MATHEMATICS

Practical Geometry

QUESTIONS

- **1.** Identify the true statement.
 - (a) A triangle with 3 equal sides is isosceles.
 - (b) A triangle with a 95° angle can be right angled.
 - (c) A triangle with 3 acute angles is acute angled.
 - (d) A triangle with 2 equal sides is equilateral.
- **2.** In which of the following cases is the construction of a triangle not possible?
 - (a) Measures of 3 sides are given.
 - (b) Measures of 2 sides and an included angle are given.
 - (c) Measures of 2 angles and a side are given.
 - (d) Measures of 3 angles are given.
- **3.** Choose the correct option in which a triangle CANNOT be constructed with the given lengths of sides.
 - (a) 3 cm, 13 cm, 15 cm (b) 6 cm, 6 cm, 6 cm
 - (c) 9 cm, 6 cm, 2 cm (d) 13 cm, 6 cm, 8 cm
- **4.** Which among the following is sufficient to construct a triangle?
 - (a) The lengths of the three sides (b) The perimeter of the triangle
 - (c) The measures of three angles (d) The names of three vertices.
- **5.** In the given figure, find the measure of $\angle RQT$ (exterior $\angle le$), if PQ = QR and $\angle QPR = 50^{\circ}$



(c) 100°

(d) 110°

Direction (6 & 7): Meera folds a sheet of paper. The dotted lines as shown in the figure are the creases formed, which are named as 1, m and n.



6.	Which of the following is true?										
	(a) 1//m	(b) 1//n	(c) n//m	(d) Either (B) or (C)							
7.	What can you say about lines 1 and n?										
	(a) 1//m		(b) $1 \perp n$								
	(c) 1 is the same line as	n	(d) Neither (A) nor (B)								
8.	A triangular sign board on highway from Agartala to Dibrugarh is isosceles. If the unequal side is 8 cm and one										
	the equal sides is 9 cm, what is the measure of the third side?										
	(a) 9 <i>cm</i>	(b) 8 <i>cm</i>	(c) $\frac{17}{2}$ cm	(d) Either (A) or (C)							
9.	Which of the following is used to draw a line parallel to a given line?										
	(a) A protractor	(b) A set square	(c) A ruler	(d) A ruler and compass							
10.	Which of the following statements is incorrect?										
	(a) The sum of angles in a triangle is 2 right angles.(b) The exterior angle of a triangle is equal to the interior angle of the triangle.										
	(c) The hypotenuse is the longest side of a right angled triangle.										
	(d) All the above										
11.	How many parallel lines	s can be drawn passing th	rough a point not on the g	jiven line?							
	(a) 2	(b) 1	(c) 3	(d) 0							
12.	In which of the following	In which of the following cases can a triangle be constructed?									
	(a) Measures of three sides are given.										
	(b) Measures of two side	(b) Measures of two sides and an included angle are given.									
	(c) Measures of two ang	(c) Measures of two angles and the side between them are given.									
10	(d) All the above.										
13.	Which type of triangle is										
	(a) An equilateral triang	le 1	(b) A scalene triangle								
14	(c) A right angled triangle (d) An isosceles triangle										
14.	The measurements of Z	ΔDEF are $EF = 8.4$ cm,	$\angle E = 100^{\circ}$ and $\angle F = 82$	<u>z</u> -							
	Which of the following i	s correct?									
	(a) ΔDEF can be con	structed.									
	(b) ΔDEF is an obtuse angled triangle.										
	(c) Δ le cannot be constructed										
15	(d) ΔDEF is an acute angled triangle.										
15.	based on the sides of a triangle, which of the following is a classification of triangles?										
	(b) An acute angled tria	(a) A right angled triangle									
	(c) An obtuse angled triangle										
	(d) An isosceles triangle										

- **16.** Which of the following can be used to construct a 30° angle?
 - (a) Construct a 60° angle using compasses and bisect it.
 - (b) Construct a perpendicular bisector of a line segment.
 - (c) Construct the bisector of any angle.
 - (d) Construct an angle congruent to any given angle.
- 17. Rohan thinks he knows how to bisect angles and follows following steps to construct 45° angle.
 - **Step 1:** Construct an angle of 90°.
 - **Step 2:** Bisect the 90° angle.
 - **Step 3:** Bisect one of the angles obtained in step 2.
 - Which steps is not required to construct a 45° angle?

(a) Step 1 (b) Step 2 (c) Step 3 (d) Step 2 and 3

18. In Δ *XYZ*, a, b, c denote the three sides, which of the following is incorrect?

(a) a-b>c (b) a+c>b (c) a-b<c (d) a+b>c

- **19.** Which of the following is NOT constructed using a ruler and a set square?
 - (a) A perpendicular to a line from a point not on it.
 - (b) A perpendicular bisector of a line segment.
 - (c) A perpendicular to a line at a point on the line.
 - (d) A line parallel to a given line through a given point.
- **20.** Given $PQ = 6 \ cm$, $QR = 55 \ cm$ and $RP = 55 \ cm$, what type of a triangle can be constructed?
 - (a) An acute angled triangle. (b) An obtuse angled triangle
 - (c) An equilateral triangle (d) A right angle triangle
- **21.** Identify the false statement.
 - (a) A triangle with three equal sides is called an equilateral triangle.
 - (b) A triangle with a right angle is called a right angled triangle.
 - (c) A triangle with two equal sides is called a scalene triangle.
 - (d) A right angled triangle has two acute angles and a right angle.
- **22.** Identify the condition to be checked before constructing a triangle.
 - (a) Sum of the three angles is 180° .
 - (b) The sum of any two of the sides is greater than the third side.
 - (c) The difference of any two sides in lesser than the third side.
 - (d) All the above.
- **23.** Identify the condition when a triangle can be constructed?
 - (a) One side and two acute angles are given.
 - (b) A side and an acute angle are given
 - (c) Two obtuse angles are given.
 - (d) All given sides are equal.

- 24. How many perpendicular lines can be drawn to a line from a point not on it?
 - (a) 1 (b) 2 (c) 0 (d) Infinite
- **25.** ΔPQR is constructed with all its angles measuring 60° each. Which, of the following is correct?
 - (a) ΔPQR is an equilateral triangle. (b) ΔPQR is isosceles triangle.
 - (c) ΔPQR is a scalene triangle. (d) ΔPQR is a right angled triangle.
- **26.** Rajkumari folds a sheet of paper in the following way:



Which of the following is false?

- (a) Line $O \parallel$ line of P
- (b) Line $m \perp$ line n
- (c) With respect to lines O & P, line 'n' is a transversal
- (d) With respect to lines m and n, line 'O' is transversal
- **27.** A triangle is constructed as shown in the figure.



Which of the following is not correct about ΔDEF ?

- (a) $\triangle DEF$ has all its sides equal. (b) $\triangle DEF$ is an acute angled triangle.
- (c) ΔDEF is a scalene triangle. (d) ΔDEF is not an equilateral triangle.
- **28.** In $\triangle ABC \ \overline{AB} > \overline{BC} > \overline{CA}$ which of the following is the smallest angle?



29. An isosceles triangle is constructed as shown in the figure.



Which of the given statements in incorrect?

- (a) \overline{PR} is the hypotenuse of ΔPQR .
- (b) ΔPQR is an equilateral triangle.

- (c) ΔPQR is a right angled triangle.
- (d) In right angled ΔPQR , its equal angles measure as 90°, 45°, 45°.
- **30.** Identify the angle that gets constructed: after step 4 and by joining the points O and T.



- (a) $80^{\circ}C$ (b) 75° (c) 120° (d) 135°
- 32. Identify the angle that is constructed after step 5 in the figure below and by joining the points O and U (where

$$PR = RS = ST$$

31.



33. Given $AB = 6 \ cm \ BC = 7 \ cm \ CA = 8 \ cm$, which of are the following are right steps for constructing $\triangle ABC$.



A• 8cm (line drawn, step 1)

- (a) Step 1 is correct step 2 & 3 are wrong (b) Step 2 & 3 are right step 1 is wrong
- (c) All steps 1 to 3 are right (d) None of the above.
- **34.** Which property has been used to construct the triangle in question 33?
 - (a) RHS property (b) SSS property (c) SAS property (d) ASA property

- 35. Given AB = 3 cm, BC = 5 cm $\angle C = 70^{\circ}$, are the following steps to construct the Δle correctly shown? **Step 1:** Draw AB = 3 cm**Step 2:** Draw angle $= 70^{\circ}$ from B using protractor **Step 3:** Cut off length = 5 cm to get CStep 3 5cm 70[°] Step 2 3cm Step 1 (a) Step 1 is correct (b) Step 2 is correct (d) Step 1 should be to draw BC = 5 cm(c) All steps are correct 36. Which property is the correct one to construct triangle in question 35. (a) SSS Property (b) SAS property (c) RHS property (d) AAA property 37. A line p and a point X not on it are given. Which of the following can be used to draw a line parallel to p through X? (a) Equal corresponding angles (b) Congruent triangles. (c) Heron's formula (d) Pythagoras' theorem. Given AB = 3 cm, AC = 5.2 cm, and $\angle B = 35^{\circ}$. $\angle ABC$ cannot be uniquely constructed, with AC as base, why? 38. (a) Two sides and included angle are given. (b) The other two angles are not given. (c) The vertex B cannot be uniquely located. (d) The vertex A coincides with the vertex C. 39. A triangle ΔPQR with $\angle Q = 90^\circ$, $QR = 4 \ cm$ and $PR = 5 \ cm$ is constructed. What would be the measure of PQ? (b) 6 cm (a) 2 cm (c) 7 cm (d) 3 cm 40. The idea of equal alternate angles in used to construct which of the following? (a) A line parallel to a given line (b) A triangle
 - (c) A square (d) Two triangles

SOLUTIONS

- 1. (C) Not available
- **2.** (D): With given three angles, infinite no of similar Ales can be constructed as below;



- **3.** (C): Difference of 2 sides, [9-6=3] is greater than third side, whereas it should be lesser.
- **4.** (A) Not available
- **5.** (C):



By property of isosceles Δle , the two $\angle les$ shown are 50°

$$\Rightarrow \angle x = 180^\circ - 50^\circ - 50^\circ = 80^\circ$$

 $\Rightarrow \angle RQT = 180^\circ - 80^\circ = 100^\circ$

- **6.** (A) Not available
- 7. (B) Not available
- **8.** (A)



Third side will be equal side = 9 cm

- 9. (D) Not available
- **10.** (B): It should be equal to sum of interior $\angle les$
- **11.** (B): From point P (not on the line l'), only one line 'm' can be drawn parallel to '1'.
- **12.** (D) Not available

- **13.** (C) Not available
- 14. (C): Δle cannot be constructed as sum of only two Ales $\angle E & \angle F > 180^\circ$ ($\angle E + \angle F = 182^\circ$), which is not possible in a Δle .
- **15.** (D) Not available
- **16.** (A) Not available
- **17.** (C): Not available
- **18.** (A): Actually, $a-b < c \forall a, b, c$ (the symbol, $\forall a, b, c$ means for all a, b, c) This implies that b-c < a; c-a < b
- **19.** (B) Not available
- **20.** (A): Since $QR = RP \Rightarrow$ it is isosceles Δle and an isosceles Δle is always acute $\angle led$.
- **21.** (C): In (C), such a Ale is called isoceles Δle .
- 22. (D) Not available
- **23.** (A) Not available
- **24.** (A) Not available
- **25.** (A): Not available
- **26.** (B) Not available
- **27.** (A) Not available
- **28.** (B) Not available
- **29.** (B) Not available
- **30.** (D) Not available
- **31.** (C) Not available
- **32.** (D) Not available
- **33.** (C): The Ale formed will be as follows:



- **34.** (B)
- **35.** (D): It is important to identify the segments on which angle can be constructed. Since given angle is $\angle C$, hence the segment will be BC.
- **36.** (B) Not available
- **37.** (A) Not available
- **38.** (C): Here construction has to start with AB as base.

39. (D): Use RHS property to Contruct the Δle as. Shown:





40. (A) Not available

ANSWER - KEYS												
1.	С	2.	D	3.	С	4.	А	5.	С			
6.	А	7.	В	8.	А	9.	D	10.	В			
11.	В	12.	D	13.	С	14.	С	15.	D			
16.	А	17.	С	18.	А	19.	В	20.	А			
21.	С	22.	D	23.	А	24.	А	25.	А			
26.	В	27.	А	28.	В	29.	В	30.	D			
31.	С	32.	D	33.	С	34.	В	35.	D			
36.	В	37.	А	38.	С	39.	D	40.	А			