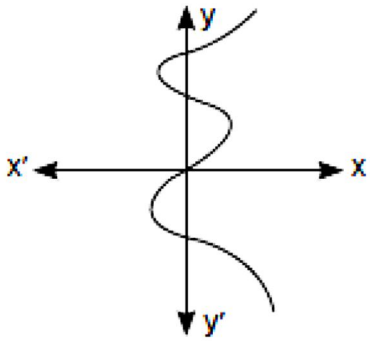
KENDRIYA VIDYALAYA GACHIBOWLI, GPRA CAMPUS HYD – 32
REVISION TEST - 04 FOR CLASS X BOARD EXAM 2021

Max. marks: 50 **Time Allowed: 2 hrs**

SECTION – A (1 MARK EACH)

1. If $\frac{p}{q}$ is a rational number ($q \neq 0$), what is condition of q so that the decimal representation of $\frac{p}{q}$ is terminating?

2. The graph of x = p(y) is given below, for some polynomial p(y). Find the number of zeroes of p(y).



3. Find the discriminant of the quadratic equation: $3\sqrt{3}\,x^2 + 10x + \sqrt{3} = 0$.

4. The nth term of an AP is 6n + 2. Find its common difference.

5. If $\cot\theta = \frac{7}{8}$, evaluate $\frac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)}$

6. Find the value of k so that the following system of equations has no solution:

$3x - y - 5 = 0,\ 6x - 2y + k = 0$

7. In ΔABC, D and E are points on sides AB and AC respectively such that DE || BC and AD : DB = 3 : 1. If EA = 6.6 cm then find AC.

8. Find the distance between the points, $\left(-\frac{8}{5}, 2\right)$ and $\left(\frac{2}{5}, 2\right)$.

SECTION – B (2 MARKS EACH)

9. Find HCF and LCM of 625, 1125 and 2125 using fundamental theorem of arithmetic.

10. Find a quadratic polynomial whose zeroes are $5 + \sqrt{2}$ and $5 - \sqrt{2}$.

11. Solve for *x* and *y* by the method of elimination: $4x - 3y = 1;\ 5x - 7y = -2$

12. In an AP, the 24th term is twice the 10th term. Prove that the 36th term is twice the 16th term.

13. Find the sum: –5 + (–8) + (–11) + ... + (–230).

14. In ΔABC, D and E are points on the sides AB and AC respectively, such that DE || BC. If AD = *x*, DB = *x* – 2, AE = *x* + 2 and EC = *x* – 1, Find the value of *x*.

SECTION – C (3 MARKS EACH)

15. Prove that $\sqrt{5}$ is irrational.

16. If α and β are zeroes of the quadratic polynomial $4x^2 + 4x + 1$, then form a quadratic polynomial whose zeroes are 2α and 2β.

17. Solve for x and y : $\frac{1}{7x}+\frac{1}{6y}=3,\ \frac{1}{2x}-\frac{1}{3y}=5.$

18. Prove the following identities: $\sin^8\theta - \cos^8\theta = (\sin^2\theta - \cos^2\theta)(1 - 2\sin^2\theta\cos^2\theta)$

SECTION – D (5 MARKS EACH)

19. Solve for x : $2\left(\frac{2x-1}{x+3}\right)-3\left(\frac{x+3}{2x-1}\right)=5$; given that $x \neq -3, x \neq \frac{1}{2}$.

20. Find the centre of a circle passing through (5, – 8), (2, – 9) and (2, 1).

CASE STUDY-BASED QUESTIONS (Each sub-question carries 1 mark)

21. In a village, a bird is sitting on the top of a tree, which is 80 m high. The angle of elevation of the bird, from a point on the ground is 45°. The bird flies away from the point of observation horizontally and remains at a constant height. After 2 seconds, the angle of elevation of the bird from the point of observation becomes the complementary angle of 60°.

Based on the above information, answer the following questions: (Attempt any four)

(i) Draw the correct figure based on the above information.

(ii) Find the angle of elevation of the bird after 2 second.

(iii)Find the distance covered by bird after 2 seconds.

(iv)Find the speed of flying of the bird.

(v) If the height is doubled, then what will be the new distance covered by the bird.

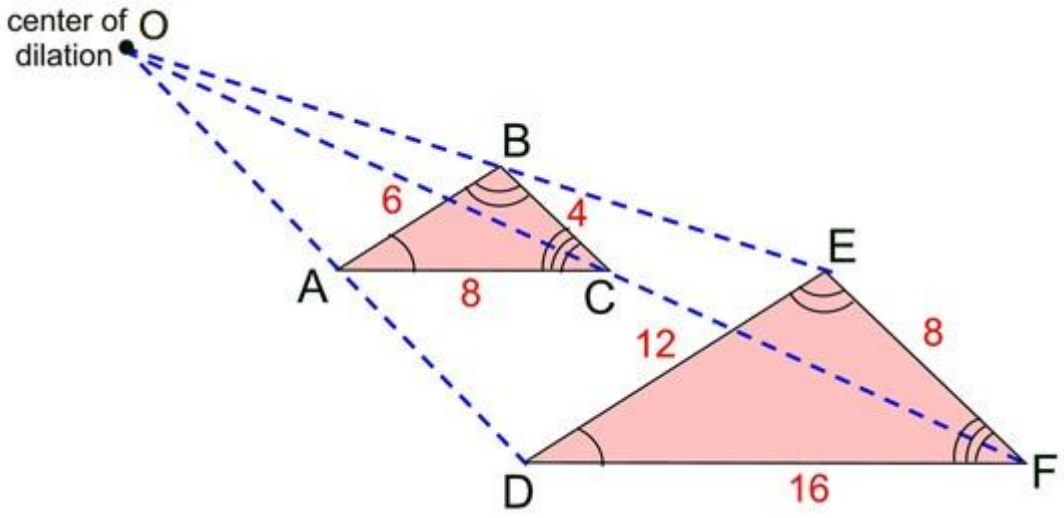
22. Similar figures are figures with the same shape, but not necessarily the same size. The term similar (or similarity) can be defined using the language of transformations.

Two figures are similar if one is the image of the other under a transformation that multiplies all distances (lengths) by the same positive scale factor. That is to say, one figure is a dilation of the other. In the below figure, ΔDEF is a dilation of ΔABC by a scale factor of 2.

Therefore, OD = 2•OA

OE = 2•OB

OF = 2•OC



Based on the above information, answer the following questions: (Attempt any four)

(i) Find by which criteria ΔOAB ~ ΔODE.

(ii) A vertical pole of length 6 m casts a shadow 4 m long on the ground and at the same time a tower casts a shadow 28 m long. Find the height of the tower.

(iii) Find by which criteria ΔOAC ~ ΔODF.

(iv) Find the ratio of the perimeter of ΔABC and ΔDEF.

(v) Find the ratio of the areas of ΔOAB and ΔODE.