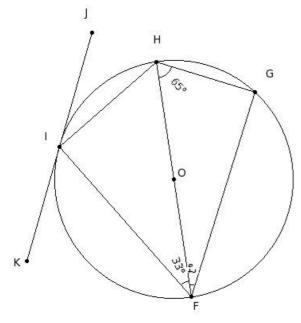
Name: Chapter Based Worksheet

Chapter: Tangent Properties of Circles

Grade: ICSE Grade X

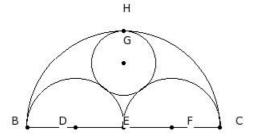
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In the given figure, O is the centre of the circle and JK is the tangent at I. If  $\angle$ HFI = 33° and  $\angle$ FHG = 65°, find  $\angle$ HFG



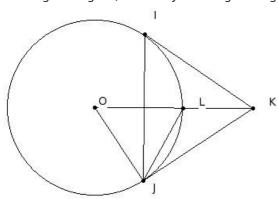
(i) 40° (ii) 25° (iii) 30° (iv) 55° (v) 35°

BC is a line segment and E is its mid-point. Three semi-circles are drawn with BE , EC and BC as diameters. D , F 2. and E respectively are the centres of these semi-circles. A new circle is drawn touching these three semi-circles. Find its radius, given BD = 6 cm



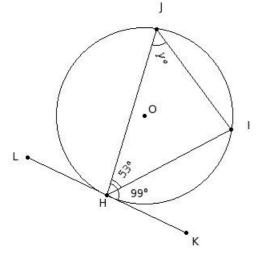
(i) 6.00 cm (ii) 4.00 cm (iii) 3.00 cm (iv) 2.00 cm (v) 5.00 cm

3. In the given figure, KI and KJ are tangent segments to the circle with centre O. Given  $\angle$ JKL = 34°, find  $\angle$ IJL

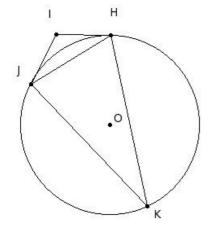


(i) 33° (ii) 58° (iii) 38° (iv) 28° (v) 43°

- 4. If two circles of radii 14 cm and 5 cm touch externally, the distance between their centres is
  - (i) 20 cm (ii) 19 cm (iii) 17 cm (iv) 21 cm (v) 18 cm
- 5. In the given figure, O is the centre of the circle and KL is the tangent at H. If  $\angle$ IHJ = 53° and  $\angle$ KHI = 99°, find  $\angle$ HJI



- (i) 61° (ii) 51° (iii) 56° (iv) 76° (v) 46°
- 6. O is the centre of the circle. HI and JI are tangents to the circle. If  $\angle$ JKH = 31.5°, find  $\angle$ HIJ

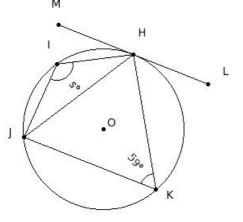


- (i) 132° (ii) 122° (iii) 127° (iv) 147° (v) 117°
- 7. If two circles touch internally, the number of their common tangents is
  - (i) 2 (ii) 1 (iii) (-1) (iv) 3 (v) 0
- The distance between the centres of two circles is d.
- If the radii are  $r_1$  and  $r_2$ , the length of their direct common tangent is

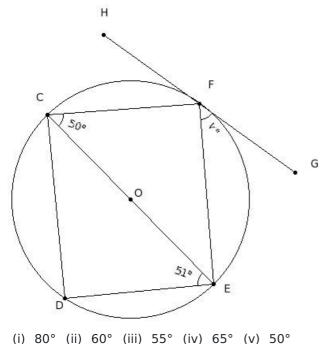
(i) 
$$\sqrt{d^2 - (r_1 + r_2)^2}$$
 (ii)  $\sqrt{d^2 - (r_1 - r_2)^2}$  (iii)  $\sqrt{d^2 + (r_1 + r_2)^2}$  (iv) None of these (v)  $\sqrt{d^2 + (r_1 - r_2)^2}$ 

- 9. A line which intersects the circle at two distinct points is called a
  - (i) secant (ii) semi-circle (iii) circumference (iv) chord (v) centre

10. In the given figure, O is the centre of the circle and LM is the tangent at H. If  $\angle$ HKJ = 59°, find  $\angle$ HIJ

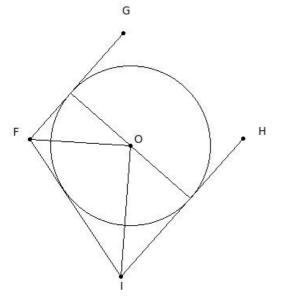


- (i) 121° (ii) 126° (iii) 151° (iv) 131° (v) 136°
- In the given figure, O is the centre of the circle and GH is the tangent at F. If  $\angle$ ECF = 50° and  $\angle$ CED = 51°, find  $\angle$ GFE



- 12. Which of the following statements are true?
  - a) If two circles touch internally, the square of the distance between their centres is the difference of the squares of their radii.
  - b) If two circles touch externally, their centres and the point of contact form an isosceles triangle.
  - c) If two circles touch externally, the distance between their centres is the sum of their radii.
  - d) If two circles touch internally, the distance between their centres is the difference of their radii.
  - e) If two circles touch internally, their centres and the point of contact form a scalene triangle.
  - f) If two circles touch externally, the square of the distance between their centres is the sum of the squares of their radii.
  - (i)  $\{c,d\}$  (ii)  $\{e,f,c\}$  (iii)  $\{a,d,c\}$  (iv)  $\{b,d\}$  (v)  $\{a,c\}$
- 13. A line which touches a circle at only one point is called a
  - (i) diameter (ii) centre (iii) semi-circle (iv) tangent (v) major segment
- 14. Two circles with radii R and r touch internally. If the distance between their centres is d, then
  - (i) d < R r (ii) d < R + r (iii) d = R r (iv) d = R + r (v) d > R r

In the given figure, FG and HI are parallel tangents to the circle with centre O. FI is another tangent meeting FG and HI at F and I. Find ∠FOI

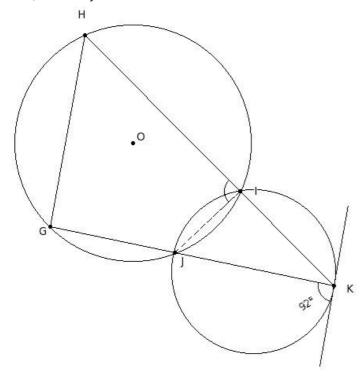


(i) 120° (ii) 100° (iii) 90° (iv) 105° (v) 95°

16. Two circles are of radii 5 cm and 3 cm. If the distance between their centres is 11 cm, what is the length of their direct common tangent?

(i)  $9.82\ cm$  (ii)  $12.82\ cm$  (iii)  $10.82\ cm$  (iv)  $11.82\ cm$  (v)  $8.82\ cm$ 

In the given figure, two circles intersect at points I & J. A tangent is drawn at point K. From the same point, two 17. lines are drawn passing through points I & J. They meet the other end of the second circle at H & G. Given  $\angle K = 92^{\circ}$ , find  $\angle HIJ$ 

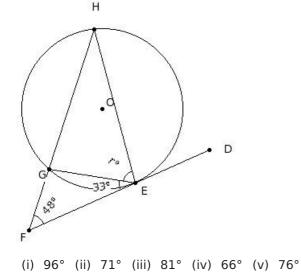


(i) 93° (ii) 98° (iii) 88° (iv) 118° (v) 103°

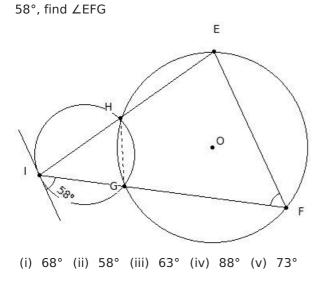
18. If two circles touch externally, the number of their common tangents is

(i) 0 (ii) 4 (iii) 5 (iv) 2 (v) 3

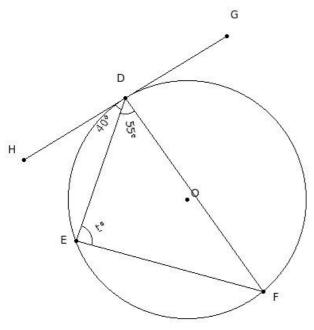
19. In the given figure, O is the centre of the circle and DF is the tangent at E. If  $\angle$ EFG = 48°,  $\angle$ FEG = 33°, find  $\angle$ HEG



In the given figure, two circles intersect at points G & H. A tangent is drawn at point I. From the same point, two 20. lines are drawn passing through points G & H. They meet the other end of the second circle at F & E. Given  $\Delta I =$ 

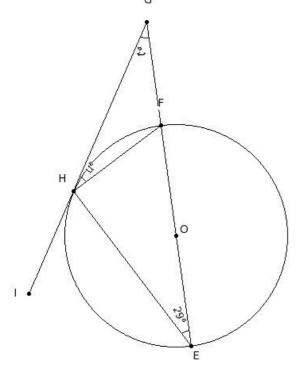


In the given figure, O is the centre of the circle and GH is the tangent at D. If  $\angle$ FDE = 55° and  $\angle$ EDH = 40°, find  $\angle$ FED



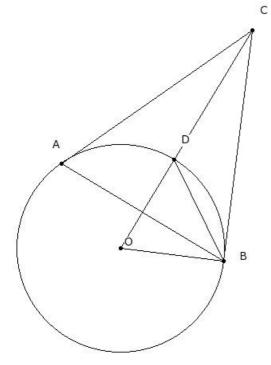
(i)  $115^{\circ}$  (ii)  $90^{\circ}$  (iii)  $85^{\circ}$  (iv)  $95^{\circ}$  (v)  $100^{\circ}$ 

22. In the given figure, O is the centre of the circle and GI is the tangent at H. If  $\angle$ FEH = 29°, find  $\angle$ FGH +  $\angle$ FHG



- (i) 66° (ii) 71° (iii) 76° (iv) 61° (v) 91°
- 23. Which of the following statements are true?
  - a) A radius is a limiting case of a diameter.
  - b) A tangent is the limiting case of a secant.
  - c) A diameter is a limiting case of a chord.
  - d) A secant has two end points.
  - e) A secant and a chord are same.
  - (i) {d,c,b} (ii) {e,a,b} (iii) {b,c} (iv) {d,c} (v) {a,b}

24. In the given figure, CA and CB are tangent segments to the circle with centre O. Given  $\angle$ BCD = 24°, find  $\angle$ ABO



(i) 24° (ii) 54° (iii) 34° (iv) 39° (v) 29°

25. The angle between a tangent to a circle and the radius drawn at the point of contact is

(i) 120° (ii) 90° (iii) 105° (iv) 95° (v) 100°

Assignment Key					
1) (ii)	2) (ii)	3) (iv)	4) (ii)	5) (v)	6) (v)
7) (ii)	8) (ii)	9) (i)	10) (i)	11) (v)	12) (i)
13) (iv)	14) (iii)	15) (iii)	16) (iii)	17) (iii)	18) (v)
19) (iv)	20) (ii)	21) (iii)	22) (iv)	23) (iii)	24) (i)
25) (ii)					

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