MATHS

BOOKS - RD SHARMA MATHS (HINGLISH)

MEASUREMENT OF ANGLES

Solved Examples And Exercises

1. Find in degrees the angle through which a pendulum swings if its length is $50cm$ and the

tip describes an arc of length $10cm$.

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2. A circular wire of radius $7.5cm$ is cut and bent so as to lie along the circumference of a hoop whose radius is $120cm$. Find in degrees the angle which is subtended at the centre of the hoop.

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3. The angles of a triangle are in $A\dot{P}$. The number of degrees in the least is to the number of radians in the greatest as $60:\pi$. Find the angles in degrees.

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4. If in two circles, arcs of the same length subtend angles $60o$ and $75o$ at the centre, find the ratio of their radii.

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5. Find the radian measures corresponding to the following degree measures: 3400 (ii) 750 (iii) -370 30' (iv) 50 37' 30' (v) 400 20' (vi) 5200

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6. Find in degree the angle subtended at the centre of a circle of diameter $50cm$ by an arc of length $11cm$.

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7. Find the degree measure corresponding to the following radian measures: $\left(\frac{2\pi}{15}\right)^c$ (ii) $\left(\frac{\pi}{8}\right)^c$ (iii) $\left(\frac{1}{4}\right)^c$ (iv-2^c) (v) 6^c (vi) $\left(\frac{11}{16}\right)^c$

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8. For each natural number k, let C_k denotes the circle radius k centimeters in the counter-clockwise direction.After completing its motion on C_k, the particle moves to C_{k+1} in

the radial direction. The motion of the particle continues in this manner. The particle starts at (1,0).If the particle crosses the the positive direction of the x-axis for first time on the circle C_n,then n equal to

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9. Find the angle between the minute hand and the hour hand of a clock at 7.20 am

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10. A rail road curve is to be laid out on a circle. What radius should be used if the track is to change direction by $25 degree$ in a distance of $40 metres$?

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11. Find the magnitude, in radians and degrees, of the interior angle of a regular (i) pentagon (ii) octagon (iii) heptagon (iv) duodecagon.

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12. If $D, G and R$ denote respectively the number of degrees, grades and radians in an angle, then

A. $\frac{D}{100} = \frac{G}{90} = \frac{2R}{\pi}$

B. $\frac{D}{90} = \frac{G}{100} = \frac{R}{\pi}$

C. $\frac{D}{90} = \frac{G}{100} = \frac{2R}{\pi}$

D. $\frac{D}{90} = \frac{G}{100} = \frac{R}{2\pi}$

Answer: C

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13. The moons distance from the earth is $360,000kms$ and its diameter subtends an angle of 31 at the eye of the observer. Find the diameter of the moon.

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14. If the angular diameter of the moon be 30, how far from the eye a coin of diameter $2.2cm$ be kept to hide the moon?

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15. Find the length of an arc of a circle of radius 5 cm subtending a central angle measuring 15^0.

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16. The angles of a triangle are in A.P. The number of grades in the least, is to be number

of radians in the greatest as $40:\pi$. Find the angles in dregees.

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17. Express the angular measurement of the angle of a regular decagon in the degrees, grades and radians.

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18. A horse is tied to a post by a rope. If the horse moves along a circular path always keeping the rope tight, and describes 88 metres when it traces 72° at the centre, find the length of the rope.

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19. Assuming that a person of normal sight can read print to such distance that the letters subtend an angle of 5' at his eye, find

the height of the letters that he can read at a distance of 12 metres.

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20. The perimeter of a certain sector of a circle is equal to the length of the arc of semi circle having the same radius. Express the angle of the sector in degrees, minutes and seconds.

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21. The minute hand of watch is 1.5 cm long. How far does its tip move in 40 minutes?

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22. Find the degrees and radians the angle between the hour hand and the minute hand of a clock at half past three.

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23. Find the degree measure corresponding to the radian measure $\frac{9\pi}{5}$ (Use $\pi = \frac{22}{7}$)

A. 360

B. 300

C. 324

D. 330

Answer: C

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24. Find the degree measure corresponding to the radian measure $-\frac{5\pi}{6}$

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25. Find the degree measure corresponding to the following radian measure $\frac{18\pi}{5}$

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26. Find the degree measure corresponding to the following radian measure -3^c Use

$$\pi = \frac{22}{7}$$

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27. Find the degree measure corresponding to the following radian measure 11^c Use $\pi = \frac{22}{7}$

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28. Find the radian measures corresponding to the following degree measure: 300^0

A. $\frac{\pi}{10}$

B. $\frac{5\pi}{3}$

C. $\frac{11\pi}{10}$

D. None of these

Answer: B

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29. Find the radian measures corresponding to the following degree measure: 35^0

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30. Find the radian measures corresponding to the following degree measure: -56^0

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31. Find the radian measures corresponding to the following degree measure: 135^0

A. $\frac{\pi}{10}$

B. $\frac{\pi}{4}$

C. $\frac{3\pi}{4}$

D. $\frac{\pi}{3}$

Answer: C

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32. Find the radian measures corresponding to the following degree measure: $70^0\ 30'$

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33. Find the radian measures corresponding to the following degree measure: 25^0 '

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34. Find the radian measures corresponding to the following degree measure: $-47^0\ 30$ '

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35. The difference between the two acute angles of a right angled triangle is $\frac{\pi}{9}$ radians. Express the angles in degrees.

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36. One angle of a triangle is $\frac{2}{3}x$ grades and another is $\frac{3}{2}x$ degrees while the third is $\frac{\pi x}{75}$ radians. Express all the angles in degrees.

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37. The angles of a quadrilateral are in A.P. and the greatest angle is 120°. Express the angles in radians.

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38. The angles of a triangle are in A.P. and the number of degrees in the least angle is to the number of degrees in the mean angle as 1:120. Find the angles in radians

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39. The angle in one regular polygon is to that in another as $3:2$ and the number of sides in first is twice that in the second. Determine the number of sides of two polygons.

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40. The number of sides of two regular polygons are as 5: 4 and the difference between their angles is 9°. Find the number of sides of the polygons

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41. Find the length which at a distance of 5280 m will subtend an angle of 1' at the eye.

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42. A wheel makes 360 revolutions per minute. Through how many radians does it turn in 1 second?

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43. Find the angle in radian through which a pendulum swings if its length is 75 cm and the tip describes an arc of length (i) 10 cm (ii) 15 cm (iii) 21 cm

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44. The radius of a circle is 30 cm. find the length of an arc this circle, if the length of the chord of the arc is 30 cm.

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45. A railway train is travelling on a circular curve of 1500 metres radius at the rate of 66km/hr. Through what angle has it turned in 10 seconds?

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46. Find the distance from the eye at which a coin of 2 cm diameter should be held so as to conceal the full moon whose angular diameter is 31'.

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47. Find the diameter of the sun in km supposing that it subtends an angle of 32 at the eye of an observer. Given that the distance of the sun is 91 x 106 km.

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48. If the arcs of the same length in two circles subtend angels 65° and 110° at the centre,

find the ration of their radii.

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49. Find the degree measure of the angles subtended at the centre of a circle of radius 100 cm by an arc of length 22 cm $(Use\ \pi = 22/7)$.

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50. If the angles of a triangle are in A.P., then the measures of one of the angles in radians is

A. $\frac{\pi}{6}$

B. $\frac{\pi}{3}$

C. $\frac{\pi}{2}$

D. $2\frac{\pi}{3}$

Answer: B

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51. The angle between the minute and hour hands of a clock at 8:30 is

A. 75°

B. 80°

C. 105°

D. 60°

Answer: A

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52. At 3:40 the hour and minute hands of a clock are inclined at

A. $\frac{13\pi}{18}$

B. $2\frac{\pi}{3}$

C. $\frac{5\pi}{18}$

D. None Of These

Answer: A

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53. If the arcs of the same lengths m two circles subtend angles $65o$ and $110o$ at the centre, find the ratio of their radii.

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54. if OP makes 4 revolutions in one second, the angular velocity in radians per second is?

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55. A circular wire of radius 7cm is cut and bend again into an arc of a circle of radius 12cm angle subtended by the arc at the centre is

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56. The radius of the circle whose arc of length 15π cm makes an angle of $\frac{3\pi}{4}$ radians at the centre is

A. 5 cm

B. 10 cm

C. 15 cm

D. 20 cm

Answer: D

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