

ST. ARNOLD'S CENTRAL SCHOOL, PUNE
PERIODIC TEST-2, 2017-18
SUBJECT- MATHEMATICS

STD: IX

M.M:80

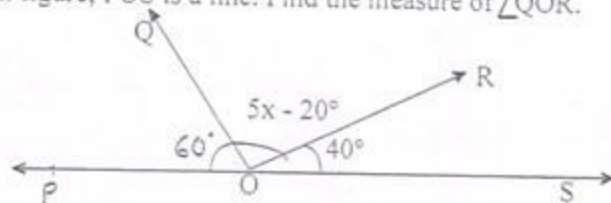
General Instructions:

- (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 and Section D contains 8 questions of 4 marks each.
- (iv) Use of calculators is not permitted.

SECTION - A

Question numbers 1 to 6 carry 1 mark each.

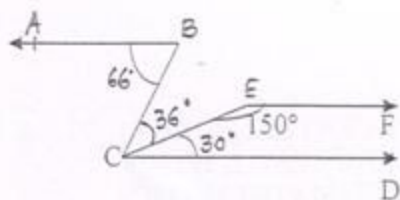
1. Find the value of $\sqrt{245} \div \sqrt{5}$. (1)
2. Write the expansion of $(2x - y)^3$. (1)
3. In which quadrant does the point $(-3, 5)$ lie? (1)
4. Write the co-ordinate of the point if the abscissa is -7 and the ordinate is 2 . (1)
5. In an experiment a coin is tossed 500 times. If the head turns up 280 times, then find the probability of getting a tail. (1)
6. In the given figure, POS is a line. Find the measure of $\angle QOR$. (1)



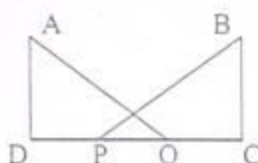
SECTION - B

Question numbers 7 to 12 carry 2 marks each.

7. Insert three rational numbers between $-\frac{1}{3}$ and $-\frac{2}{3}$. (2)
8. If $p(x) = x^2 - 4x + 4$, then find the value of $p(2) + p(-2) + p(1)$. (2)
9. If $x - k^2$ is a factor of $x^2 - k^2x + k + 3$, find the value of k . (2)
10. The probability of guessing the correct answer to a certain question is $\frac{x}{3}$. If the probability of not guessing the correct answer is $\frac{5x}{3}$, then find the value of x . (2)
11. In the given figure, prove that $AB \parallel EF$. (2)



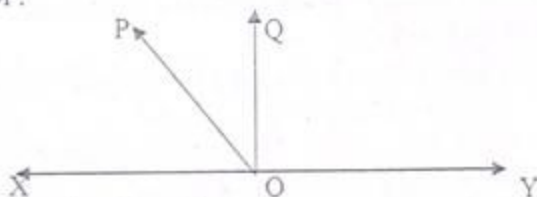
12. In the given figure, $AD \perp CD$, $BC \perp CD$. If $AQ = BP$ and $DP = CQ$, prove that $\angle DAQ = \angle CBP$. (2)



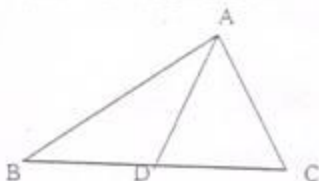
SECTION - C

Question numbers 13 to 22 carry 3 marks each.

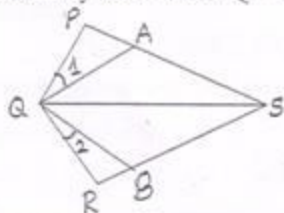
13. Represent $\sqrt{4.5}$ on the number line. (3)
14. Factorise: $\frac{a^2}{25} + \frac{b^2}{4} + 1 - \frac{ab}{5} - b + \frac{2a}{5}$. (3)
15. Define the following terms and also draw them: (3)
- a) Parallel lines b) Perpendicular lines c) Collinear points
16. Find the perimeter of an isosceles right triangle having an area of 200 cm^2 . (3)
17. Find the area of the triangle whose vertices are $(0,4)$, $(0,0)$, $(2,0)$ by plotting them on the graph. (3)
18. In the given figure, XOY is a straight line and $OQ \perp XY$ at O. Show that $2\angle QOP = \angle YOP - \angle XOP$. (3)



19. In $\triangle ABC$, $AB > AC$. Show that $AB > AD$. (3)

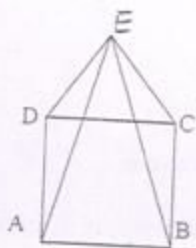


20. In the figure, PQRS is a quadrilateral in which $\angle PQS = \angle SQR$. A and B are points on side PS and RS respectively such that $AQ = BQ$ and $\angle 1 = \angle 2$. Prove that $\angle P = \angle R$. (3)



21. ABCD is a square and $\triangle DEC$ is an equilateral triangle. Prove that :

- a) $\triangle ADE \cong \triangle BCE$
 b) $AE = BE$



(3)

22. The following distribution gives the weight of 38 students of a class.

Weight (in Kg)	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75
No. of students	9	5	14	3	1	2	2	1	1

Find the probability that weight of a student in the class is:

- a) at least 61 kg
 b) not more than 50 kg

SECTION - D

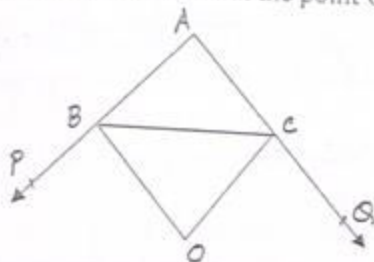
(3)

Question numbers 23 to 30 carry 4 marks each.

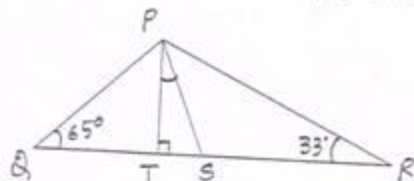
23. Two parallel sides of a trapezium are 60cm and 77cm. Other two sides are 25cm and 26cm. Find the area of the trapezium. (4)

24. Plot the points $A(-2,3)$, $B(-2,0)$, $C(2,0)$ and $D(2,6)$ on the graph paper. Join them consecutively and find the lengths of AC and AD. (4)

25. In the given figure, bisectors of the exterior angles $\angle B$ and $\angle C$ formed by producing AB and AC of $\triangle ABC$ intersect each other at the point O. Prove that $\angle BOC = 90^\circ - \frac{1}{2}\angle A$. (4)



26. In the given figure, $PT \perp QR$ and PS bisects $\angle QPR$. If $\angle Q = 65^\circ$ and $\angle R = 33^\circ$, find $\angle TPS$. (4)



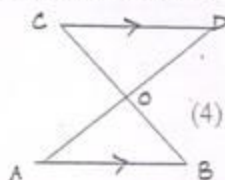
27. In the given figure, $AC = AE$, $AB = AD$ and $\angle BAD = \angle EAC$. Show that $BC = DE$. (4)



28. State angle sum property of a triangle and prove it. (4)

29. In a school students thought of planting trees in and around the school. The class teacher divided the students in two groups. One group planted trees in a triangular plot AOB, whereas another group planted in the triangular plot COD. Here O is the mid-point of AD. Show that

- $\triangle AOB \cong \triangle DOC$
- O is also the mid-point of BC
- By planting trees what value do the students depict?



30. A job company selected 2000 software engineers at random in a city and surveyed about the number of jobs changed by them in their career in different age group, which is given below:

Age group in years	Change in job				
	0	1	2	3	Over 3
18-19	440	160	110	61	35
30-50	505	125	60	22	18
Above 50	360	45	35	15	09

A person is chosen at random from these engineers. Find the probability

- that the person selected is from the age group of (18 - 19) and has made exactly 3 changes in the job.
- that the person selected is from the age group of (30 - 50) and is having 2 or more than 2 changes in the job.
- that the person selected had not changed the job at all.
- that the person selected is above 50 and has changed at least one job. (4)