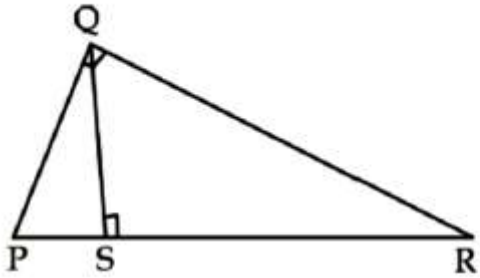
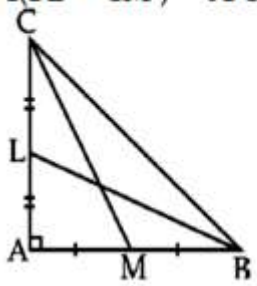
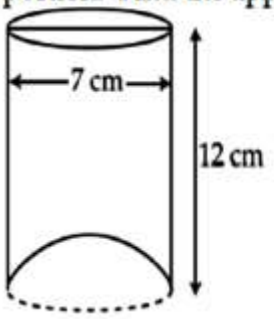
INDIAN SCHOOL AL WADI AL KABIR 2017- 18

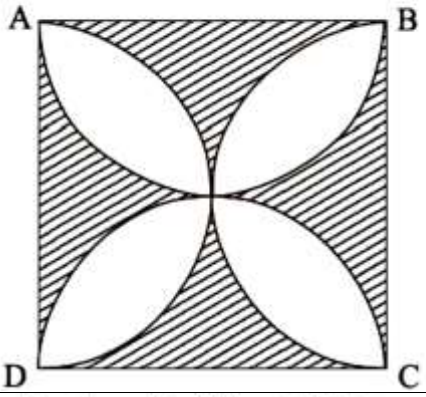
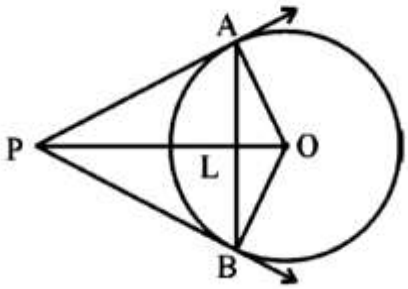
Department of Mathematics

Class X Holiday Worksheet- December 2017

Q.no	Questions	Ans
1.	Prove that $\sqrt{2}$ is an irrational number and hence show that $-2\sqrt{2}$ is also an irrational number.	
2.	If p and q are the zeroes of the polynomial x^2+7x+7, then form a quadratic polynomial whose zeroes are 2p and 2q.	$x^2-14x+28$
3.	In the given figure, $\angle PQR = 90°$ and $QS \perp PR$. Prove that $\frac{RQ^2}{PQ^2} = \frac{RS}{PS}$ 	
4.	The sum of a two digit number and another formed by reversing its digits is 99. Five added to the number yields 4 less than 6 times the sum of its digits. Find the number.	45
5.	Solve the following pair of equations graphically : $2x-y=2$; $4x-y=8$ Also find the co-ordinates of the points where the lines represented by the above equations meet the $x-$axis.	
6.	In ΔPQR, show that $\sin\frac{P}{2} = \cos\frac{Q+R}{2}$	
7.	For what value of k will the following pair of linear equations have an infinite number of solutions ? $2x+3y=2$; $(k+2)x+(2k+1)y=2(k-1)$	k = 4
8.	Draw a more than ogive for the following distribution and hence find its median.	Median = 50

Class	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 - 90
Frequency	25	15	10	6	24	12	8

9.	In the given figure BL and CM are medians of ΔABC, right angled at A. Prove that $4(BL^2+CM^2) = 5BC^2$.  	
10.	Construct a Δ ABC in which AB = 6 cm, $\angle$ A = 30° and $\angle$ B = 60°. Construct another Δ AB′C′ similar to Δ ABC with base AB′ = 8 cm.	
11.	In an A.P., if the 12^{th} term is –13 and the sum of its first four terms is 24, find the sum of its first ten terms.	0
12.	The long and short hands of a clock are 6 cm and 4 cm long respectively. Find the sum of the distances travelled by their tips in 24 hours. (Use $\pi = 3{\cdot}14$)	954.56 cm
13.	A metallic cylinder has radius 3 cm and height 5 cm. To reduce its weight, a conical hole is drilled in the cylinder. The conical hole has a radius of $\frac{3}{2}$ cm and its depth is $\frac{8}{9}$ cm. Calculate the ratio of the volume of metal left in the cylinder to the volume of metal taken out in conical shape.	133 : 2
14.	A milk seller serves his customers using glasses shown in the figure. The inner diameter of the cylindrical glass is 7 cm and height 12 cm. The bottom of the glass has a raised hemispherical portion. Find the apparent and the actual capacities of the glass.  	462 cu cm. 372.17 cu.cm
15.	Evaluate : $(\cos^2 20° + \cos^2 70°) + \frac{\cot 25°}{\tan 65°} + \cot 5° \cot 10° \cot 60° \cot 80° \cot 85°$	$\frac{6+\sqrt{3}}{3}$

16.	ABCD is a square of side 14 cm. Semi-circles are drawn with each side of square as diameter. Find the area of the shaded region. $\left(\text{use } \pi = \frac{22}{7}\right)$ 	: 84 cm².
17.	A bird is sitting on the top of a 80 m high tree. From a point on the ground, the angle of elevation of the bird is 45°. The bird flies away horizontally in such a way that it remained at a constant height from the ground. After 2 seconds, the angle of elevation of the bird from the same point is 30°. Find the speed of flying of the bird. (Take $\sqrt{3}=1.732$)	29.2m/s
18.	A semicircular sheet of metal of diameter 28 cm is bent into an open conical cup. Find the depth and capacity of the cup.	$7\sqrt{3}$ $\frac{1078\sqrt{3}}{3}$ cm³
19.	AB is a chord of a circle, with centre O, such that AB = 16 cm and radius of circle is 10 cm. Tangents at A and B intersect each other at P. Find the length of PA. 	$\frac{40}{3}$ cm
20.	Prove the identity : $\frac{\text{cosec}^2\theta}{\text{cosec}\theta - 1} - \frac{\text{cosec}^2\theta}{\text{cosec}\theta + 1} = 2\sec^2\theta$	

Submission Date: 16th Jan 2018