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DAV PUBLIC SCHOOLS, BHUBANESWAR
ANNUAL EXAMINATION, 2019-20
CLASS-VII
SUBJECT-MATHEMATICS

TIME: 3 HOURS

MAXIMUM MARKS-80

GENERAL INSTRUCTIONS:

1. This question paper consists of 4 printed pages and 30 questions, divided into four sections A, B, C and D.
2. Section A consists of 6 VSA type questions of 1 mark each.
3. Section B consists of 6 SA-1 type questions of 2 marks each.
4. Section C consists of 10 SA-2 type questions of 3 marks each with two internal choices.
5. Section D consists of 8 LA type questions of 4 marks each with two internal choices.
6. Answer all the questions.

SECTION-A (1×6=6)

1. Find the area of the rectangle whose length is y and breadth is half of its length.
2. If $\triangle PQR$ and $\triangle XYZ$ are congruent under the correspondence $QPR \leftrightarrow XYZ$, then $\angle R = \underline{\hspace{2cm}}$ and $QR = \underline{\hspace{2cm}}$.
3. If area of a field is 600000 m^2 , then what is its area in hectare ?
4. Write four letters of English alphabet having one line of symmetry.
5. Under what circumstances will a right-angled triangle have a line of symmetry? Give reasons.
6. Draw a net for a cylinder.

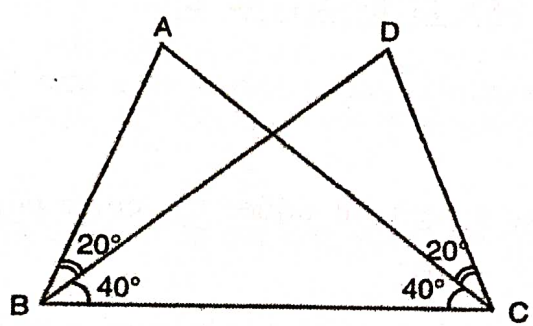
SECTION-B (2×6=12)

7. Express $\left(\frac{2}{5}\right)^3 \times \left(\frac{2}{5}\right)^{-5}$ as a rational number with positive exponent.
8. Find the value of ' p ' if the expression $z^2 + 3z - p$ equals to 3 for $z = 2$.

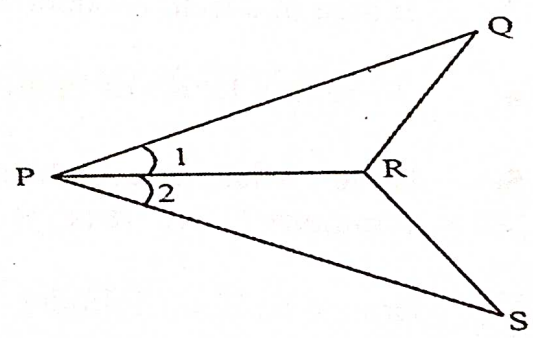
9. ABC is an isosceles triangle with $AB=AC$ and D is the mid-point of base BC. Is $\triangle ABD \cong \triangle ACD$? If so why?
10. Subtract $6\frac{2}{3}$ from the sum of $\frac{-3}{7}$ and 2.
11. Solve the equation : $4y-2 = \frac{1}{5}$
12. In a triangle one of the exterior angle is 105° . One of the interior opposite angle is 75° . Find the measure of all the angles of the triangle.

SECTION-C (3×10=30)

13. Express $(1.25 \times 10^7) \div (5 \times 10^3)$ in the form $k \times 10^n$; ($1 \leq k < 10$)
14. Factorise: $axy + bcxy - az - bcz$
15. In the given figure $\triangle ABC$ and $\triangle DBC$ are on the same base BC. State the equality between any three corresponding parts to ensure that $\triangle ABC \cong \triangle DCB$.



16. In the given figure , $PQ=PS$ and $\angle 1 = \angle 2$.
 (i) Is $\triangle PQR \cong \triangle PSR$? Give reasons.
 (ii) Is $QR=SR$? Give reasons.



OR

If $\triangle PQR$ is an isosceles triangle such that $PQ=PR$, then prove that the altitude PS from P on QR, bisects QR.

17. Construct a triangle PQR when two of its angles are of 60° and 40° and the included side is equal to 4.8 cm.

18. One side and corresponding altitude of a parallelogram are 50 cm and 8cm. If the other altitude is 4 cm, find the length of other pair of parallel sides.

OR

A field is in the form of a right triangle with hypotenuse 10m and one side 8m. Find the area of the field.

19. How many lines of symmetry will the following have ?
 (i) A nine-sided regular polygon
 (ii) A circle
 (iii) A quadrilateral
20. Draw the rough sketch of a tetrahedron and write the number of faces and vertices it has. What is the shape of its faces ?
21. A drum of kerosene oil is $\frac{3}{4}$ full. When 15 litres of oil is drawn from it, it is $\frac{7}{12}$ full. Find the total capacity of the drum.
22. Present age of Veena's mother is four times Veena's age. Five years hence, her age will be 21 years more than Veena's age. Find their present ages.

SECTION-D (4×8=32)

23. Find the value of x so that

$$\left(\frac{-7}{11}\right)^{-3} \times \left(\frac{-7}{11}\right)^{5x} = \left[\left(\frac{-7}{11}\right)^{-2}\right]^{-1}$$

24. Simplify:

$$\left[\left(\frac{2}{3}\right)^2\right]^3 \times \left(\frac{2}{3}\right)^{-4} \times 3^{-1} \times \frac{1}{6}$$

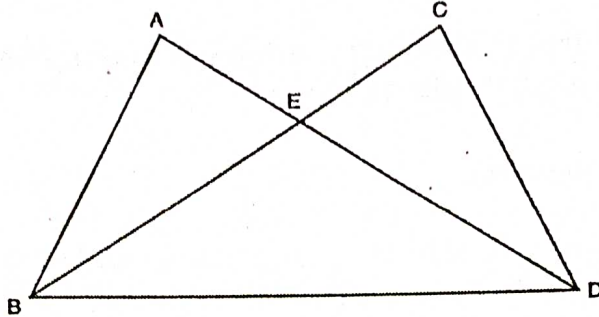
OR

Find the reciprocal of $\left(\frac{1}{2}\right)^{-2} \div \left(\frac{2}{3}\right)^{-3}$

25. Multiply and verify the result for the given values.

$$(2x^2 - 5y)(5x + 2y^2); x = 2, y = -1$$

26. In the given figure, $AE = CE$, $BE = DE$, then prove that $AB = CD$ and if $\angle EDC = 35^\circ$, find $\angle EBA$.



27. Construct a right angled triangle in which sides containing the right angle are 3cm and 4cm. Also construct perpendicular bisector of the hypotenuse.
28. The diameter of a circular park is 140m. Around it on the outside, a path having the width of 7m is constructed. If the path has to be fenced from inside and outside at the rate of Rs 7 per metre, find its total cost.

OR

A path 3.5 m wide runs inside along the boundary of a square field whose side is 65m. Find the area of the path. Also find the cost of manuring the rest of the field at the rate of Rs 25 per square metre.

29. A rectangular lawn is 30m by 20m. It has two roads each 2m wide running in the middle of it, one parallel to the length and the other parallel to the breadth. Find the area of the roads.
30. The foot of a ladder is 6m away from its wall and its top reaches a window 8m above the ground,
(a) find the length of the ladder.
(b) If the ladder is shifted in such a way that its foot is 8m away from the wall, to what height does its top reach?
