

If $PA \perp PB$, then the length of each tangent is:

			Ċ	P	Y 5-
(A) 3 cm (B) 4 cm (C) 5 cm (D) 6 cm					
Answer: (B)					3
6. In Fig. 3, the area of triangle ABC (in sq. units) is:					
(A) 15	(E	3) 10	(C) 7.5	(D) 2.5	
Answer: (C)					$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
7. If the difference between the circumference and the radius of a circle is 37 -2					
cm, then using π =22/7, the circumference (in cm) of the circle is:					
(A) 154	(B) 44	(C) 14		(D) 7
Answer: (B)					
8. The common difference of the AP 1/3q, (1-6q)/3q, (1-12q)/3qis:					
(A) q		(B) –q		(C) –2	(D) 2
Answer: (C)					
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Class X Delhi Math Set-3 Section - B

9. Prove that the parallelogram circumscribing a circle is a rhombus.

Solution: Given that ABCD is a parallelogram circumscribing a circle with centre O.

Prove that: ABCD is a rhombus.

Since, the length of the tangents drawn to a circle from an exterior point is equal length.

Therefore, AP = AS, BP = BQ, CR = CQ and DR = DS.

AP + BP + CR + DR = AS + BQ + CQ + DS

(AP + BP) + (CR + DR) = (AS + DS) + (BQ + CQ)

Therefore, AB + CD = AD + BC or 2AB = 2BC (Since, AB = DC and AD = BC)

 \Rightarrow AB = BC = DC = AD.

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ABCD is a IIgm having all sides equals. Therefore, ABCD is a rhombus.

10. Two circular pieces of equal radii and maximum area, touching each other are cut out from a rectangular card board of dimensions 14 cm x 7 cm. Find the area of the remaining card board. [Use $\pi = 22/7$]

Solution: Given that ,two circular pieces of equal radii and maximum area touching each other are cut from the rectangular card board, therefore, the radius of each of each circular piece is 14/4 = 3.5 cm.



Sum of area of two circular pieces = $2 x\pi r^2 = 2 x 22/7 x 3.5x3.5=77cm^2$

Area of the remaining card board = Area of the card board - Area of two circular pieces

= [14 x 7 cm - 77] cm2 = [98 - 77] cm2 = 21 cm2

11. In given fig., a circle inscribed in triangle ABC touches its sides AB, BC and AC at points D, E and F respectively. If AB = 12 cm, BC = 8 cm and AC = 10 cm, then find the lengths of AD, BE and CF.



Solution: Given that AB = 12 cm, BC = 8 cm and AC = 10 cm.

Let, AD = AF = p cm, BD = BE = q cm and CE = CF = r cm

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(Tangents drawn from an external point to the circle are equal in length)

 $\Rightarrow 2(p+q+r) = AB + BC + AC = AD + DB + BE + EC + AF + FC = 30 \text{ cm}$ $\Rightarrow p+q+r = 15$ AB = AD + DB = p + q = 12 cmTherefore, r = CF = 15 - 12 = 3 cm. AC = AF + FC = p + r = 10 cmTherefore, q = BE = 15 - 10 = 5 cm. Therefore, p = AD = p + q + r - r - q = 15 - 3 - 5 = 7 cm. 12. How many three – digit natural numbers are divisible by 7?

Solution: All the three-digit natural numbers that are divisible by 7 will be of the form 7n.

Therefore, $100 \le 7n \ge 999 \implies 14^2_7 \le 7n \ge 142^5_7$

Since, n is an integer, therefore, there will be 142 - 14 = 128 three-digit natural numbers that will be divisible by 7.

Therefore, there will be 128 three - digit natural numbers that will be divisible by 7.

13. Solve the following quadratic equation for *x*: $4\sqrt{3x^2} + 5x - 2\sqrt{3} = 0$

Solution:

 $4\sqrt{3}x^{2} + 5x - 2\sqrt{3} = 0$ $\Rightarrow 4\sqrt{3}x^{2} + 8x - 3x - 2\sqrt{3} = 0$ $\Rightarrow 4x(\sqrt{3}x + 2) - \sqrt{3}(\sqrt{3}x + 2) = 0$ $\Rightarrow (4x - \sqrt{3})(\sqrt{3}x + 2) = 0$ $\therefore x = \frac{\sqrt{3}}{4} \text{ or } x = -\frac{2}{\sqrt{3}}$

14. A card is drawn at random from a well shuffled pack of 52 playing cards. Find the probability that the drawn card is neither a king nor a queen.

Answer. Let E denote the event that the drawn card is neither a king nor a queen.

Total number of possible cases = 52.

Total number of cards that are king and those that are queen in the pack of playing cards = 4 + 4 = 8.

Therefore, there are 52 - 8 = 44 cards that are neither a king nor a queen.

Total number of favorable cases = 44.

Required probability = P(E) = Favorable outcome/ Total possible outcomes = 44/52 = 0.84