Chapter 1: **Number System**

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. Every rational number is

(*a*) a natural number (*b*) an integer

(*c*) a real number (*d*) a whole number **[CBSE SP 2011]**

2. Decimal representation of a rational number cannot be

(*a*) terminating (*b*) non-terminating

(*c*) non-terminating repeating (*d*) non-terminating non-repeating

[CBSE SP 2010]

3. π is an irrational number because its decimal expansion is

(*a*) terminating (*b*) non-terminating

(*c*) non-terminating repeating (*d*) non-terminating non-repeating

4. Every point on a number line represents

(*a*) a unique real number (*b*) a natural number

(*c*) a rational number (*d*) an irrational number

5. Which of the following is a rational number?

(*a*) $\frac{-2}{3}$ (*b*) $\frac{-1}{\sqrt{5}}$ (*c*) $\frac{13}{\sqrt{5}}$ (*d*) $\frac{\sqrt{2}}{3}$ **[CBSE SP 2011]**

6. Which of the following is irrational?

(*a*) 0.15 (*b*) $0.15\overline{16}$ (*c*) $0.\overline{1516}$ (*d*) 0.5015001500015…

7. A rational number equivalent to $\frac{3}{17}$ is

(*a*) $\frac{6}{17}$ (*b*) $\frac{6}{34}$ (*c*) $\frac{17}{3}$ (*d*) $\frac{3}{34}$

8. A rational number between 2 and 3 is

(*a*) 2.010010001… (*b*) $\sqrt{6}$

(*c*) $\frac{5}{2}$ (*d*) $4-\sqrt{2}$ **[CBSE SP 2013]**

9. Four rational numbers between 3 and 4 are

(*a*) 3.1, 3.2, 3.8, 3.9 (*b*) $\frac{3}{5}, \frac{4}{5}, 1, \frac{6}{5}$

(*c*) 3.1, 3.2, 4.1, 4.2 (*d*) $\frac{13}{5}, \frac{14}{5}, \frac{16}{5}, \frac{17}{5}$

10. The smallest irrational number to be added to $3+\sqrt{2}$ to get a rational number is

(*a*) $-\sqrt{2}$ (*b*) $3-\sqrt{2}$ (*c*) $\sqrt{2}-3$ (*d*) $\sqrt{3}+2$

11. The value of $0.\overline{3}$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$ is

(a) $\frac{33}{100}$ (b) $\frac{3}{10}$ (c) $\frac{1}{3}$ (d) $\frac{3}{100}$ **[CBSE SP 2011]**

12. $0.3\overline{2}$ expressed in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$, is

(a) $\frac{8}{25}$ (b) $\frac{29}{90}$ (c) $\frac{32}{99}$ (d) $\frac{32}{199}$

13. $0.\overline{437}$ expressed in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$, is

(a) $\frac{437}{9999}$ (b) $\frac{394}{999}$ (c) $\frac{434}{99}$ (d) $\frac{437}{999}$

14. Simplest rationalisation factor of $\sqrt[3]{40}$ is

(a) $\sqrt[3]{25}$ (b) $\sqrt[3]{5}$ (c) $\sqrt{40}$ (d) $\sqrt{5}$

15. $2\sqrt{5} + \sqrt{5}$ is equal to

(a) $2\sqrt{10}$ (b) 10 (c) $3\sqrt{5}$ (d) $3\sqrt{10}$

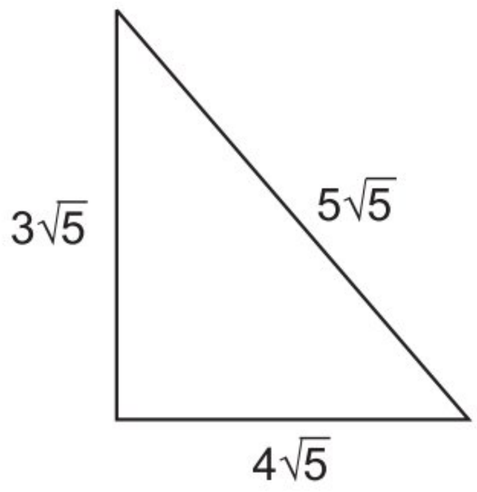
16. The perimeter of the given figure is

(a) $60\sqrt{5}$

(b) $12\sqrt{5}$

(c) $27\sqrt{5}$

(d) $32\sqrt{5}$



17. On simplification of $\left(\frac{2}{3}\sqrt{5} - \frac{1}{2}\sqrt{2} + 6\sqrt{11}\right) + \left(\frac{1}{3}\sqrt{5} + \frac{3}{2}\sqrt{2} - \sqrt{11}\right)$, we get

(a) $\sqrt{5} + \sqrt{2} + 5\sqrt{11}$ (b) $\frac{\sqrt{5}}{2} + 2\sqrt{2} + \sqrt{11}$

(c) $\sqrt{5} + \sqrt{2} + 6\sqrt{11}$ (d) $\sqrt{5} + 2\sqrt{2} + 5\sqrt{11}$

18. The product of $\sqrt[3]{7}$ and $\sqrt{5}$ is

(a) $\sqrt[3]{35}$ (b) $\sqrt[6]{35}$ (c) $\sqrt[6]{6125}$ (d) $\sqrt[6]{1225}$

19. The product of $\frac{1}{6}\sqrt{18}$ and $\frac{1}{3}\sqrt{18}$ is

(a) 1 (b) $\frac{1}{12}$ (c) $\frac{1}{3}$ (d) $\sqrt{2}$

20. $\sqrt{5} \times \sqrt{7} \times \sqrt{15} \times \sqrt{21}$ in simplified form is

(a) $\sqrt{105}$ (b) $\sqrt{210}$ (c) 105 (d) 210

21. $(3 + \sqrt{3})(3 - \sqrt{3})$ on simplification becomes equal to

(*a*) 18 (*b*) $2\sqrt{3}$ (*c*) 6 (*d*) 9

22. The value of $(3+\sqrt{5})^2\,(3-\sqrt{5})^2$ is

(*a*) 15 (*b*) 16 (*c*) 4 (*d*) 14

23. $\sqrt[3]{250} \div \sqrt[3]{10}$ in simplified form is equal to

(*a*) $\sqrt[3]{25}$ (*b*) 5 (*c*) $\sqrt{5}$ (*d*) $\sqrt[3]{2500}$

24. $\dfrac{30}{\sqrt{20}+\sqrt{5}}$ is equal to

(*a*) $\dfrac{10}{3\sqrt{5}}$ (*b*) $\dfrac{30}{\sqrt{5}}$ (*c*) $\dfrac{10}{\sqrt{5}}$ (*d*) $12\sqrt{5}$

[CBSE SP 2011]

25. $\dfrac{6}{\sqrt{12}-\sqrt{3}}$ is equal to

(*a*) $\dfrac{1}{\sqrt{3}}$ (*b*) $\dfrac{2}{\sqrt{3}}$ (*c*) $2\sqrt{3}$ (*d*) $6\sqrt{3}$

[CBSE SP 2011]

26. The value of $\dfrac{2^0+7^0}{5^0}$ is

(*a*) 2 (*b*) 0 (*c*) $\dfrac{9}{5}$ (*d*) $\dfrac{1}{5}$

27. On simplifying $\dfrac{2^{30}+2^{29}}{2^{31}-2^{30}}$, we get

(*a*) 1 (*b*) 2 (*c*) $\dfrac{2}{3}$ (*d*) $\dfrac{3}{2}$

28. The value of $\sqrt{(3^{-2})}$ is

(*a*) $\dfrac{1}{9}$ (*b*) 9 (*c*) -3 (*d*) $\dfrac{1}{3}$

29. $\left(\dfrac{256}{625}\right)^{-\frac{3}{4}}$ in its simplified form is equal to

(*a*) $\dfrac{25}{64}$ (*b*) $\dfrac{64}{125}$ (*c*) $\dfrac{125}{64}$ (*d*) $\dfrac{64}{25}$

30. $(32)^{\frac{1}{5}} \times (125)^{-\frac{1}{3}}$ in its simplified form is equal to

(*a*) $\dfrac{16}{25}$ (*b*) $\dfrac{4}{5}$ (*c*) $\dfrac{2}{5}$ (*d*) $\dfrac{2}{25}$

31. $\dfrac{5^{n+2}-6.5^{n+1}}{13.5^n-2.5^{n+1}}$ equals

(*a*) $\dfrac{5}{3}$ (*b*) $-\dfrac{5}{3}$ (*c*) $\dfrac{3}{5}$ (*d*) $-\dfrac{3}{5}$

32. The value of $\left[8^{-4/3} \div 2^{-2}\right]^{1/2}$ is

(*a*) $\frac{1}{2}$ (*b*) 2 (*c*) $\frac{1}{4}$ (*d*) 4

33. If x is a positive real number, then $\sqrt[4]{\sqrt[3]{x^2}}$ is

(*a*) $x^{1/24}$ (*b*) $x^{1/6}$ (*c*) $x^{1/12}$ (*d*) $x^{1/20}$

34. If $x = 2$ and $y = 3$, then the value of $x^y + y^x$ is

(*a*) 15 (*b*) 17 (*c*) 19 (*d*) 21

35. If $x = 9 - 4\sqrt{5}$, then $x + \frac{1}{x}$ is equal to

(*a*) $8\sqrt{5}$ (*b*) $-8\sqrt{5}$ (*c*) 18 (*d*) 81

36. Which of the following is equal to a?

(*a*) $a^{\frac{13}{7}-\frac{5}{7}}$ (*b*) $\sqrt[12]{\left(a^4\right)^{\frac{1}{3}}}$ (*c*) $\left(\sqrt{a^5}\right)^{\frac{2}{5}}$ (*d*) $a^{\frac{13}{7}} \times a^{\frac{7}{13}}$

37. Decimal representation of $-\frac{17}{8}$ is

(*a*) -2.125 (*b*) -2.225 (*c*) 2.125 (*d*) -1.175

38. If $\frac{3}{7} = 0.\overline{428571}$, then $\frac{5}{7}$ is equal to

(*a*) 0.704125 (*b*) 0.714285 (*c*) 0.77132 (*d*) 0.714381

39. If $\sqrt{3} = 1.732$, then the value of $\frac{1}{\sqrt{3}}$ approximately is

(*a*) 0.866 (*b*) 0.433 (*c*) 0.288 (*d*) 0.577

40. If $\sqrt{2} = 1.414$, then the value of $\sqrt{3} \div \sqrt{6}$ up to three places of decimal is

(*a*) 0.235 (*b*) 0.707 (*c*) 1.414 (*d*) 0.471

Chapter 2: **Polynomials**

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. Which one of the following is a polynomial?

(*a*) $\frac{x^2}{3} - \frac{2}{x^2}$ (*b*) $x^3 + \frac{4x^{3/2}}{\sqrt{x}}$ (*c*) $\sqrt{3y} + 5$ (*d*) $\frac{x^2 - 1}{x^2 + 1}$

2. The coefficient of x^2 in $(2x^2 - 5)(4 + 3x^2)$ is

(*a*) 2 (*b*) 3 (*c*) 8 (*d*) –7 **[CBSE SP 2010]**

3. $\sqrt{2}$ is a polynomial of degree

(*a*) 2 (*b*) 0 (*c*) 1 (*d*) $\frac{1}{2}$ **[CBSE SP 2012]**

4. Degree of polynomial $(x^3 - 2)(x^2 + 11)$ is

(*a*) 0 (*b*) 5 (*c*) 3 (*d*) 2 **[CBSE SP 2012]**

5. Degree of zero polynomial is

(*a*) 0 (*b*) any natural number

(*c*) 1 (*d*) not defined

6. Standard form of the polynomial $\frac{1}{x^{-3}} + \frac{x}{8} + 6x^5 + \frac{\sqrt{3}}{5}$ is

(*a*) $x^3 + \frac{x}{8} + 6x^5 + \frac{\sqrt{3}}{5}$ (*b*) $6x^5 + x^3 + \frac{x}{8} + \frac{\sqrt{3}}{5}$

(*c*) $6x^5 + \frac{\sqrt{3}}{5} + \frac{x}{8} + x^3$ (*d*) $x^3 + 6x^5 + \frac{\sqrt{3}}{5} + \frac{x}{8}$

7. $x^2 + 5x - \frac{1}{2}$ is a

(*a*) quadratic polynomial in x (*b*) binomial

(*c*) monomial (*d*) cubic polynomial in x

8. The value of $p\left(\frac{1}{2}\right)$ for $p(z) = z^4 - z^2 + z$ is

(*a*) $\frac{7}{16}$ (*b*) $\frac{5}{16}$ (*c*) $\frac{3}{16}$ (*d*) $\frac{1}{16}$

9. If $p(x) = 2x^2 - 3x + 5$, then the value of $\frac{p(0) + p(1)}{p(-1)}$ is

(*a*) $\frac{1}{10}$ (*b*) $\frac{4}{11}$ (*c*) $\frac{9}{10}$ (*d*) $\frac{4}{5}$

10. A polynomial of degree 5 in x has at most

(*a*) 5 terms (*b*) 10 terms (*c*) 6 terms (*d*) 4 terms

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

(*a*) 1 (*b*) $-a$

(*c*) 0 (*d*) $-\frac{1}{a}$ **[CBSE SP 2010]**

12. Zeroes of the polynomial $p(x) = (x + 2)(x + 5)$ are

(*a*) 2, 5 (*b*) $-2, -5$ (*c*) $\frac{1}{2}, \frac{1}{5}$ (*d*) $-\frac{1}{2}, -\frac{1}{5}$

13. Zeroes of the polynomial $p(x) = x(x - 1)(x - 2)$ are

(*a*) $0, -1, 2$ (*b*) $0, -1, -2$ (*c*) $0, 1, -2$ (*d*) 0, 1, 2

14. Which of the following is a zero of the polynomial $x^3 + 3x^2 - 3x - 1$?

(*a*) –1 (*b*) –2 (*c*) 1 (*d*) 2 **[CBSE SP 2011]**

15. The number to be added to the polynomial $x^2 - 5x + 4$, so that 3 becomes its zero, is

(*a*) 4 (*b*) -4 (*c*) -2 (*d*) 2

16. The number to be subtracted from the polynomial $x^2 - 16x + 30$, so that 15 becomes its zero, is

(*a*) 15 (*b*) 16 (*c*) 30 (*d*) 0

17. A polynomial whose zeroes are $\sqrt{2}$ and $-\sqrt{2}$ is

(*a*) $x^2 + 2$ (*b*) $x - 2$ (*c*) $x^2 - 2$ (*d*) $x + 2$

18. If $x = 2$ is a zero of the polynomial $x^2 - 2k + 2$, then the value of k is

(*a*) 1 (*b*) 2 (*c*) 3 (*d*) 4

19. The value of k for which the polynomial $x^3 + 3x^2 - 3x + k$ has -3 as its zero, is

(*a*) -9 (*b*) -3 (*c*) 9 (*d*) 12 **[CBSE SP 2011]**

20. The remainder when $p(x) = x^3 + 1$ is divided by $x + 1$, is

(*a*) -6 (*b*) 0 (*c*) 1 (*d*) 6

21. The remainder when $x^{51} + 51$ is divided by $x + 1$, is

(*a*) 51 (*b*) 50 (*c*) -1 (*d*) 0

22. The remainder when $x^2 + 2x + 1$ is divided by $x + 1$, is

(*a*) 4 (*b*) 0 (*c*) 1 (*d*) –2 **[CBSE SP 2011]**

23. The remainder when $f(x) = x^3 + 4x^2 - 3x + 1$ is divided by $x - 2$, is

(*a*) 16 (*b*) 12 (*c*) 17 (*d*) 19

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

(*a*) -2 (*b*) -3 (*c*) 4 (*d*) 2

25. If $x + a$ is a factor of $x^4 - a^2x^2 + 3x - 6a$, then the value of a is

(*a*) 0 (*b*) 1 (*c*) -1 (*d*) 2

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

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

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

27. The common factor in $x^2 - 1$, $x^4 - 1$ and $(x - 1)^2$ is

(*a*) $x - 1$ (*b*) $x + 1$ (*c*) $x^2 - 1$ (*d*) $x^2 + 1$

28. The factorisation of $-x^2 + 5x - 6$ yields

(*a*) $-(x - 2)(3 - x)$ (*b*) $-(2 - x)(3 - x)$

(*c*) $(x - 2)(x - 3)$ (*d*) $(2 + x)(3 - x)$ **[CBSE SP 2011]**

29. The value of $(348)^2 - (347)^2$ is

(*a*) $(1)^2$ (*b*) 685 (*c*) 695 (*d*) 705

30. The expansion of $(x + y + z)^2$ is

(*a*) $x^2 + y^2 + z^2 - 2xy - 2yz - 2zx$ (*b*) $x^2 + y^2 + z^2 + 2xy + 2yz + 2zx$

(*c*) $x^2 + y^2 + z^2 - xy - yz - zx$ (*d*) $x^2 + y^2 + z^2 + xy + yz + zx$

31. The expansion of $(x - y)^3$ is

(*a*) $x^3 + y^3 + 3x^2y + 3xy^2$ (*b*) $x^3 + y^3 - 3x^2y + 3xy^2$

(*c*) $x^3 - y^3 - 3x^2y + 3xy^2$ (*d*) $x^3 - y^3 + 3x^2y - 3xy^2$

32. The product $\left(\frac{x}{2} - 3y\right)\left(3y + \frac{x}{2}\right)\left(\frac{x^2}{4} + 9y^2\right)$ is equal to

(*a*) $\frac{x^4}{16} + 81y^4$ (*b*) $\frac{x^4}{81} + 16y^4$ (*c*) $\frac{x^4}{81} - 16y^4$ (*d*) $\frac{x^4}{16} - 81y^4$

33. $75 \times 75 + 2 \times 75 \times 25 + 25 \times 25$ in simplified form is equal to

(*a*) 10000 (*b*) 6250 (*c*) 7500 (*d*) 3750

34. $\frac{8.83 \times 8.83 - 2.17 \times 2.17}{6.66}$ in its simplified form is equal to

(*a*) 9 (*b*) 10 (*c*) 11 (*d*) 12

35. If $x + y + z = 0$, then $x^3 + y^3 + z^3$ is equal to

(*a*) $x^2 + y^2 + z^2 + 3xyz$ (*b*) $3xyz$

(*c*) $3x^2y^2z^2$ (*d*) $x^2 + y^2 + z^2 - xy - yz - zx$

36. If $49x^2 - y = \left(7x + \frac{1}{2}\right)\left(7x - \frac{1}{2}\right)$, then the value of y is

(*a*) 0 (*b*) $\frac{1}{4}$ (*c*) $\frac{1}{\sqrt{2}}$ (*d*) $\frac{1}{2}$

37. If the area of a rectangle is $4x^2 + 4x - 3$, then its possible dimensions are

(*a*) $2x - 3, 2x + 1$ (*b*) $2x - 1, 2x + 3$

(*c*) $3x + 1, 2x - 3$ (*d*) $3x - 1, 2x + 3$

38. The factors of $12y^2 - y - 6$ are

(*a*) $(12y - 1)(y + 6)$ (*b*) $(12y + 1)(y - 6)$

(*c*) $(3y - 2)(4y + 3)$ (*d*) $(3y + 2)(4y - 3)$

39. The factors of $\frac{1}{2} - \frac{x^2}{50}$ are

(*a*) $\frac{1}{2}\left(1 - \frac{x}{5}\right)\left(1 - \frac{x}{5}\right)$ (*b*) $\frac{1}{2}\left(\frac{1}{5} + x\right)\left(\frac{1}{5} - x\right)$

(c) $\frac{1}{2}\left(1+\frac{x}{5}\right)\left(1-\frac{x}{5}\right)$ (d) $\frac{1}{2}\left(1+\frac{x}{5}\right)\left(1+\frac{x}{5}\right)$

40. The factors of $a^3 + 27$ are

(a) $(a + 3)(a^2 + 3a + 9)$ (b) $(a + 3)(a^2 - 3a + 9)$

(c) $(a - 3)(a^2 - 3a + 9)$ (d) $(a - 3)(a^2 + 3a + 9)$

41. $\sqrt{2a^2 + 2\sqrt{6}\,ab + 3b^2}$ in its simplified form is equal to

(a) $\left(\sqrt{2}a - \sqrt{3}b\right)$ (b) $\left(\sqrt{2}a + \sqrt{3}b\right)$

(c) $\left(\sqrt{3}a + \sqrt{2}b\right)$ (d) $\left(\sqrt{3}a - \sqrt{2}b\right)$

42. For the polynomial $(x + 2)(x - 2)$, the values of $p(0)$, $p(1)$, $p(-2)$ respectively are

(a) 0, 3, – 4 (b) – 1, 0, 3

(c) – 4, – 3, 0 (d) 1, 4, – 3

43. If $p(x) = x^2 - 4x + 3$, then the value of $p(2) - p(-1) + p\left(\frac{1}{2}\right)$ is

(a) $\frac{31}{4}$ (b) $-\frac{31}{4}$ (c) $\frac{21}{4}$ (d) $-\frac{21}{4}$

44. If polynomial $x^3 - 2mx^2 + 16$ is divisible by $x + 2$, then the value of m is

(a) – 2 (b) 2 (c) 1 (d) – 1

45. If $2x - 1$ is a factor of $8x^4 + 4x^3 - 16x^2 + 10x + a$, then the value of a is

(a) – 2 (b) 2 (c) 1 (d) – 1

46. $\left(2x+\frac{1}{3}\right)^2 - \left(x-\frac{1}{2}\right)^2$ in its factorised form is equal to

(a) $\left(x-\frac{1}{6}\right)\left(3x+\frac{5}{6}\right)$ (b) $\left(3x+\frac{1}{6}\right)\left(x-\frac{5}{6}\right)$

(c) $\left(x+\frac{1}{6}\right)\left(3x-\frac{5}{6}\right)$ (d) $\left(3x-\frac{1}{6}\right)\left(x+\frac{5}{6}\right)$

47. The expanded form of $(3a - 5b - c)^2$ is

(a) $9a^2 + 25b^2 + c^2 - 30ab + 10bc - 6ac$

(b) $9a^2 + 25b^2 + c^2 + 30ab - 10bc + 6ac$

(c) $9a^2 + 25b^2 + c^2 - 30ab - 10bc + 6ac$

(d) $9a^2 + 25b^2 + c^2 + 30ab + 10bc - 6ac$

48. The product of $\left(\frac{x}{2}+2y\right)\left(\frac{x^2}{4}-xy+4y^2\right)$ is equal to

(a) $\frac{x^3}{6} + 6y^3$ (b) $\frac{x^3}{8} + 8y^3$ (c) $\frac{x^3}{8} - 8y^3$ (d) $\frac{x^3}{6} - 6y^3$

49. Factors of $a^3 - 2\sqrt{2}\ b^3$ are

(a) $\left(a - \sqrt{2}b\right)\left(a^2 + \sqrt{2}ab + 2b^2\right)$ (b) $\left(a - 2\sqrt{2}b\right)\left(a^2 - \sqrt{2}ab + 2b^2\right)$

(c) $\left(a+\sqrt{2}b\right)\left(a^2-\sqrt{2}ab+2b^2\right)$ (d) $\left(a+\sqrt{2}b\right)\left(a^2+\sqrt{2}ab+2b^2\right)$

50. The expanded form of $\left(x+\frac{1}{3}\right)^3$ is

(a) $x^3+\frac{1}{27}+3x^2+\frac{1}{3}x$ (b) $x^3+\frac{1}{27}+x^2+\frac{1}{3}x$

(c) $x^3+\frac{1}{9}+3x^2+3x$ (d) $x^3+\frac{1}{27}+3x^2+\frac{1}{3}x$

51. The value of $10^3-(5)^3-(5)^3$ is

(a) 750 (b) 1000 (c) 250 (d) 500

52. If $x+\frac{1}{x}=8$, then the value of $x^2+\frac{1}{x^2}$ is

(a) 62 (b) 64 (c) 66 (d) 60

53. The value of p^3-q^3 if $p-q=-8$, $pq=-12$ is

(a) -244 (b) -240 (c) -224 (d) -260

54. If $9x^2-30x+k$ is a perfect square then the value of k is

(a) 25 (b) 5 (c) 36 (d) 81

55. The value of $a^2+b^2+c^2$, if $a+b+c=13$ and $ab+bc+ca=27$ is

(a) 250 (b) 223 (c) 115 (d) 81

Chapter 3: Coordinate Geometry

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. The measure of angle between the two coordinate axes is

(*a*) 180° (*b*) 0° (*c*) 90° (*d*) 360°

2. Points (0, 3) and (0, – 7) lie

(*a*) on the *x*-axis (*b*) in the first quadrant

(*c*) on the *y*-axis (*d*) in the second quadrant

3. Point (– 3, 0) lies

(*a*) in the third quadrant (*b*) on the negative direction of *y*-axis

(*c*) in the fourth quadrant (*d*) on the negative direction of *x*-axis

4. If *y*-coordinate of a point is zero, then this point always lies

(*a*) in the second quadrant (*b*) on the *x*-axis

(*c*) in the first quadrant (*d*) on the *y*-axis

5. Signs of the abscissa and ordinate of a point in the third quadrant are respectively

(*a*) –, – (*b*) +, + (*c*) +, – (*d*) –, +

6. A point both of whose coordinates are positive will lie in the

(*a*) first quadrant (*b*) second quadrant

(*c*) third quadrant (*d*) fourth quadrant

7. The points (2, –3) and (–3, 2) lie in the

(*a*) first and second quadrants respectively

(*b*) fourth and second quadrants respectively

(*c*) second and third quadrants respectively

(*d*) second and fourth quadrants respectively

8. If P (– 2, 2), Q (3, – 5), R (2, – 2), S (– 3, – 4), and T (– 6, 3) are plotted on the graph paper, then the point(s) in the fourth quadrant are

(*a*) P and R (*b*) only T (*c*) Q and R (*d*) P and T

9. Ordinate of a point is positive in the

(*a*) first and second quadrants (*b*) first and third quadrants

(*c*) second and third quadrants (*d*) third and fourth quadrants

10. A point with abscissa – 3 and ordinate 5 lies in the

(*a*) first quadrant (*b*) second quadrant

(*c*) third quadrant (*d*) fourth quadrant

11. The abscissa and ordinate of the origin are

(*a*) (0, 0) (*b*) (1, 1) (*c*) (– 1, – 1) (*d*) (2, 2)

12. Coordinates of a point which is 8 units away from the x-axis and lies on the negative direction of the y-axis are

(*a*) (– 8, 0) (*b*) (8, 0) (*c*) (0, – 8) (*d*) (0, 8)

13. The perpendicular distance of the point P (3, 4) from the x-axis is

(*a*) 3 units (*b*) 4 units (*c*) 1 unit (*d*) 7 units

14. If two points have the same abscissa but different ordinates, then the line joining them is parallel to

(*a*) both x-axis and y-axis (*b*) neither x-axis nor y-axis

(*c*) y-axis (*d*) x-axis

15. The points having same signs of abscissa and ordinate lie in

(*a*) first or second quadrants (*b*) first or third quadrants

(*c*) second or fourth quadrants (*d*) second or third quadrants

16. A point lies on the positive direction of x-axis at a distance of 3 units from the y-axis. It is made to slide along the x-axis and its new position is on the negative direction of x-axis, at the same distance from the y-axis, as it was in the original position. Then, the coordinates of its new position are

(*a*) (3, 3) (*b*) (– 3, 3) (*c*) (– 3, 0) (*d*) (3, 0)

17. Coordinates of four points lying on the coordinate axes at a distance of 5 units from the origin are

(*a*) (5, 0), (0, 5), (– 5, 0), (0, – 5) (*b*) (5, 5), (– 5, – 5), (5, – 5), (– 5, 5)

(*c*) (5, 0), (5, 5), (– 5, 0), (– 5, – 5) (*d*) (0, 5), (0, – 5), (5, – 5), (– 5, – 5)

18. The verbal sentence 'The difference of the ordinate and abscissa of a point is 1' is represented by the equation

(*a*) $x - y = 0$ (*b*) $x - y = 1$ (*c*) $x + y = 1$ (*d*) $y - x = 1$

19. Coordinates of the point lying on the y-axis satisfying the equation $2x - 5y = 10$ are

(*a*) (2, 0) (*b*) (0, 2) (*c*) (0, – 2) (*d*) (– 2, 0)

20. Coordinates of the point at which the line $5x + 3y = 15$ intersects the x-axis are

(*a*) (0, 3) (*b*) (3, 0) (*c*) (– 3, 0) (*d*) (0, – 3)

Chapter 4: Linear Equations in Two Variables

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. 'Twice the ordinate of a point decreased by three times the abscissa is 6.' The given sentence expressed in the form of an equation is

(*a*) $2x - 3y = 6$ (*b*) $2y - 3x = 6$

(*c*) $3x - 2y = 6$ (*d*) $3y - 2x = 6$

2. The condition that the equation $ax + by + c = 0$ represents the linear equation in two variables is

(*a*) $a \neq 0, b = 0$ (*b*) $b \neq 0, a = 0$

(*c*) $a = 0, b = 0$ (*d*) $a \neq 0, b \neq 0$ **[CBSE SP 2011]**

3. The linear equation of the type $y = mx, m \neq 0$ has

(*a*) infinitely many solutions. (*b*) a unique solution.

(*c*) only solution $x = 0, y = 0$. (*d*) solution $m = 0$. **[CBSE SP 2011]**

4. $x - 4 = \sqrt{3}\, y$ expressed in the form $ax + by + c = 0$ is

(*a*) $x - \sqrt{3}\, y - 4 = 0$ (*b*) $x + \sqrt{3}\, y + 4 = 0$

(*c*) $x - \sqrt{3}\, y + 4 = 0$ (*d*) $x + \sqrt{3}\, y - 4 = 0$

5. $\frac{y}{5} = 1$, expressed as an equation in two variables in standard form is

(*a*) $x + y + 5 = 0$ (*b*) $x - y - 5 = 0$

(*c*) $0 \cdot x + 1 \cdot y - 5 = 0$ (*d*) $x - y + 5 = 0$

6. The coefficients of x and y respectively in the equation $5x - y = 10$ are

(*a*) 5, 1 (*b*) 1, $\frac{1}{5}$ (*c*) 1, 5 (*d*) 5, – 1

7. The equation $x = 9$, in two variables, can be written as

(*a*) $1 \cdot x + 1 \cdot y = 9$ (*b*) $1 \cdot x + 0 \cdot y = 9$ (*c*) $0 \cdot x + 1 \cdot y = 9$ (*d*) $0 \cdot x + 0 \cdot y = 9$

8. If (4, 19) is a solution of the equation $y = px + 3$, then the value of p is

(*a*) 3 (*b*) 4 (*c*) 5 (*d*) 6

9. If $(0, y)$ is a solution of the equation $6x - y = 0$, then the graph of this equation

(*a*) passes through the origin

(*b*) is parallel to the x-axis

(*c*) is parallel to the y-axis

(*d*) is neither parallel to any of the coordinate axes nor passes through the origin

10. If (2, 0) is a solution of the linear equation $2x + 3y - k = 0$, then the value of k is

(*a*) 6 (*b*) 4 (*c*) 2 (*d*) 5

11. Any point on the line $y = x$ is of the form

(a) (a, a) (b) $(0, a)$ (c) $(a, 0)$ (d) $(a, -a)$

12. Any solution of the linear equation $3x + 0 \cdot y + 7 = 0$ in two variables is of the form

(a) $\left(n, \frac{-7}{3}\right)$ (b) $\left(\frac{-7}{3}, m\right)$ (c) $\left(0, \frac{-7}{3}\right)$ (d) $(-7, 0)$

where n and m are real numbers.

13. The equation of x-axis is of the form

(a) $x = 0$ (b) $x + y = 0$

(c) $y = 0$ (d) $x = y$ **[CBSE SP 2010]**

14. Which statement is true about the graph $y = 5$?

(a) It goes through the origin (b) It is parallel to x-axis

(c) It is parallel to y-axis (d) It has an x-intercept

15. The graph of $x = 5$ is a line

(a) parallel to x-axis at a distance of 5 units from the origin

(b) parallel to y-axis at a distance of 5 units from the origin

(c) making an intercept of 5 on the y-axis

(d) making an intercept of 5 on both the axes

16. The measure of angle between the graph lines of the equations $y = 3$ and $x = 7$ is

(a) $0°$ (b) $45°$ (c) $90°$ (d) $75°$

17. If a linear equation has solutions $(0, 0)$, $(-3, 3)$ and $(3, -3)$, then it is of the form

(a) $y - 2x = 0$ (b) $x + y = 0$

(c) $y - x = 0$ (d) $x - y = 0$

18. The negative solutions of the equation $ax + by + c = 0$ always lie in the

(a) 1st quadrant (b) 2nd quadrant

(c) 3rd quadrant (d) 4th quadrant

19. The point of the form (a, a) always lies on the

(a) x-axis (b) y-axis

(c) line $y = x$ (d) line $x + y = 0$

20. Which of the following is a solution of the equation $x + 2y = 7$?

(a) $x = 3, y = -5$ (b) $x = 3, y = 5$

(c) $x = 0, y = 7$ (d) $x = 3, y = 2$

[CBSE SP 2011]

21. If we multiply or divide both sides of a linear equation with a non-zero number, then the solution of the linear equation

(a) changes

(b) remains the same

(c) changes in case of multiplication only

(d) changes in case of division only

22. How many linear equations in x and y can be satisfied by $x = 3$ and $y = 1$?

(a) Only one (b) Two

(c) Three (d) Infinitely many

23. The graph of $2x = 1$ is parallel to the

(a) x-axis at a distance of 1 unit (b) y-axis at a distance of 1 unit

(c) x-axis at a distance of $\frac{1}{2}$ unit (d) y-axis at a distance of $\frac{1}{2}$ unit

24. The graph of the linear equation $3x - y = 2$ cuts the y-axis at the point

(a) $(0, 2)$ (b) $(0, -2)$

(c) $(-2, 0)$ (d) $(2, 0)$

25. The graph of the linear equation $x - 2y = 3$ is a line which meets the x-axis at the point

(a) $(3, 0)$ (b) $(0, 3)$ (c) $(-3, 0)$ (d) $(0, -3)$

26. The distance between the graph lines of the equations $x = 5$ and $x = -7$ is

(a) 2 units (b) 5 units (c) 7 units (d) 12 units

27. The y-intercept of the line $y = x + 5$ is

(a) 0 (b) 5 (c) 2 (d) 3

28. The linear equation $2x + cy = 8$ has equal values of x and y for its solution when c is equal to

(a) $\frac{8+2x}{y}, y \neq 0$ (b) $\frac{8-2x}{y}, y \neq 0$

(c) $\frac{2-8x}{y}, y \neq 0$ (d) $\frac{2+8x}{y}, y \neq 0$

29. The number of solution(s) of the equation $2x + 1 = x - 3$ on the number line and cartesian plane respectively are

(a) infinitely many solutions, one

(b) one, two

(c) two, one

(d) one, infinitely many solutions

30. Linear equation such that each point on its graph has its ordinate equal to twice its abscissa is

(a) $x + y = 2$ (b) $y = 2x$ (c) $x = 2y$ (d) $x - y = 2$

31. Coordinates of the point on the graph of the linear equation $2x + 5y = 19$, whose ordinate is $1\frac{1}{2}$ times its abscissa is

(a) $(3, 2)$ (b) $(2, 3)$ (c) $\left(2, \frac{5}{2}\right)$ (d) $\left(\frac{5}{2}, 2\right)$

32. The ratio of the x and y intercepts made by the graph of the linear equation $2x + 3y = 9$ on the x-axis and y-axis respectively is

(a) 2 : 3 (b) 1 : 3 (c) 3 : 2 (d) 3 : 1

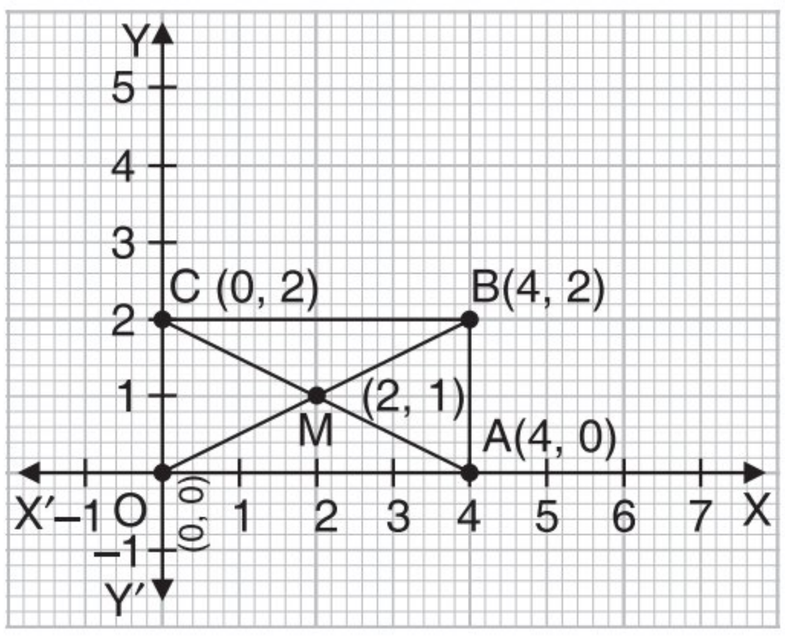
33. In the given figure, if OABC is a rectangle whose diagonals BO and CA intersect at M (2, 1), then the equations of the diagonals BO and CA respectively are

(*a*) $x = 2y, x + 2y = 4$

(*b*) $x = y, x + y = 0$

(*c*) $2x = y, 2x + y = 0$

(*d*) $x = 3y, x + 3y = 0$



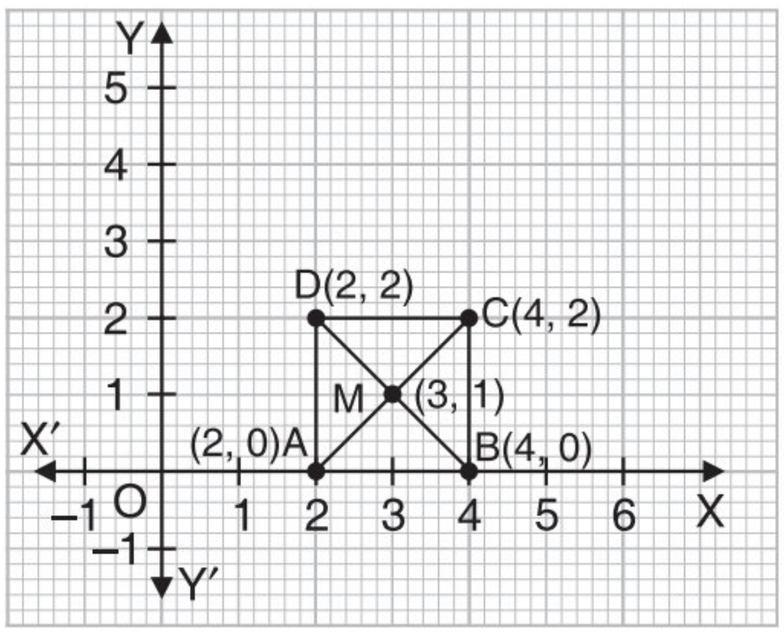
34. In the given figure, if ABCD is a square whose diagonals AC and BD intersect at M(3, 1) then the equations of the diagonals AC and BD respectively are

(*a*) $x + y = 2, x - y = 4$

(*b*) $x = 2y, x + y = 3$

(*c*) $2x = y, x - y = 3$

(*d*) $x - y = 2, x + y = 4$



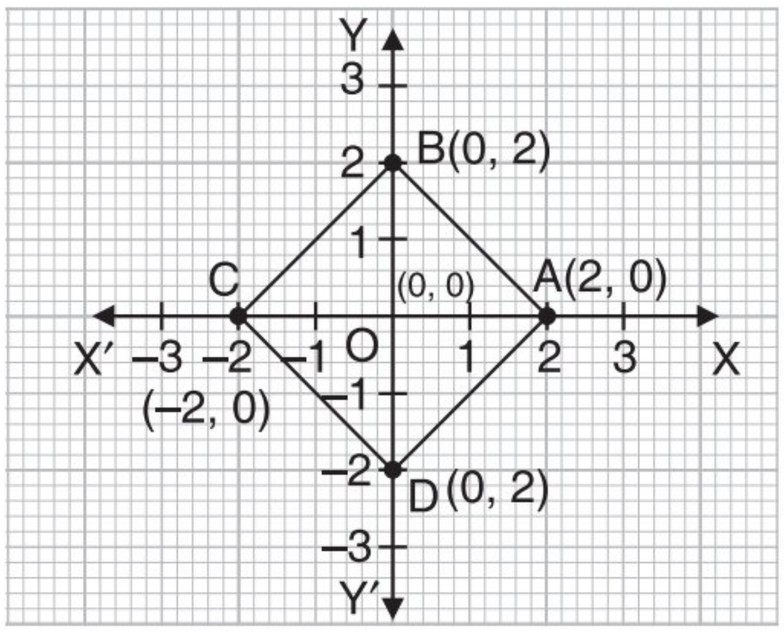
35. In the given figure, if ABCD is a square, then the diagonal AC divides it into two congruent triangles each of area

(*a*) 2 sq units

(*b*) 3 sq units

(*c*) 4 sq units

(*d*) 5 sq units



Chapter 5: Introduction to Euclid's Geometry

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. A pyramid is a solid figure, the base of which is

(*a*) only a square (*b*) only a triangle

(*c*) only a rectangle (*d*) any polygon

2. The side faces of a pyramid are

(*a*) squares (*b*) triangles (*c*) polygons (*d*) trapeziums

3. In ancient India, the shapes of altars used for household rituals were

(*a*) square and rectangular (*b*) square and circular

(*c*) triangular and rectangular (*d*) square and triangular

4. In ancient India, the shapes of altars used for public worship were combinations of

(*a*) circles, squares and rectangles (*b*) triangles, circles and rectangles

(*c*) circles, trapeziums and squares (*d*) rectangles, triangles and trapeziums

5. The number of interwoven isosceles triangles in *sriyantra* (in the *Atharvaveda*) is

(*a*) seven (*b*) eight (*c*) nine (*d*) ten

6. In Indus Valley Civilisation, the bricks used for constructions were kiln fired and the ratio, length : breadth : thickness, of the bricks was found to be

(*a*) 4 : 3 : 2 (*b*) 4 : 4 : 1 (*c*) 4 : 2 : 1 (*d*) 1 : 2 : 3

7. Euclid divided his famous treatise "*The Elements*" into

(*a*) 9 chapters (*b*) 11 chapters (*c*) 12 chapters (*d*) 13 chapters

8. Which of the following are known as the boundaries of solids?

(*a*) curves (*b*) lines (*c*) points (*d*) surfaces

9. The three steps from solids to points are:

(*a*) Solids–surfaces–lines–points (*b*) Solids–lines–surfaces–points

(*c*) Lines–points–surfaces–solids (*d*) Lines–surfaces–points–solids

10. The number of dimensions, a solid has:

(*a*) 0 (*b*) 1 (*c*) 2 (*d*) 3

11. The number of dimensions, a surface has:

(*a*) 1 (*b*) 2 (*c*) 3 (*d*) 0

12. The number of dimensions, a point has:

(*a*) none (*b*) 1 (*c*) 2 (*d*) 3

13. The number of dimensions, a line has:

(*a*) 3 (*b*) 2 (*c*) 1 (*d*) 0

14. Axioms are assumed

(*a*) definitions

(*b*) theorems

(*c*) universal truths in all branches of mathematics

(*d*) universal truths specific to geometry

15. Which of the following needs a proof?

(*a*) Axiom (*b*) Theorem

(*c*) Definition (*d*) Postulate **[CBSE SP 2010]**

16. Euclid stated that if equals are subtracted from equals, the remainders are equals in the form of

(*a*) an axiom (*b*) a postulate (*c*) a definition (*d*) a proof

17. Euclid stated that all right angles are equal to each other in the form of

(*a*) an axiom (*b*) a definition (*c*) a postulate (*d*) a proof

18. 'Lines are parallel if they do not intersect' is stated in the form of

(*a*) a definition (*b*) an axiom (*c*) a postulate (*d*) a proof

19. X is of the same age as Y. Z is also of the same age as Y. Then the Euclid's axiom that illustrates the relative ages of X and Z is the

(*a*) first Axiom (*b*) second Axiom

(*c*) third Axiom (*d*) fourth Axiom

20. The interwoven isosceles triangles in *sriyantra* are arranged in such a way that the number of subsidiary triangles they produce are

(*a*) 40 (*b*) 43 (*c*) 45 (*d*) 50

Chapter 6: **Lines and Angles**

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. The measure of an angle which is 24° more than its complement is

(*a*) 66° (*b*) 57° (*c*) 156° (*d*) 114°

2. The measure of an angle which is 32° less than its supplement is

(*a*) 148° (*b*) 58° (*c*) 74° (*d*) 122°

3. The measure of an angle which is four times its complement is

(*a*) 78° (*b*) 76° (*c*) 72° (*d*) 74°

4. If the supplement of an angle is 4 times of its complement, then the angle is

(*a*) 60° (*b*) 40° (*c*) 50° (*d*) 70°

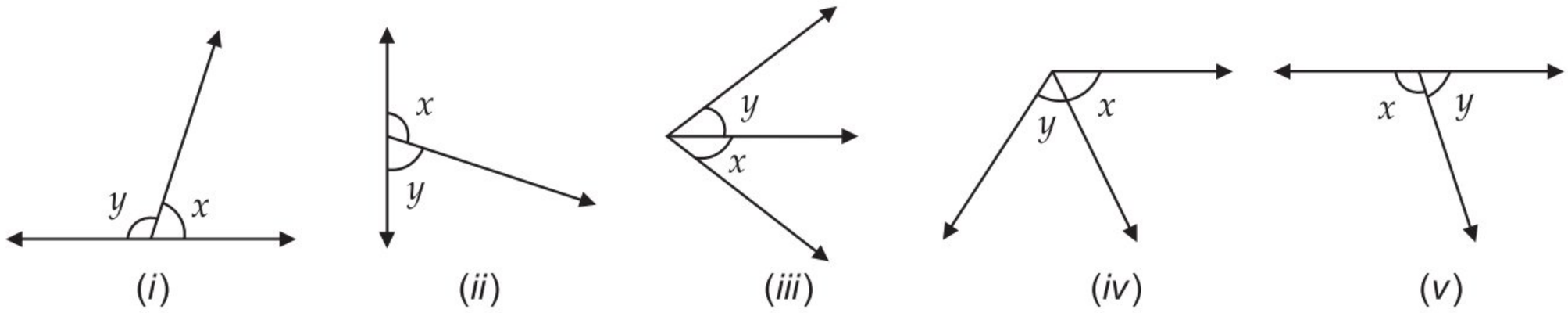
5. If two complementary angles are in the ratio 2 : 3, then the angles are

(*a*) 58°, 32° (*b*) 50°, 40° (*c*) 56°, 34° (*d*) 36°, 54°

6. ∠P and ∠Q are complementary angles. If they are represented by the expressions $m\angle Q = y$ and $m\angle P = 2y + 30°$, then their measures respectively are

(*a*) 70°, 20° (*b*) 20°, 70° (*c*) 10°, 80° (*d*) 80°, 10°

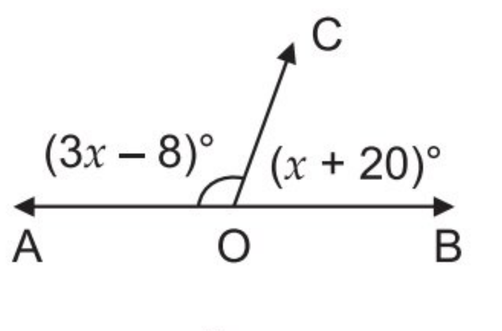
7. In the given figures, which pairs of angles represent a linear pair?



(*a*) (*i*) and (*iii*) (*b*) (*iii*) and (*iv*) (*c*) (*iii*) and (*v*) (*d*) (*i*), (*ii*) and (*v*)

[CBSE SP 2010]

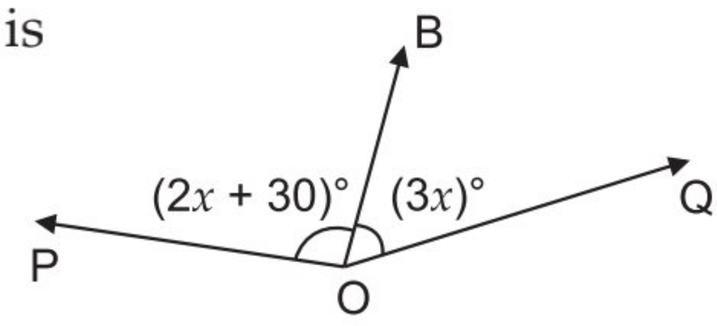
8. If in the given figure, OA and OB are opposite rays, then the value of x is



(*a*) 40 (*b*) 44

(*c*) 46 (*d*) 42

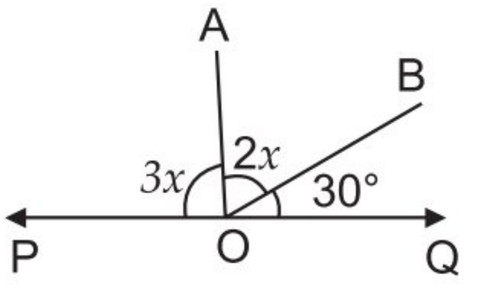
9. The value of x that will make POQ a straight line is



(*a*) 30 (*b*) 25

(*c*) 35 (*d*) 40

10. In the given figure, if POQ is a straight line, then the value of x is

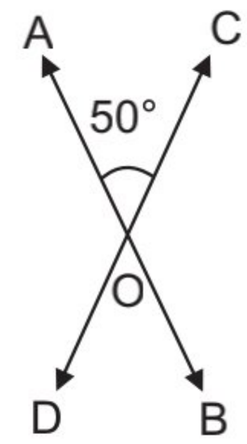


(*a*) 20° (*b*) 30°

(*c*) 40° (*d*) 50°

[CBSE SP 2011]

11. In the given figure, $\angle AOC = 50°$, then $\angle AOD + \angle COB$ is equal to



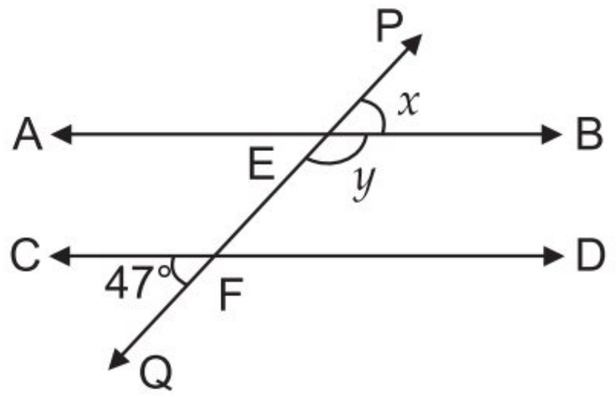
(*a*) 100°

(*b*) 140°

(*c*) 260°

(*d*) 130°

12. In the given figure AB ∥ CD. Transversal PQ intersects AB at E and CD at F. Given, $\angle CFQ = 47°$, the measure of x and y respectively are



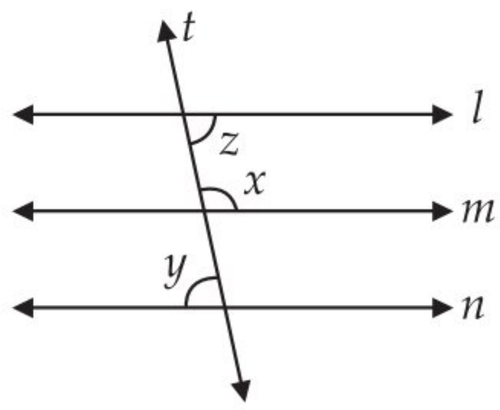
(*a*) 30°, 150°

(*b*) 37°, 143°

(*c*) 47°, 133°

(*d*) 39°, 141°

13. In the given figure, $l \parallel m \parallel n$. If $x : y = 5 : 4$, then the measure of angle z is



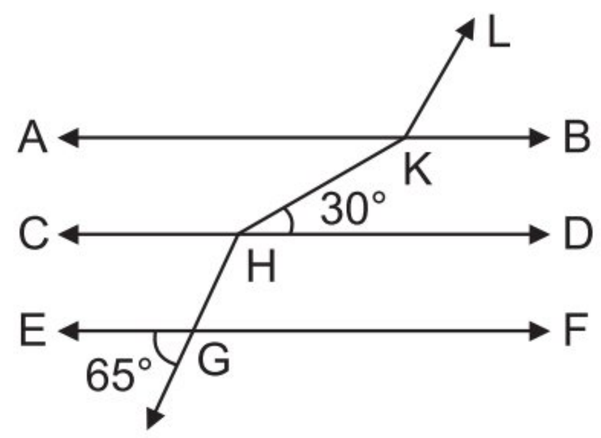
(*a*) 40°

(*b*) 50°

(*c*) 90°

(*d*) 80°

14. In the given figure, AB ∥ CD ∥ EF and GH ∥ KL. The measure of angle HKL is



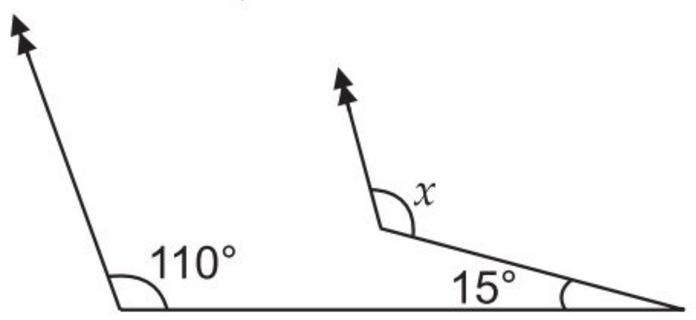
(*a*) 95°

(*b*) 145°

(*c*) 130°

(*d*) 135°

15. The measure of x in the given figure is



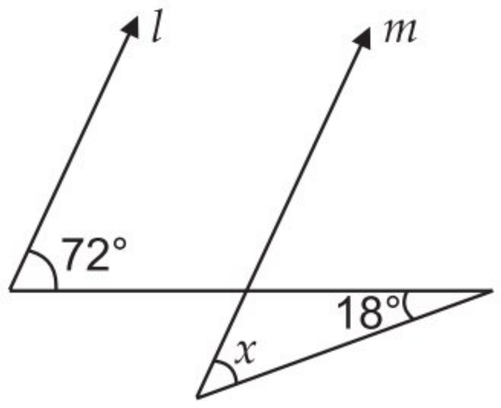
(*a*) 125°

(*b*) 70°

(*c*) 105°

(*d*) 100°

16. In the given figure, if $l \parallel m$, then the value of x is



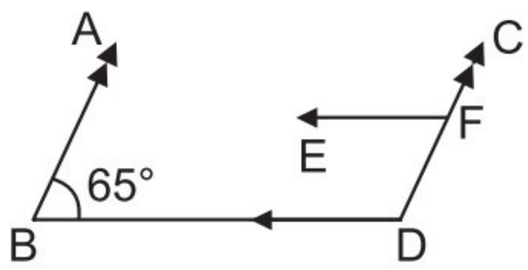
(*a*) 18°

(*b*) 72°

(*c*) 54°

(*d*) 100°

17. In the given figure, AB ∥ CD and EF ∥ BD. If $\angle ABD = 65°$, then the measure of $\angle CFE$ is



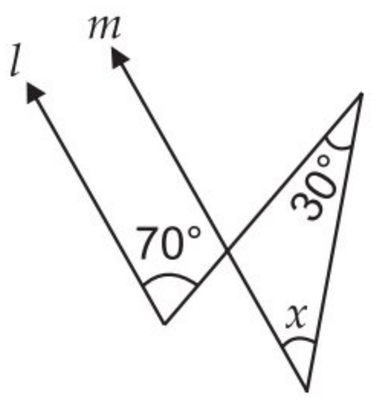
(*a*) 120°

(*b*) 115°

(*c*) 65°

(*d*) 165°

18. In the given figure, if $l \parallel m$, then the measure of x is



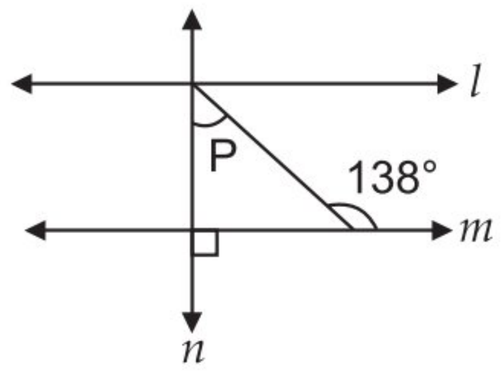
(*a*) 70°

(*b*) 100°

(*c*) 40°

(*d*) 30°

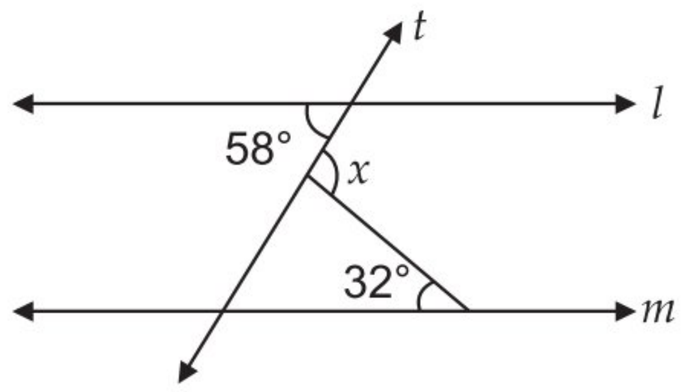
19. In the adjoining figure, if $l \parallel m$ and $n \perp m$, then the measure of angle P is



(*a*) 48° (*b*) 42°

(*c*) 90° (*d*) 38°

20. In the given figure, if $l \parallel m$ then the measure of angle x is



(*a*) 65° (*b*) 40°

(*c*) 25° (*d*) 90°

21. If two angles of a triangle are complementary, then it is

(*a*) a right triangle (*b*) an obtuse angled triangle

(*c*) an acute angled triangle (*d*) an equilateral triangle

22. An exterior angle of a triangle is 110° and its two opposite interior angles are equal. Each of these equal angles is

(*a*) 70° (*b*) 55° (*c*) 35° (*d*) 110°

[CBSE SP 2010]

23. The angles of a triangle are in the ratio 4 : 5 : 9. The triangle is

(*a*) an isosceles triangle (*b*) an obtuse angled triangle

(*c*) an acute angled triangle (*d*) a right triangle

24. An exterior angle is drawn to a triangle. If this exterior angle is acute, then the triangle must be

(*a*) an acute angled triangle (*b*) a right triangle

(*c*) an obtuse angled triangle (*d*) an equilateral triangle

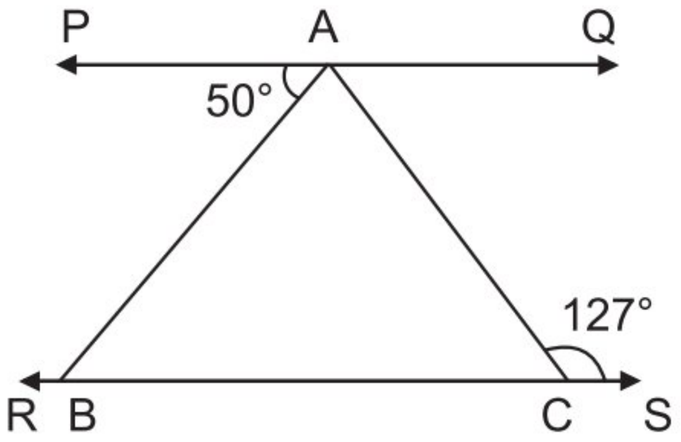
25. If the measure of each base angle of an isosceles triangle is seven times the measure of the vertex angle, then the measure of the vertex angle is

(*a*) 84° (*b*) 48° (*c*) 12° (*d*) 24°

26. If the vertex angle of an isosceles triangle is 80°, then the measure of an exterior angle to one of the base angles of this triangle is

(*a*) 100° . (*b*) 120° (*c*) 110° (*d*) 130°

27. In the given figure, if PQ ∥ RS and ∠ACS = 127°, then ∠BAC is equal to

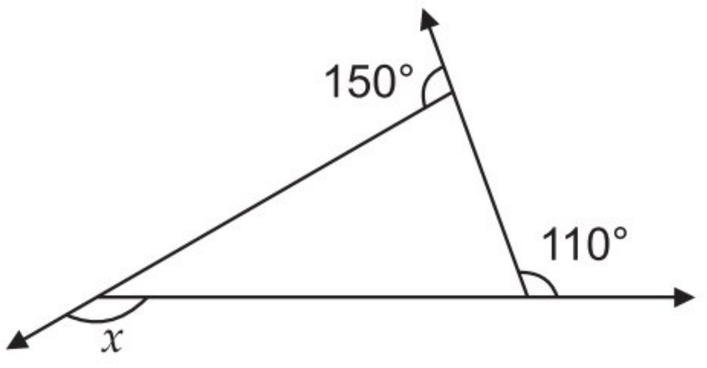


(*a*) 53° (*b*) 77°

(*c*) 50° (*d*) 107°

[CBSE SP 2010]

28. The value of x in the given figure is



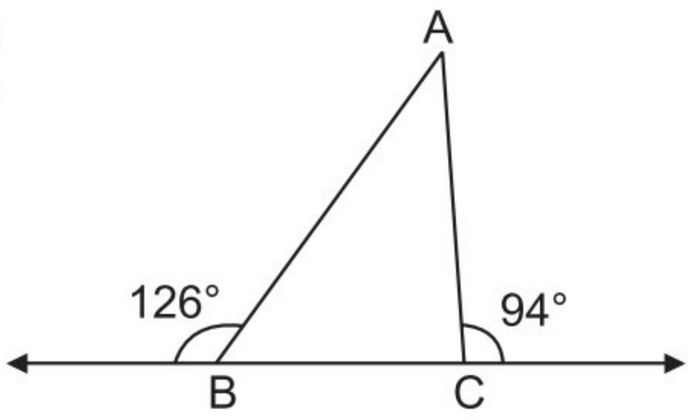
(*a*) 100° (*b*) 70°

(*c*) 110° (*d*) 150°

29. The base BC of triangle ABC is produced both ways and the measures of exterior angles formed are 94° and 126°. Then, the measure of ∠BAC is

(*a*) 94° (*b*) 54°

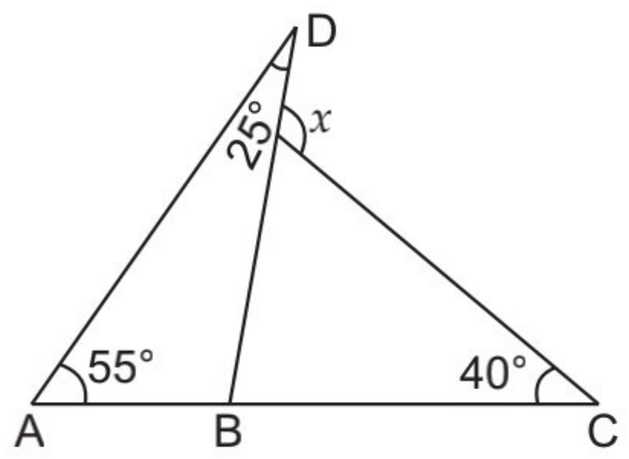
(*c*) 40° (*d*) 44°



30. The value of x in the given figure is

(*a*) 65° (*b*) 95°

(*c*) 80° (*d*) 120°



31. If one of the angles of an isosceles triangle is 125°, then the angle between the bisectors of the other two angles is

(*a*) 125.5° (*b*) 152.5° (*c*) 152° (*d*) 125°

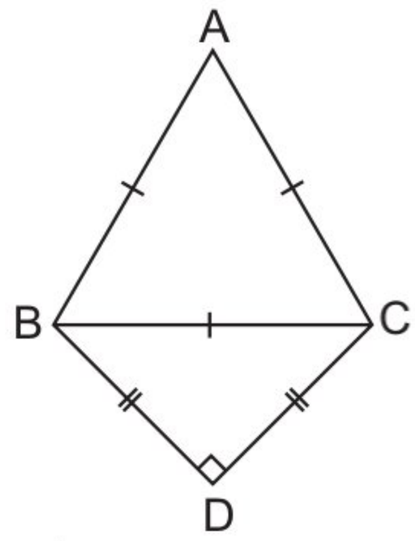
32. ΔABC is a right triangle in which ∠A is a right angle. AL is drawn perpendicular to BC. If ∠BAL is 35°, then the measure of ∠ACB is

(*a*) 70° (*b*) 17.5° (*c*) 35° (*d*) 105°

33. ABC is an equilateral triangle and BDC is an isosceles triangle right angled at D. ∠ABD is equal to

(*a*) 45° (*b*) 60°

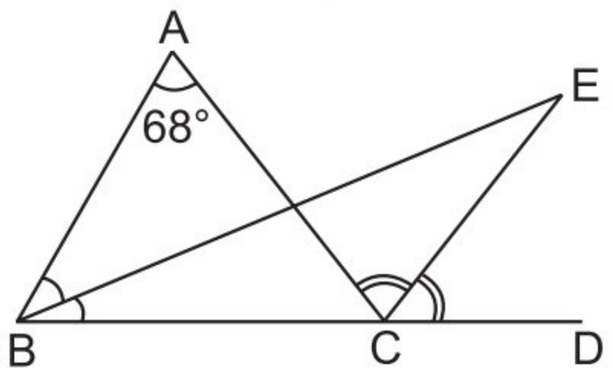
(*c*) 105° (*d*) 120° **[CBSE SP 2011]**



34. The side BC of ΔABC is produced to point D. The bisectors of ∠ABC and ∠ACD meet at a point E. If ∠BAC = 68°, then the measure of ∠BEC is

(*a*) 30° (*b*) 32°

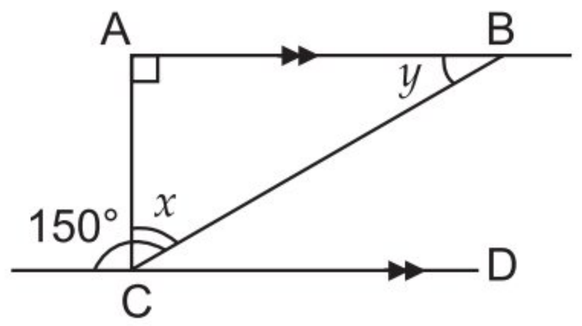
(*c*) 36° (*d*) 34°



35. In the given figure, if AB ∥ CD, then the values of x and y respectively are

(*a*) 25°, 65° (*b*) 60°, 30°

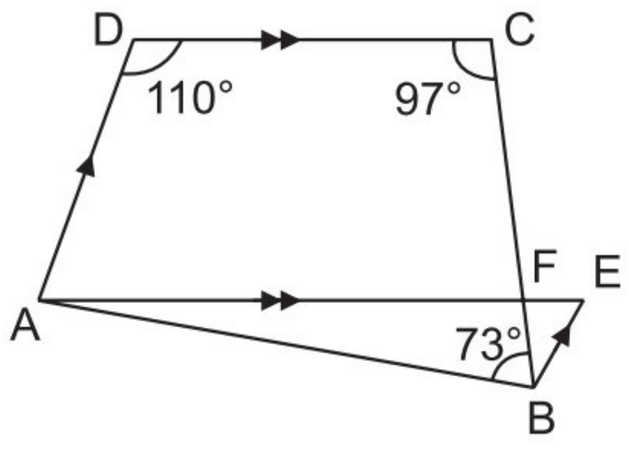
(*c*) 65°, 25° (*d*) 40°, 50°



36. In the given figure, ABCD is a quadrilateral in which ∠ABC = 73°, ∠C = 97° and ∠D = 110°. If AE ∥ DC and BE ∥ AD and AE intersects BC at F, then the measure of ∠EBF is

(*a*) 23° (*b*) 70°

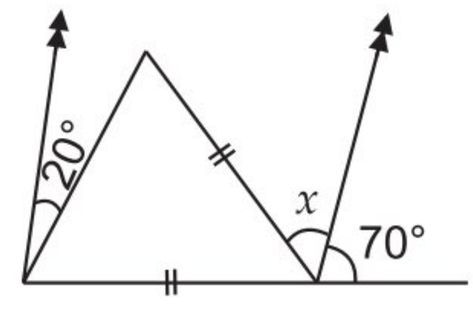
(*c*) 10° (*d*) 27°



37. The angle between the bisectors of two acute angles of a right triangle is

(*a*) 135° (*b*) 120° (*c*) 90° (*d*) 150°

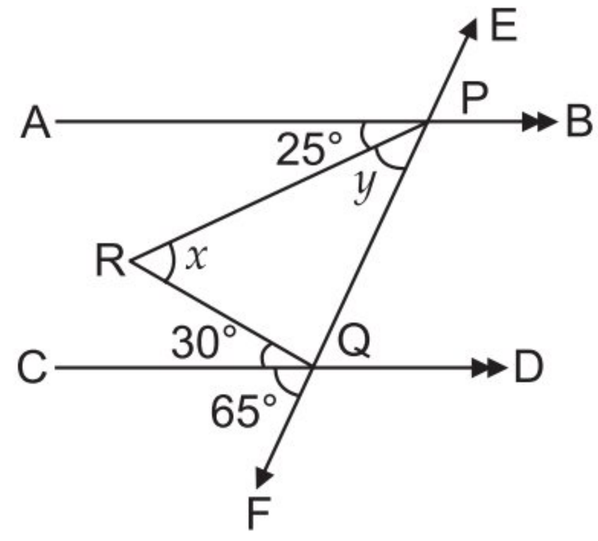
38. The measure of x in the given figure is



(*a*) 35° (*b*) 25°

(*c*) 30° (*d*) 20°

39. In the given figure, AB ∥ CD. Transversal EF intersects AB at P and CD at Q. ∠PRQ = x, ∠RPQ = y. If ∠APR = 25°, ∠RQC = 30° and ∠CQF = 65°, then the measures of angle x and y respectively are



(*a*) 55°, 40° (*b*) 50°, 45°

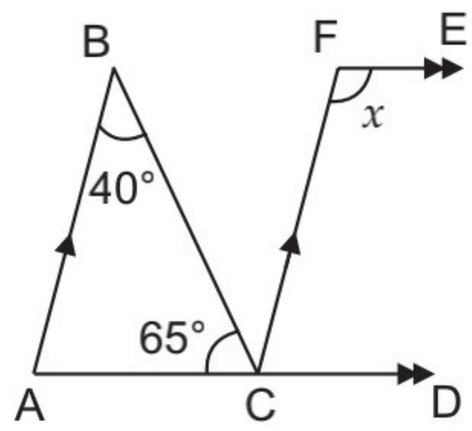
(*c*) 60°, 35° (*d*) 35°, 60°

40. If the bisectors of base angles of a triangle enclose an angle of 135°, then the triangle is

(*a*) an acute angled triangle (*b*) an obtuse angled triangle

(*c*) an equilateral triangle (*d*) a right triangle

41. In the figure given alongside, if AB ∥ CF and CD ∥ FE, then the value of x is



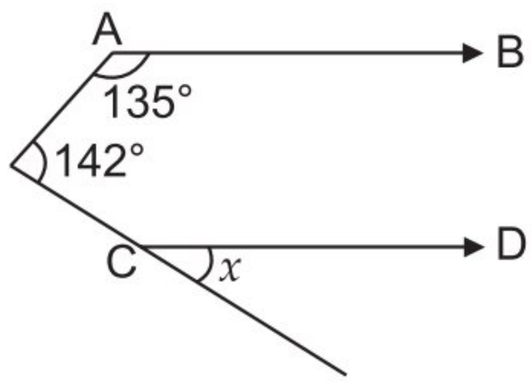
(*a*) 40°

(*b*) 65°

(*c*) 75°

(*d*) 105°

42. In the given figure, if AB ∥ CD, then the value of x is



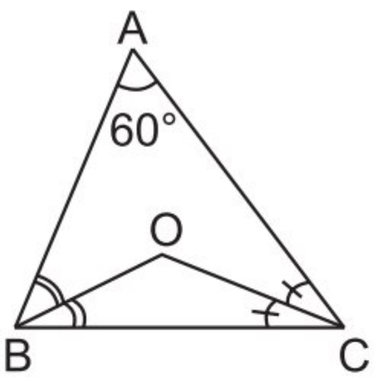
(*a*) 97°

(*b*) 100°

(*c*) 107°

(*d*) 45°

43. BO and CO, the bisectors of ∠B and ∠C respectively, of ΔABC, meet at O. If ∠A = 60°, then the measure of ∠BOC is



(*a*) 100°

(*b*) 90°

(*c*) 120°

(*d*) 150°

44. If two parallel lines are cut by a transversal, then the bisectors of the interior angles on the same side of the transversal intersect each other at

(*a*) 60° (*b*) 90° (*c*) 100° (*d*) 120°

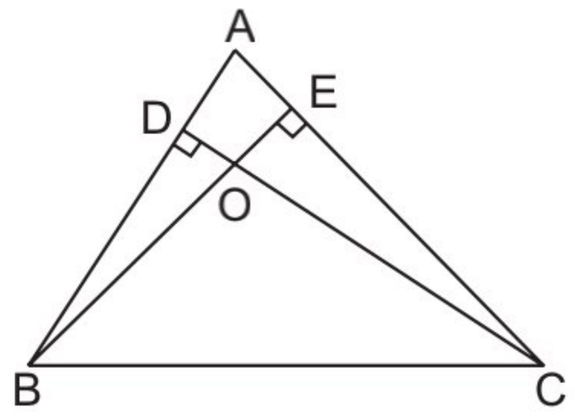
45. If two parallel lines are intersected by a transversal, then the bisectors of the interior angles form a

(*a*) kite (*b*) rhombus (*c*) rectangle (*d*) trapezium

46. ABC is a triangle in which BE ⊥ AC and CD ⊥ AB. BE and CD intersect at O. If ∠BAC = 75°, then the measure of ∠BOC is

(*a*) 100° (*b*) 105°

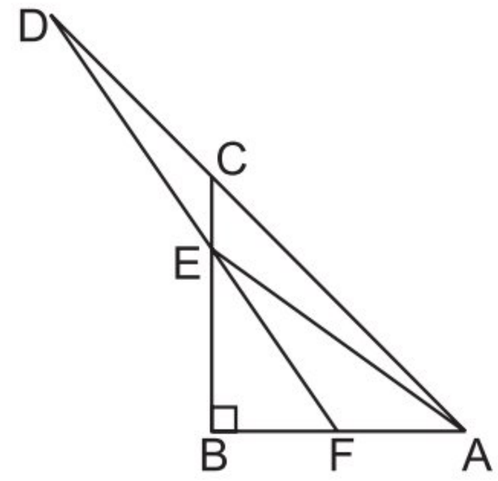
(*c*) 75° (*d*) 115°



47. ABC is a right triangle, right angled at B. BC = BA. D is a point on AC produced and a line DEF cuts CB at E, AB at F. If ∠D = 13° and ∠FAE = 29°, then the measure of ∠FEA is

(*a*) 31° (*b*) 42°

(*c*) 29° (*d*) 16°



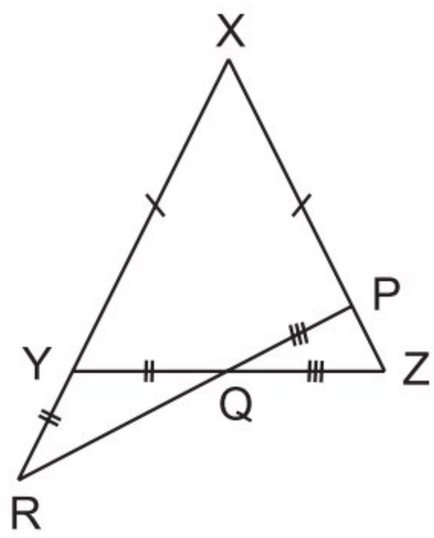
48. In ΔXYZ, XY = XZ. A straight line cuts XZ at P, YZ at Q and XY produced at R. If YQ = YR and QP = QZ, then the measure of ∠PQY is

(*a*) 100°

(*b*) 124°

(*c*) 144°

(*d*) 140°



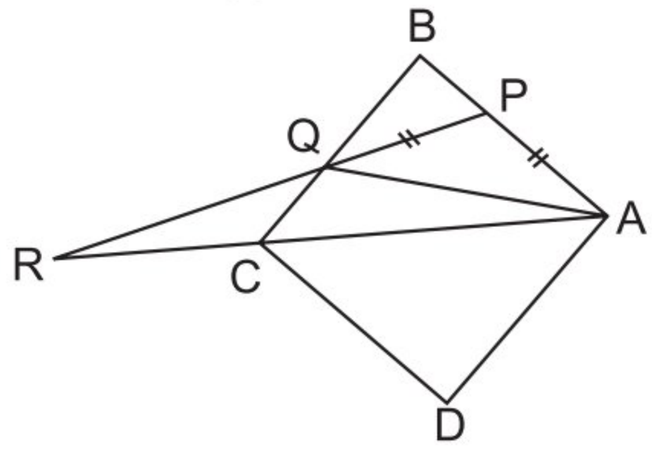
49. ABCD is a square. If AP = PQ and ∠QRC = 35°, then the measure of ∠PAQ is

(*a*) 40°

(*b*) 35°

(*c*) 30°

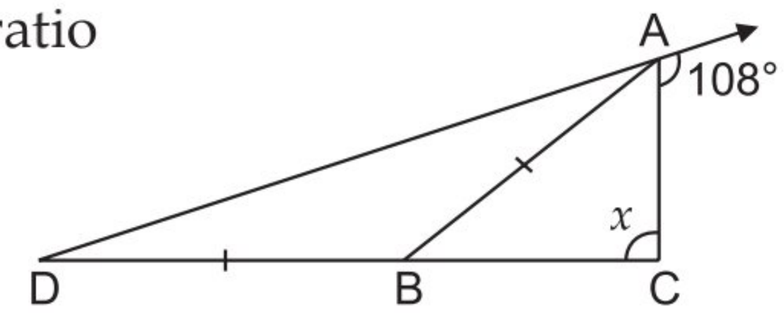
(*d*) 25°



50. In the given figure, if AB divides ∠DAC in the ratio 1 : 3, then the measure of angle marked *x* is

(*a*) 108° (*b*) 100°

(*c*) 80° (*d*) 90°



Chapter 7: **Triangles**

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. In ΔABC, if $BC = AB$ and $\angle B = 80°$ then $\angle A$ will be equal to

(*a*) 80° (*b*) 40°

(*c*) 50° (*d*) 100° **[CBSE SP 2012]**

2. Two angles measure $(30 - a)°$ and $(125 + 2a)°$. If each one is a supplement of the other then the value of a is

(*a*) 45° (*b*) 25°

(*c*) 35° (*d*) 65° **[CBSE SP 2012]**

3. Choose the correct option:

(*a*) A triangle has two right angles.

(*b*) All angles of a triangle are more than 60°.

(*c*) An exterior angle of a triangle is always greater than opposite interior angle.

(*d*) All the angles of a triangle are less than 60°. **[CBSE SP 2010]**

4. Which of the following is not a criterion for congruence of triangles?

(*a*) SAS (*b*) SSA

(*c*) ASA (*d*) SSS **[CBSE SP 2010]**

5. In triangles ABC and DEF, $\angle A = \angle D$, $\angle B = \angle E$ and $AB = EF$, then are the two triangles congruent? If yes, by which congruency criterion?

(*a*) yes by AAS (*b*) no

(*c*) yes by ASA (*d*) yes by RHS **[CBSE SP 2010]**

6. In ΔABC and ΔPQR, $AB = AC$, $\angle C = \angle P$ and $\angle B = \angle Q$.
The two triangles are

(*a*) isosceles but not necessarily congruent.

(*b*) neither congruent nor isosceles.

(*c*) isosceles and congruent.

(*d*) congruent but not isosceles.

7. The sides of a triangle are of length 7 cm and 3.5 cm. The length of the third side cannot be

(*a*) 3.6 cm (*b*) 4.1 cm

(*c*) 3.4 cm (*d*) 3.8 cm **[CBSE SP 2010]**

8. In triangles ABC and DEF, $AB = DF$ and $\angle A = \angle D$. The two triangles will be congruent by SAS axiom if

(*a*) $BC = DE$ (*b*) $AC = EF$

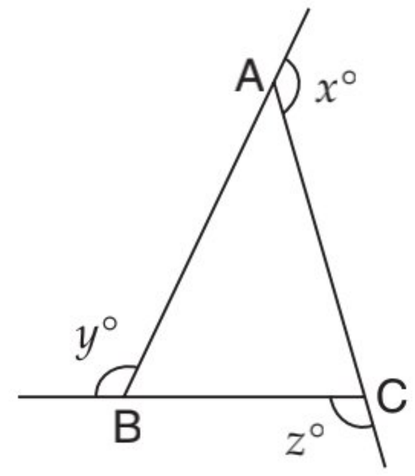
(*c*) $BC = EF$ (*d*) $AC = DE$ **[CBSE SP 2011]**

9. It is given that $\Delta ABC \cong \Delta FDE$ and AB = 5 cm, $\angle B = 40°$ and $\angle A = 80°$. Then which of the following is true?

(*a*) DF = 5 cm, $\angle F = 60°$ (*b*) DE = 5 cm, $\angle E = 60°$

(*c*) DF = 5 cm, $\angle E = 60°$ (*d*) DE = 5 cm, $\angle D = 40°$

10. In the given figure, if AB = 7.5 cm, BC = 5 cm and CA = 6.3 cm, then x, y, z arranged in ascending order are



(*a*) $x < z < y$. (*b*) $y < x < z$.

(*c*) $x < y < z$. (*d*) $z < y < x$.

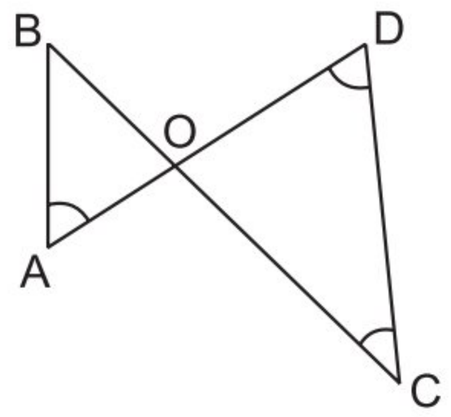
11. In ΔPQR if $\angle R > \angle Q$ then

(*a*) QR > PR (*b*) PQ > PR

(*c*) PQ < PR (*d*) QR < PR

[CBSE SP 2010]

12. In the given figure, $\angle B < \angle A$ and $\angle D > \angle C$, then



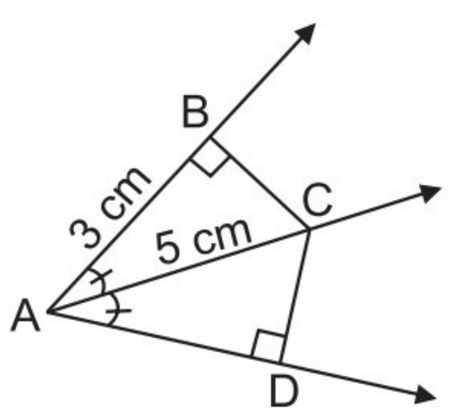
(*a*) AD > BC

(*b*) AD = BC

(*c*) AD < BC

(*d*) AD = 2BC

13. In the given figure, if AB = 3 cm and AC = 5 cm, then CD is equal to



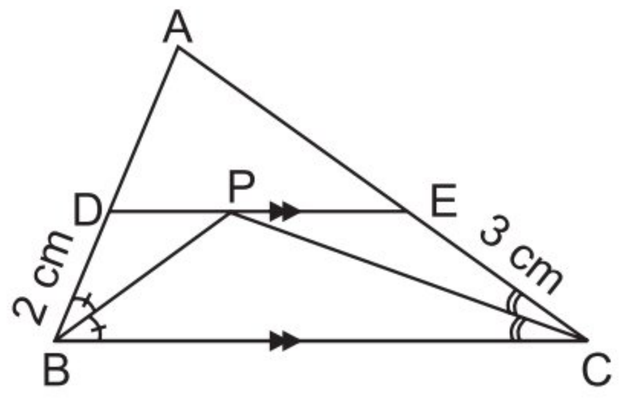
(*a*) 4 cm

(*b*) 2 cm

(*c*) 3 cm

(*d*) 5 cm

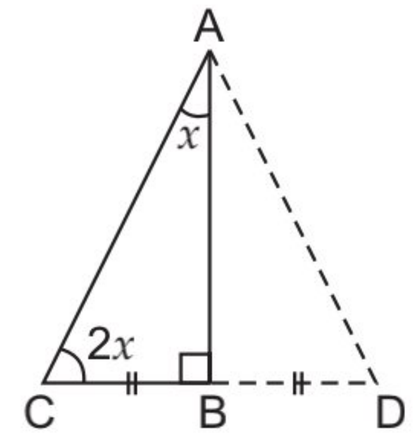
14. In the given figure, DE || BC, BP and CP are bisectors of $\angle B$ and $\angle C$ respectively. If BD = 2 cm and CE = 3 cm, then DE is equal to



(*a*) 3 cm (*b*) 2 cm

(*c*) 5 cm (*d*) 7 cm

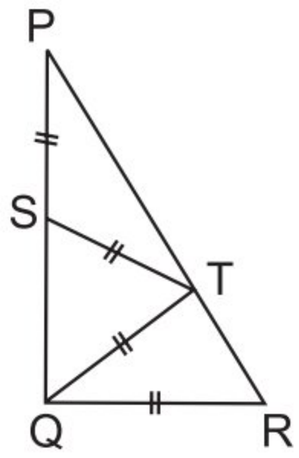
15. In right ΔABC, right angled at B, $\angle ACB$ is twice $\angle CAB$ (as shown in the figure). If BC = 2 cm, then hypotenuse AC is equal to



(*a*) 3 cm (*b*) 4 cm

(*c*) 5 cm (*d*) 6 cm

16. In the given figure, if $\angle P = 25°$, then the measure of $\angle R$ is



(*a*) 25°

(*b*) 50°

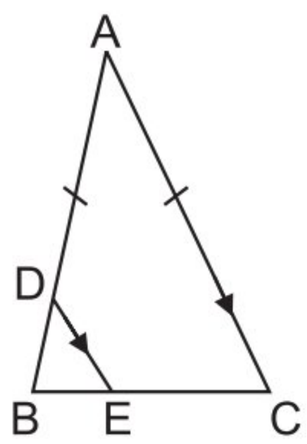
(*c*) 75°

(*d*) 60°

17. ABC is a triangle in which AB = AC. D is any point on AB. Through D, a line parallel to AC intersects BC at E. If DB = 1.5 cm, then DE is equal to

(*a*) 3 cm (*b*) 2 cm

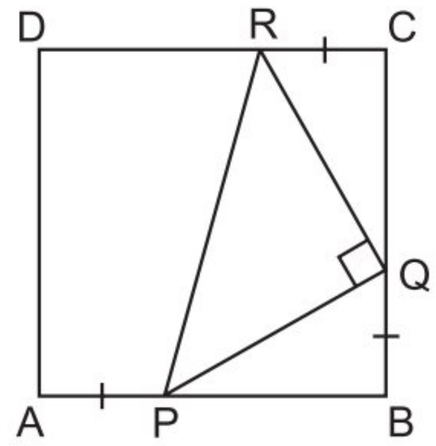
(*c*) 2.5 cm (*d*) 1.5 cm



18. ABCD is a square. P, Q and R are points on the sides AB, BC and CD such that AP = BQ = CR and ∠PQR = 90°. Then, the measure of ∠RPQ is

(*a*) 60° (*b*) 30°

(*c*) 45° (*d*) 75°



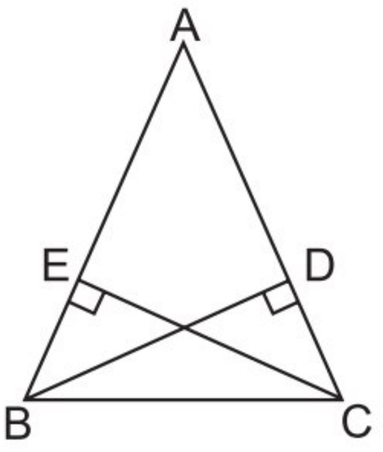
19. In the given figure, BD ⊥ AC and CE ⊥ AB. If BD = CE = 3.5 cm and AB = 5 cm, then the measure of AC is

(*a*) 3.5 cm

(*b*) 4.5 cm

(*c*) 5 cm

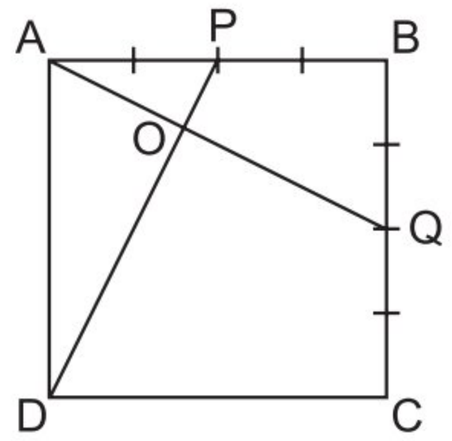
(*d*) 5.5 cm



20. ABCD is a square. P is the mid-point of AB and Q is the mid-point of BC. If PD and AQ intersect at O, then the measure of ∠POQ is

(*a*) 100° (*b*) 90°

(*c*) 75° (*d*) 60°



Chapter 8: **Quadrilaterals**

MULTIPLE-CHOICE QUESTIONS

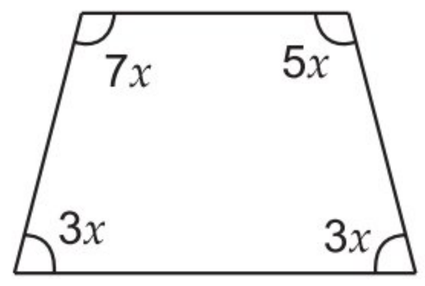
Choose the correct answer from the given four options in the following questions:

1. Three angles of a quadrilateral are 60°, 86° and 110°. The fourth angle is

(*a*) 104° (*b*) 124°

(*c*) 94° (*d*) 84° **[CBSE SP 2011]**

2. The value of x in the given figure is



(*a*) 10° (*b*) 20°

(*c*) 30° (*d*) 40° **[CBSE SP 2010]**

3. In a quadrilateral, three angles are in the ratio 3 : 3 : 1 and the fourth angle is 80°, then the other angles are

(*a*) 100°, 100°, 80° (*b*) 120°, 120°, 40°

(*c*) 100°, 110°, 70° (*d*) 110°, 110°, 60°

4. In a quadrilateral ABCD, AB ∥ DC and AD = BC = 5.5 cm, and one of the angles is 80°, then the other angles are

(*a*) 90°, 90°, 100° (*b*) 120°, 80°, 80°

(*c*) 80°, 100°, 100° (*d*) 110°, 85°, 85°

5. The sides of a quadrilateral are extended in order to form exterior angles. The sum of these exterior angles is

(*a*) 360° (*b*) 270° (*c*) 90° (*d*) 180°

6. Which of the following is not true for a parallelogram?

(*a*) Opposite sides are equal.

(*b*) Opposite angles are equal.

(*c*) Opposite angles are always bisected by the diagonals.

(*d*) Diagonals bisect each other.

7. In a quadrilateral ABCD, if AB = BC and CD = DA, then quadrilateral ABCD is a

(*a*) trapezium (*b*) rhombus (*c*) kite (*d*) parallelogram

8. Given a quadrilateral ABCD such that ∠C = 90° and diagonal AC and BD bisect each other at right angles, then the quadrilateral is a

(*a*) trapezium (*b*) kite (*c*) rectangle (*d*) square

9. P and Q are the mid-points of the sides AB and AC of ΔABC and O is any point on side BC. O is joined to A. If S and R are the mid-points of OB and OC respectively, then PQRS is

(*a*) a square (*b*) a rectangle

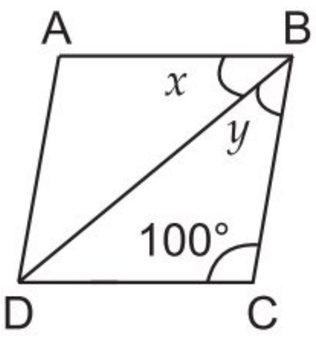
(*c*) a rhombus (*d*) a parallelogram

10. If bisectors of $\angle P$ and $\angle Q$ of a quadrilateral PQRS intersect each other at A, of $\angle Q$ and $\angle R$ at B, of $\angle R$ and $\angle S$ at C and of $\angle S$ and $\angle P$ at D, then ABCD is a

(*a*) rectangle (*b*) rhombus (*c*) parallelogram

(*d*) quadrilateral whose opposite angles are supplementary

11. ABCD is a rhombus in which $\angle BCD = 100°$, then $(x + y)$ equals



(*a*) 40° (*b*) 60°

(*c*) 80° (*d*) 70° **[CBSE SP 2011]**

12. ABCD is a parallelogram. If $\angle A = (3x - 20)°$ and $\angle C = (x + 40)°$, then the value of x is

(*a*) 30 (*b*) 40 (*c*) 50 (*d*) 60

13. D and E are the mid-points of the sides AB and AC respectively of ΔABC. DE is produced to F. To prove that DA is equal and parallel to FC, we need an additional information, which is

(*a*) $\angle DAE = \angle EFC$ (*b*) AE = EF

(*c*) DE = EF (*d*) $\angle ADE = \angle ECF$

14. ABCD is a parallelogram. If its diagonals are equal, then the measure of $\angle ABC$ is

(*a*) 60° (*b*) 90° (*c*) 75° (*d*) 120°

15. Diagonals AC and BD of a parallelogram ABCD intersect each other at O. If OA = 5 cm and OD = 4 cm, then the lengths of AC and BD respectively are

(*a*) 5 cm, 4 cm (*b*) 10 cm, 8 cm

(*c*) 2.5 cm, 2 cm (*d*) 15 cm, 12 cm

16. If the angle between two altitudes of a parallelogram through the vertex of an obtuse angle of the parallelogram is 60°, then the angles of the parallelogram are

(*a*) 105°, 75°, 105°, 75° (*b*) 115°, 65°, 115°, 65°

(*c*) 120°, 60°, 120°, 60° (*d*) 110°, 70°, 110°, 70°

17. In a parallelogram, if $\angle A = 60°$, then $\angle D$ is equal to

(*a*) 110° (*b*) 140°

(*c*) 120° (*d*) 130° **[CBSE SP 2011]**

18. One angle of a quadrilateral is 114° and the remaining three angles are equal. Then, the measure of each of the three equal angles is

(*a*) 82° (*b*) 84° (*c*) 86° (*d*) 92°

19. Given a trapezium PQRS such that PQ = 12 cm, RS = 5 cm, PQ $\parallel$ SR, PS = QR = 8 cm. If $\angle R = 130°$, then $\angle P$ is

(*a*) 130° (*b*) 50° (*c*) 150° (*d*) 120°

20. In parallelogram ABCD, AB = 3 cm and the diagonals AC and BD are 5.8 cm and 4.2 cm respectively. If the diagonals AC and BD intersect at O, then the perimeter of ΔAOB is

(*a*) 10 cm (*b*) 8.8 cm

(*c*) 7.2 cm (*d*) 8 cm

21. If an angle of a parallelogram is four-fifths of its adjacent angle, then the angles of the parallelograms are

(*a*) 70°, 110°, 70°, 110° (*b*) 80°, 100°, 80°, 100°

(*c*) 72°, 108°, 72°, 108° (*d*) 60°, 120°, 60°, 120°

22. Four angles of a quadrilateral are $(2x + 20)°$, $(3x - 30)°$, $(x + 10)°$ and $(2x)°$. Value of x is

(*a*) 40 (*b*) 45 (*c*) 50 (*d*) 55

23. ABCD is a rectangle where BC = $(4x - 5)$ cm and AD = $(2x + 3)$ cm. Then, BC is

(*a*) 11 cm (*b*) 12 cm

(*c*) 10 cm (*d*) 15 cm

24. In rhombus PQRS, PQ = $3x$ cm, QR = $2(x + 3)$ cm. Each side of the rhombus is

(*a*) 17 cm (*b*) 19 cm (*c*) 18 cm (*d*) 28 cm

25. ABCD is a rhombus in which altitude from D to side AB bisects AB. Then the angles of the rhombus are

(*a*) 100°, 80°, 100°, 80° (*b*) 110°, 70°, 110°, 70°

(*c*) 120°, 60°, 120°, 60° (*d*) 130°, 50°, 130°, 50°

26. P is the mid-point of side BC of a parallelogram ABCD such that $\angle BAP = \angle DAP$. If AD = 10 cm, then length of CD is

(*a*) 10 cm (*b*) 5 cm (*c*) 6 cm (*d*) 8 cm

27. ABCD is a parallelogram. P and Q are respectively the mid-points of AB and CD. PQ and diagonal AC intersect at M. If AM = 3 cm, then the length of diagonal AC is

(*a*) 3 cm (*b*) 4.5 cm (*c*) 6 cm (*d*) 7.5 cm

28. The diagonals AC and BD of a parallelogram ABCD intersect each other at point O. If $\angle BOA = 68°$ and $\angle CAD = 25°$, then $\angle DBC$ is equal to

(*a*) 40° (*b*) 43° (*c*) 68° (*d*) 25°

29. In a parallelogram PQRS, PQ = 9 cm and PS = 5 cm. The bisector of $\angle P$ meets SR in A. PA and QR produced meet at B. Then, the length of RB is

(*a*) 5 cm (*b*) 4 cm (*c*) 9 cm (*d*) 6 cm

30. M is the mid-point of side CD of a parallelogram ABCD. A line through C parallel to MA intersects AB at P and DA produced at R. If DA = 3.5 cm, then the length of DR is

(*a*) 3.5 cm (*b*) 5 cm (*c*) 7 cm (*d*) 10.5 cm

31. ABCD is a trapezium in which AB $\parallel$ DC. M and N are the mid-points of AD and BC respectively. If AB = 12 cm, MN = 14 cm, then the length of CD is

(*a*) 16 cm (*b*) 14 cm (*c*) 12 cm (*d*) 10 cm

32. PQRS is a parallelogram. A and B are respectively the mid-points of sides PQ and SR. AS and BQ meet the diagonal PR of length 12 cm at C and D respectively. Then, the length of CD is

(*a*) 6 cm (*b*) 3 cm (*c*) 4 cm (*d*) 5 cm

33. The side AB of the parallelogram ABCD is produced to X and the bisector of $\angle CBX$ meets DA produced and DC produced at E and F respectively. If DE = 10 cm, then the length of DF is

(*a*) 5 cm (*b*) 10 cm

(*c*) 7.5 cm (*d*) 15 cm

34. If the diagonals of a rhombus are 18 cm and 24 cm respectively, then its side is equal to

(*a*) 16 cm (*b*) 15 cm (*c*) 20 cm (*d*) 17 cm

35. In ΔABC, $\angle A = 30°$, $\angle B = 40°$ and $\angle C = 110°$. Then, the angles of the triangle formed by joining the mid-point of the sides of this triangle are

(*a*) 70°, 70°, 40° (*b*) 60°, 40°, 80°

(*c*) 30°, 40°, 110° (*d*) 60°, 70°, 50°

Chapter 9: Areas of Parallelograms and Triangles

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. The median of a triangle divides it into two

(*a*) equilateral triangles (*b*) isosceles triangles

(*c*) right triangles (*d*) triangles of equal areas

[CBSE SP 2012]

2. ABCD is a quadrilateral whose diagonal AC divides it into two parts, equal in area, then ABCD

(*a*) is a rhombus (*b*) is a parallelogram

(*c*) is a rectangle (*d*) need not be any of (*a*), (*b*) or (*c*)

3. Two parallelograms are on equal base and between the same parallels. The ratio of their areas is

(*a*) 1 : 2 (*b*) 2 : 1

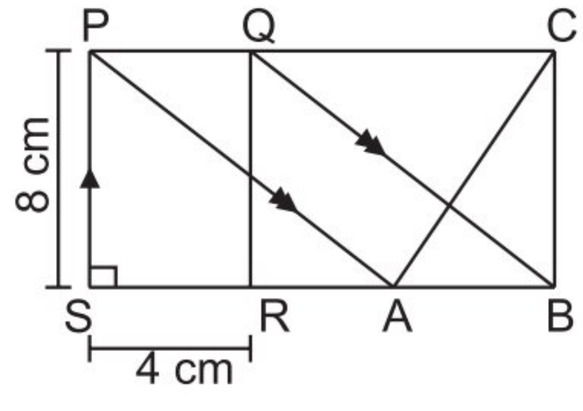
(*c*) 1 : 1 (*d*) 3 : 1

4. The mid-point of the sides of a triangle along with any of the vertices as the fourth point make a parallelogram of area equal to

(*a*) ar(ΔABC) (*b*) $\frac{1}{2}$ ar(ΔABC)

(*c*) $\frac{1}{3}$ ar(ΔABC) (*d*) $\frac{1}{4}$ ar(ΔABC)

5. In the given figure, PQRS is a rectangle. If PS = 8 cm and SR = 4 cm, then the area of ΔABC is



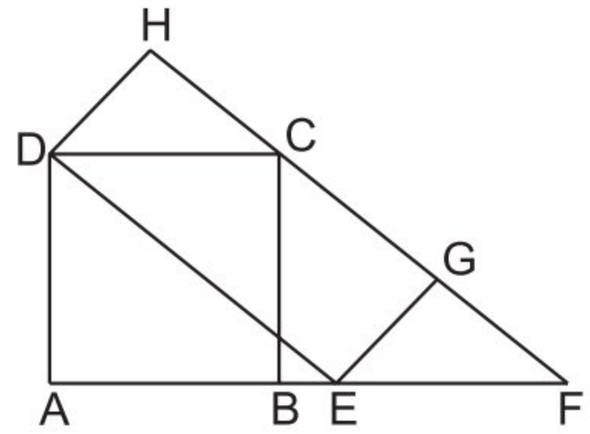
(*a*) 32 cm^2

(*b*) 12 cm^2

(*c*) 20 cm^2

(*d*) 16 cm^2

6. ABCD is a square. DEGH is a rectangle. Two equal parallelograms on the base DE are



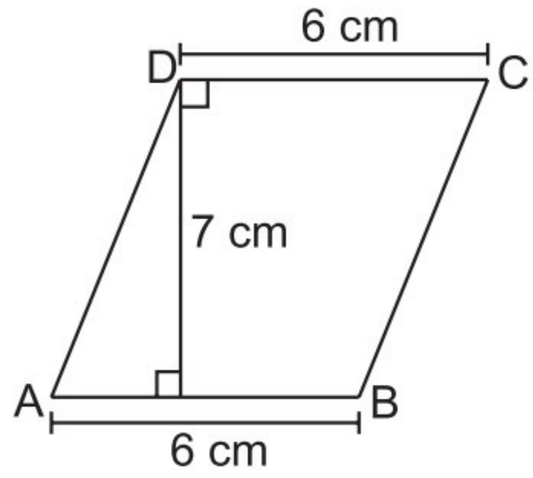
(*a*) DCFE and DCBA

(*b*) DEGC and DEFH

(*c*) ABCD and HDEG

(*d*) DEGH and DEFC

7. In the given figure, the area of quadrilateral ABCD is



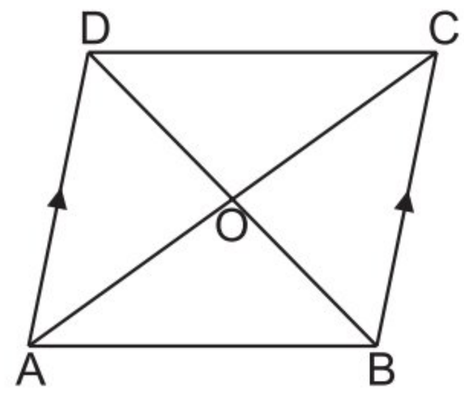
(*a*) 24 cm^2

(*b*) 13 cm^2

(*c*) 21 cm^2

(*d*) 42 cm^2

8. In the given figure, if AD || BC, then the triangle which is equal in area to ΔCOD is



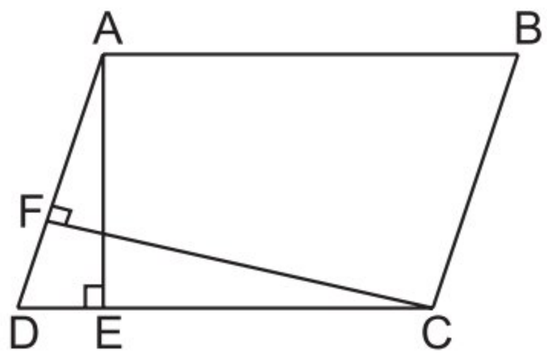
(*a*) ΔADC

(*b*) ΔBOA

(*c*) ΔAOD

(*d*) ΔCOB

9. ABCD is a parallelogram. If AB = 12 cm, AE = 7.5 cm, CF = 15 cm, then AD is equal to



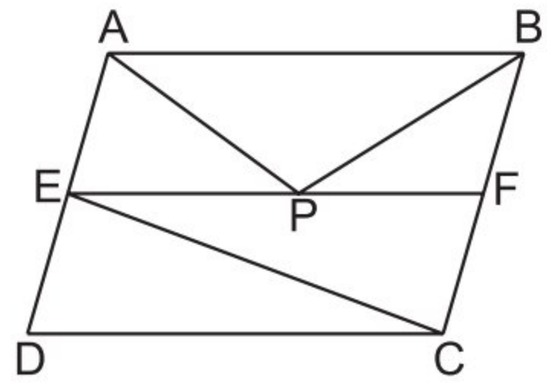
(*a*) 6 cm

(*b*) 3 cm

(*c*) 10.5 cm

(*d*) 8 cm

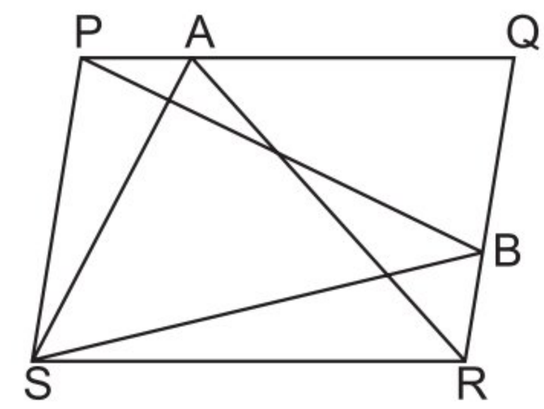
10. ABCD is a parallelogram and E and F are mid-points of AD and BC respectively. P is any point on EF. If area of $\Delta EFC = 8\ cm^2$, then ar($\Delta AEP + \Delta BFP$) is



(*a*) 16 cm^2 (*b*) 8 cm^2

(*c*) 4 cm^2 (*d*) 12 cm^2

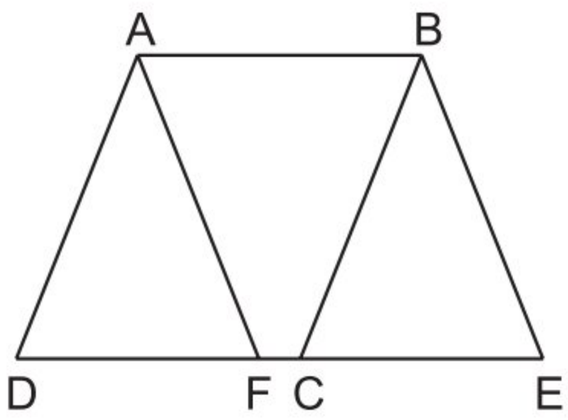
11. PQRS is a parallelogram and A and B are any points on PQ and QR respectively. If ar(||gm PQRS) = 48 cm^2, then ar(ΔPBS) + ar(ΔASR) is equal to



(*a*) 24 cm^2 (*b*) 96 cm^2

(*c*) 36 cm^2 (*d*) 48 cm^2

12. In the given figure, if ar(||gm ABCD) = 29 cm^2 and AB = 5.8 cm, then the height of ||gm ABEF is



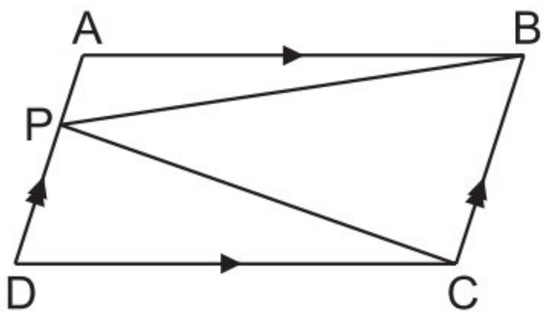
(*a*) 4.8 cm

(*b*) 6 cm

(*c*) 5 cm

(*d*) 5.8 cm

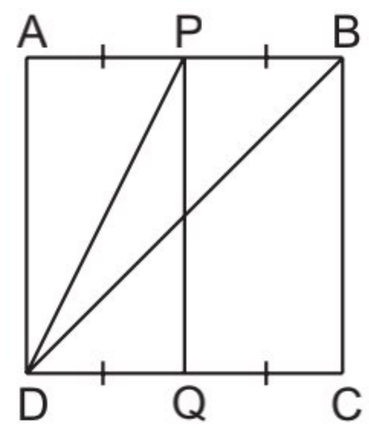
13. In the given figure, ABCD is a parallelogram. If ar(ΔBAP) = 10 cm^2 and ar(ΔCPD) = 30 cm^2, then ar(||gm ABCD) is



(*a*) 40 cm^2 (*b*) 80 cm^2

(*c*) 60 cm^2 (*d*) 100 cm^2

14. ABCD is a square. P and Q are mid-points of AB and DC respectively. If AB = 8 cm, then ar(ΔBPD) is



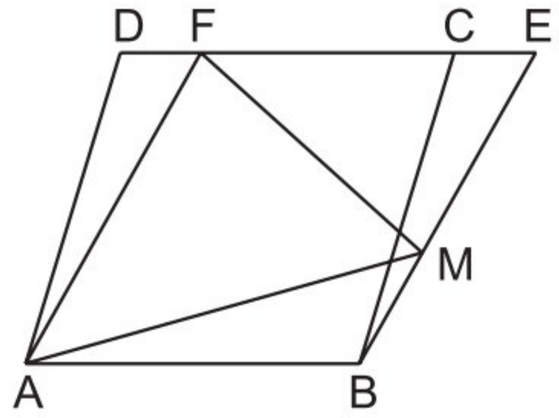
(*a*) 16 cm^2

(*b*) 18 cm^2

(*c*) 24 cm^2

(*d*) 32 cm^2

15. ABCD and ABEF are parallelograms. M is any point of EB. If ar(||gm ABCD) = 28 cm^2, then ar (ΔFAM) is



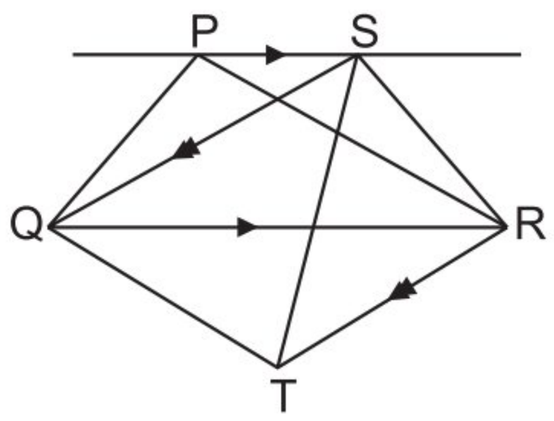
(*a*) 7 cm^2

(*b*) 14 cm^2

(*c*) 21 cm^2

(*d*) 28 cm^2

16. PQR is a triangle. S is any point on a line through P parallel to QR. If T is any point on a line through R parallel to SQ, then the three triangles equal in area are



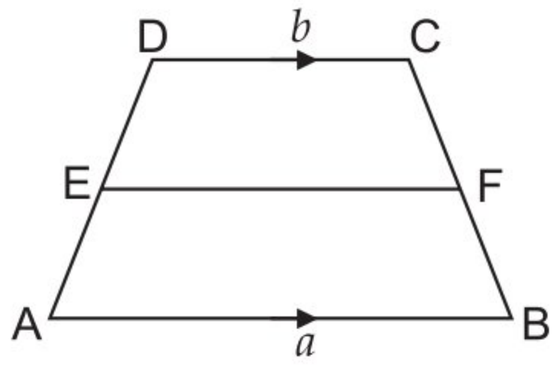
(*a*) ΔPQR, ΔQSR, ΔQST

(*b*) ΔPQR, ΔQSR, ΔQRT

(*c*) ΔQRT, ΔSRT, ΔQSR

(*d*) ΔQSR, ΔTSR, ΔPQR

17. ABCD is a trapezium with parallel sides AB = *a* cm and DC = *b* cm. E and F are the mid-points of the non-parallel sides. The ratio of ar(ABFE) to ar(EFCD) is



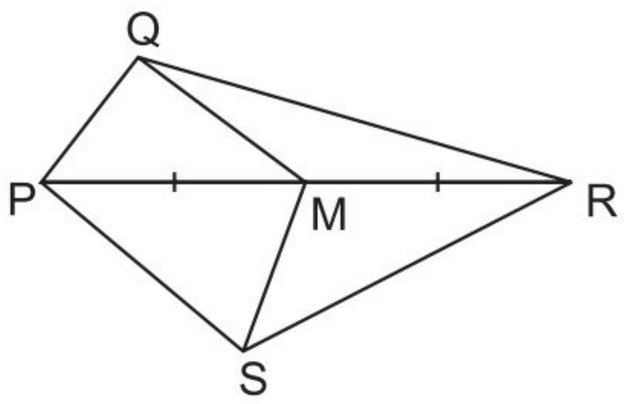
(*a*) *a* : *b*

(*b*) (*a* + 3*b*) : (3*a* + *b*)

(*c*) (3*a* + *b*) : (*a* + 3*b*)

(*d*) (2*a* + *b*) : (3*a* + *b*)

18. In quadrilateral PQRS, M is the mid-point of PR. If ar(quad SMQR) is 18 cm^2, then ar (quad PQMS) is



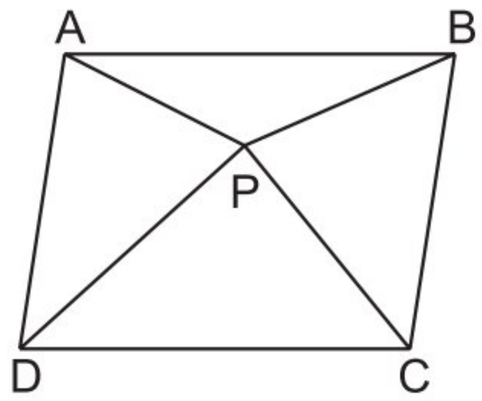
(*a*) 24 cm^2

(*b*) 18 cm^2

(*c*) 12 cm^2

(*d*) 36 cm^2

19. In the given figure, ABCD is a parallelogram and its area is 64 cm^2. If P is any point in the interior of ||gm ABCD, then ar(ΔAPD) + ar(ΔPBC) is equal to



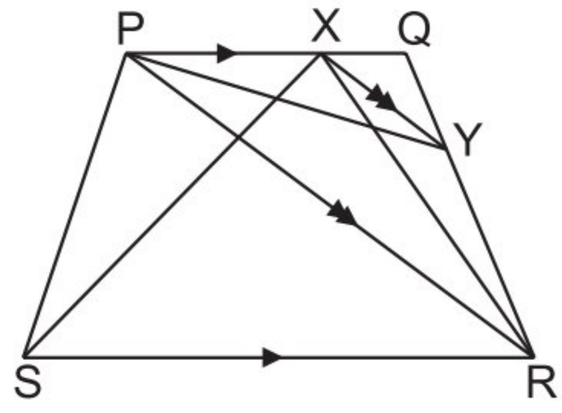
(*a*) 64 cm^2

(*b*) 48 cm^2

(*c*) 32 cm^2

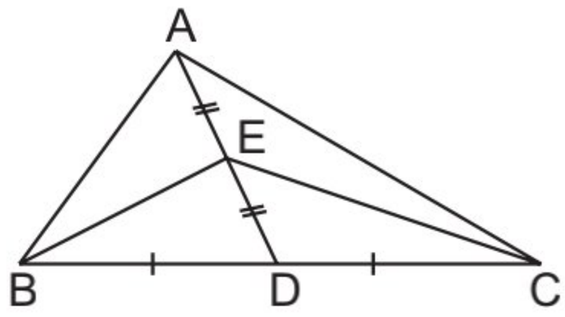
(*d*) 16 cm^2

20. PQRS is a trapezium with PQ ∥ SR. A line parallel to PR intersects PQ at X and QR at Y. If ar(ΔPYR) = 5 cm^2, then ar(ΔPXS) is



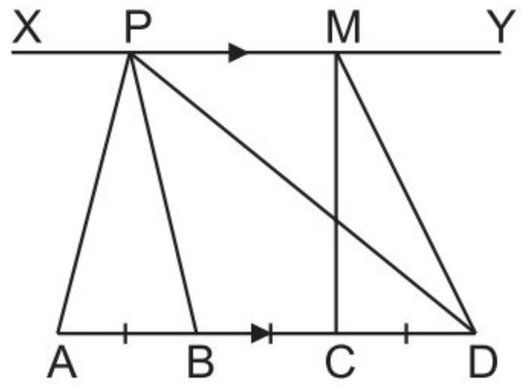
(*a*) 10 cm^2
(*b*) 5 cm^2
(*c*) 2.5 cm^2
(*d*) 7.5 cm^2

21. D and E are mid-points of BC and AD respectively. If ar(ΔABC) = 10 cm^2, then ar (ΔEBC) is



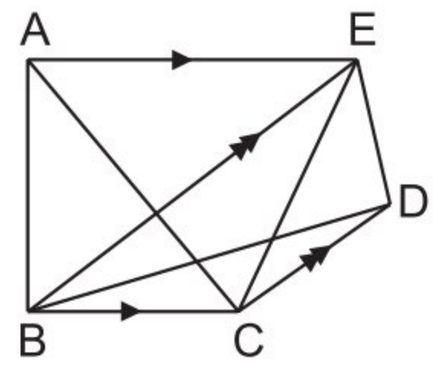
(*a*) 2.5 cm^2 (*b*) 10 cm^2
(*c*) 5 cm^2 (*d*) 7.5 cm^2

22. Points A, B, C and D are collinear. AB = BC = CD. XY ∥ AD. If P and M lie on XY and ar(ΔMCD) = 7 cm^2, then ar(ΔAPB) and ar(ΔAPD) respectively are



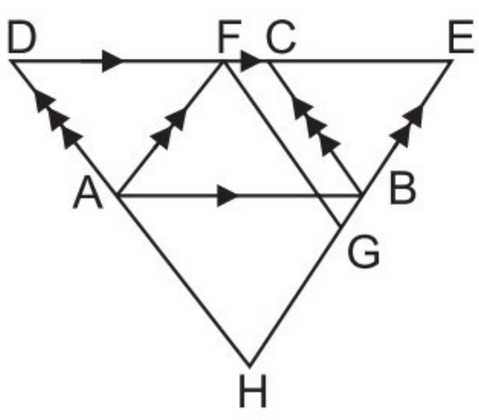
(*a*) 7 cm^2, 21 cm^2 (*b*) 7 cm^2, 14 cm^2
(*c*) 14 cm^2, 21 cm^2 (*d*) 14 cm^2, 14 cm^2

23. In the given figure, if BC ∥ AE, CD ∥ BE, and ar(ΔBED) = 6 cm^2, then ar(ΔABC) is



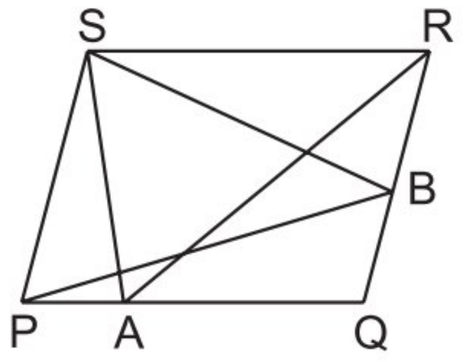
(*a*) 6 cm^2 (*b*) 8 cm^2
(*c*) 10 cm^2 (*d*) 12 cm^2

24. In the given figure, if ar (∥gm ABEF) = ar (∥gm ABCD) = 50 cm^2, AFGH is a parallelogram and points E, B, G and H are collinear points, then ar(∥gm AFGH) is



(*a*) 25 cm^2 (*b*) 50 cm^2
(*c*) 100 cm^2 (*d*) 75 cm^2

25. PQRS is a parallelogram. A and B are any points on PQ and RQ respectively. If ar(ΔSBR) = 16 cm^2 and ar(ΔPBQ) = 8 cm^2, then the area of ΔRAS is

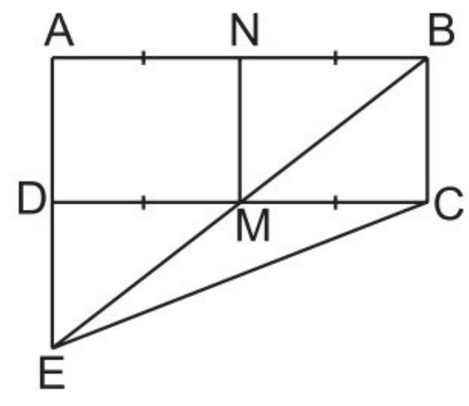


(*a*) 8 cm^2 (*b*) 16 cm^2
(*c*) 24 cm^2 (*d*) 32 cm^2

26. ABCD is a parallelogram. P is any point on CD. If ar(ΔDPA) = 15 cm^2 and ar (ΔAPC) = 20 cm^2, then ar(ΔAPB) is

(*a*) 15 cm^2 (*b*) 20 cm^2 (*c*) 35 cm^2 (*d*) 30 cm^2

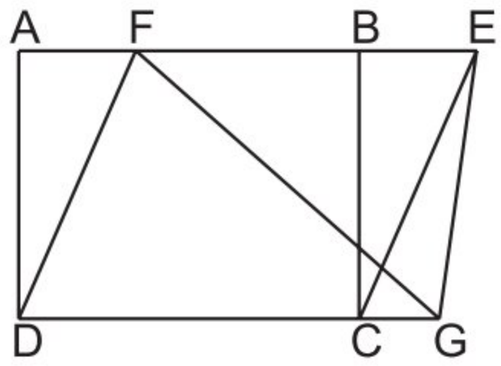
27. M and N are the mid-points of sides DC and AB respectively, of a rectangle ABCD. If ar(rectangle ABCD) = 48 cm^2, then ar(ΔEMC) is



(*a*) 36 cm^2
(*b*) 48 cm^2
(*c*) 24 cm^2
(*d*) 12 cm^2

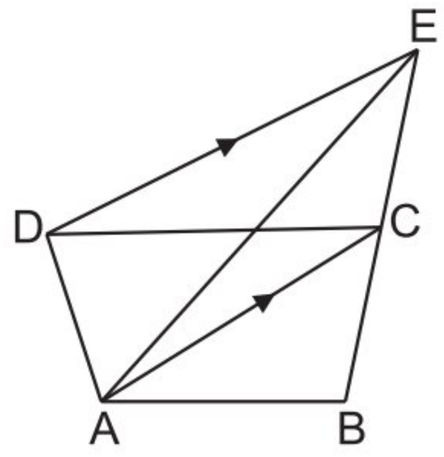
28. ABCD is a rectangle in which AB = 8 units and AD = 3 units. If DCEF is a parallelogram, then the area of ΔEFG in sq units is

(*a*) 16
(*b*) 6
(*c*) 24
(*d*) 12



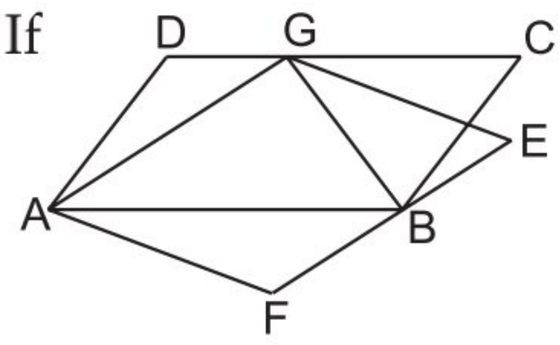
29. ABCD is a quadrilateral. A line through D, parallel to AC meets BC produced at E. If ar(ΔABE) = 36 cm^2, then the ar(quad ABCD) is

(*a*) 18 cm^2
(*b*) 36 cm^2
(*c*) 72 cm^2
(*d*) 9 cm^2



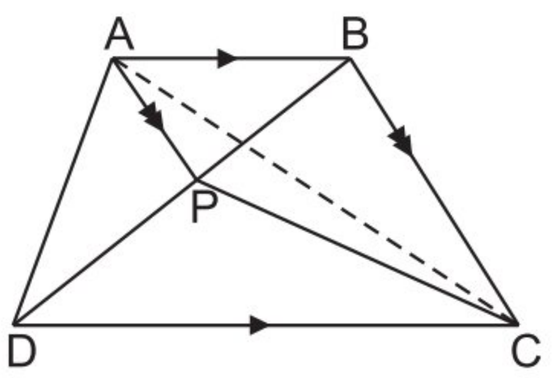
30. In the given figure, ABCD and AGEF are parallelograms. If ar(||gm AGEF) = 27 cm^2, then ar(ΔADG) + ar(ΔGCB) is

(*a*) 13.5 cm^2
(*b*) 27 cm^2
(*c*) 9 cm^2
(*d*) 18 cm^2



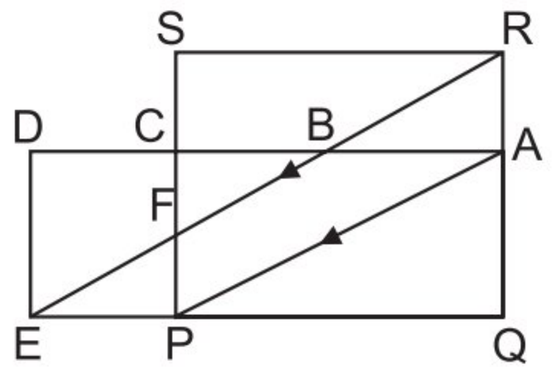
31. ABCD is a trapezium in which AB || DC. A line through A parallel to BC meets diagonal BD at P. If ar(ΔBPC) = 5 cm^2, then ar (ΔABD) is

(*a*) 5 cm^2
(*b*) 2.5 cm^2
(*c*) 7.5 cm^2
(*d*) 10 cm^2



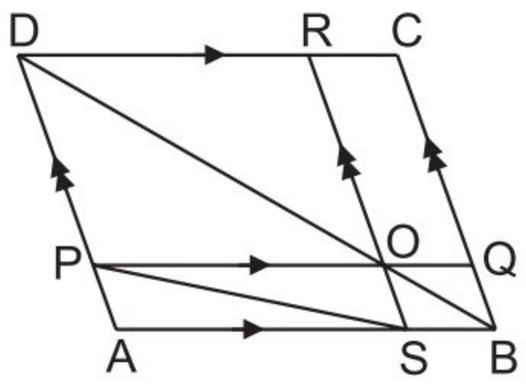
32. PQRS and ADEQ are rectangles. RE || AP. If ar(ACPQ) = 25 cm^2 and ar(ABEP) = 10 cm^2, then ar(PQRS) is

(*a*) 25 cm^2
(*b*) 10 cm^2
(*c*) 35 cm^2
(*d*) 30 cm^2

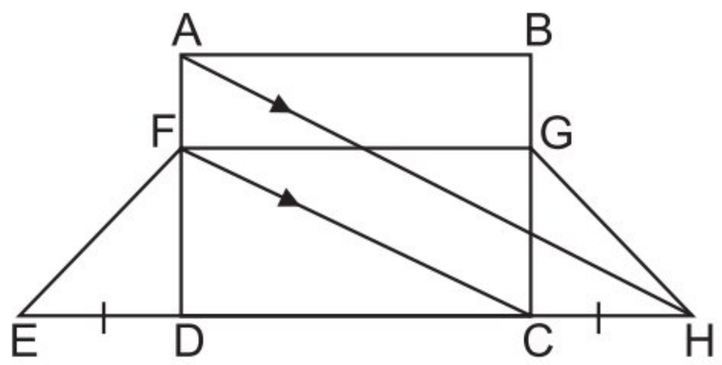


33. ABCD is a parallelogram. O is any point on diagonal BD. If ar(ΔDOP) = 8 cm^2, ar (ΔBOS) = 3 cm^2 and ar(ΔAPS) = 6 cm^2, then ar(||gm ABCD) is

(*a*) 33 cm^2
(*b*) 45 cm^2
(*c*) 46 cm^2
(*d*) 34 cm^2

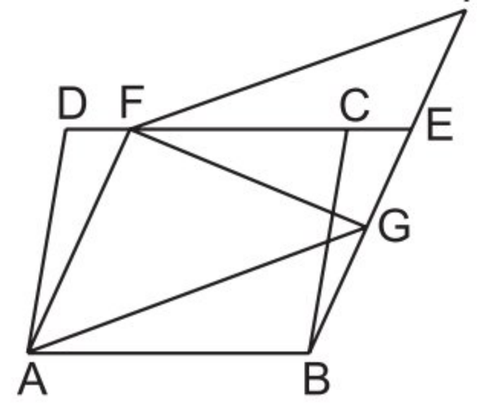


34. In the given figure, ABCD is a rectangle and EFGH is a trapezium DE = CH. If ar(rect ABCD) = 26 cm^2, then ar(trap EFGH) is



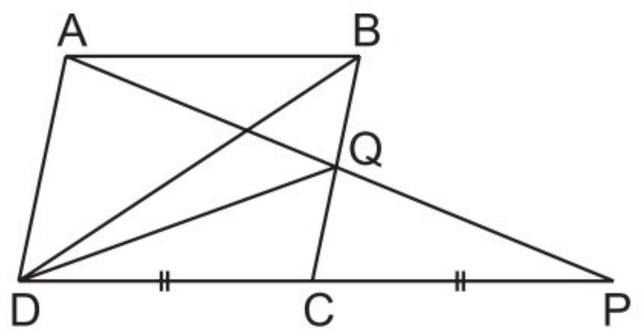
(*a*) 52 cm^2
(*b*) 26 cm^2
(*c*) 39 cm^2
(*d*) 34 cm^2

35. ABCD, ABEF and AGHF are parallelograms. If ar(||gm ABCD) = 23 cm^2, then ar(ΔFGH) is



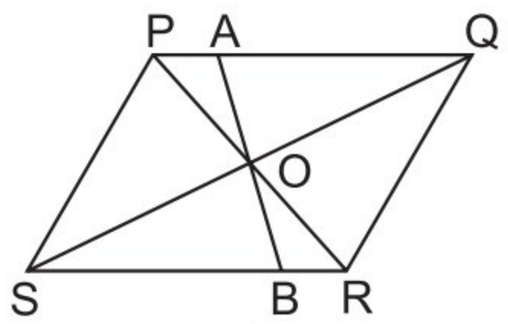
(*a*) 12 cm^2
(*b*) 12.5 cm^2
(*c*) 11.5 cm^2
(*d*) 23 cm^2

36. ABCD is a parallelogram in which DC is produced to P such that DC = CP. AP intersects BC at Q. If ar(ΔBQD) = 3 cm^2, then ar(||gm ABCD) is



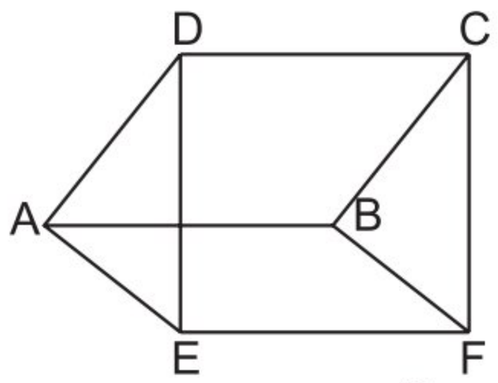
(*a*) 9 cm^2 (*b*) 12 cm^2
(*c*) 15 cm^2 (*d*) 6 cm^2

37. PQRS is a parallelogram whose diagonals PR and SQ intersect at O. A line segment through O meets PQ at A and SR at B. If ar(||gm PQRS) = 25 cm^2, then ar (quad SBAP) is



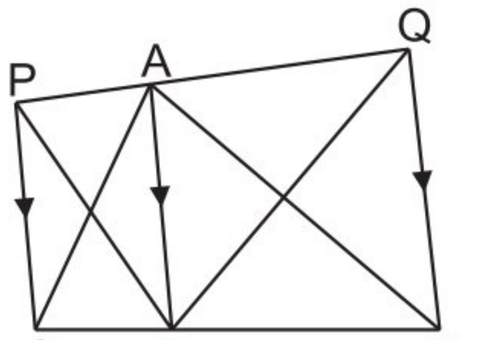
(*a*) 12 cm^2 (*b*) 50 cm^2 (*c*) 25 cm^2 (*d*) 12.5 cm^2

38. ABCD and ABFE are parallelograms as shown in the figure. If ar(||gm ABCD) = 24 cm^2 and ar (||gm ABFE) = 18 cm^2, then ar(quad EFCD) is



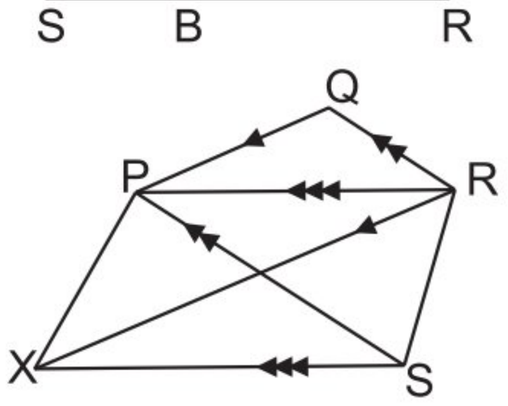
(*a*) 33 cm^2 (*b*) 42 cm^2
(*c*) 30 cm^2 (*d*) 36 cm^2

39. PQRS is a trapezium. A is any point on PQ and AB || QR. If ar(ΔPBQ) = 17 cm^2, then ar(ΔASR) is



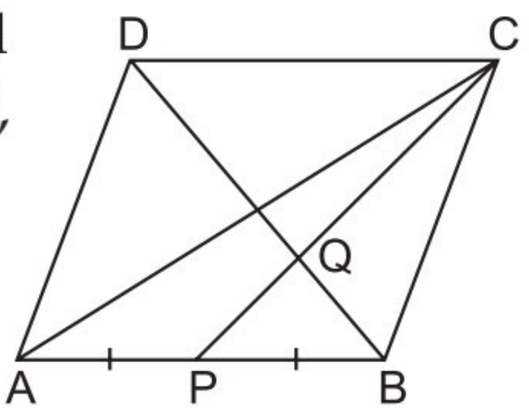
(*a*) 17 cm^2 (*b*) 8.5 cm^2
(*c*) 10 cm^2 (*d*) 18.5 cm^2

40. PQRS is a trapezium. A line drawn parallel to QP through R meets a line parallel to RP drawn through S at X. If ar(trap PQRS) is 22 cm^2 and ar (ΔPQR) = 8 cm^2, then ar(ΔPXR) is



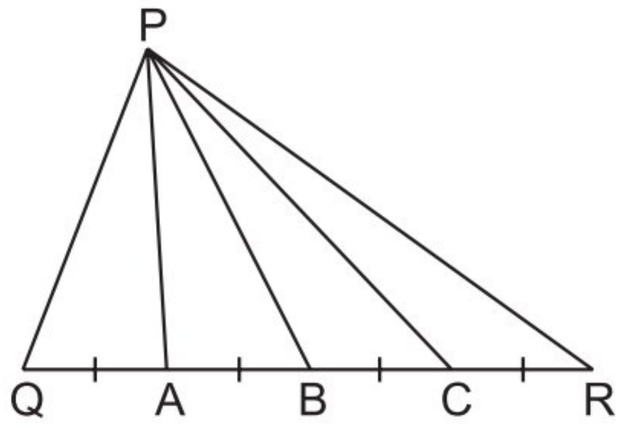
(*a*) 15 cm^2 (*b*) 30 cm^2
(*c*) 14 cm^2 (*d*) 8 cm^2

41. ABCD is a parallelogram. P is the mid-point of AB. BD and CP intersect at Q. CQ : QP = 3 : 1. If ar(ΔBQC) = 10 cm^2, then ar(||gm ABCD) is



(*a*) 130 cm^2 (*b*) 160 cm^2
(*c*) 120 cm^2 (*d*) 90 cm^2

42. In the given figure, QA = AB = BC = CR. If ar(ΔPQR) = 24 cm^2, then ar(ΔPAR) is



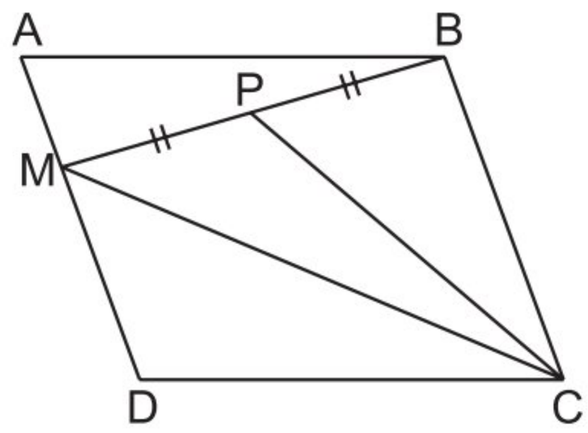
(*a*) 18 cm^2

(*b*) 12 cm^2

(*c*) 20 cm^2

(*d*) 16 cm^2

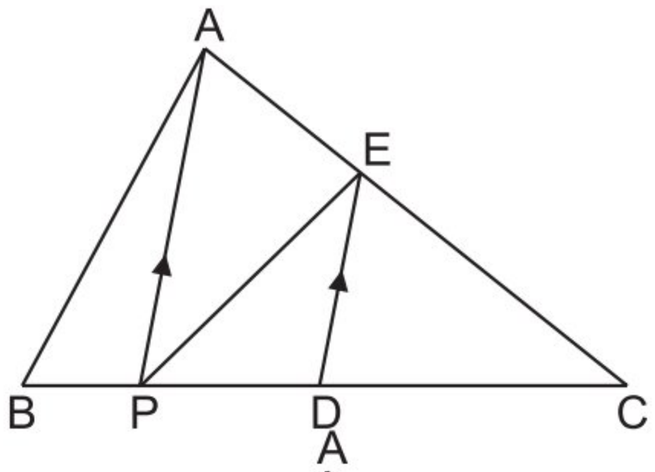
43. ABCD is a parallelogram. M is any point on AD. P is the mid-point of BM. If the area of parallelogram ABCD = 28 cm^2, then the area of ΔMPC is



(*a*) 14 cm^2 (*b*) 12 cm^2

(*c*) 7 cm^2 (*d*) 16 cm^2

44. P is any point on the base BC of ΔABC. D is the mid-point of BC. DE is drawn parallel to PA. If ar (ΔABC) = 12 cm^2, then ar(ΔEPC) is

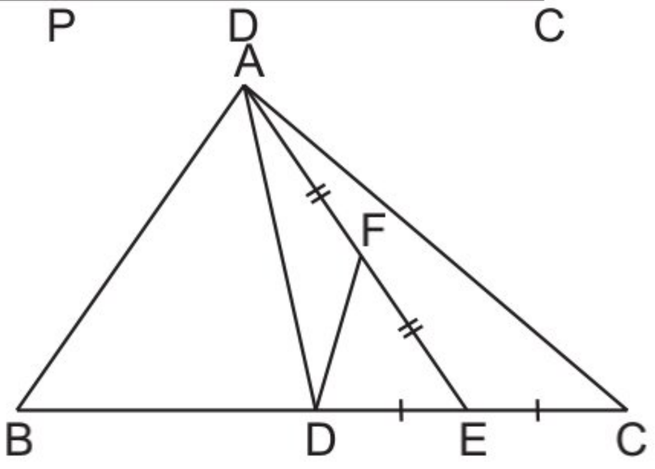


(*a*) 4 cm^2 (*b*) 8 cm^2

(*c*) 9 cm^2 (*d*) 6 cm^2

[**Hint:** Join AD]

45. ABC is a triangle in which D is the mid-point of BC. E and F are mid-points of DC and AE respectively. If ar (ΔABC) = 16 cm^2, then ar(ΔDEF) is



(*a*) 2 cm^2 (*b*) 1 cm^2

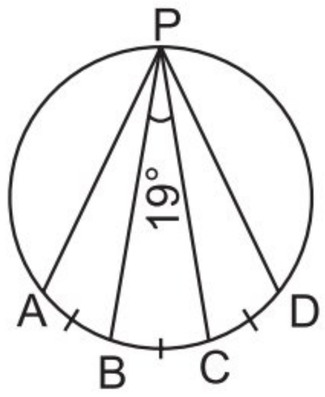
(*c*) 4 cm^2 (*d*) 8 cm^2

Chapter 10: **Circles**

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

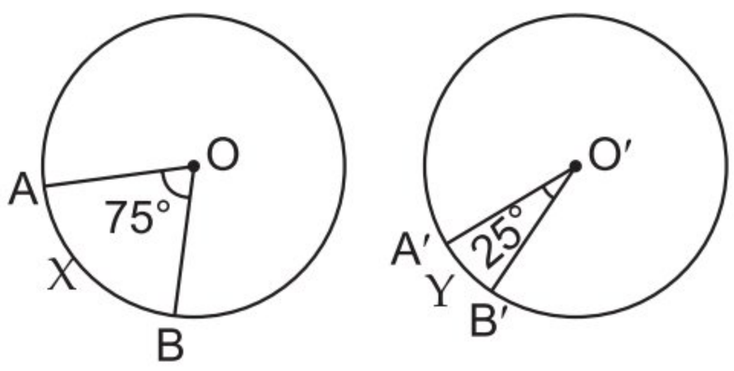
1. In the given figure, $\angle BPC = 19°$, arc AB = arc BC = arc CD. Then, the measure of $\angle APD$ is



(*a*) 38° (*b*) 59°

(*c*) 57° (*d*) 76°

2. The given figures show two congruent circles with centre O and O′. Arc AXB subtends an angle of 75° at the centre and arc A′YB′ subtends an angle of 25° at the centre O′. Then, the ratio of arcs AXB to A′YB′ is



(*a*) 3 : 1 (*b*) 1 : 3

(*c*) 2 : 1 (*d*) 1 : 2

3. Greatest chord of a circle is called its

(*a*) radius (*b*) diameter

(*c*) chord (*d*) secant

4. Angle formed in minor segment of a circle is

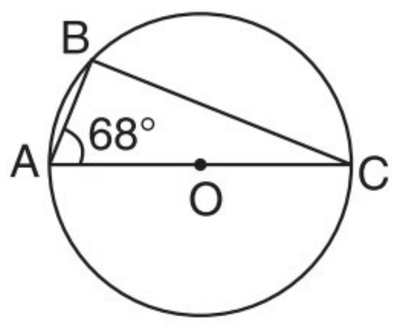
(*a*) an acute angle (*b*) an obtuse angle

(*c*) a right angle (*d*) a straight angle

5. Number of circles that can be drawn through three non-collinear points is

(*a*) 1 (*b*) 0 (*c*) 2 (*d*) 3

6. In the given figure, O is the centre of the circle. $\angle BAO = 68°$. AC is a diameter of the circle. The measure of $\angle BCO$ is



(*a*) 22°

(*b*) 33°

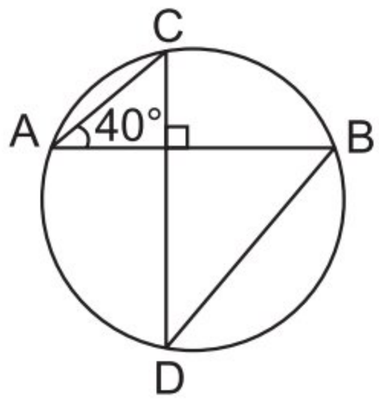
(*c*) 44°

(*d*) 68° **[CBSE SP 2012]**

7. AB is a chord of a circle with radius '*r*'. If P is any point on the circle such that $\angle APB$ is a right angle, then AB is equal to

(*a*) r (*b*) $2r$ (*c*) $3r$ (*d*) r^2

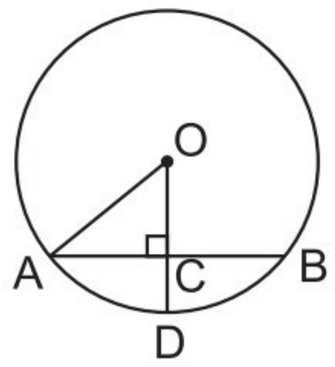
8. Chords AB and CD intersect at right angles. If $\angle BAC = 40°$, then $\angle ABD$ is equal to



(*a*) 45° (*b*) 60°

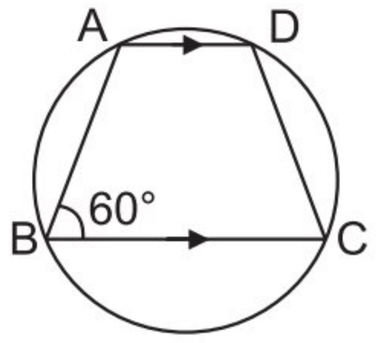
(*c*) 50° (*d*) 40°

9. In the given figure, if OA = 5 cm, AB = 8 cm and OD is perpendicular to AB, then CD is equal to



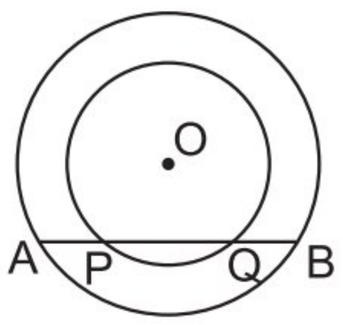
(*a*) 2 cm
(*b*) 3 cm
(*c*) 4 cm
(*d*) 5 cm

10. If ABCD is a cyclic trapezium in which AD ∥ BC and ∠B = 60°, then ∠BCD is equal to



(*a*) 120° (*b*) 100°
(*c*) 80° (*d*) 60°

11. If a straight line APQB is drawn to cut two concentric circles, then

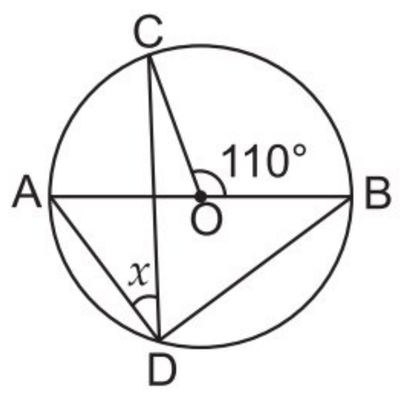


(*a*) AP > BQ (*b*) AP = BQ
(*c*) AP < BQ (*d*) AQ > PB

12. If AB = 12 cm, BC = 16 cm and AB is perpendicular to BC, then the radius of the circle passing through the points A, B and C is

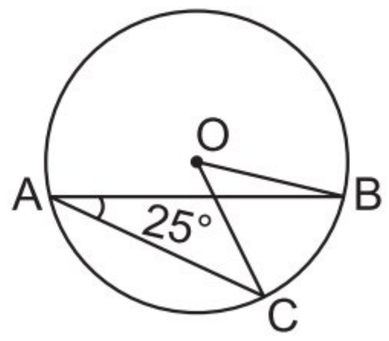
(*a*) 8 cm (*b*) 6 cm
(*c*) 12 cm (*d*) 10 cm

13. The value of x in the given figure is



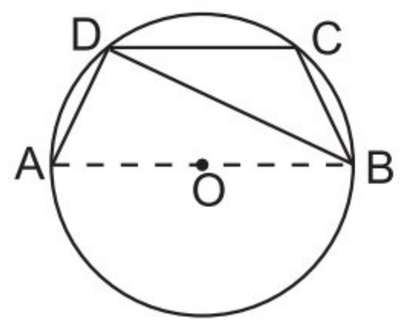
(*a*) 35°
(*b*) 45°
(*c*) 25°
(*d*) 30°

14. In the given figure, if ∠BAC = 25°, then ∠BOC is equal to



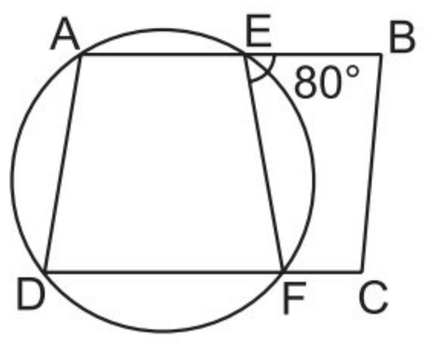
(*a*) 25°
(*b*) 50°
(*c*) 60°
(*d*) 125°

15. In the given figure, if ∠ADC = 118°, then the measure of ∠BDC is



(*a*) 22°
(*b*) 28°
(*c*) 32°
(*d*) 38°

16. ABCD is a parallelogram. A circle passes through A and D and cuts AB at E and DC at F. If ∠BEF = 80°, then ∠ABC is equal to



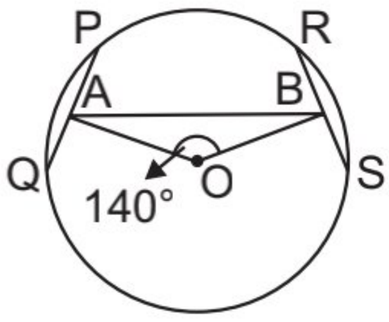
(*a*) 75°
(*b*) 120°
(*c*) 100°
(*d*) 80°

17. If a chord of a circle is equal to its radius, then the angle subtended by this chord in major segment is

(*a*) 90° (*b*) 60°

(*c*) 45° (*d*) 30°

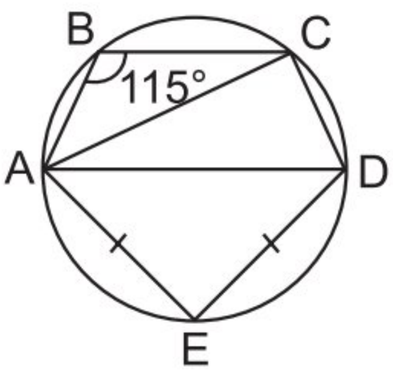
18. In the given figure, PQ and RS are two equal chords of a circle with centre O. OA and OB are perpendiculars on chords PQ and RS, respectively. If ∠AOB = 140°, then ∠PAB is equal to



(*a*) 50° (*b*) 70°

(*c*) 60° (*d*) 40°

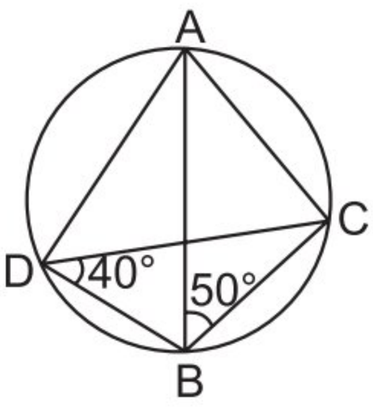
19. In the given figure, AD is the diameter of the circle and AE = DE. If ∠ABC = 115°, then the measure of ∠CAE is



(*a*) 60° (*b*) 80°

(*c*) 70° (*d*) 90°

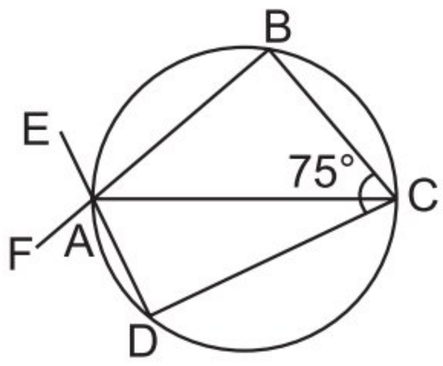
20. In the given figure, if ∠ABC = 50° and ∠BDC = 40°, then ∠BCA is equal to



(*a*) 100° (*b*) 40°

(*c*) 90° (*d*) 50°

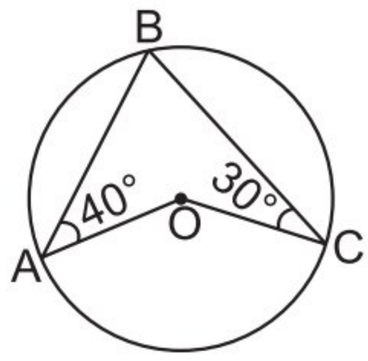
21. In the given figure, AC is a diameter of the given circle and ∠BCD = 75°. Then, ∠EAF – ∠ABC is equal to



(*a*) 10° (*b*) 15°

(*c*) 20° (*d*) 25°

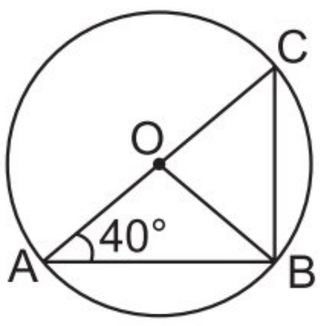
22. In the given figure, O is the centre of the circle. ∠OAB and ∠OCB are 40° and 30° respectively. Then, the measure of ∠AOC is



(*a*) 120° (*b*) 140°

(*c*) 170° (*d*) 110° **[CBSE SP 2010]**

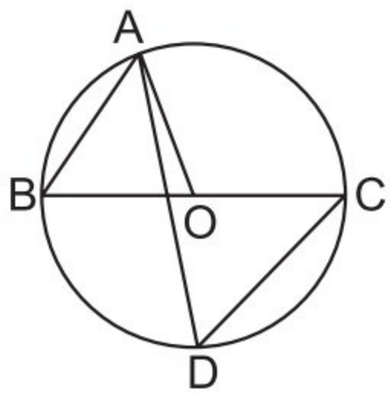
23. If ∠OAB = 40°, then the measure of ∠ACB is



(*a*) 40° (*b*) 80°

(*c*) 50° (*d*) 20°

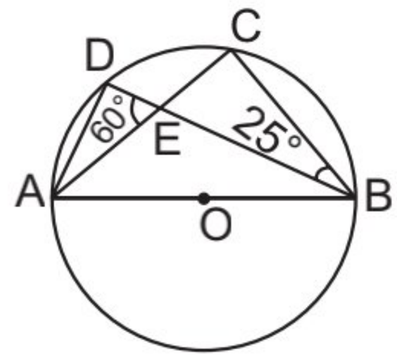
24. BC is a diameter of the circle and ∠BAO = 60°. Then ∠ADC is equal to



(*a*) 60° (*b*) 45°

(*c*) 30° (*d*) 90°

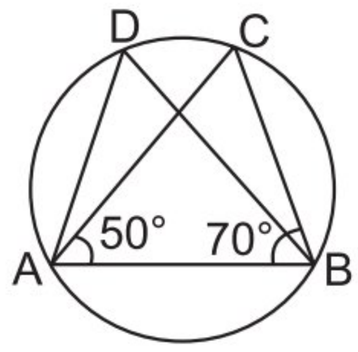
25. In the given figure, O is the centre of the circle and $\angle CBE = 25°$ and $\angle DEA = 60°$. The measure of $\angle ADB$ is



(*a*) 90° (*b*) 85°

(*c*) 95° (*d*) 120° **[CBSE SP 2010]**

26. In the given figure, if $\angle CAB = 50°$ and $\angle CBA = 70°$, then $\angle ADB$ is equal to



(*a*) 80° (*b*) 60°

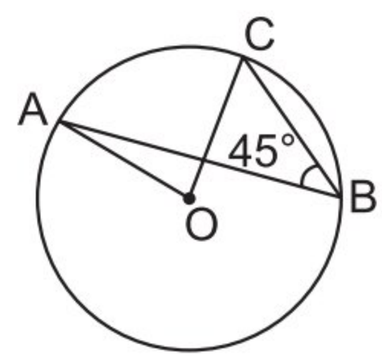
(*c*) 50° (*d*) 70°

27. ABCD is a cyclic quadrilateral such that AB is a diameter of the circle circumscribing it and $\angle ADC = 140°$, then $\angle BAC$ is equal to

(*a*) 30° (*b*) 50°

(*c*) 40° (*d*) 60°

28. In the given figure, $\angle ABC = 45°$, then the measure of $\angle AOC$ is



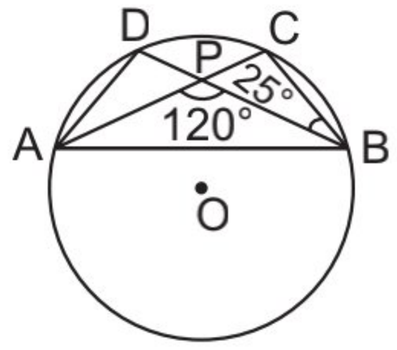
(*a*) 45°

(*b*) 90°

(*c*) 60°

(*d*) 75°

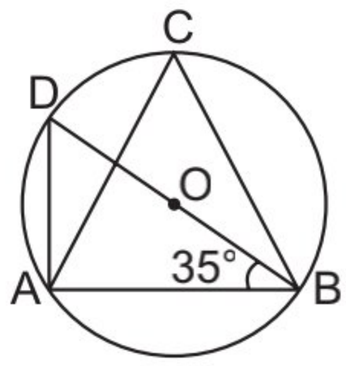
29. O is the centre of the given circle. If $\angle APB = 120°$ and $\angle DBC = 25°$, then the measure of $\angle ADB$ is equal to



(*a*) 120° (*b*) 60°

(*c*) 100° (*d*) 95°

30. In the given figure, O is the centre of the circle. If $\angle DBA = 35°$, then the measure of $\angle ACB$ is equal to



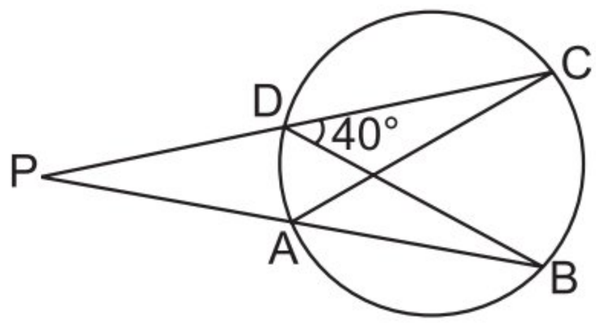
(*a*) 35°

(*b*) 45°

(*c*) 55°

(*d*) 65°

31. In the given figure, if $\angle CDB = 40°$, then the measure of $\angle PAC$ is



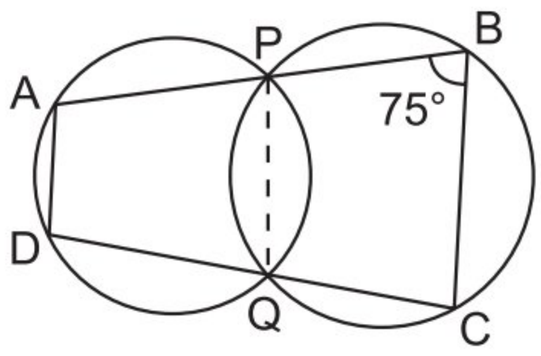
(*a*) 160°

(*b*) 120°

(*c*) 100°

(*d*) 140°

32. The given figure shows two intersecting circles. If $\angle ABC = 75°$, then the measure of $\angle PAD$ is



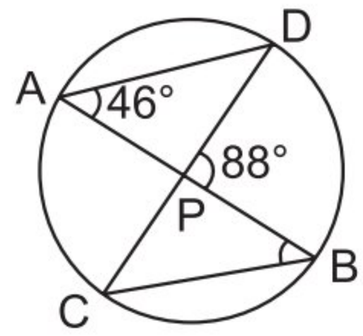
(*a*) 125°

(*b*) 150°

(*c*) 75°

(*d*) 105°

33. In the given figure, chords AB and CD intersect at P. If $\angle DPB = 88°$ and $\angle DAP = 46°$, then the measure of $\angle ABC$ is



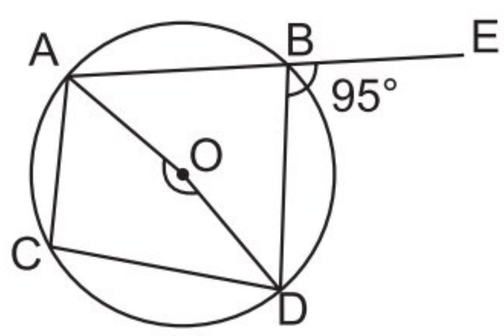
(*a*) 48°

(*b*) 42°

(*c*) 46°

(*d*) 44°

34. In the given figure, O is the centre of the circle. ABE is a straight line. If $\angle DBE = 95°$, then $\angle AOD$ is equal to



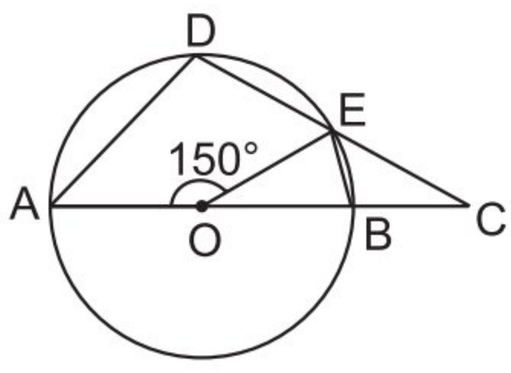
(*a*) 170°

(*b*) 190°

(*c*) 180°

(*d*) 175°

35. AOB is the diameter of the circle. If $\angle AOE = 150°$, then the measure of $\angle CBE$ is



(*a*) 105° (*b*) 120°

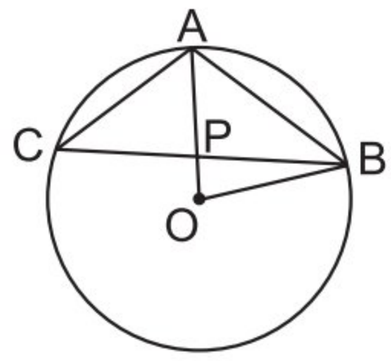
(*c*) 125° (*d*) 115°

36. The region between a chord and either of the arc is called

(*a*) a segment (*b*) a semicircle

(*c*) a quarter circle (*d*) a sector

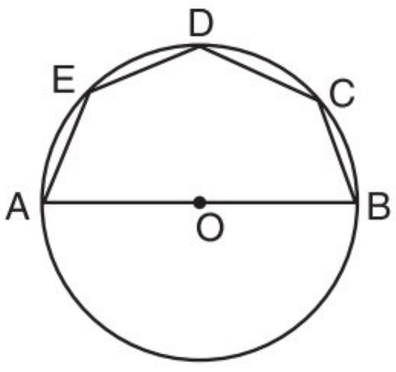
37. In the given figure, AB is a side of a regular five sided polygon and AC is a side of a regular six sided polygon inscribed in the circle with centre O. AO and CB intersect at P, then $\angle APB$ is equal to



(*a*) 100° (*b*) 72°

(*c*) 96° (*d*) 90°

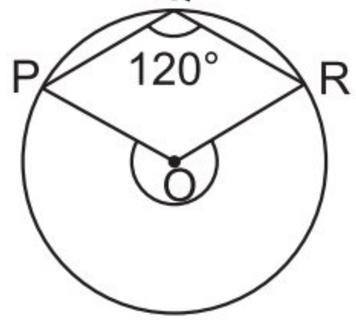
38. AOB is a diameter of the circle and C, D, E are any three points on the semicircle. Then, $\angle AED + \angle BCD$ is equal to



(*a*) 25° (*b*) 260°

(*c*) 270° (*d*) 280°

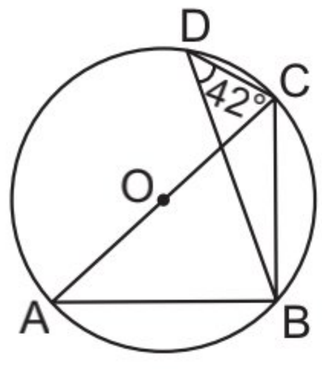
39. What fraction of the whole circle is minor arc RP in the given figure?



(*a*) $\frac{1}{2}$ of the circle (*b*) $\frac{1}{4}$ of the circle

(*c*) $\frac{1}{3}$ of the circle (*d*) $\frac{1}{5}$ of the circle

40. In the given circle, O is the centre and $\angle BDC = 42°$. Then, $\angle ACB$ is equal to



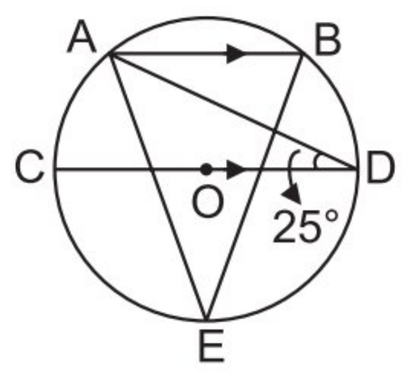
(*a*) 42° (*b*) 48°

(*c*) 58° (*d*) 52°

41. In the given figure, AB ∥ CD and O is the centre of the circle. If ∠ADC = 25°, then the measure of ∠AEB is

(*a*) 80° (*b*) 50°

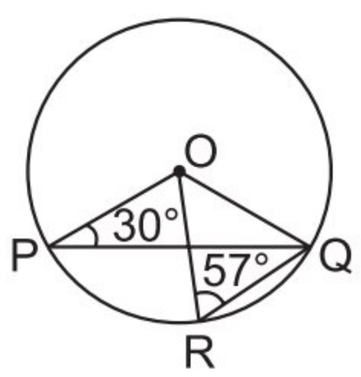
(*c*) 25° (*d*) 40°



42. In the given figure, ∠OPQ = 30° and ∠ORQ = 57°. Then, the measure of ∠POR is

(*a*) 33° (*b*) 57°

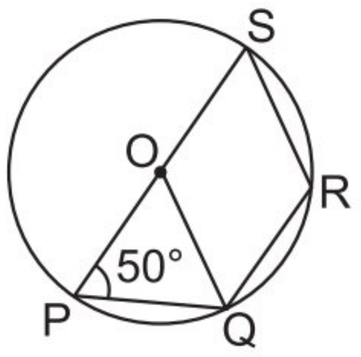
(*c*) 66° (*d*) 54°



43. In the given figure, O is the centre of the circle and ∠SPQ = 50°. Then, the measure of ∠SRQ is

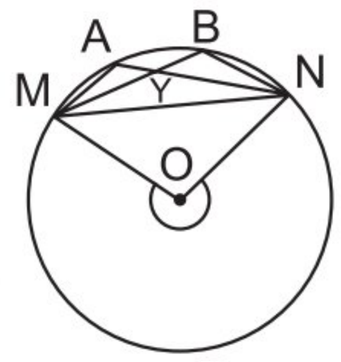
(*a*) 100° (*b*) 130°

(*c*) 120° (*d*) 110°



44. In the given figure, M, A, B and N are points on a circle having centre O. AN and MB cut at Y. If ∠NYB = 50° and ∠YNB = 20°, then reflex ∠MON is equal to

(*a*) 200° (*b*) 220° (*c*) 240° (*d*) 260°



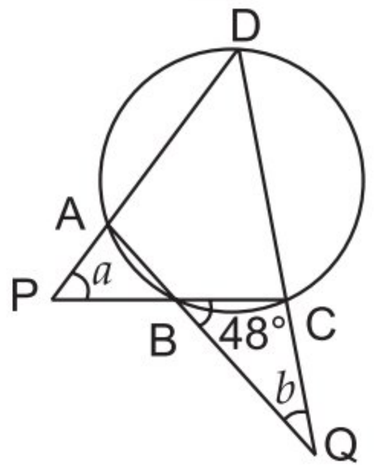
45. In the given figure, ABCD is a cyclic quadrilateral, ∠CBQ = 48° and $a = 2b$. Then, b is equal to

(*a*) 48°

(*b*) 38°

(*c*) 28°

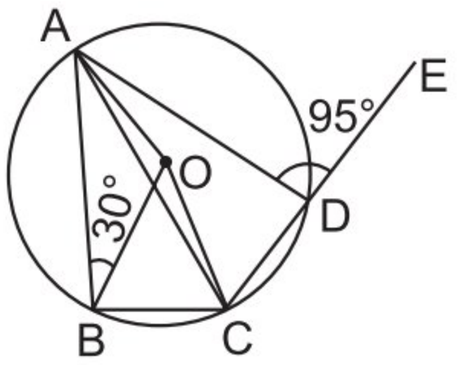
(*d*) 18°



46. In the given figure, ABCD is a quadrilateral inscribed in a circle with centre O. CD is produced to E. If ∠ADE = 95° and ∠OBA = 30°, then ∠OAC is equal to

(*a*) 10° (*b*) 5°

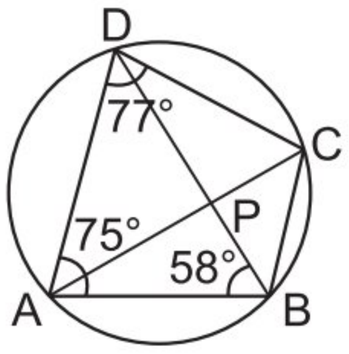
(*c*) 15° (*d*) 20°



47. In the given figure, ABCD is a cyclic quadrilateral in which ∠BAD = 75°, ∠ABD = 58° and ∠ADC = 77°, AC and BD intersect at P. Then, the measure of ∠DPC is

(*a*) 94° (*b*) 90°

(*c*) 92° (*d*) 105°

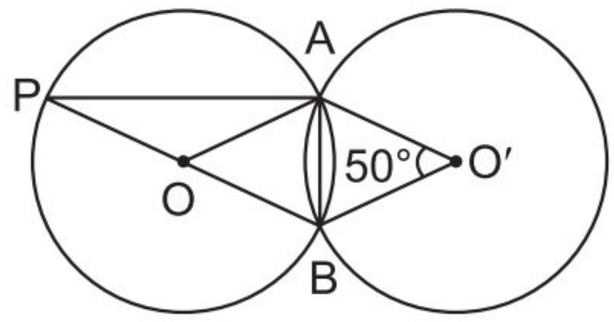


48. AD is a diameter of a circle and AB is a chord. If AD = 50 cm, AB = 48 cm, then the distance of AB from the centre of the circle is

(*a*) 5 cm (*b*) 6 cm

(*c*) 7 cm (*d*) 8 cm

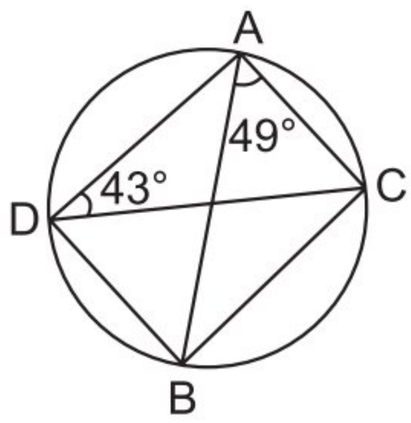
49. The given figure shows two congruent circles with centre O and O′ intersecting at A and B. If $\angle AO'B = 50°$, then the measure of $\angle APB$ is



(*a*) 50° (*b*) 40°

(*c*) 25° (*d*) 45°

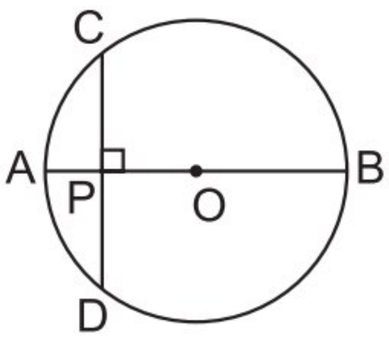
50. In the given figure, if $\angle CAB = 49°$ and $\angle ADC = 43°$, then the measure of $\angle ACB$ is



(*a*) 96° (*b*) 74°

(*c*) 92° (*d*) 88°

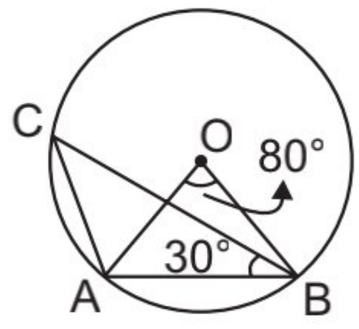
51. P is a point on the diameter AB of a circle and CD is a chord perpendicular to AB. If AP = 4 cm and PB = 16 cm then the length of chord CD is



(*a*) 20 cm (*b*) 10 cm

(*c*) 8 cm (*d*) 16 cm

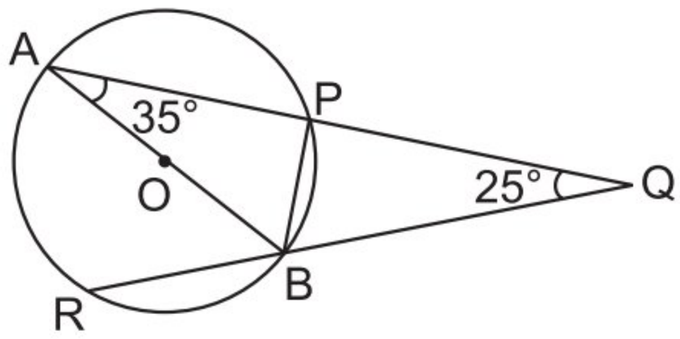
52. In the given figure, if $\angle AOB = 80°$ and $\angle ABC = 30°$, then $\angle CAO$ is equal to



(*a*) 30° (*b*) 80°

(*c*) 60° (*d*) 40°

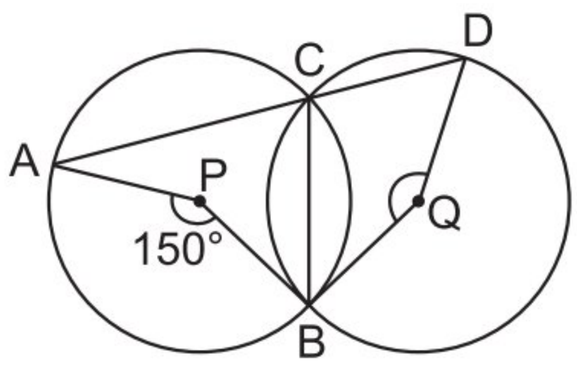
53. In the given figure, AB is a diameter of the circle APBR. APQ and RBQ are straight lines. If $\angle A = 35°$ and $\angle Q = 25°$, then the measure of $\angle PBR$ is



(*a*) 135° (*b*) 115°

(*c*) 155° (*d*) 165°

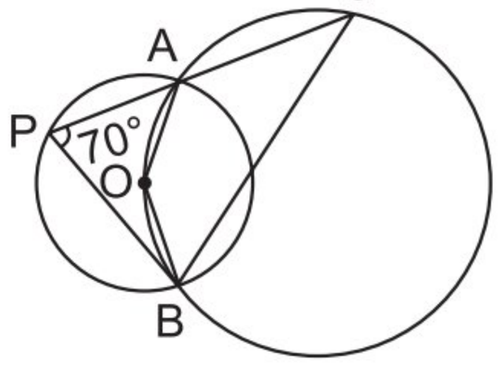
54. In the given figure, P and Q are centres of two circles intersecting at B and C. ACD is a straight line. Then, the measure of $\angle BQD$ is



(*a*) 115° (*b*) 150° (*c*) 105° (*d*) 130°

55. The figure shows two circles which intersect at A and B. The centre of the smaller circle is O and it lies on the circumference of the larger circle. If $\angle APB = 70°$, then the measure of $\angle ACB$ is

C



(*a*) 50° (*b*) 60°

(*c*) 70° (*d*) 40°

Chapter 11: **Constructions**

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. With the help of a ruler and compass, it is possible to construct an angle of

(*a*) 40° (*b*) 65°

(*c*) 37.5° (*d*) 50°

2. With the help of a ruler and compass, it is not possible to construct an angle of

(*a*) 7.5° (*b*) 82.5°

(*c*) 35° (*d*) 67.5°

3. The construction of ΔABC in which AB = 5 cm, $\angle A = 75°$ is not possible when difference of BC and AC is equal to

(*a*) 4.5 cm (*b*) 5.5 cm

(*c*) 4 cm (*d*) 3.5 cm

4. The construction of ΔABC, given that BC = 5 cm, $\angle B = 60°$ is not possible when the difference of AB and AC is equal to

(*a*) 3 cm (*b*) 4 cm

(*c*) 4.2 cm (*d*) 5.9 cm

5. The construction of a triangle ABC, given that BC = 3 cm, $\angle C = 60°$ is possible when the difference of AB and AC is equal to

(*a*) 3.1 cm (*b*) 3 cm

(*c*) 2.8 cm (*d*) 3.2 cm

Chapter 12: Heron's Formula

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. The area of a triangle with base 8 cm and height 10 cm is

(*a*) 80 cm^2 (*b*) 40 cm^2 (*c*) 20 cm^2 (*d*) 18 cm^2

2. The sides of a triangle are 12 cm, 16 cm and 20 cm. Its area is

(*a*) 48 cm^2 (*b*) 120 cm^2 (*c*) 96 cm^2 (*d*) 160 cm^2

[CBSE SP 2012]

3. The area of a triangle whose sides are 3 cm, 4 cm and 5 cm is

(*a*) 42 cm^2 (*b*) 6 cm^2 (*c*) 84 cm^2 (*d*) 100 cm^2

[CBSE SP 2012]

4. If the perimeter of an equilateral triangle is 24 m, then its area is

(*a*) $20\sqrt{3}$ m^2 (*b*) $16\sqrt{3}$ m^2 (*c*) $8\sqrt{3}$ m^2 (*d*) $24\sqrt{3}$ m^2

5. If the area of an equilateral triangle is $16\sqrt{3}$ cm^2, then the perimeter of the triangle is

(*a*) 12 cm (*b*) 24 cm (*c*) 48 cm (*d*) 36 cm

[CBSE SP 2013]

6. The edges of a triangular board are 6 cm, 8 cm and 10 cm. The cost of painting it at the rate of 70 paise per cm^2 is

(*a*) ₹ 7 (*b*) ₹ 16.80 (*c*) ₹ 17 (*d*) ₹ 16

7. The perimeter of a rhombus is 20 cm. If one of its diagonals is 6 cm, then its area is

(*a*) 28 cm^2 (*b*) 36 cm^2 (*c*) 24 cm^2 (*d*) 20 cm^2

8. An isosceles right triangle has area 8 cm^2. The length of the hypotenuse is

(*a*) 6 cm (*b*) $\sqrt{32}$ cm (*c*) 8 cm (*d*) 4 cm

9. The area of an isosceles triangle having base 24 cm and length of one of the equal sides 20 cm is

(*a*) 480 cm^2 (*b*) 196 cm^2 (*c*) 240 cm^2 (*d*) 192 cm^2

10. The perimeter of an isosceles triangle is 32 cm. The ratio of the equal side to its base is 3 : 2. Then area of the triangle is

(*a*) $32\sqrt{2}$ cm^2 (*b*) 32 cm^2 (*c*) $16\sqrt{2}$ cm^2 (*d*) 16 cm^2

11. If the perimeter and base of an isosceles triangle are 11 cm and 5 cm respectively, then its area is

(*a*) $5\sqrt{11}$ cm^2 (*b*) $\frac{5}{2}\sqrt{11}$ cm^2 (*c*) $\frac{5}{8}\sqrt{11}$ cm^2 (*d*) $\frac{5}{4}\sqrt{11}$ cm^2

12. If the difference between the semi-perimeter '*s*' and the sides '*a*', '*b*' and '*c*' of ΔABC are 8 cm, 7 cm and 6 cm respectively, then ar(ΔABC) is

(*a*) 63 cm^2 (*b*) 42 cm^2 (*c*) 84 cm^2 (*d*) 168 cm^2

13. The sides of a triangle are 13 cm, 14 cm and 15 cm. The length of the shortest altitude is

(*a*) 12 cm (*b*) 11.2 cm (*c*) 12.9 cm (*d*) 11.9 cm

14. The sides of a triangle are 17 cm, 25 cm and 26 cm. The length of the altitude to the longest side correct up to two places of decimals is

(*a*) 16.32 cm (*b*) 34.00 cm

(*c*) 15.69 cm (*d*) 24.00 cm

15. If the perimeter of a rhombus whose diagonals measure 12 cm and 16 cm is equal to the perimeter of an isosceles triangle having its equal side and the base in the ratio 3 : 2, then the area of the isosceles triangle is

(*a*) $50\sqrt{2}$ cm^2 (*b*) $25\sqrt{2}$ cm^2 (*c*) $75\sqrt{2}$ cm^2 (*d*) $100\sqrt{2}$ cm^2

Chapter 13: **Surface Areas and Volumes**

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. The total surface area of a cube is 96 cm^2. The volume of the cube is

(*a*) 27 cm^3 (*b*) 64 cm^3 (*c*) 8 cm^3 (*d*) 512 cm^3

2. The number of cubes whose edge measures 3 cm, that can be formed by melting a cubic block of metal of edge 15 cm is

(*a*) 125 (*b*) 45 (*c*) 75 (*d*) 135

3. The difference between the total surface area of a cube of side 4 cm and its lateral surface area is

(*a*) 16 cm^2 (*b*) 20 cm^2 (*c*) 32 cm^2 (*d*) 24 cm^2

4. The volume of a cube whose diagonal is $2\sqrt{3}$ cm is

(*a*) 8 cm^3 (*b*) 4 cm^3

(*c*) $8\sqrt{3}$ cm^3 (*d*) $4\sqrt{3}$ cm^3

5. The number of planks of dimensions (5 m × 25 cm × 10 cm) that can be placed in a pit which is 20 m long, 6 m wide and 80 cm deep is

(*a*) 764 (*b*) 840 (*c*) 768 (*d*) 960

6. The number of 6 m cubes that can be formed from another cuboid measuring 18 m × 12 m × 9 m is

(*a*) 9 (*b*) 10 (*c*) 12 (*d*) 15

7. The length of the longest rod that can be placed in a room 12 m long, 9 m broad and 8 m high is

(*a*) 15 m (*b*) 20 m (*c*) 18 m (*d*) 17 m

8. The edge of a cube whose volume is equal to the volume of a cuboid of dimensions 36 cm × 75 cm × 80 cm is

(*a*) 48 cm (*b*) 60 cm (*c*) 36 cm (*d*) 42 cm

9. A rectangular pit of dimensions 30 m × 15 m × 12 m is dug and the earth taken out is disposed of in a carrier which can carry a maximum load of 540 m^3 of earth. The least number of rounds the carrier had to make to dispose of the earth dug out is

(*a*) 20 (*b*) 10 (*c*) 15 (*d*) 12

10. A granary is in the shape of a cuboid of size 16 m × 12 m × 9 m. If a bag of grain occupies a space of 0.48 m^3, then the maximum number of bags that can be stored in the granary is

(*a*) 1800 (*b*) 3600 (*c*) 2400 (*d*) 3000

11. When a cuboid of dimensions 30 cm × 30 cm × 42.6 cm is melted and converted into cubes of edge 3 cm, then the number of cubes formed is

(*a*) 2840 (*b*) 2130 (*c*) 1420 (*d*) 710

12. The volume of a right circular cylinder is 2310 cm^3. If the radius of its base is 7 cm, then its height is

(*a*) 7.5 cm (*b*) 22.5 cm (*c*) 15 cm (*d*) 30 cm

13. If a square paper of side 25 cm is rolled to form a cylinder, then its curved surface area is

(*a*) 625 cm^2 (*b*) 500 cm^2 (*c*) 250 cm^2 (*d*) 1000 cm^2

14. The curved surface area of a well of diameter 3.5 m and depth 10 m is

(*a*) 135 m^2 (*b*) 35 m^2 (*c*) 70 m^2 (*d*) 110 m^2

15. The curved surface area of a cylinder whose circumference of the base is 22 m and height 3 m is

(*a*) 66 m^2 (*b*) 132 m^2 (*c*) 33 m^2 (*d*) 99 m^2

16. If the outer diameter of a pipe 21 m long is 1 m, then its outer curved surface area is

(*a*) 21 m^2 (*b*) 63 m^2 (*c*) 66 m^2 (*d*) 42 m^2

17. The cost of cementing the inner curved surface of a 14 m deep well of radius 2 m at the rate of ₹ 2 per m^2 is

(*a*) ₹ 352 (*b*) ₹ 56 (*c*) ₹ 112 (*d*) ₹ 176

18. The diameter of the base of a cylinder of curved surface area 88 cm^2 and height 14 cm is

(*a*) 1 cm (*b*) 2 cm (*c*) 1.5 cm (*d*) 2.5 cm

19. The total surface area of a right circular cylinder of height 4 cm and radius 3 cm is

(*a*) 132 cm^2 (*b*) 66 cm^2 (*c*) 198 cm^2 (*d*) 99 cm^2

20. If the lateral surface area of a cylinder is 132 cm^2 and its height is 7 cm, then its base diameter is

(*a*) 5 cm (*b*) 3 cm (*c*) 6 cm (*d*) 4 cm

21. The circumference of the base of a right circular cylinder is 44 cm. If its whole surface area is 968 cm^2, then the sum of its height and radius is

(*a*) 16 cm (*b*) 18 cm (*c*) 20 cm (*d*) 22 cm

22. The curved surface area of a right circular cylinder is 4400 cm^2. If the circumference of its base is 110 cm, then its height is

(*a*) 36 cm (*b*) 38 cm (*c*) 40 cm (*d*) 42 cm

23. A cylindrical piece of maximum volume has to be cut out of an iron cube of edge 4 cm. Then, the maximum volume of the iron cylinder is

(*a*) 32π cm^3 (*b*) 24π cm^3 (*c*) 16π cm^3 (*d*) 28π cm^3

24. If each bag containing rice occupies 2.1 m^3 of space, then the number of full bags which can be emptied into a drum of radius 4.2 m and height 3.5 m is

(*a*) 69 (*b*) 46 (*c*) 92 (*d*) 138

25. If the radius of the base of a right circular cylinder is halved, keeping the same height, then the ratio of the volume of the reduced cylinder to the volume of the original cylinder is

(*a*) 1 : 4 (*b*) 4 : 1 (*c*) 1 : 2 (*d*) 2 : 1

26. A cylindrical vessel of radius 16 cm contains water to a depth of 30 cm. If a spherical ball of brass is dropped into it and the water rises by 9 cm, then the radius of the ball is

(*a*) 12 cm (*b*) 15 cm (*c*) 8 cm (*d*) 18 cm

27. The radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio of 5 : 3. The ratio of their volumes is

(*a*) 20 : 27 (*b*) 20 : 37 (*c*) 17 : 27 (*d*) 10 : 17

28. The volume of a sphere of diameter 42 cm is

(*a*) 38000 cm^3 (*b*) 34000 cm^3

(*c*) 30000 cm^3 (*d*) 38808 cm^3

29. The surface area of a sphere of radius 3.5 cm is

(*a*) 77 cm^2 (*b*) 154 cm^3 (*c*) 154 cm^2 (*d*) 120 cm^2

30. The volume of a sphere is numerically equal to its surface area, then its diameter is

(*a*) 6 units (*b*) 3 units (*c*) 1 unit (*d*) 2 units

[CBSE SP 2011]

31. A cube of side 4 cm contains a sphere touching its sides. Find the approximate volume of the gap in between.

(*a*) 33 cm^3 (*b*) 30.48 cm^3 (*c*) 33.52 cm^3 (*d*) 34 cm^3

32. The ratio of the radii of two spheres whose volumes are in the ratio 64 : 27 is

(*a*) 16 : 9 (*b*) 8 : 3 (*c*) 10 : 7 (*d*) 4 : 3

33. Given that the surface area of a spherical shot-put is 616 cm^2, its diameter is

(*a*) 12 cm (*b*) 14 cm (*c*) 16 cm (*d*) 18 cm

34. If a sphere of radius 3 cm is melted and recast into a right circular cone of height 3 cm, then the radius of the base of the cone is

(*a*) 27 cm (*b*) 3 cm (*c*) 6 cm (*d*) 9 cm

35. If a spherical balloon grows to twice its radius when inflated, then the ratio of the volume of the inflated balloon to the original balloon is

(*a*) 8 : 1 (*b*) 4 : 1 (*c*) 6 : 1 (*d*) 5 : 1

36. If the total surface area of a hemisphere is 1848 cm^2, then its diameter is

(*a*) 22 cm (*b*) 26 cm (*c*) 28 cm (*d*) 24 cm

37. The total surface area of a cone of radius $2r$ and slant height $\frac{l}{2}$ is

(*a*) $2\pi r(l + r)$ (*b*) $\pi r\left(l + \frac{r}{4}\right)$ (*c*) $\pi r(4r + l)$ (*d*) $2\pi r$ **[CBSE SP 2010]**

38. The total surface area of a cone of radius 7 m and slant height 10 m is

(*a*) 374 m^2 (*b*) 598.4 m^2 (*c*) 561 m^2 (*d*) 280.5 m^2

39. The volume of a cone is 1570 cm^3. If it is 15 cm high then its base area is

(*a*) 415 cm^2 (*b*) 413 cm^2 (*c*) 314 cm^2 (*d*) 514 cm^2

40. If the slant height of a cone of base radius 7 cm is 25 cm, then its height is

(*a*) 32 cm (*b*) 24 cm (*c*) 18 cm (*d*) 36 cm

41. The diameter of the base of a cone of height 15 cm and volume 770 cm^3 is

(*a*) 7 cm (*b*) 14 cm (*c*) 21 cm (*d*) 10.5 cm

42. A conical tent is 21 m high and the diameter of its base is 4 m. If 10 men sleep in it, then the average number of cubic dm of air space per man is

(*a*) 4400 (*b*) 8800 (*c*) 8400 (*d*) 4800

43. A conical pandal 240 m in radius and 100 m high is made of cloth which is 100π m wide. Then, the length of cloth used to make the pandal is

(*a*) 625 m (*b*) 676 m (*c*) 600 m (*d*) 624 m

44. The curved surface area of a cylinder and a cone is equal. If their base radius is same, then the ratio of the slant height of the cone to the height of the cylinder is

(*a*) 2 : 3 (*b*) 1 : 1 (*c*) 2 : 1 (*d*) 1 : 2

45. If the ratio of the radii of bases of two cones is 3 : 1 and the ratio of their heights is 1 : 3, then the ratio of their volumes is

(*a*) 1 : 2 (*b*) 2 : 1 (*c*) 1 : 3 (*d*) 3 : 1

46. The cost of digging a pit of dimensions 4.5 m × 2.5 m × 2.5 m at the rate of ₹ 20 per cubic metre is

(*a*) ₹ 281.25 (*b*) ₹ 562.50 (*c*) ₹ 1125 (*d*) ₹ 1687.50

47. The volume of resulting cuboid formed when two cubes each of side 6 cm are joined end to end is

(*a*) 648 cm^3 (*b*) 864 cm^3 (*c*) 432 cm^3 (*d*) 416 cm^3

48. The number of litres that a cuboidal water tank of dimensions 6 m × 5 m × 4.5 m can hold is

(*a*) 135000 L (*b*) 135 L (*c*) 270 L (*d*) 270000 L

49. The surface area of a cuboid whose length, breadth and height are 15 cm, 10 cm and 20 cm respectively is

(*a*) 1300 cm^2 (*b*) 650 cm^2 (*c*) 1950 cm^2 (*d*) 2600 cm^2

50. The difference between the total surface area and the lateral surface area of a cuboid of length 20 cm, breadth 10 cm and height 40 cm is

(*a*) 400 cm^2 (*b*) 800 cm^2 (*c*) 200 cm^2 (*d*) 600 cm^2

51. The volume of a cylinder whose circumference of the base is 132 cm and height 25 cm is

(*a*) 3300 cm^3 (*b*) 34650 cm^3 (*c*) 9900 cm^3 (*d*) 19800 cm^3

52. A cylinder and a cone have equal base radius. If their volumes are same, then the ratio of the height of the cylinder to the height of the cone is

(*a*) 1 : 3 (*b*) 1 : 2 (*c*) 2 : 1 (*d*) 3 : 1

53. If the area of the base of a right circular cylinder is 15400 cm^2 and its volume is 92400 cm^3, then its curved surface area is

(*a*) 2880 cm^2 (*b*) 2760 cm^2

(*c*) 2640 cm^2 (*d*) 2600 cm^2

54. The total surface area of a 7 cm high cylinder having a volume of 448π cm^3 is

(*a*) $\frac{5110}{7}$ cm^2 (*b*) $\frac{5280}{7}$ cm^2

(*c*) $\frac{5287}{7}$ cm^2 (*d*) 755 cm^2

55. If the circumference of the base of a 9 m high conical tent is 44 m, then the volume of air contained in it is

(*a*) 693 m^3 (*b*) 924 m^3 (*c*) 1386 m^3 (*d*) 462 m^3

56. If a conical glass is 35 cm in diameter and 12 cm deep, then its capacity in litres is

(*a*) 1.155 L (*b*) 3.85 L (*c*) 0.5775 L (*d*) 7.7 L

57. To make a closed hollow cone of base radius 7 cm and height 24 cm, the area of metal sheet required is

(*a*) 550 cm^2 (*b*) 704 cm^2 (*c*) 825 cm^2 (*d*) 1100 cm^2

58. The area of canvas required for a conical tent of height 24 m and base radius 7 m is

(*a*) 550 m^2 (*b*) 1100 m^2 (*c*) 275 m^2 (*d*) 825 m^2

59. A conical vessel whose internal depth is 42 cm and internal diameter is 48 cm is full of water. If 1 cubic dm of water weighs 1 kg-wt, then the weight of water in the conical vessel is

(*a*) 26.5 kg-wt (*b*) 25.344 kg-wt (*c*) 25.5 kg-wt (*d*) 25.65 kg-wt

60. The height of a conical vessel is 3.5 cm. If its capacity is 3.3 litres of milk, then the diameter of its base is

(*a*) 30 cm (*b*) 60 cm (*c*) 15 cm (*d*) 35 cm

61. If the volume of a sphere is 4851 cm^3, then its surface area is

(*a*) 693 cm^2 (*b*) 1386 cm^2 (*c*) 2079 cm^2 (*d*) 1039.5 cm^2

62. A hemispherical bowl is made of steel 0.25 cm thick. If the inner radius of the bowl is 3.25 cm, then the outer curved surface area of the bowl is

(*a*) 77 cm^2 (*b*) 154 cm^2 (*c*) 38.5 cm^2 (*d*) 115.5 cm^2

63. If the surface area of a solid sphere is 1386 cm^2, then the total surface area of the solid hemisphere of the same radius is

(*a*) 693 cm^2 (*b*) 1039.5 cm^2 (*c*) 519.75 cm^2 (*d*) 1559.25 cm^2

64. The number of spherical bullets each 5 dm in diameter which can be cast from a rectangular block of lead 11 m long, 10 m broad and 5 m high is

(*a*) 8400 (*b*) 4200

(*c*) 6300 (*d*) 5600

65. The number of solid spheres each 6 cm in diameter, which can be moulded from a solid cylinder of height 45 cm and diameter 4 cm without any loss is

(*a*) 7 (*b*) 12

(*c*) 10 (*d*) 5

66. If a hollow sphere of internal and external diameters 4 cm and 8 cm respectively melted into a cone of base diameter 8 cm, then the height of the cone formed is

(*a*) 14 cm (*b*) 12 cm

(*c*) 16 cm (*d*) 8 cm

67. If a sphere of radius $2r$ has the same volume as that of a cone with a circular base of radius r, then the height of the cone is

(*a*) $32r$ (*b*) $30r$

(*c*) $28r$ (*d*) $24r$

68. If the radius and slant height of a cone are in the ratio 7 : 13 and its curved surface area is 286 cm^2, then its radius is

(*a*) 7 cm (*b*) 10 cm

(*c*) 10.5 cm (*d*) 7.5 cm

69. The curved surface area of a right circular cylinder which just encloses a sphere of radius r is

(*a*) $2\pi r^2$ (*b*) $4\pi r^2$

(*c*) $8\pi r^2$ (*d*) $6\pi r^2$

70. If the radius (r) of a sphere is reduced to its half, then new volume would be

(*a*) $\frac{1}{2}\left(\frac{4}{3}\pi r^3\right)$ (*b*) $\frac{4}{3}\pi\left(\frac{r^3}{2}\right)$

(*c*) $\frac{4}{3}\pi\left(\frac{r^3}{8}\right)$ (*d*) $\frac{4}{6}\pi\left(\frac{r^3}{8}\right)$ **[CBSE SP 2010]**

Chapter 14: **Statistics**

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. A student collects information about the number of school going children in a locality consisting of a hundred households. The data collected by him is

(*a*) primary data (*b*) secondary data

(*c*) grouped data (*d*) arrayed data

2. To analyse the election results, the data is collected from newspapers. The data thus collected is known as

(*a*) primary data (*b*) secondary data

(*c*) raw data (*d*) grouped data

3. Which of the following variables are discrete?

1. Size of shoes 2. Number of pages in a book

3. Distance travelled by a train 4. Time

(*a*) 1 and 4 (*b*) 1 and 3 (*c*) 1 and 2 (*d*) 2 and 4

4. For a given data, the difference between the maximum and minimum observations is known as its

(*a*) class (*b*) range

(*c*) class mark (*d*) class limit

5. A data is such that its maximum value is 75 and range is 20, then the minimum value is

(*a*) 95 (*b*) 55 (*c*) 20 (*d*) 75

6. In a grouped frequency distribution, the class intervals are 0–10, 10–20, 20–30, …, then the class width is

(*a*) 20 (*b*) 15 (*c*) 10 (*d*) 30

7. In a grouped frequency distribution, the class intervals are 1–20, 21–40, 41–60, …, then the class width is

(*a*) 10.5 (*b*) 30 (*c*) 10 (*d*) 20

8. Class size of a distribution having 28, 34, 40, 46 and 52 as its class marks is

(*a*) 3 (*b*) 4 (*c*) 5 (*d*) 6

9. Given the class intervals 0–10, 10–20, 20–30, …, then 10 is considered in class

(*a*) 0–10 (*b*) 10–20 (*c*) 0–20 (*d*) 10–30

10. The class mark of the class interval 2.4–6.6 is

(*a*) 2.4 (*b*) 4.5 (*c*) 6.6 (*d*) 4.2

11. The class marks of a frequency distribution are as given below:

38, 43, 48, 53, 58

The class corresponding to the class mark 43 is

(*a*) 38–48 (*b*) 38.5–48.5 (*c*) 35.5–45.5 (*d*) 40.5–45.5

12. The class size of a distribution is 25 and the first class interval is 200–224. Then, the class marks of first two class intervals are

(*a*) 212, 237 (*b*) 237, 262

(*c*) 212, 262 (*d*) 237, 287

13. Observe the table given below and choose the correct alternative in each case.

Column	P	Q	R	S	T	U
Marks scored	30–40	40–50	50–60	60–70	70–80	80–90
Number of students	4	8	12	10	7	4

(*i*) The class mark of R is

(*a*) 50 (*b*) 60 (*c*) 55 (*d*) 12

(*ii*) The class width of T is

(*a*) 70 (*b*) 10 (*c*) 80 (*d*) 7

(*iii*) The frequency of Q is

(*a*) 50 (*b*) 40 (*c*) 45 (*d*) 8

(*iv*) The class size of P is

(*a*) 80 (*b*) 10 (*c*) 90 (*d*) 4

14. A grouped frequency table with class intervals of equal sizes using 3–5 (5 included in this interval) as one of the class intervals is constructed for the following data:

1 4 7 2 0 3 9 2 3 7 6 3 5

2 5 5 6 2 3 5 1 0 4 6 4

The frequency of the class 3–5 is

(*a*) 8 (*b*) 11 (*c*) 5 (*d*) 3

15. The given cumulative frequency distribution shows the class intervals and their corresponding cumulative frequencies.

Class	10–20	20–30	30–40
Cumulative frequency	5	14	25

Then, the frequency of class interval 20–30 is

(*a*) 5 (*b*) 9 (*c*) 11 (*d*) 20

16. 'Less than' cumulative frequency table for a given data is as follows:

Marks	Less than 10	Less than 20	Less than 30	Less than 40
Cumulative frequency	3	17	37	92

Then, the frequency of class interval 20–30 is

(*a*) 20 (*b*) 14

(*c*) 55 (*d*) 34

17. 'More than' cumulative frequency table for a given data is as follows:

Marks	More than 89	More than 79	More than 69	More than 59
Cumulative frequency	8	18	30	65

Then, the frequency of the class interval 70–80 is

(*a*) 10 (*b*) 35 (*c*) 12 (*d*) 22

18. In a bar graph, 0.25 cm length of a bar represents 100 people. Then, the length of bar which represents 2000 people is

(*a*) 4 cm (*b*) 4.5 cm (*c*) 5 cm (*d*) 3.5 cm

19. In a bar graph, the widths of bars

(*a*) have no significance

(*b*) are proportional to the corresponding heights

(*c*) are proportional to the corresponding frequencies

(*d*) are proportional to the space between two consecutive bars

20. For drawing a frequency polygon of a continuous frequency distribution, we plot the points whose ordinates are the frequency of respective classes and abscissa are respectively

(*a*) lower limits of the classes

(*b*) upper limits of the classes

(*c*) class marks of the classes

(*d*) upper limits of preceeding classes

21. One of the sides of a frequency polygon is

(*a*) the x-axis (*b*) the y-axis

(*c*) either of the coordinate axes (*d*) neither of the coordinate axes

22. Which of the following is not a measure of central tendency?

(*a*) Mean (*b*) Median

(*c*) Mode (*d*) Standard deviation

23. The mean for counting numbers through 100 is

(*a*) 50 (*b*) 49.5 (*c*) 50.5 (*d*) 51

24. The mean of first four prime numbers is

(*a*) 4 (*b*) 4.5 (*c*) 3.75 (*d*) 4.25

25. The smallest of three consecutive even integers is 32. Then, the mean of the three integers is

(*a*) 34 (*b*) 36 (*c*) 33 (*d*) 35

26. If each observation of the data is increased by 3, then their mean

(a) becomes 3 times the original mean

(b) is decreased by 3

(c) is increased by 3

(d) remains the same

27. The mean of 30 observations is 12. If 25 is subtracted from the sum of observations, then remaining sum is

(a) 375 (b) 335

(c) 385 (d) 365

28. The mean of prime numbers between 30 and 40 is

(a) 37 (b) 31

(c) 34 (d) 36

29. The mean of x_1, x_2 is 6 and mean of x_1, x_2, x_3 is 7. The value of x_3 is

(a) 2 (b) 9

(c) 5 (d) 4 **[CBSE SP 2010]**

30. Sheila received x marks in two of her tests and y marks in three other tests. Her average score in all the five tests in terms of x and y is

(a) $\frac{3x + 2y}{5}$ (b) $\frac{2x + 3y}{5}$

(c) $\frac{3x + 2y}{3}$ (d) $\frac{2x + 3y}{2}$

31. The marks obtained by 10 students in a mathematics test are 75, 90, 70, 50, 70, 50, 75, 90, 70 and 75. Their median mark is

(a) 70 (b) 71.5

(c) 72.5 (d) 75

32. Out of sixteen observations arranged in an ascending order, the 8th and 9th observations are 25 and 27. Then, the median is

(a) 25 (b) 27 (c) 26.5 (d) 26

33. The following observations have been arranged in an ascending order:

18, 20, 25, 26, 30, x, 37, 38, 39, 48

If the median of the data is 35, then the value of x is

(a) 35 (b) 40 (c) 45 (d) 50

34. Mode of a set of observations is the value which

(a) occurs most frequently

(b) divides the observations into two equal parts

(c) is the mean of the middle two observations

(d) is the sum of the observations

35. The mode of 4, 6, 7, 6, 4, 2, 4, 8, 6, 4, 3, 4, 6 is

(a) 6 (b) 4

(c) 3 (d) 2 **[CBSE SP 2010]**

36. The given data is 3, 5, 6, 7, 5, 4, 7, 5, 6, x, 8 and 7. Then, the value of x for which the mode of the above data will be 7, is

(*a*) 5 (*b*) 6 (*c*) 8 (*d*) 7

37. A set of data consists of six numbers: 7, 8, 8, 9, 9 and x

The difference between the modes when $x = 9$ and $x = 8$ is

(*a*) 4 (*b*) 1 (*c*) 2 (*d*) 3

38. For a frequency distribution, mean, median and mode are connected by the relation:

(*a*) Mode = 3 Median – 2 Mean

(*b*) Mode = 3 Median + 2 Mean

(*c*) Mode = 3 Mean – 2 Median

(*d*) Mode = 2 Median – 3 Mean

39. Median of the following observations, arranged in an ascending order is 22.

$$8, 11, 13, 15, x + 1, x + 3, 30, 35, 40, 43$$

Then, the value of x is

(*a*) 16 (*b*) 18 (*c*) 19 (*d*) 20

40. For which set of data does the median equal the mode?

(*a*) 3, 3, 4, 5 (*b*) 3, 3, 4, 5, 6 (*c*) 3, 3, 4 (*d*) 3, 4, 5, 6, 6

41. A grouped frequency distribution table with classes of equal sizes using 105–120 (120 not included) as one of the class interval is constructed for the following data:

125	126	140	98	128	78	108	67
87	149	102	136	145	112	103	84
123	130	120	89	103	65	96	65

The number of classes in the distribution will be

(*a*) 7 (*b*) 6 (*c*) 5 (*d*) 4

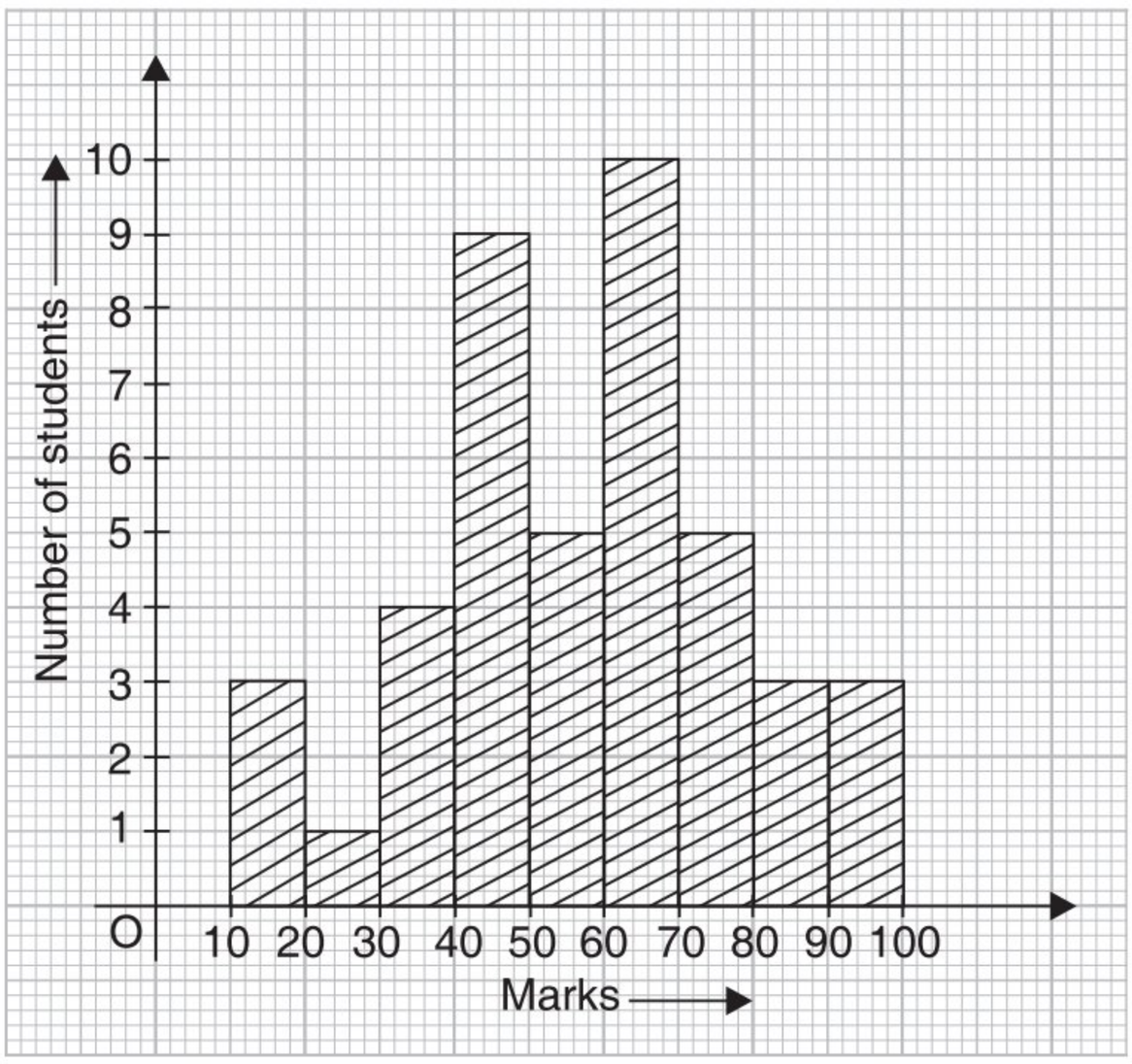
42. In the graph given alongside, the number of students who scored 60 or more marks is

(*a*) 19

(*b*) 20

(*c*) 22

(*d*) 21



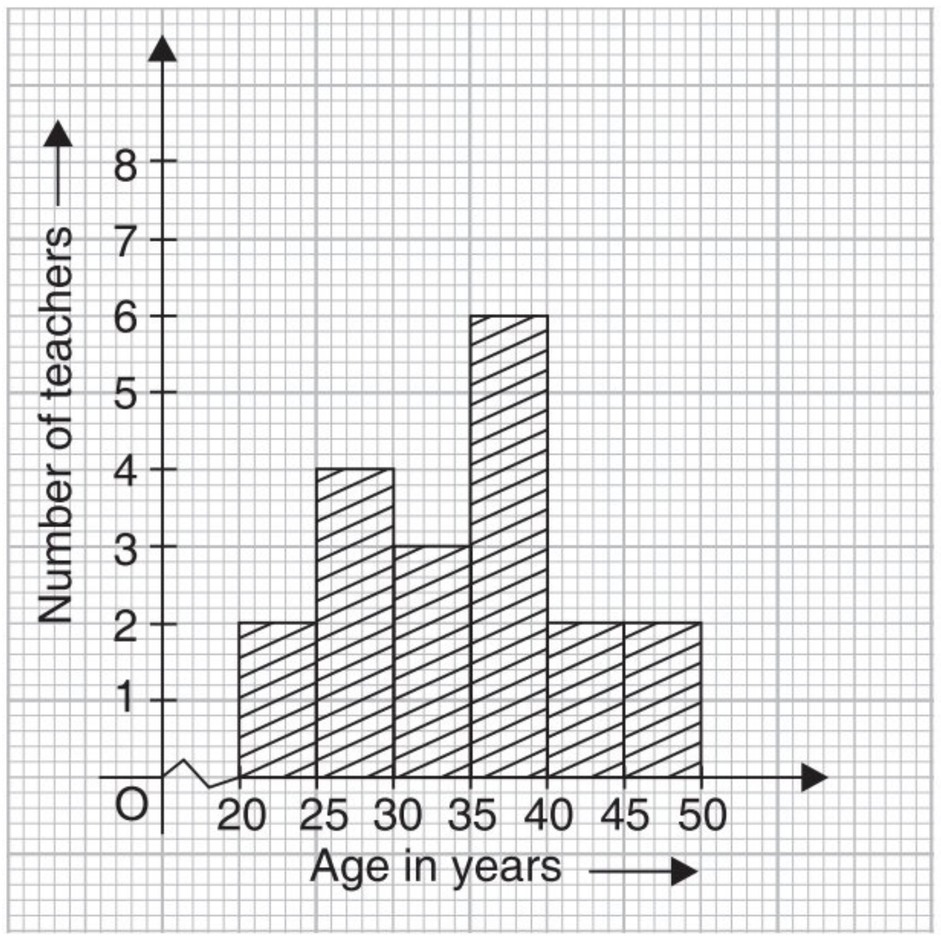
43. The graph given alongside shows the frequency distribution of the age of 22 teachers in a school. The number of teachers whose age is less than 40 years is

(*a*) 15

(*b*) 14

(*c*) 16

(*d*) 17



44.

Class interval	5–10	10–15	15–25	25–45	45–75
Frequency	6	12	10	8	15

For the frequency distribution given above, the adjusted frequency for the class 25 – 45 is:

(*a*) 6 (*b*) 5 (*c*) 3 (*d*) 2

45. The average of three consecutive even integers is 20. Then, the integers are

(*a*) 14, 16, 18 (*b*) 20, 22, 24

(*c*) 16, 18, 20 (*d*) 18, 20, 22

46. Vihaan has marks of 92, 85 and 78 in three mathematics tests. In order to have an average of exactly 87 for the four math tests, he should obtain

(*a*) 90 marks (*b*) 92 marks

(*c*) 93 marks (*d*) 91 marks

47. If the mean of x and $\frac{1}{x}$ is M, then the mean of x^2 and $\frac{1}{x^2}$ is

(*a*) $2M^2 + 1$ (*b*) $2M + 1$ (*c*) $2M - 1$ (*d*) $2M^2 - 1$

48. The mean of six numbers is 23. If one of the numbers is excluded, the mean of the remaining numbers becomes 20. The excluded number is

(*a*) 36 (*b*) 38 (*c*) 39 (*d*) 37

49. The mean of five observations is 15. If the mean of first three observations is 14 and that of last three is 17, then the third observation is

(*a*) 29 (*b*) 18 (*c*) 31 (*d*) 32

50. The mean of n observations is $\bar{x}$. If the first item is increased by 1, second by 2, third by 3 and so on, then the new mean is

(*a*) $\bar{x} + \frac{n+1}{2}$ (*b*) $\bar{x} + \frac{n}{2}$

(*c*) $\bar{x} + n$ (*d*) $\bar{x} + \frac{n(n+1)}{2}$

51.

Variable	1	2	x	4	5
Frequency	2	3	4	5	6

The mean of the above frequency distribution is 3.5, then the value of x is

(*a*) 4 (*b*) 3 (*c*) 2 (*d*) 5

52. If the mean of the observations:

$x, x + 3, x + 5, x + 7, x + 10$ is 9, the mean of last three observations is

(*a*) $11\frac{2}{3}$ (*b*) $11\frac{1}{3}$ (*c*) $10\frac{1}{3}$ (*d*) $10\frac{2}{3}$

53. The traffic police recorded the speed (in km/h) of 10 motorists as 48, 52, 57, 55, 42, 39, 60, 49, 53 and 47. Later an error in recording instrument was found. If the instrument had recorded the speed 5 km/h less in each case, then the correct average speed of the motorists is

(*a*) 50.2 km/h (*b*) 52.5 km/h (*c*) 55.2 km/h (*d*) 54.5 km/h

54. The difference between the mean and median of first five prime numbers is

(*a*) 1 (*b*) 0.4 (*c*) 0.6 (*d*) 0.8

55. When the data consists of 3, 4, 5, 4, 3, 4, 5, which statement is true?

(*a*) mean > median (*b*) mean > mode

(*c*) median < mode (*d*) mean = mode

Chapter 15: **Probability**

MULTIPLE-CHOICE QUESTIONS

Choose the correct answer from the given four options in the following questions:

1. The sum of the probabilities of all events of a trial is

(*a*) less than 1 (*b*) 1

(*c*) greater than 1 (*d*) between 0 and 1

2. The probability of a sure event is

(*a*) more than 1 (*b*) 1

(*c*) less than 1 (*d*) between 0 and 1

3. Which of the following cannot be empirical probability of an event?

(*a*) $\frac{4}{5}$ (*b*) 1 (*c*) 0 (*d*) $\frac{5}{4}$ **[CBSE SP 2012]**

4. The probability of an impossible event is

(*a*) 1 (*b*) less than 1 (*c*) 0 (*d*) more than 1

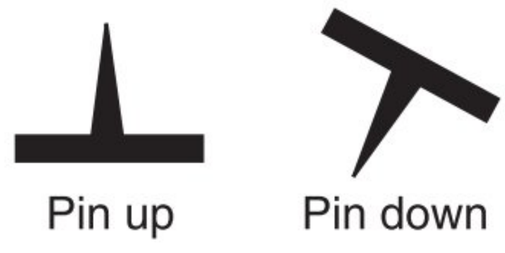
5. In a cricket match, a batswoman hits the boundary 8 times out of 50 balls played by her. The probability that she did not hit a boundary is

(*a*) $\frac{4}{25}$ (*b*) $\frac{21}{25}$ (*c*) $\frac{41}{50}$ (*d*) $\frac{1}{50}$

6. A die is thrown 300 times and odd numbers are obtained 153 times. Then, the probability of getting an even number is

(*a*) $\frac{147}{300}$ (*b*) $\frac{153}{300}$ (*c*) $\frac{174}{300}$ (*d*) $\frac{147}{153}$

7. A thumbtack is tossed. It may land either with the pin up or pin down. In tossing a thumbtack the probability of the pin facing up is



Pin up Pin down

(*a*) 0 (*b*) 1 (*c*) $\frac{1}{2}$ (*d*) less than $\frac{1}{2}$

8. Weather forecast from a news channel was correct 125 times out of 365 days. The probability that on a given day it was not correct is

(*a*) $\frac{25}{73}$ (*b*) $\frac{5}{73}$ (*c*) $\frac{16}{73}$ (*d*) $\frac{48}{73}$

9. A fair coin is tossed 100 times and the head occurs 58 times and tail 42 times. The experimental probability of getting head is

(*a*) $\frac{1}{2}$ (*b*) $\frac{21}{50}$ (*c*) $\frac{29}{50}$ (*d*) $\frac{42}{58}$

10. Two coins are tossed simultaneously 300 times. Either one or two heads are obtained 198 times. The probability of getting no head is

(*a*) 0.45 (*b*) 0.21 (*c*) 0.36 (*d*) 0.34

11. In n trials of a random experiment, if an event E happens m times, then P(E) is equal to

(*a*) $\frac{m}{n}$ (*b*) $\frac{n}{m}$ (*c*) $\frac{m}{m+n}$ (*d*) $\frac{n}{m+n}$