrow$ **acute triangle**.

(iii) The shelf needs a support from one vertex perpendicular to the opposite edge. What is the mathematical name for this support ?

Ans : Altitude.

(iv) The exterior angle at the first vertex is $(2x+5)^\circ$ from the exterior. Find the exterior angle at each vertex and verify they sum to 360° .

Ans : Exterior angles: $180-51.67=128.33$, $180-60=120$, $180-68.33=111.67$.
Sum= $128.33+120+111.67=360^\circ$. $\square$

21. Students investigate triangle inequality.

4

(i) Check which of the following can form triangles : (a) 3, 4, 5 (b) 5, 5, 11 (c) 7, 8, 14 (d) 10, 10, 10.

Ans : (a) $3+4=7>5$ $\square$ **Yes**. (b) $5+5=10<11$ $\square$? No, $10<11$. **No**. (c) $7+8=15>14$ $\square$ **Yes**. (d) $10+10=20>10$ $\square$ **Yes**.

(ii) For the valid triangles in (i), state their type (equilateral/isosceles/scalene).

Ans : (a) scalene ($3 \neq 4 \neq 5$). (c) scalene. (d) equilateral.

(iii) Can a triangle have sides 3, x and 10 if $x = 6$? If $x = 7$?

Ans : $x=6$: $3+6=9<10$. **No**. $x=7$: $3+7=10=10$, not strictly $>$. **No** (need strict inequality).
Actually $3+7=10$ which is NOT >10 . So **No for both**.

(iv) What are the possible integer values of the third side of a triangle if two sides are 5 and 9 ?

Ans : Third side must be $>|9-5|=4$ and $<9+5=14$. Integer values: **5, 6, 7, 8, 9, 10, 11, 12, 13**.