

# NEW STANDARD ACADEMY

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## PHYSICS

1. Find the nature and focal length of a spherical mirror having radius of curvature is (-)24 cm.
2. A concave mirror produces three times magnified (enlarged) real image of object placed at 10 cm in front of it. Where is the image located?
3. What is the size of image on the inner surface? How does it change when you move the spoon slowly away from your face?
4. Find the focal length of a convex mirror whose radius of curvature is 32 cm.
5. The magnification produced by a plane mirror is +1. What does it mean?

## CHEMISTRY

1. Five solutions A, B, C, D and E when tested with universal indicator showed pH as 4, 1, 11, 7 and 9, respectively. Which solution is:  
(a) neutral? (b) strongly alkaline? (c) strongly acidic?
2. Equal lengths of magnesium ribbons are taken in test tubes A and B. Hydrochloric acid (HCl) is added to test tube A, while acetic acid ( $\text{CH}_3\text{COOH}$ ) is added to test tube B. In which test tube will the fizzing occur more vigorously and why?
3. Fresh milk has a pH of 6. How do you think the pH will change as it turns into curd? Explain your answer.
4. Plaster of Paris should be stored in a moisture-proof container. Explain why?
5. What is a neutralization reaction? Give two examples.

## BIOLOGY

1. What are phytohormones? Give the function of auxin hormone.
2. Give the function of cytokinin.
3. Give the name and function of gaseous plant hormone.
4. What is a tropic movement in plants? Give the example.
5. Touch me not, so which type of movement explain it?

## MATHS

1. The distance between the points (m, -n) and (-m, n) is  $\sqrt{m^2 + n^2}$ .
2. Show that the points (7, 10), (-2, 5) and (3, -4) are vertices of an isosceles right triangle.
3. Find the point on y-axis which is equidistant from the points (5, -2) and (-3, 2).
4. Do the points (3, 2), (-2, -3) and (2, 3) form a triangle? If so name the type of triangle formed.
5. Determine the coordinates of the centre of a circle passing through the points A (8, 6), B (2, -2) and C (8, -2). Also find the radius of the circle.
6. If the centroid of the triangle formed by the points A(a, b), B(b, c) and C(c, a) is at the origin. What is the value of  $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab}$ ?
7. Find the coordinates of the point P which divides the line segment joining the points (-2, -3) and (6, 5) in the ratio 4:3 externally.
8. The ratio in which the x-axis divides the line segment joining the points (2, -3) and (6, 7) is:
9. The centre of a circle whose diameter's endpoints are (-6, 3) and (6, 4) is:
10. Point (3, 1) divides the line segment joining points (3, k) and (3, -5) in the ratio 1:3 internally. Find the value of k.