

PRACTICE QUESTIONS BASED ON EXERCISE 1.6

1. Simplify: (i) $15^2 \cdot 15^4$ (ii) $\frac{27^{10}}{27^6}$

2. Simplify: (i) $11^{\frac{2}{3}} \cdot 11^{\frac{1}{3}}$ (ii) $13^{\frac{1}{5}} \cdot 17^{\frac{1}{5}}$

3. Find: (i) $15^2 \cdot 15^{-5}$ (ii) $(17^2)^{-1}$

4. Evaluate: (i) $(2^2)^3$ (ii) $\left(\frac{1}{3^5}\right)^4$

5. The simplified form of $\frac{13^{\frac{5}{3}}}{13^{\frac{1}{3}}}$ is

(a) $13^{\frac{2}{15}}$

(b) $13^{\frac{8}{15}}$

(c) $13^{\frac{-1}{15}}$

(d) $13^{\frac{-2}{15}}$

6. Simplify: (i) $\left(\frac{64}{125}\right)^{-\frac{2}{3}}$ (ii) $\left(\frac{15^4}{3^2}\right)^{\frac{1}{2}}$

(iii) $\left(\frac{12^{\frac{5}{3}}}{27^{\frac{1}{3}}}\right)$

[CBSE 2011]

7. Find: (i) $4\sqrt{3\sqrt{2^2}}$ (ii) $2^5\sqrt{4\sqrt{(2^3)^4}}$

8. Find the value of (i) $\sqrt{(144)^{-2}}$ (ii) $\sqrt{(3)^{-2}}$

9. $\sqrt[3]{2} \times \sqrt[4]{3}$ is equal to [HOTS]

(a) 648

(b) $(72)^{\frac{1}{12}}$

(c) $(432)^{\frac{1}{12}}$

(d) $(216)^{\frac{1}{12}}$

10. It is given that m and n are two natural numbers such that $m^n = 32$. The value of n^{mn} is equal to [HOTS]

(a) 5^{25}

(b) 5^{10}

(c) 5^2

(d) 5^5

11. Find the value of x for which $\left(\frac{3}{4}\right)^6 \times \left(\frac{16}{9}\right)^5 = \left(\frac{4}{3}\right)^{x+2}$.

12. Evaluate: (i) $(3^2 + 4^2)^{\frac{1}{2}}$ (ii) $(1^3 + 2^3 + 3^3)^{\frac{1}{2}}$

13. If $2^x \times 4^x = 8^{\frac{1}{3}} \times (32)^{\frac{1}{5}}$, then find the value of x . [CBSE 2013]

14. Write the value of $\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c+a}$.

15. Simplify $\left\{5\left(16^{\frac{1}{4}} + 27^{\frac{1}{3}}\right)\right\}^{\frac{1}{4}}$.

16. Prove that $9^{\frac{3}{2}} - 3 \times 2^0 - \left(\frac{1}{81}\right)^{-\frac{1}{2}} = 15$.

17. Find the value of x , if $2^{5x} \div 2^x = 5\sqrt{2^{20}}$.

18. Evaluate $(27)^{-\frac{1}{3}} \cdot (27)^{-\frac{1}{3}} \times \left[27^{\frac{1}{3}} - 27^{\frac{2}{3}}\right]$.

19. Prove that $\sqrt{3 \times 5^{-3}} \div \sqrt[3]{3^{-1} \times 5} \times \sqrt[6]{3 \times 5^5} = \frac{3}{5}$.

20. Simplify and give the result in exponent form:

$$\frac{(25)^{\frac{5}{2}} \times (729)^{\frac{1}{2}}}{(125)^{\frac{2}{3}} \times (27)^{\frac{2}{3}} \times (8)^{\frac{4}{3}}}$$

[HOTS]

INTEGRATED EXERCISE

Very Short Answer/Objective Type Questions [1 Mark]

1. On simplifying $4\sqrt{3\sqrt{3^2}}$, we get

(a) $3^{\frac{1}{12}}$

(b) $3^{\frac{1}{8}}$

(c) $3^{\frac{1}{9}}$

(d) $3^{\frac{1}{6}}$

2. Value of $(256)^{0.16} \times (256)^{0.09}$ is [NCERT Exemplar]

(a) 4

(b) 16

(c) 64

(d) 256.25

3. To rationalise the denominator of $\frac{1}{\sqrt{7}}$, we multiply and divide by

(a) 7

(b) $2\sqrt{2}$

(c) $\sqrt{7}$

(d) $2\sqrt{3}$

4. Value of $\sqrt[4]{(81)^{-2}}$ is [NCERT Exemplar]

(a) $\frac{1}{9}$

(b) $\frac{1}{3}$

(c) 9

(d) $\frac{1}{81}$

5. Is -25 a rational number? Give reasons.

6. Insert a rational and an irrational number between 0.0001 and 0.001.

(iii) $2x^2 + 11x - 21$

(iv) $\frac{1}{2}y^2 - 3y + 4$

7. Factorise the following:

(i) $x^3 + 3x^2y + 3xy^2 + y^3 - 125$

(ii) $8a^3 - 27b^3 - 64c^3 - 64abc$

8. Simplify: $(x + y + z)^2 - (x - y + z)^2$ [CBSE 2016]

9. Using suitable identity, evaluate

$(-32)^3 + (18)^3 + (14)^3$

10. If $a + b + c = 0$, then prove that

$a^4 + b^4 + c^4 = 2(b^2c^2 + c^2a^2 + a^2b^2)$

[CBSE 2016, HOTS]

11. Without multiplying directly, find the product of 103×107 .

(a) 11021

(b) 12051

(c) 12091

(d) 10918

12. Volume of a cuboid is $3x^2 - 27$. Then possible dimensions are

(a) 3, 3, 3

(b) 3, $(x-3)$, $(x+3)$

(c) $3, x^2, 27x$

(d) $3, x^2, -27x$

13. The coefficient of x in the expansion of $(x + 3)^3$ is [NCERT Exemplar]

(a) 1

(b) 9

(c) 18

(d) 27

14. If $64x^2 - y = \left(8x + \frac{1}{2}\right)\left(8x - \frac{1}{2}\right)$, then the value of y is

(a) 0

(b) $\frac{1}{\sqrt{2}}$

(c) $\frac{1}{4}$

(d) $\frac{1}{2}$

INTEGRATED EXERCISE

Very Short Answer/Objective Type Questions [1 Mark]

1. Write True or False and justify your answer. Every polynomial is a binomial. [NCERT Exemplar]

2. Zero of the polynomial $p(x)$, where $p(x) = ax + 1$, $a \neq 0$, is

(a) 1

(b) $-a$

(c) 0

(d) $-\frac{1}{a}$

3. If polynomial $p(x) = 3x^4 - 4x^3 - 3x - 1$ is divided by $(x - 1)$, then remainder is

(a) 3

(b) -4

(c) -1

(d) $p(1)$

4. To evaluate $(99)^3$, best option is expansion of

(a) $(95 + 4)^3$

(b) $(90 + 9)^3$

(c) $(100 - 1)^3$

(d) $(98 + 1)^3$

5. Are -3 and 3 zeros of the polynomial $x + 3$?

(a) only ' -3 ' is a zero

(b) only 3 is a zero

(c) no, none is a zero

(d) yes, both are zeros

6. $(x + 1)$ is a factor of the polynomial

[NCERT Exemplar]

(a) $x^3 + x^2 - x + 1$

(b) $x^3 + x^2 + x + 1$

(c) $x^4 + x^3 + x^2 + 1$

(d) $x^4 + 3x^3 + 3x^2 + x + 1$

7. If $(x - 1)$ is a factor of $kx^2 - \sqrt{2}x + 1$, then value of k is

(a) 1

(b) $\sqrt{2} + 1$

(c) $\sqrt{2} - 1$

(d) $-\sqrt{2} - 1$

8. Give an example of a polynomial.

9. Find the degree of the polynomial

$4x^4 + 0x^3 + 0x^5 + 5x + 7$.

[NCERT Exemplar]

10. If $p(x) = x^2 - 2\sqrt{2}x + 1$, then find the value of $p(2\sqrt{2})$.

[NCERT Exemplar]

11. Find the value of the polynomial $5x - 4x^2 + 3$, when $x = -1$.

[NCERT Exemplar]

12. Find the zero of the polynomial $p(x) = 2x + 5$.

13. Find the zero of the polynomial $2x^2 + 7x - 4$.

Short Answer Type I Questions [2 Marks]

14. If $x^{51} + 51$ is divided by $x + 1$, then find the remainder.

[NCERT Exemplar]

15. If $x + 1$ is a factor of the polynomial $2x^2 + kx$, then find the value of k .

[NCERT Exemplar]

16. Check whether $x + 1$ is a factor of the polynomial $x^3 + x^2 + x + 1$.

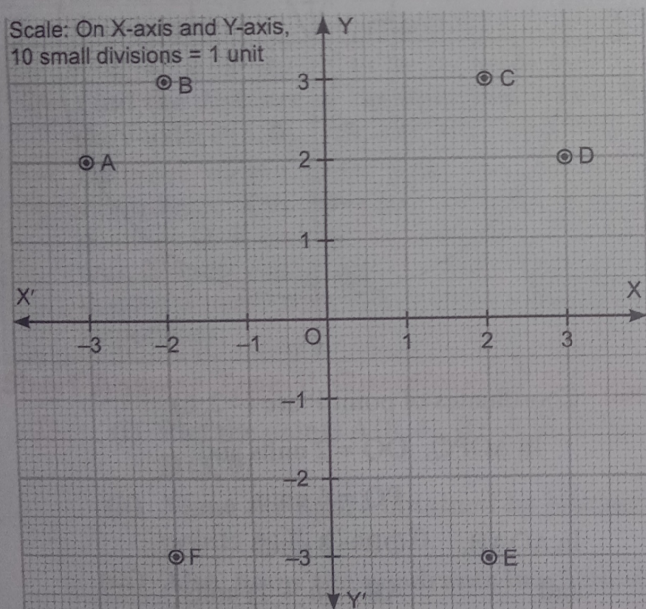
[NCERT Exemplar]

17. Find the factor of $(25x^2 - 1) + (1 + 5x)^2$.

18. Find the value of $249^2 - 248^2$.

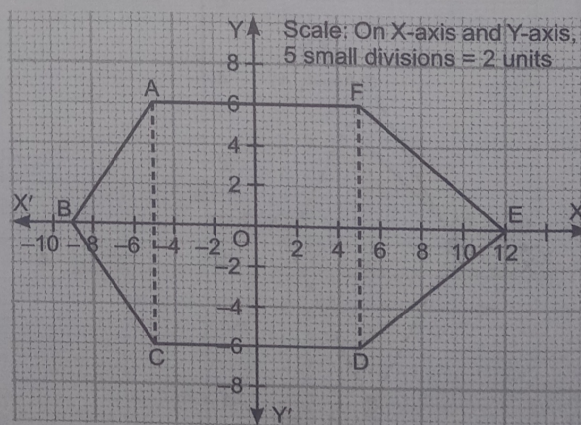
PRACTICE QUESTIONS BASED ON EXERCISES 3.1, 3.2 AND 3.3

- Which of the following points lie on the x -axis and which on the y -axis?
(1, 1), (0, -3), (-2, 0), (-1, 1), (0, 5), (6, 0)
- What is the sign of x -coordinate of a point lying in third quadrant?
- Which of the following points lies on the x -axis?
A(0, 4), B(1, 0), C(0, -7) and D(-5, 0)
- If a point lies on the y -axis, then what will be its abscissa?
- Check whether the points P(3, 5) and Q(-3, -5) lie in the same quadrant or not?
- If the perpendicular distance of a point A from the x -axis is 6 units and foot of perpendicular lies on the negative direction of the x -axis, then write the ordinate of point A.
- In the given figure, identify the point whose coordinates is (-3, 2).



- Which whole number represents the y -coordinate of any point lying on the x -axis?
- Name the point where the two coordinate axes meet?
- If the coordinates of two points P and Q are (2, -3) and (-6, 5) respectively, then find the value of (y -coordinate of P) - (y -coordinate of Q).
- Plot the points P(-1, -1), Q(2, 3) and R(8, 11). Show that they are collinear. [CBSE 2011]
- Find the coordinates of a point:
 - whose ordinate is 6 and lies on the y -axis
 - whose abscissa is -3 and lies on the x -axis. [CBSE 2011]

- Which of the following points lies on the x -axis and which on the y -axis?
A(0, 2), B(5, 6), C(-3, 0), D(0, -3), E(0, 4), F(6, 0), G(3, 0) [CBSE 2011]
- Plot a point A (-2, -3) and draw AP and AQ as perpendiculars to the x -axis and y -axis respectively. Write the coordinates of points P and Q.
- Write abscissa of the following points: (4, 0), (5, 23), (23, 4) and (0, 24). [CBSE 2016]
- Draw a quadrilateral whose vertices are: (3, 2), (2, 3), (-4, 5) and (5, -3). [CBSE 2014]
- In which quadrant the following points lie?
(3, 2), (2, -3), (-4, 4) and (-2, -3)
- Write the equation of the x -axis, the y -axis and the coordinates of the point where these two coordinate axes intersect each other.
- 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.
- P(3, 2) and Q(7, 7) are two points. Perpendiculars are drawn to the x -axis from P and Q meeting the x -axis at L and M respectively.
 - Find the coordinates of L and M.
 - Find the lengths of LM. [CBSE 2014]
- Write the coordinates of the point A, B, C, D, E and F of the figure formed on the graph. Also, write coordinates of the points of intersection of AC and DF with the x -axis.



- Plot the points A(-5, -2), B(1, -2), C(6, 4) and D(0, 4).
 - Join the points to get AB, BC, CD and DA. Name the figure so obtained.
 - Find the coordinates of a point where the line AB intersects the y -axis.