



INDIAN SCHOOL SOHAR
PERIODIC TEST II (2018-19)
MATHEMATICS

CLASS: IX

DATE: 27/09/2018

MAX. MARKS: 80

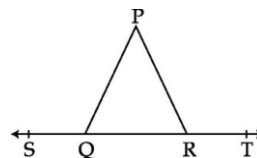
DURATION: 3 HRS

General Instructions:**(i) All questions are compulsory****(ii)** The question paper consists of 30 questions divided into four sections **A, B, C and D.****(iii)** Section **A** contains **6** questions of **1** mark each. Section **B** contains **6** questions of **2** marks each. Section **C** contains **10** questions of **3** marks each. Section **D** contains **8** questions of **4** marks each**(iv)** There is no overall choice. However, an internal choice has been provided in four questions of 3 marks each and three questions of four marks each. You have to attempt only one of the alternatives in all such questions.**(v)** Use of calculators is not permitted.**Section A****Question numbers 1 to 6 carry 1 mark each.**

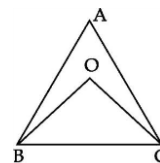
1. Write the decimal expansion of $\frac{3}{11}$ and state the kind of expansion.
2. For what value of k , $(x + 1)$ is a factor of the polynomial $kx^2 - x - 4$?
3. The base of a right triangle is 15 cm and its hypotenuse is 25 cm. Find its area.
4. State any two Euclid's axiom.
5. If x , y and z are the exterior angles of ΔABC , find value of $x + y + z$.
6. Find the zero of a zero polynomial.

Section B**Question numbers 7 to 12 carry 2 marks each.**

7. If a point C lies between two points A and B such that $AC = BC$, prove that $AC = \frac{1}{2} AB$. Explain by drawing a figure.



8. In the given figure, $PQ = PR$, then prove that $\angle PQS = \angle PRT$.
9. In the given figure, $AB > AC$ and BO and CO are the bisectors of $\angle B$ and $\angle C$ respectively. Show that $OB > OC$.



10. The degree measure of three angles of a triangle are x , y , and z . If $z = \frac{x + y}{2}$, then find the value of z .

11. Check whether the polynomial $q(t) = 4t^3 + 4t^2 - t - 1$ is a multiple of $2t + 1$
12. If $x = 3 + 2\sqrt{2}$, find whether $x + \frac{1}{x}$ is a rational or an irrational number.

Section C

Question numbers 13 to 22 carry 3 marks each.

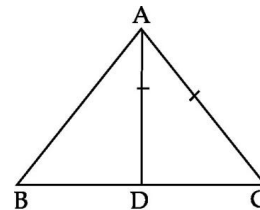
13. Represent $\sqrt{8.2}$ on a number line. Justify.

OR

Visualize $4.1\bar{6}$ on the number line up to 4 decimal places.

14. Prove that angles opposite to equal sides of an isosceles triangle are equal.
15. In figure below, D is a point on side BC of ΔABC such that $AD=AC$.

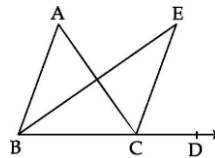
Show that $AB > AD$.



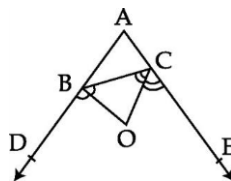
OR

In the figure, if BE is the bisector of $\angle ABC$ and CE is the bisector of $\angle ACD$, then show that

$$\angle BEC = \frac{1}{2} \angle BAC$$



16. In the following figure, the sides AB and AC of ΔABC are produced to D and E respectively. If the bisectors of $\angle CBD$ and $\angle BCE$ meet at O, then show that $\angle BOC = 90 - \frac{\angle A}{2}$



17. BE and CF are two equal altitudes of a ΔABC . Prove that ΔABC is an isosceles triangle.

OR

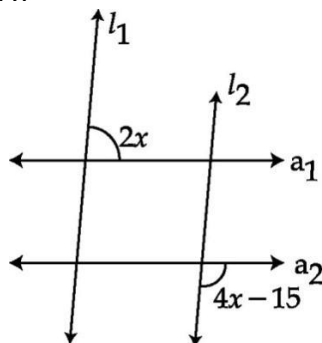
ABCD is a quadrilateral such that $AB = AD$ and $CB = CD$. Prove that AC is the perpendicular bisector of BD.

18. The perimeter of a triangular field is 300 cm and its sides are in the ratio 5: 12: 13. Find the length of the perpendicular from the opposite vertex to the side whose length is 120 cm.
19. Factorize: $x^3 - 23x^2 + 142x - 120$
20. A field is in the shape of a trapezium whose parallel sides are 25 m and 10 m. The non-parallel sides are 14 m and 13 m. Find the area of the field.

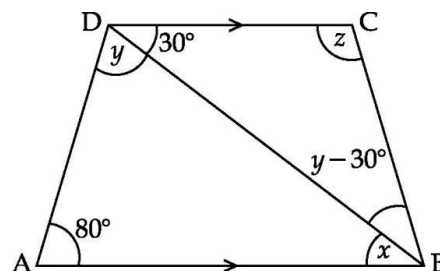
21. If a pair of parallel lines is intersected by a transversal, show that the bisectors of a pair of alternate interior angles are also parallel.

OR

In the figure below, $l_1 \parallel l_2$ and $a_1 \parallel a_2$. Find the value of x



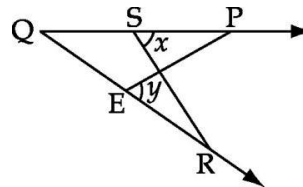
22. In figure, if $AB \parallel CD$, $\angle BDC = 30^\circ$ and $\angle BAD = 80^\circ$, find $\angle x$, $\angle y$ and $\angle z$



Section D

Question numbers 23 to 30 carry 4 marks each.

23. Factorize (a) $8x^3 + 27y^3 + 36x^2y + 54xy^2$
 (b) $a^2 + b^2 - 2(ab - ac + bc)$
24. Prove that two triangles are congruent if any two angles and the included side of one triangle is equal to any two angles and the included side of the other triangle.
25. In the figure given below, $\angle x = \angle y$ and $PQ = QR$. Prove that $PE = RS$.



26. ABCD is a trapezium in which $AB \parallel CD$ and $AD = BC$. Show that (i) $\angle A = \angle B$ (ii) $\angle C = \angle D$

OR

Diagonals AC of parallelogram ABCD bisects $\angle A$. Show that:

- (i) It bisects $\angle C$ also.
 (ii) ABCD is a rhombus
27. Factorize: $a^7 - ab^6$

OR

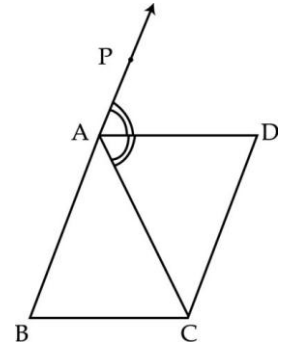
If $ax^3 + bx^2 + x - 6$ has $x+2$ as factor and leaves remainder 4 when divided by $x-2$, find values of a and b

28. Evaluate $\frac{25}{\sqrt{40} - \sqrt{80}}$. It is being given that $\sqrt{5} = 2.236$ and $\sqrt{10} = 3.162$

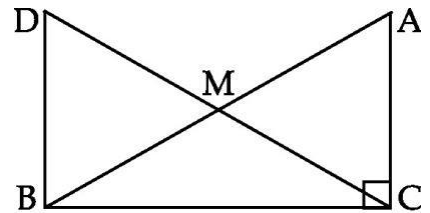
OR

If $x = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ and $y = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$, then find the value of $x^2 + y^2 - 10xy$

29. In the figure ABC, is an isosceles triangle in which $AB = AC$, AD bisects exterior angle PAC and $CD \parallel AB$. Prove that ABCD is a parallelogram



30. In right $\triangle ABC$ in given figure, right angled at C, M is the midpoint of hypotenuse AB, C is joined to M and produced to a point D such that $DM = CM$. Point D is joined to point B. Show that (i) $\triangle AMC \cong \triangle BMD$ (ii) $\angle DBC$ is a right angle



*****THE END*****