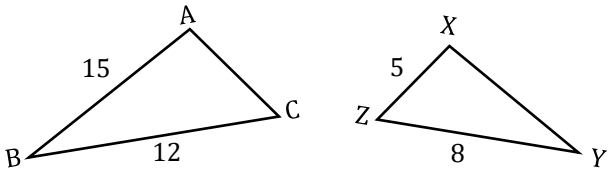
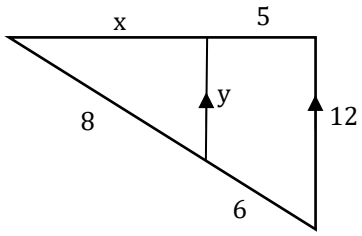
 Name:_____

1. $\Delta ABC \sim \Delta XYZ$. Find AC.

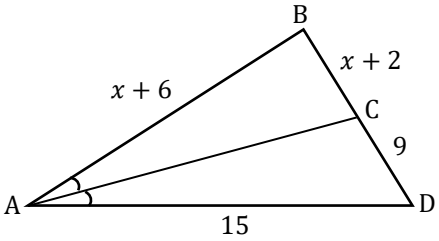


2. Find x and y.

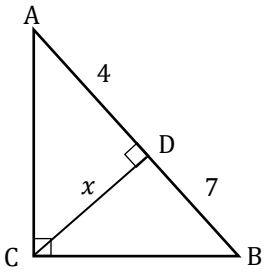


3. If two triangles are similar and the ratio of their perimeters is 5:3. Find the ratio of their areas.

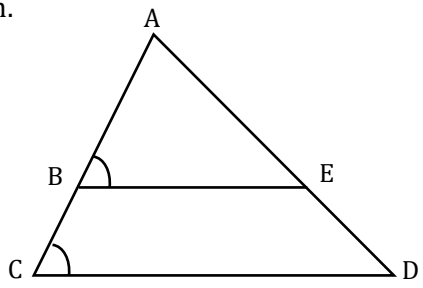
4. Find the perimeter of ΔABD.



5. Find x.



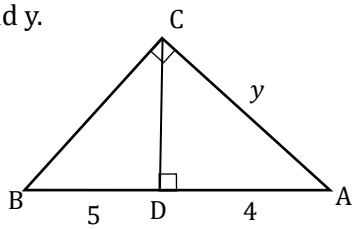
6. Are the triangles shown similar? If so write a similarity statement and identify the postulate or theorem.



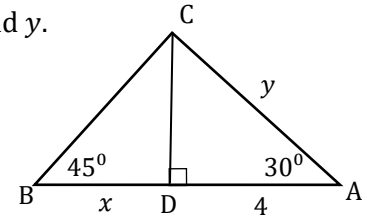
7. Given a dilation where A (4, 2) becomes A'(2, 1), find the scale factor of the dilation if the dilation is centered at the origin.

 Name:_____

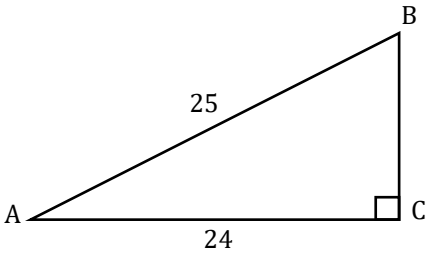
8. Find y.



9. Find x and y.

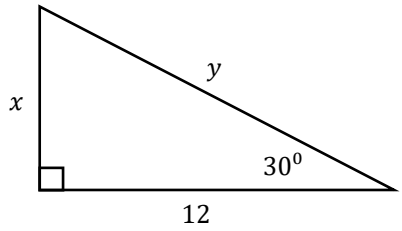


10. Find $\sin\angle A$, $\cos\angle A$, $\tan\angle A$, *and* $\tan\angle B$

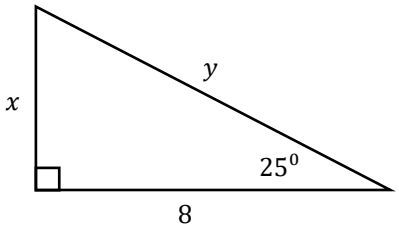


11. Use the diagram in #10 and solve the Δ.

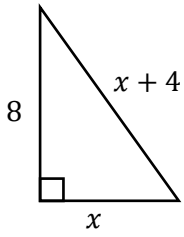
12. Find x and y.



13. Find x and y.

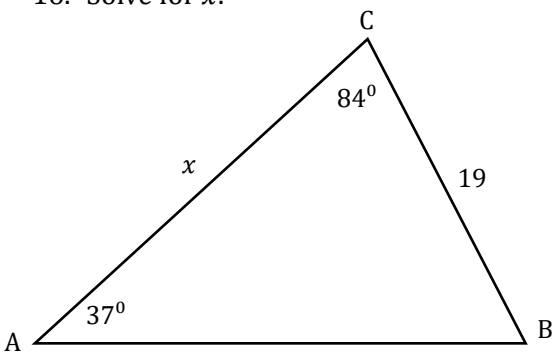


14. Solve for x.

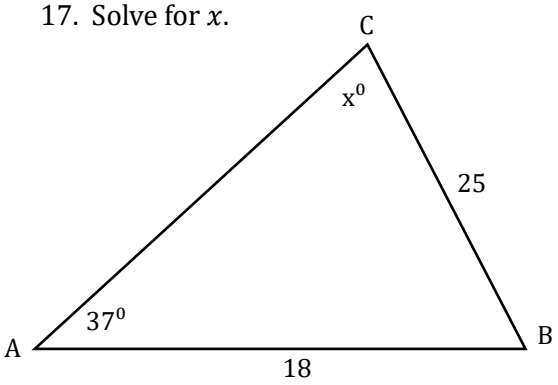


15. Find $\sin 30^0$, $\cos 30^0$, $\tan 30^0$

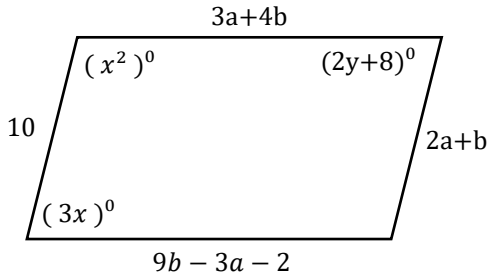
16. Solve for x.



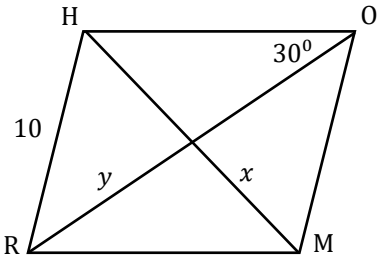
17. Solve for x.



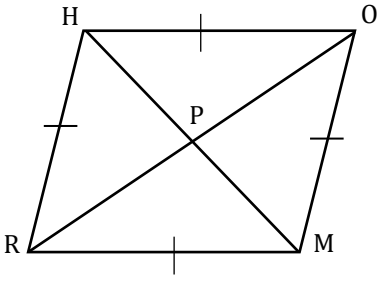
18. Find the value of each variable in the parallelogram shown.



19. Given quadrilateral RHOM is a rhombus, find x and y.

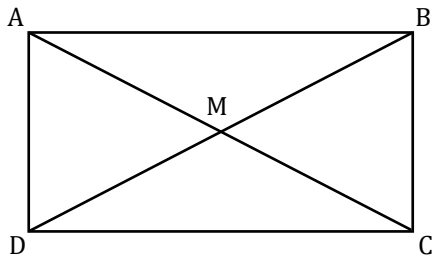


20. Find the $m\angle ORM$, if $m\angle HPO = (3x + 27)^0$, and $m\angle OHP = (2x + 8)$.



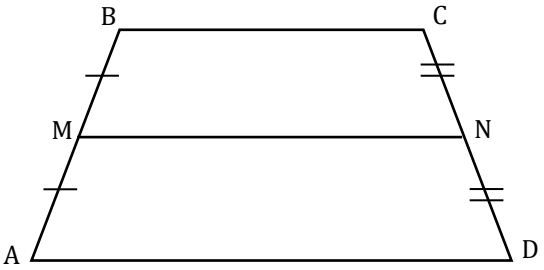
 Name:_____

21. ABCD is a rectangle, Find AC if $AM = x^2 + 2$ and $BD = 5x + 16$.

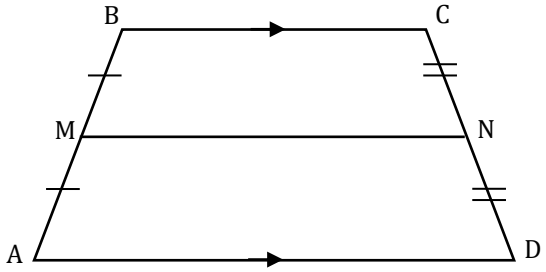


22. If a rhombus has a Perimeter of 36 and one of the interior angles is 72^0. Find the length of the longest diagonal.

23. ABCD is a trapezoid, $BC = 8$ and $AD = 17$. Find MN.



24. Find x, if $AD = 9x - 3, BC = 5x - 1$, and $MN = 2x + 8$.

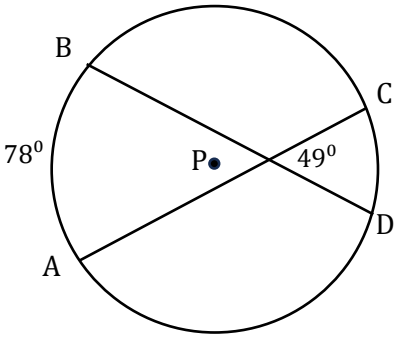


25. Find the length of a chord that is 6 cm from the center of a circle with a radius of 10 cm.

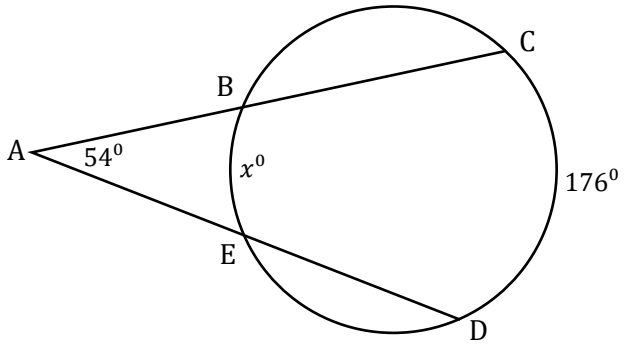
26. Find the radius of a circle with an arc length of 10 in when the measure of the arc is 80^0.

 Name:_____

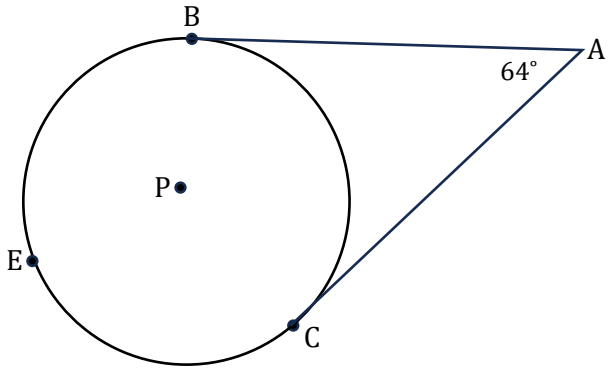
27. Find $m\widehat{CD}$.



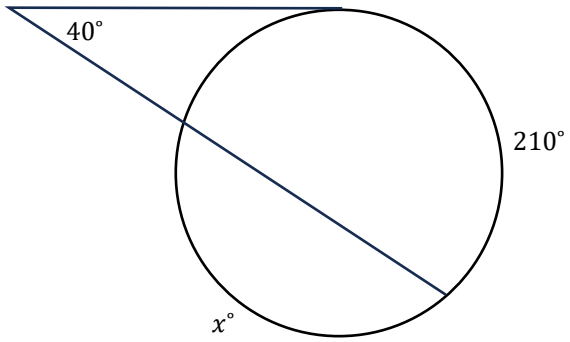
28. Find x.



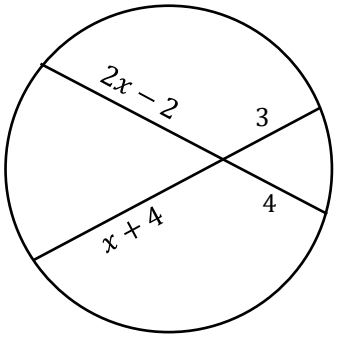
29. Find $m\widehat{BEC}$.



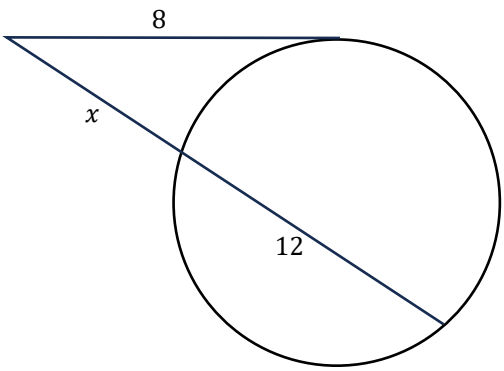
30. Find x.



31. Find x.

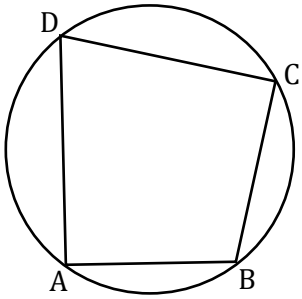


32. Find x.

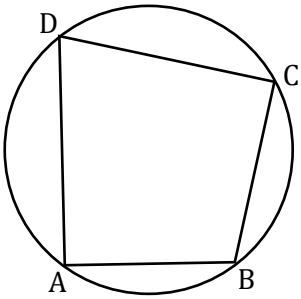


 Name:_____

33. If $m\widehat{DAB} = 210^\circ$, find $m\angle C$.



34. Find x if $m\angle B = (3x + 12)^\circ$ and $m\angle D = (7x - 32)^\circ$.



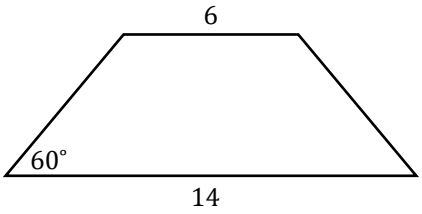
35. Find the area of a circle whose circumference is 18π in.

36. Find the area of a circle if the inscribed square has an area of 64 in^2.

37. Find the area of a regular hexagon with a side length of 8 cm.

38. Find the area of a regular hexagon with a radius of 8 cm.

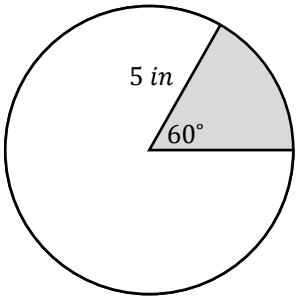
39. Find the area of the isosceles trapezoid.



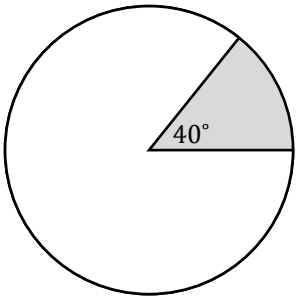
40. Find the area of an equilateral triangle with a side length of 10 in.

 Name:_____

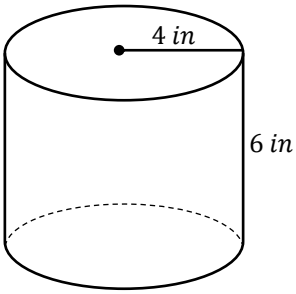
41. Find the area of the shaded sector.



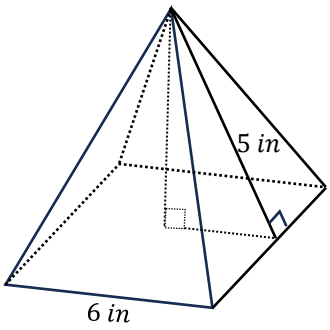
42. Find the circumference of the circle if the the area of the sector is $10\pi\ in^2$.



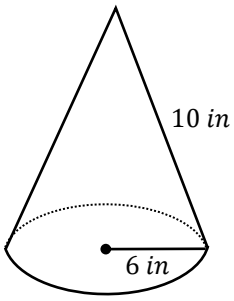
43. Find the volume of the cylinder.



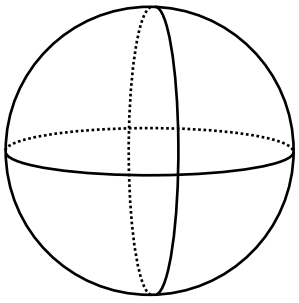
44. Find the volume of the square pyramid.



45. Find the volume of the cone.



46. Find the volume of a sphere with a radius of 5.



For #47-51, determine if the statement is always, sometimes, or never true.

47. If a quadrilateral is a rhombus, then its diagonals are ≅.
48. If the diagonals of a parallelogram are ⊥, then it is a square.
49. If both pairs of opposite sides of a quadrilateral are ≅, then it is a trapezoid.
50. If the diagonals of a quadrilateral are ≅, then it is a rectangle.
51. If two triangles are similar, then their corresponding angles are ≅.

For #52-55, determine if the statement is true or false.

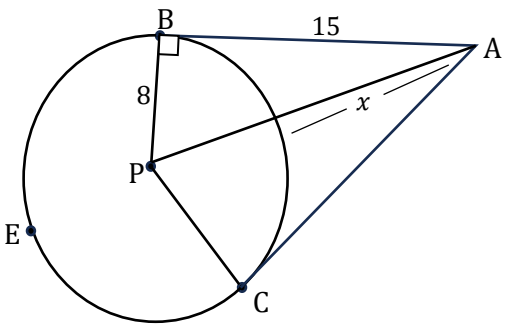
52. If two similar triangles with a ratio of perimeters is 20:25, then the ratio of their areas is 4:5.
53. If two similar solids have a scale factor of 5:8, then the ratio of their volumes is 125:512.
54. If two similar solids have a ratio of volumes 16:54, then their scale factor is 2:3.
55. In right ΔABC, if the $\sin \angle A = \frac{7}{25}$ then the $\tan \angle B = \frac{7}{24}$.

56. Which of the following methods would be valid to prove quadrilateral ABCD is a parallelogram. **(choose all that apply.)**
    a. Show $\angle A \cong \angle C$ and $\angle B \cong \angle D$.
    b. Show $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{AD}$.
    c. Show $\overline{AB} \parallel \overline{CD}$ and $\overline{BC} \parallel \overline{AD}$.
    d. Show $\overline{AB} \parallel \overline{CD}$ and $\overline{BC} \cong \overline{AD}$.

57. A cylinder has a volume of 1500 cm^3 with a radius of 8 cm. Find the height of the cylinder.

58. Find the volume of a hexagonal prisms if the area of the base is $20\sqrt{3}\ in^2$ and the height is 12 in.

59. Find x.



60. Find the area of an equilateral triangle with a height of $8\sqrt{3}\ in$.

Answer Key:

1. $x = \frac{15}{2}$ 2. $x = \frac{20}{3}, y = \frac{48}{7}$ 3. 25:9 4. 40 5. $2\sqrt{7}$ 6. $\Delta ABE \sim \Delta ACD$ *by AA*~
7. $k = \frac{1}{2}$ 8. $y = 6$ 9. $x = \frac{4\sqrt{3}}{3}, y = \frac{8\sqrt{3}}{3}$
10. $\sin\angle A = \frac{7}{25}$, $\cos\angle A = \frac{24}{25}, \tan\angle A = \frac{7}{24}, \tan\angle B = \frac{24}{7}$
11. $AB = 25, BC = 7, AC = 24, m\angle A = 16.3°, m\angle B = 73.7°, m\angle C = 90°$
12. $x = 4\sqrt{3}, y = 8\sqrt{3}$ 13. $x = 8\tan 25° \approx 3.73, y = \frac{8}{\cos 25°} \approx 8.83$ 14. $x = 6$
15. $\sin 30° = \frac{1}{2}, \cos 30° = \frac{\sqrt{3}}{2}, \tan 30° = \frac{\sqrt{3}}{3}$ 16. $x \approx 27.06$ 17. $x \approx 25.68°$
18. $x = 12, y = 14, a = 3, b = 4$ 19. $x = 5, y = 5\sqrt{3}$ 20. $m\angle ORM = 40°$ 21. $AC = 36$ or $\frac{17}{2}$
22. $x \approx 14.56$ 23. $MN = \frac{25}{2}$ 24. $x = 2$ 25. 16 cm 26. $r \approx 7.16$ in 27. $m\widehat{CD} = 20°$
28. $x = 68$ 29. $m\widehat{BEC} = 244°$ 30. $x = 20°$ 31. $x = 4$ 32. $x = 4$ 33. $m\angle C = 105°$
34. $x = 20$ 35. 81π in^2 36. 32π in^2 37. $96\sqrt{3}$ cm^2 38. $96\sqrt{3}$ cm^2 39. $40\sqrt{3}$
40. $25\sqrt{3}$ in^2 41. $\frac{25\pi}{6}$ in^2 42. $6\pi\sqrt{10}$ in 43. 96π in^3 44. 48 in^3 45. 96π in^3
46. $\frac{500}{3}\pi$ 47. Sometimes 48. Sometimes 49. Never 50. Sometimes 51. Always
52. False 53. True 54. True 55. False 56. a, b, c 57. $h \approx 7.46$ cm
58. $240\sqrt{3}$ in^3 59. $x = 9$ 60. $64\sqrt{3}$