

10th CBSE Maths Mock Test
Topic: Chapters- 1,2,3,6,7,8,12 & 15

Time Allowed: 2.5 hrs.

Max. Marks: 80

Instructions:

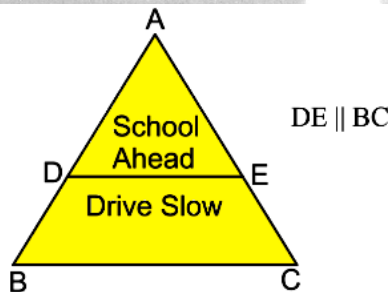
- Q1-Q16 carry 1 mark each
- Q17-20 are case study questions, carrying 4 marks each (each part of question is of 1 mark)
- Q21-26 carry 2 marks each
- Q27-33 carry 3 marks each
- Q34-36 carry 5 marks each

1. The distance of a point P(2,-1) from the origin is
(a) $\sqrt{6}$ (b) $\sqrt{5}$ (c) 3 (d) 4
2. If one zero of the polynomial $12x^2 + 13x + 6a$ is reciprocal of the other, then the value of 'a' is
(a) 3 (b) 2 (c) 1 (d) -2
3. $\sin^2 60^\circ + 2 \tan 45^\circ$ equals
(a) $\frac{7}{4}$ (b) $\frac{11}{13}$ (c) $\frac{11}{4}$ (d) 2
4. The decimal expansion of the rational number $\frac{23}{2^5 \times 5^4}$ will terminate after how many places of decimals?
(a) 4 (b) 2 (c) 3 (d) 5
5. The probability of getting a face card from a well shuffled deck of 52 playing cards is
(a) $\frac{1}{13}$ (b) $\frac{2}{13}$ (c) $\frac{3}{13}$ (d) $\frac{4}{13}$
6. In ΔABC , right-angled at B, if $AB = 5$, $BC = 12$ and $AC = 13$, find the value of $\sin A - \cos A$
(a) $\frac{7}{13}$ (b) $\frac{5}{13}$ (c) $\frac{12}{13}$ (d) 1
7. A quadratic polynomial, whose zeroes are -3 and 4, is
(a) $x^2 - x + 12$ (b) $x^2 + x + 12$ (c) $x^2 + 5x - 3$ (d) $x^2 + x - 12$
8. The pair of equations $x + 2y + 5 = 0$ and $-3x - 6y + 1 = 0$ have
(a) a unique solution (b) exactly two solutions
(c) infinitely many solutions (d) no solution

9. If in two triangles ABC and PQR, $(AB/QR) = (BC/PR) = (CA/PQ)$, then
 (a) $\Delta PQR \sim \Delta CAB$ (b) $\Delta PQR \sim \Delta ABC$
 (c) $\Delta CBA \sim \Delta PQR$ (d) $\Delta BCA \sim \Delta PQR$
10. If the distance between the points (4, p) and (1, 0) is 5, then the value of p is
 (a) 4 only (b) ± 4 (c) - 4 only (d) 0
11. If P (a/3,4) is the mid-point of the line segment joining the points Q (- 6, 5) and R (- 2, 3), then the value of a is
 (a) - 4 (b) - 12 (c) 12 (d) - 6
12. In ΔABC , $LM \parallel BC$ (L lies on AB & M lies on AC).
 If $AL = 2\text{cm}$, $LB = 4\text{ cm}$, then $\frac{BC}{LM}$ is:
 (a) $\frac{1}{3}$ (b) 2 (c) 3 (d) None of these
13. If the area of a circle is 154 cm^2 , then its perimeter is
 (a) 11 cm (b) 22 cm (c) 44 cm (d) 55 cm
14. If an event cannot occur, then its probability is
 (a) 1 (b) $3/4$ (c) $1/2$ (d) 0
15. The area of the circle that can be inscribed in a square of side 6 cm is
 (a) $36\pi\text{ cm}^2$ (b) $18\pi\text{ cm}^2$ (c) $12\pi\text{ cm}^2$ (d) $9\pi\text{ cm}^2$
16. When a die is thrown, the probability of getting an odd number less than 3 is
 (a) $1/6$ (b) $1/3$ (c) $1/2$ (d) 0

Case study-based questions are compulsory. Each subpart carries 1 mark

17. A group of student volunteers are working for making a safety board for their school. They prepared triangular safety board for their school with title "School Ahead" and "Drive Slow" in two parts of the triangular board as shown in below figure.

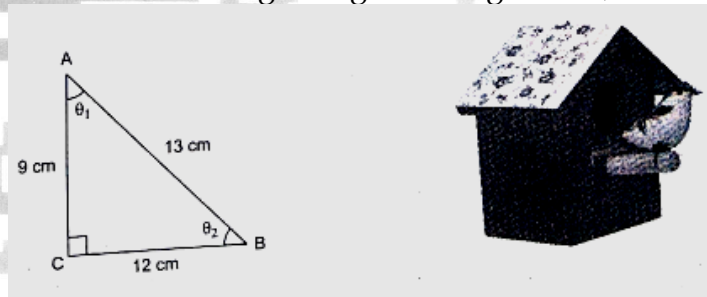


Based on the given information, answer the following question.

- (i) If $AD = 2\text{ cm}$, $BD = 5\text{ cm}$ and $AE = 3\text{ cm}$, then $EC = ?$
 (a) $\frac{15}{2}$ (b) $\frac{3}{5}$ (c) $\frac{1}{5}$ (d) $\frac{6}{5}$

- (ii) If $AD = 3$ cm, $AB = 9$ cm, $BC = 6$ cm, then $DE = ?$
 (a) 4 cm (b) 3 cm (c) 1 cm (d) 2 cm
- (iii) If $\angle A = 60^\circ$ and $\angle ADE = 50^\circ$, then $\angle C = ?$
 (a) 70° (b) 75° (c) 85° (d) 40°
- (iv) Which of the following is correct?
 (a) $\triangle ADE \sim \triangle ABC$ (b) $\triangle ADE \cong \triangle ABC$
 (c) Both (i) and (ii) (d) None of these

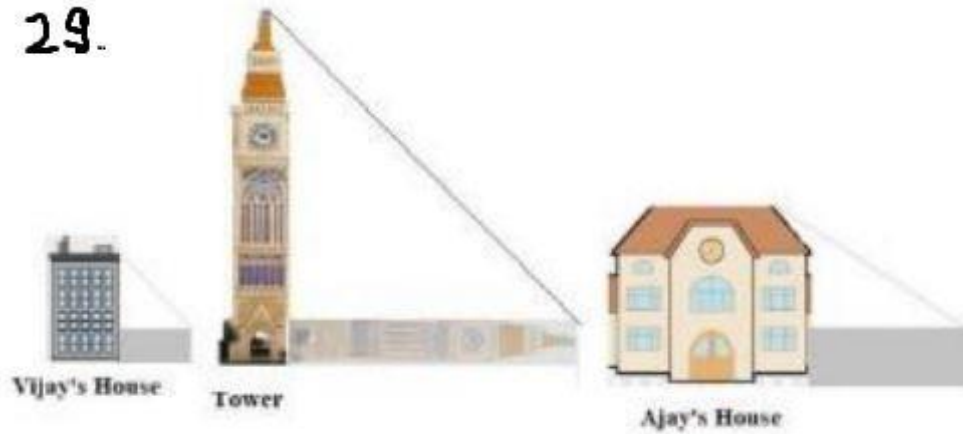
18. Anjana is a student of class-X, she has to make a project on "Introduction to Trigonometry". She decides to make a bird house which is triangular in shape. She uses cardboard to make the bird house as shown in below. Consider the front side of bird house as a right-angled triangle ABC, such that $\angle C = 90^\circ$



Based on the given information, answer the following question.

- (i). If $\angle BAC = \theta_1$, then $\tan \theta_1$ is
 (a) $\frac{4}{3}$ (b) $\frac{5}{4}$ (c) $\frac{4}{5}$ (d) $\frac{3}{4}$
- (ii). The value of $\operatorname{cosec} \theta_1$ is
 (a) $\frac{9}{13}$ (b) $\frac{13}{9}$ (c) $\frac{13}{12}$ (d) $\frac{11}{13}$
- (iii). If $\angle ABC = \theta_2$ then value of $\tan \theta_2$ is
 (a) $\frac{4}{3}$ (b) $\frac{3}{4}$ (c) $\frac{13}{12}$ (d) $\frac{9}{13}$
- (iv). $\sin \theta_1 - \cos \theta_2$ is equal to
 (a) 4 (b) 1 (c) 2 (d) 0

19.



Vijay is trying to find the average height of a tower near his house. He is using the properties of similar triangles. The height of Vijay's house is 20m when Vijay's house casts a shadow 10m long on the ground. At the same time, the tower casts a shadow 50m long on the ground and the house of Ajay casts 20m shadow on the ground.

Based on the given information, answer the following question.

- (i). What is the height of the tower?
a) 20m b) 50m c) 100m d) 200m
- (ii). What will be the length of the shadow of the tower when Vijay's house casts a shadow of 12m?
a) 75m b) 50m c) 45m d) 60m
- (iii). What is the height of Ajay's house?
a) 30m b) 40m c) 50m d) 20m
- (iv). When the tower casts a shadow of 40m, same time what will be the length of the shadow of Ajay's house?
a) 16m b) 32m c) 20m d) 8m
20. Ruby and Rita are best friends. They are staying in the same colony. Both are studying in the same class and in the same school. During Winter vacation Ruby visited Rita's house to play Ludo. They decided to play Ludo with 2 dice.



Based on the given information, answer the following question.

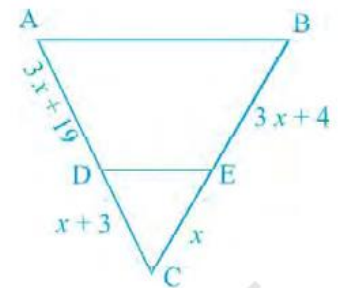
- (i) Towinagame, Rubywanteda totalof7.Whatisthe probabilityofwinningagame byRuby?
(a) $\frac{1}{6}$ (b) $\frac{7}{12}$ (c) $\frac{5}{18}$ (d) $\frac{1}{9}$
- (ii) Towinagame,Ritawanted 8 asthesum.Whatistheprobabilityofwinninga gameby Rita?
(a) $\frac{1}{12}$ (b) $\frac{7}{36}$ (c) $\frac{5}{36}$ (d) $\frac{1}{4}$
- (iii) Whatisthe probabilitythatthe sumofthe numbers onthe boththe diceisdivisible by4or6?
(a) $\frac{7}{18}$ (b) $\frac{7}{15}$ (c) $\frac{5}{18}$ (d) $\frac{2}{9}$
- (iv) Theprobability ofgettingatotalofat least10is:
(a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) $\frac{2}{3}$ (d) $\frac{1}{4}$

Each question carries 2 marks

21. Find the zeroes of : $x^2 - 2x - 80$.
22. Solve the following systems of equations:
 $2x - y = 11, 5x + 4y = 1$
23. Show that 9^n can not end with digit '0' for any natural number 'n'.
24. The king, queen and jack of clubs are removed from a deck of 52 playing cards and the remaining cards are shuffled. A card is drawn from the remaining cards. Find the probability of getting a card of (i) hearts (ii) queen.
25. In a circle of radius 21 cm, an arc subtends an angle of 60° at the centre. Find the length of the arc.
26. If $4 \tan \theta = 3$, evaluate $\frac{4 \sin \theta - \cos \theta + 1}{4 \sin \theta + \cos \theta - 1}$

Each question carries 3 marks

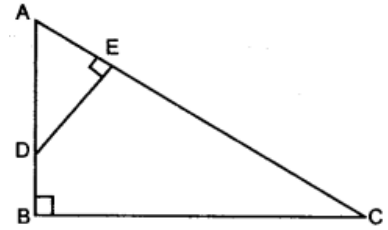
27. Find the value of x for which DE is parallel to AB in figure.



28. Find the ratio in which the line segment joining $(2, -3)$ and $(5, 6)$ is divided by x-axis.

29. ABC is a right-angled triangle with $\angle ABC = 90^\circ$. D is any point on AB and DE is perpendicular to AC.

Prove that: $\triangle ADE \sim \triangle ACB$.



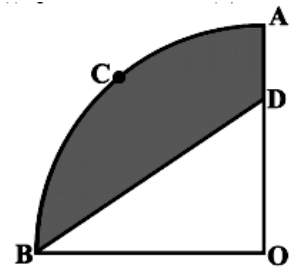
30. If $A(-2, 1)$ and $B(a, 0)$, $C(4, b)$ and $D(1, 2)$ are the vertices of a parallelogram ABCD, find the values of a and b. Hence find the lengths of its sides.

31. Find LCM & HCF of 120 & 45. Also verify that

$$\text{LCM}(120, 45) \times \text{HCF}(120, 45) = 120 \times 45$$

32. Prove that $\sin A (1 + \tan A) + \cos A (1 + \cot A) = \sec A + \text{cosec } A$

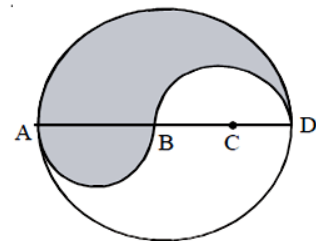
33. In the below figure, OACB is a quadrant of a circle with centre O and radius 3.5 cm. If $OD = 2$ cm, find the area of the (i) quadrant OACB, (ii) shaded region.



Each question carries 5 marks

34. Prove that $\sqrt{5}$ is an irrational number.

35. ABCD is a diameter of a circle of radius 6 cm. The length AB, BC and CD are equal. Semicircles are drawn on AB and BD as diameter as shown in the fig. area of the shaded region (in cm^2) is:



36. A part of monthly hostel charge is fixed and the remaining depends on the number of days one has taken food in the mess. When Swati takes food for 20 days, she has to pay Rs. 3,000 as hostel charges whereas Mansi who takes food for 25 days Rs. 3,500 as hostel charges. Find the fixed charges and the cost of food per day.

