

# CUMULATIVE REVIEW

CHAPTERS 1-15

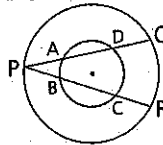
## Problem Set A

1 Find the volume and the total surface area of a circular cone with a height of 4 and a base radius of 3.  $V = 12\pi$ ,  $A = 24\pi$

- 2 If you graphed the equation  $2x + 3y = 12$ ,
- What would the graph's x-intercept be? 6
  - What would the graph's slope be?  $-\frac{2}{3}$
  - Would the point  $(37, -21)$  lie on the graph? No

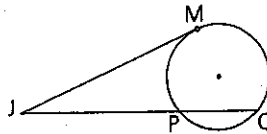
3 Given: Concentric circles, with  $\widehat{CD} = 70^\circ$  and  $\widehat{QR} = 54^\circ$

Find:  $\widehat{AB} = 16^\circ$

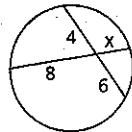


4 How far from the center of a circle with a diameter of 26 is a chord with a length of 24? 5

5 If the length of tangent  $\overline{JM}$  is 10 and  $JP = 4$ , find  $PQ$ . 21

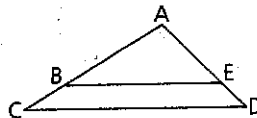


6 Solve for  $x$ . 3



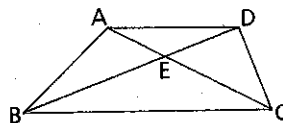
7 In  $\triangle ADC$ ,  $\overline{BE} \parallel \overline{CD}$ ,  $AB = 8$ ,  $BC = 4$ ,  $AE = 6$ , and  $BE = 9$ .

- Find  $DE$ . 3
- Find  $CD$ .  $13\frac{1}{2}$
- Is  $\triangle ABE$  a right triangle? No

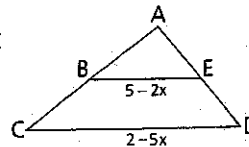


8 Given: ABCD is a trapezoid, with  $AD \parallel BC$ .

Prove:  $AE \cdot BE = DE \cdot EC$



9 B and E are midpoints of  $\overline{AC}$  and  $\overline{AD}$  respectively. Find  $CD$ . 42



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- 11 Draw a  $C = (-$
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17 Given:

Prove:

## Problem

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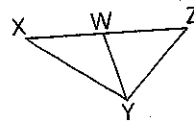
- 10 If a base angle of an isosceles triangle is twice the vertex angle, then find the measure of the vertex angle. 36
- 11 Draw a graph of  $\triangle ABC$  with vertices  $A = (3, 8)$ ,  $B = (8, -4)$ , and  $C = (-6, -4)$ .
- Find the lengths and the slopes of  $\overline{AB}$ ,  $\overline{BC}$ , and  $\overline{AC}$ . 13, 14, 15;  $-\frac{12}{5}$ ,  $0$ ,  $\frac{4}{3}$
  - Is  $\triangle ABC$  acute, right, or obtuse? Acute
  - Find the equation of  $\overleftrightarrow{AC}$  and its  $x$ - and  $y$ -intercepts.  $y = \frac{4}{3}x + 4$ ;  $-3$ ;  $4$
  - Find the equation of  $\overleftrightarrow{BC}$ .  $y = -4$
  - Where does the altitude to  $\overline{BC}$  intersect  $\overline{BC}$ ?  $(3, -4)$
  - What is the equation of the altitude to  $\overline{BC}$ ?  $x = 3$
  - Find the length of the altitude to  $\overline{BC}$ . 12
  - Find the midpoint of  $\overline{CB}$  and the slope of the median to  $\overline{CB}$ .  $(1, -4)$ ;  $6$
  - Find the area of  $\triangle ABC$ . 84
- 12 Two regular pentagons have areas 8 and 18. What is the ratio of their perimeters?  $2:3$
- 13 Each interior angle of a regular polygon is  $160^\circ$ . Find the number of diagonals. 135

- 14 Find the area of the sector formed by the hands of a clock at 2 o'clock if the diameter of the clock is 12 in.  $6\pi$  sq in.



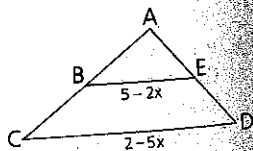
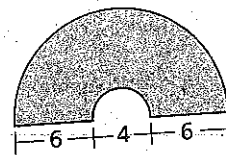
- 15 Find the area of an equilateral triangle whose height is 6.  $12\sqrt{3}$
- 16 Write the converse, the inverse, and the contrapositive of the statement, "If a parallelogram is inscribed in a circle, then it is not a 'plain old parallelogram.'"

- 17 Given:  $\angle X \neq \angle Z$ ;  
 $W$  is the midpoint of  $\overline{XZ}$ .  
 Prove:  $\overline{WY}$  is not an altitude to  $\overline{XZ}$ .



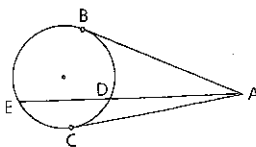
### Problem Set B

- 18 Find, to the nearest tenth,
- The area of the shaded region (a half washer)  $\approx 94.2$
  - The figure's perimeter (Hint: There are two semicircles and two segments.)  $\approx 43.4$

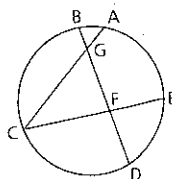


Cumulative Review Problem Set B, continued

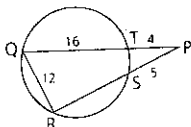
- 19 Given:  $\widehat{BD} = \widehat{CE} = 80^\circ$ ,  
 $\angle CAB = 75^\circ$   
 Find:  $\widehat{BE}$   $175^\circ$



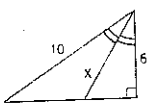
- 20 Given:  $\overline{BD}$  is a diameter.  
 $\widehat{AB} = 10^\circ$ ,  $\angle C = 40^\circ$ ,  
 $\angle GFC = 80^\circ$   
 Find: a  $\widehat{CD}$   $110^\circ$   
 b  $\widehat{ED}$   $90^\circ$



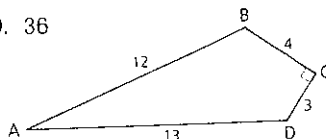
- 21 a Find RS. 11  
 b Find  $\widehat{QTS}$ .  $180^\circ$



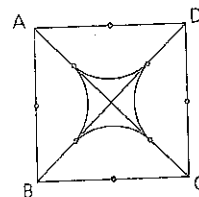
- 22 Find x.  $3\sqrt{5}$



- 23 Find the area of ABCD. 36



- 24 ABCD is a square with a side of 12. The midpoints of the sides of the square are the centers of arcs tangent to the diagonals. Find the shaded area.  $72 - 18\pi$



- 25 The vertices of  $\triangle ABC$  are  $A = (5, 4)$ ,  $B = (11, 6)$ , and  $C = (9, 10)$ .  
 a Find the length of the median to  $\overline{AB}$ .  $\sqrt{26}$   
 b Find the equation of the median to  $\overline{AB}$ .  $y = 5x - 35$   
 c Find the equation of the altitude to  $\overline{AB}$ .  $y = -3x + 37$   
 d Find the equation of the perpendicular bisector of  $\overline{AB}$ .  $y = -3x + 29$
- 26 Given a kite with diagonals 6 and 14, find, to the nearest tenth, the length of the segment joining the midpoints of two opposite sides.  $\approx 7.6$

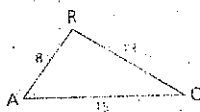
27 Roger is 2 m tall. He is standing atop a tower, and the total length of his shadow and the tower's shadow is 14 m. If he were standing on the ground, his shadow would be 1 m long. How high is the tower? 26 m

28 The diagonals of a rhombus are 8 and 12. Find its altitude.  $\frac{24\sqrt{13}}{13}$

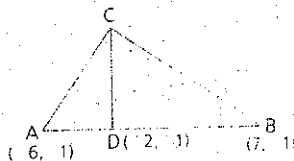
29 Quadrilateral PQRS is inscribed in  $\odot O$ . The measures of  $\widehat{PQ}$ ,  $\widehat{QR}$ ,  $\widehat{RS}$ , and  $\widehat{SP}$  are in the ratio 7:12:6:5. Find the acute angle formed by the diagonals of the quadrilateral.  $78^\circ$

30 Find the equation of the circle with center (2, 4) that passes through (1, 7).  $(x - 2)^2 + (y - 4)^2 = 10$

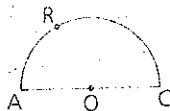
31 Is  $\triangle ARO$  acute, right, or obtuse? Acute



32  $\overline{CD}$  is the altitude to the hypotenuse of  $\triangle ABC$ . The coordinates of points A, B, and D are given. Find the coordinates of point C. (-2, 5)



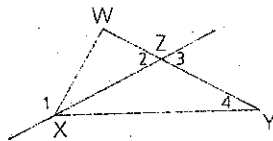
33 Find the ratio of the length of arc ARC to the length of diameter  $\overline{AC}$ .  $\pi:2$



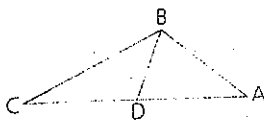
34 How far above the ground does the small ball touch the wall if the balls have radii of 4 cm and 9 cm? 21 cm



35 Given: Diagram as shown  
Prove:  $\angle 1 > \angle 4$



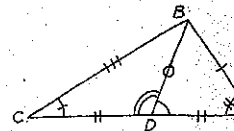
36 Given:  $\overline{AD} \cong \overline{DC}$ ,  
 $\angle ADB < \angle BDC$   
Prove:  $\angle A > \angle C$



Problem-Set Notes and Additional Answers, contir

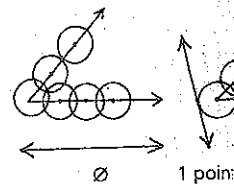
■ See Solution Manual for to problems 35 and 39.

36

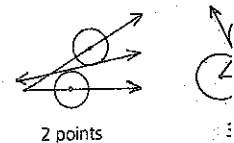


By the Hinge Theore  $\triangle ADB$  and  $\triangle CDB$ ,  $AB < CB$ . Thus,  $\angle A$  (If  $\triangle$ , then  $\Delta$ ).

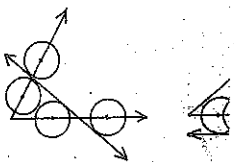
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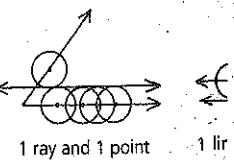
1 point



2 points



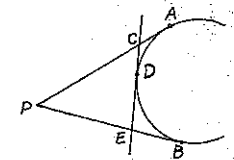
4 points 1 ray



1 ray and 1 point 1 lir

42 The difference betw areas is the area of which is  $121\pi$ .

43



By the Two-Tangen Theorem,  $CD = CE$ ,  $ED = EB$ . Thus,  $PC = PA$ , and  $PE + ED = \therefore PC + CD + ED + PE = PC + CE + PE$