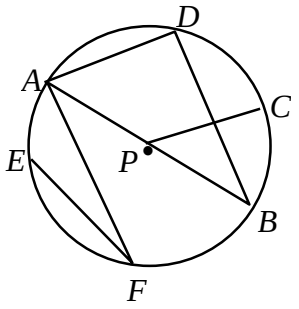
Geometry Semester 2 Final Review (a snapshot of items)

1. In ⊙ P, $\overline{AB}$ is a diameter, $m\angle CPB = 75^\circ$, $\overline{AB} \parallel \overline{EF}$, and $m\angle BAF = 20^\circ$. Find each of the following:



a. $m\overset{\frown}{FB}$

b. $m\overset{\frown}{EF}$

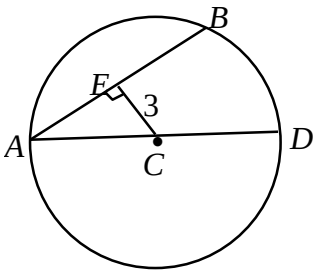
c. $m\overset{\frown}{AE}$

d. $m\angle AFE$

e. $m\overset{\frown}{BC}$

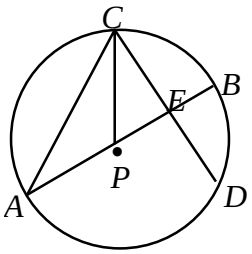
f. $m\overset{\frown}{AC}$

g. $m\angle ADBm$

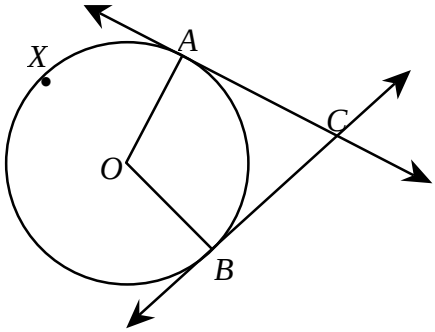


2. In ⊙ *C*, *CD* = 6. Calculate the length of *AE.*

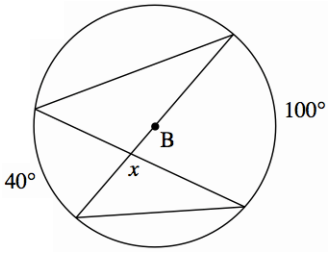
3. $\overline{AB}$ is a diameter of ⊙ *P*, *AB* = 9, $m\angle ACP = 30^\circ$, $\overline{CE} \cong \overline{ED}$. Calculate the lengths of *CE* and *EB*.



4. ⊙ *O* has tangents $\overleftrightarrow{AC}$ and $\overleftrightarrow{BC}$, $m\overset{\frown}{AXB}$ = 240°, and *OA* = 8. Calculate the length of *BC*.

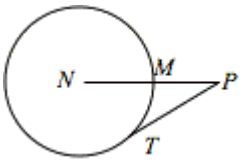


5. In the circle *B* calculate the value of *x*.

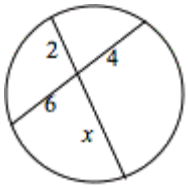


6. $\overline{PT}$ is tangent to circle *N* at *T*. The area of circle *N* is 25π cm^2. *MP* = 4 cm, what is the length of $\overline{PT}$?

A. 4 cm
B. 6 cm
C. $2\sqrt{14}$ cm
D. 8 cm
E. none of these

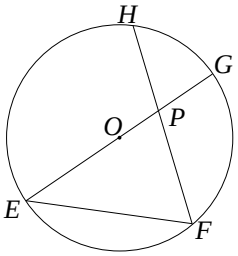


7. Calculate the value of *x* in the figure to the right:

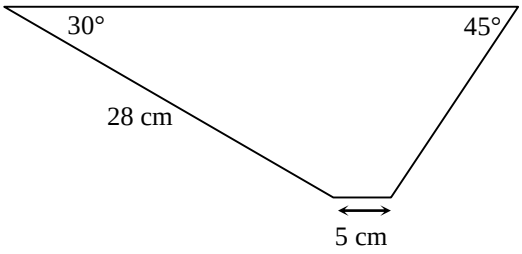


A. 3
B. 8
C. 9
D. 12
E. None of these

8. $\overline{EG}$ is the diameter of circle *O*, with $m\widehat{FG} = 41°$ and $m\widehat{EH} = 53°$. Calculate $m\angle E$ and $m\angle GPF$.



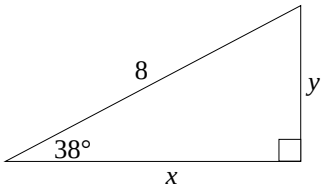
9. Calculate the area and perimeter of the trapezoid below. Show your work.



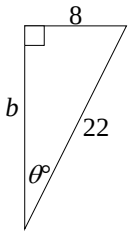
10. Captain Barbossa wants to find the height of his ship's flag above the ship's deck. His eye height is 6 feet and he is standing 30 feet from the base of the flagpole on the ship's deck. He uses his clinometer to measure an angle of elevation of 40˚ to the top of the flag. How high is the flag above the ship's deck? Draw a diagram, and show your work clearly. Label your answer!

11. Calculate the value of each variable. Clearly show your work.

a. Calculate *x* and *y*.

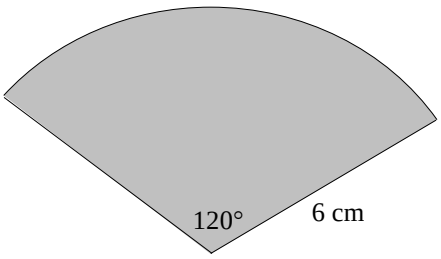


b. Calculate *b* and θ.



12. An aquarium shaped like a rectangular prism has a length of 24 inches, a width of 12 inches, and a height of 18 inches. You fill the aquarium half full with water. When you submerge a rock in the aquarium, the water level rises 0.5 inch. Find the volume of the rock.

13. Calculate the area and perimeter of the sector shown at right. Leave your answer in terms of π.



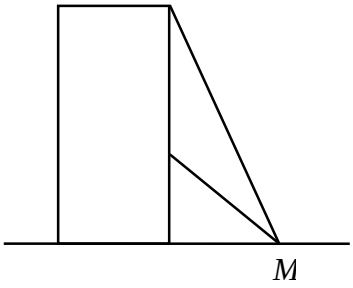
14. If two similar rectangles have a side ratio of 1:5, and the area of the smaller rectangle is 12 m², what is the area of the larger rectangle?

15. A regular polygon has 24 sides.

a. What is the sum of the interior angles of the 24-gon?
b. What is the measure of an interior angle of the 24-gon?
c. What is the measure of an exterior angle of the 24-gon?

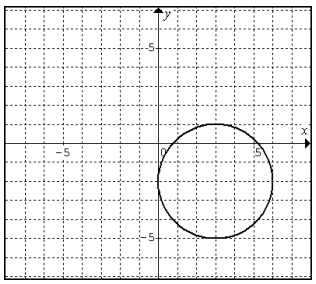
16. Each exterior angle of a regular polygon has a measure of 18°. Find the number of sides of the regular polygon.

17. Find the circumference of a circle inscribed in a square with a side length of 14 centimeters.

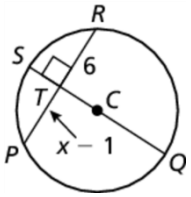


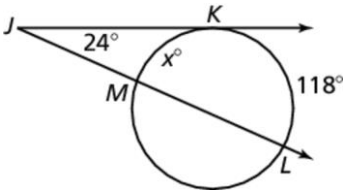
18. A building stands on level ground. At a point *M* on the ground, the angle of elevation to the second floor windowsill, which is 20' above the ground, is 40˚. From point *M*, the angle of elevation to the top of the building is 70˚. Calculate the height of the building.

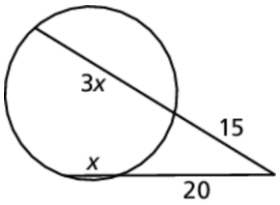
19. What is the equation of the circle graphed at right?



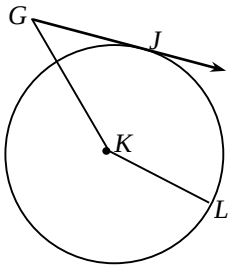
20. Calculate the value of *x*:

a.


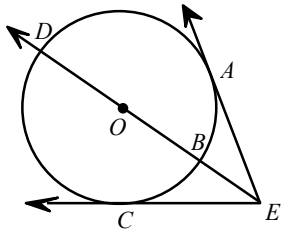
b.


c.


21. $\overline{GJ}$ is tangent to circle *K*. If *JG* = 8 and *KL* = 6, find the length of $\overline{KG}$.



22. In the figure at right, $\overline{EA}$ and $\overline{EC}$ are tangents, $\overline{BD}$ is a diameter of circle *O* and $m\widehat{BC} = 50°$. What is the $m\angle DEC$?



23. The regular decagon shown at right is inscribed in ⊙ *O* and *AB* = 8. Calculate each of the following:

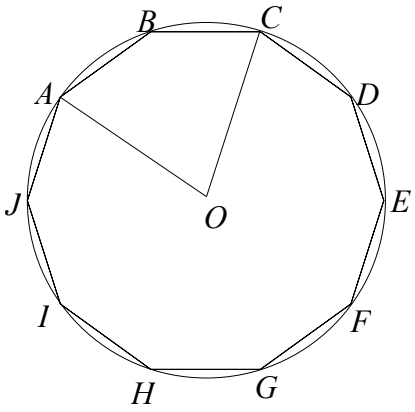
a. $m\angle AOC$

b. $m\widehat{AB} =$

c. $m\angle ACE$

d. $m\angle ABC =$

e. $m\widehat{AJI}$

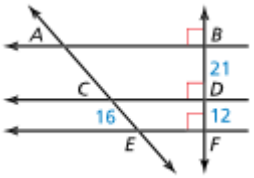


24. A rectangular jewelry box costs $125 to gold plate. Calculate the cost of gold plating a box which is similar in shape and that holds 8 times as much.

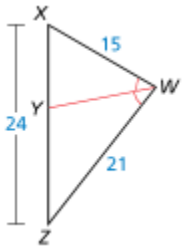
25. Calculate the volume of a cone with a height of 2 feet and a base circumference of 7π feet.

26. In $\Delta DEF, m\angle D = 115°, DE = 23,$ and $DF = 27$. Find the area of ΔDEF. Round to the nearest tenth.

27. Find AC



28. In the diagram, $\angle XWY \cong \angle ZWY$. Find XY

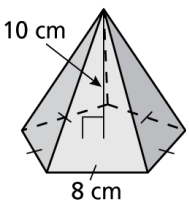


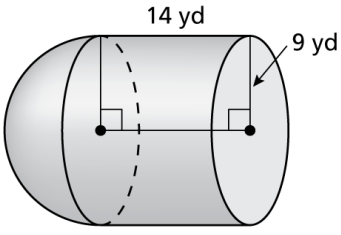
29. Find the area.

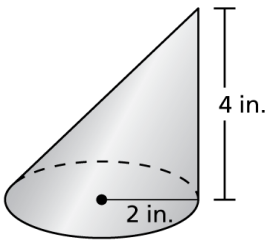
a. a pentagon with an apothem of 7 centimeters

b. a decagon with a radius of 20 meters

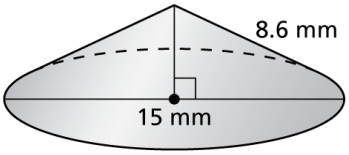
30. Find the volume.







31. Find the surface area.



Geometry Semester 2 Final Exam Topics

Chapter 7	Properties of special quadrilaterals Interior and exterior angle measures
Chapter 8	Area and perimeter ratios Using similarity theorems
Chapter 9	Special right triangles Sine, cosine, tangent ratios Trig story problems
Chapter 10	All circle relationships, angle and side Equation of a circle
Chapter 11	Area of regular polygons Surface area and volume

Answers:

1. a: 40°, b: 100°, c: 40°, d: 20°, e: 75°, f: 105°, g: 90°
2. $3\sqrt{3} \approx 5.196$
3. CE = $2.25\sqrt{3} \approx 3.897$, EB = 2.25
4. $8\sqrt{3}$
5. 110°
6. C
7. D
8. 20.5°, 47°
9. A = $168 + 98\sqrt{3} \approx 337.34$; P = $52 + 14\sqrt{3} + 14\sqrt{2} \approx 96.04$
10. approx. 31.173 feet
11. a: $x \approx 6.304$, $y \approx 4.925$; b: $b \approx 20.494$, $\theta \approx 21.324°$
12. 144 in^3
13. 12π cm^2; $4\pi + 12$ cm
14. 300 m^2
15. a. 3960°; b. 165°; 15°
16. 20 sides
17. 44.0 cm
18. Height = 65.5 ft
19. $(x-3)^2 + (y+2)^2 = 9$
20. a. x = 7; b. x = 70; c. x = 7
21. $KG = 10$
22. 40°
23. a. 72° b. 36° c. 108° d. 144° e. 72°
24. $500
25. $\frac{49\pi}{6}$ or 25.66 ft^3
26. ≈ 281.4 un^2
27. 28 un
28. 10 un
29. a. 178 cm^2; b. 1175.6 m^2
30. a. 367.04 cm^3; b. 5089.38 yd^3; c. 16.76 in^3
31. 379.3 mm^2