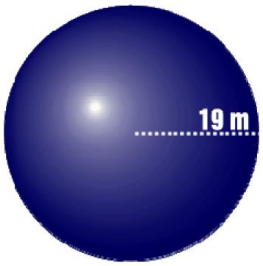
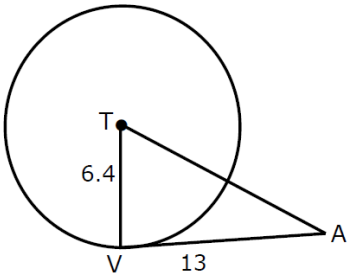
Name: _____ Date: _____

Regents Review – Session One Common Core Geometry

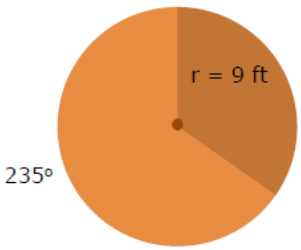
1. Calculate the volume of the sphere below. Leave your answer in terms of π.



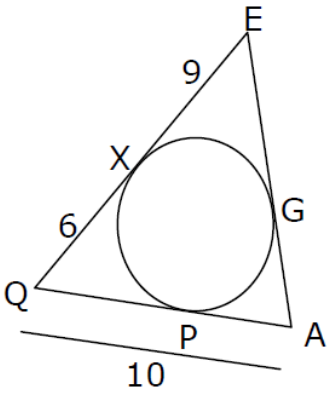
2. Given circle T below, a tangent $\overline{VA}$ is drawn. Find the length of $\overline{TA}$ to the *nearest tenth* of an inch



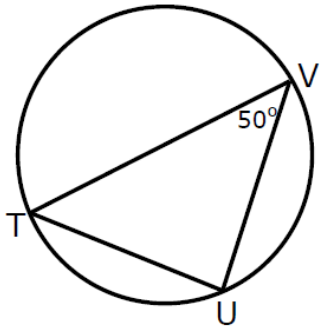
3. The radius of the circle at the right is 9 feet. Calculate the length of the arc measuring 235°. Leave your answer in terms of π.



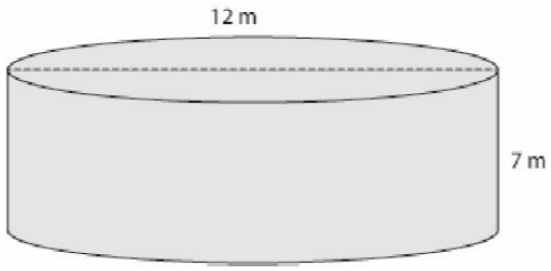
4. Find the length of AG.



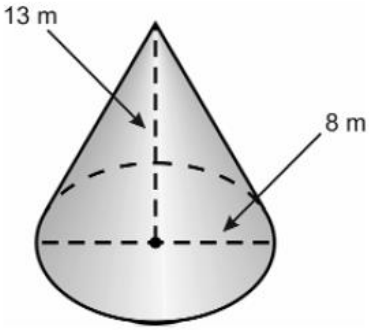
5. What is the measure of angle T, given $\overline{VT}$ is a diameter?



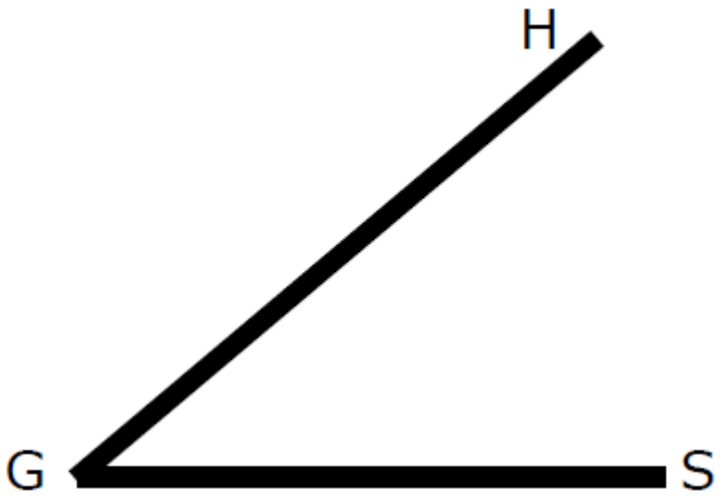
6. Determine the volume of the cylinder. Express your answer in terms of π.



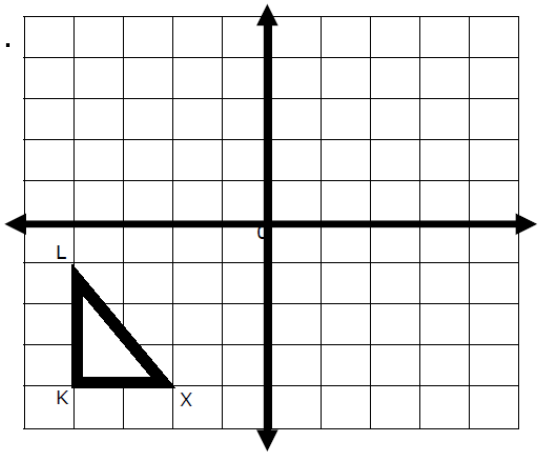
7. Find the volume of the cone. Express your answer in terms of π.



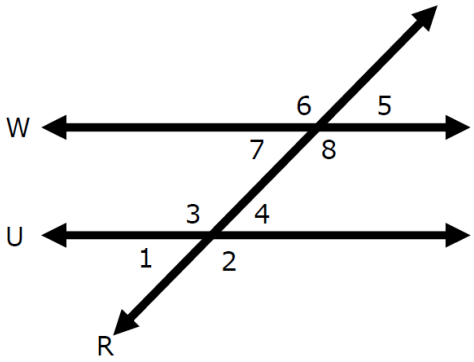
8. Bisect angle HGS.



9. Find the coordinates of $\Delta L'K'X'$ after the translation: $T_{6,4}$.



Use the following diagram for #10 – 12.



Given:

Line W and U are parallel.

10. Which three angles have the same measure as angle 8?

11. Name three angles supplementary to angle 3.

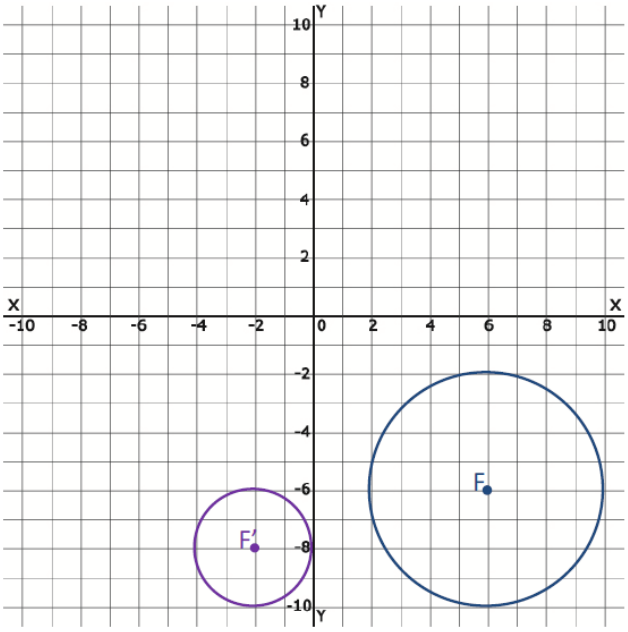
12. Name all sets of corresponding angles.

13. Write the equation of a circle centered at $(-3,8)$ and has a radius of 14 inches.

14. If point $H\ (5,-2)$ was to undergo a dilation with a scale factor 3 centered at the origin, what are the coordinates of its image, *H'*?

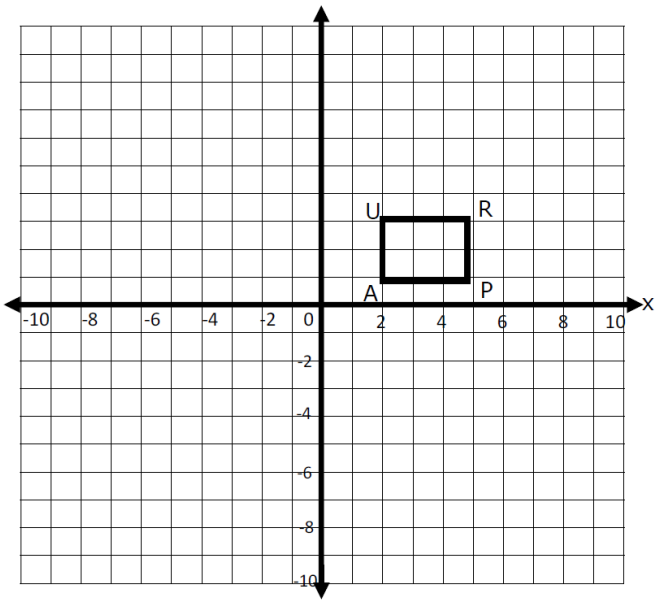
15. Line *m* has the equation $y=2x-5$ Write the equation of the image of line *m* after a dilation with a scale factor of $\frac{1}{5}$.

16. Determine the scale factor of the dilation and the translation rule that maps circle *F* onto circle *F'*.

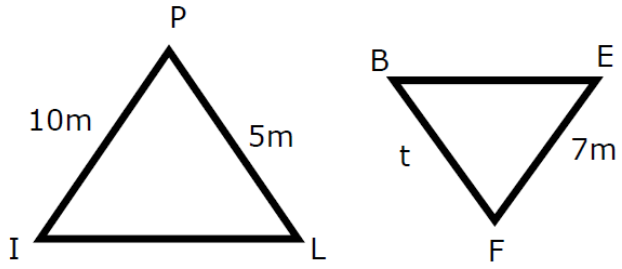


17. If the end points of a line segment are $H\ (6,-3)$ and $T\ (-3,-7)$, determine the coordinates of point *M*, the midpoint of the segment.

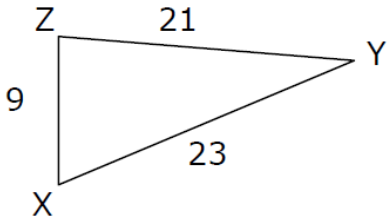
18. Graph, and state the coordinates of Rectangle $U'R'P'A'$ under a dilation with scale factor 2, centered at the origin.



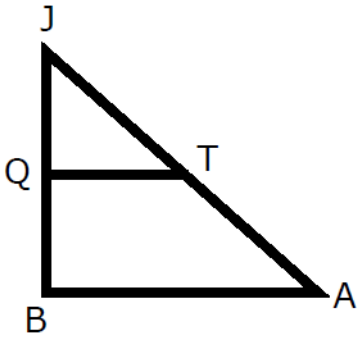
19. ΔPIL is similar to ΔFBE, find the value of *t*.



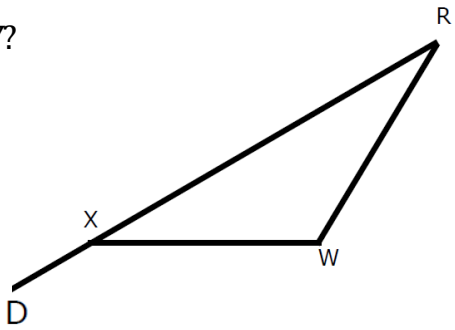
20. If $m\angle X = 59^\circ$, find the measure of $\angle Z$ to the *nearest degree*.



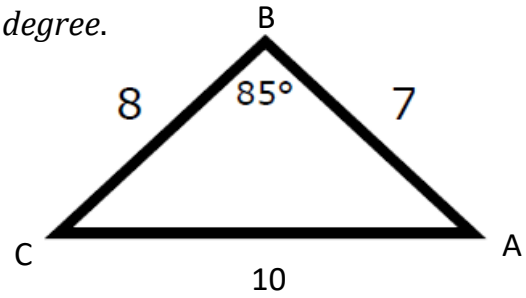
21. If $JQ = 9$, $TA = 18$, $QB = 14$ and QT is parallel to AB, find JT. Round your answer to the *nearest tenth*.



22. If $\angle R = 35^\circ$ and $\angle WXD = 135^\circ$, what is the measure of angle *W*?



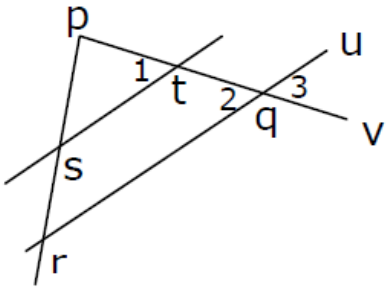
23. Given ΔABC, find the measure of angle *A*, to the *nearest degree*.



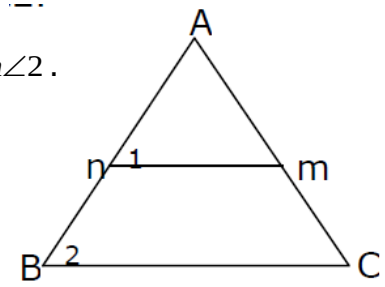
24. Does the point $(-4,-1)$ lie on the circle centered at $(3,5)$ containing the point $(7,2)$?

25. Write the equation of a circle which has a diameter with endpoints $(-4,5)$ and $(6,3)$.

26. Given $ST \parallel RU$ and $m\angle 1 = 49^\circ$, find the $m\angle 3$.



27. Line *mn* is drawn parallel to the base *BC* in ΔABC. If $m\angle 1 = 51^\circ$, find $m\angle 2$.



28. How many degrees are there in the sum of the exterior angles of a regular hexagon?

29. What is the measure of one exterior angle of a regular polygon having 8 sides?

30. If each exterior angle of a regular polygon contains 40°, how many sides does the polygon have?

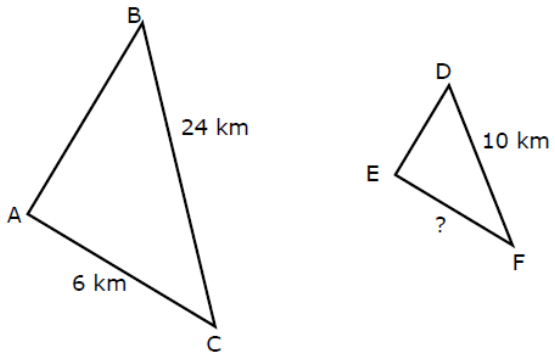
31. Convert the following equation of a circle into standard form, then state the coordinates of the center and the length of the radius.

$$x^2 + y^2 - 8x - 8y - 12 = 0$$

32. Write the equation of a circle with a center at $(4, -4)$ and passing through the point $(-7, 3)$.

33. Write the equation of a circle that is tangent to the *x*-axis, with the center located at $(-5, 4)$.

34. Given ΔABC is similar to ΔEDF, find the length of $\overline{EF}$.



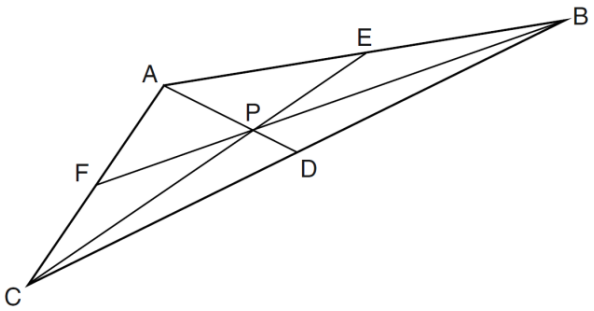
35. At a certain time of day, a 16-foot tree casts a shadow 22 feet long. At the same time another tree casts a shadow 40 feet long. How tall, to the *nearest foot*, is the second tree?

36. The sides of a triangle are 7, 16, and 18. Find the longest side of a similar triangle whose shortest side is 17.5.

37. In the diagram below of ΔABC, $\overline{AE} \cong \overline{BE}$, $\overline{AF} \cong \overline{CF}$ and $\overline{CD} \cong \overline{BD}$.

Point *P* must be the

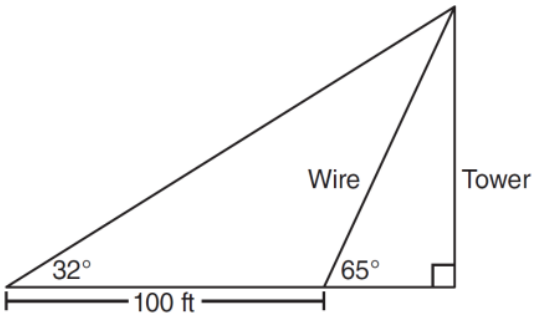
(1) Centroid
(2) Circumcenter
(3) incenter
(4) orthocenter



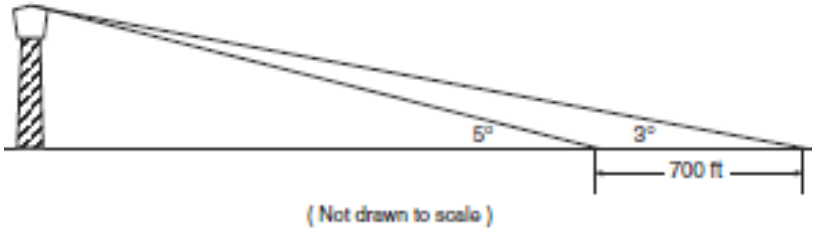
38. For a triangle, which two points of concurrence could be located outside the triangle?

    (1) incenter and centroid
    (2) centroid and orthocenter
    (3) incenter and circumcenter
    (4) circumcenter and orthocenter

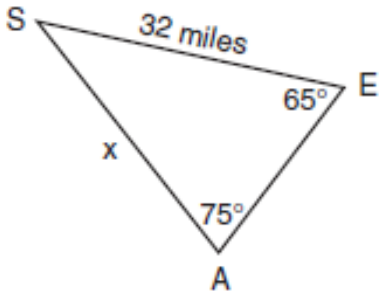
39. The diagram below shows the plans for a cell phone tower. A guy wire attached to the top of the tower makes an angle of 65 degrees with the ground. From a point on the ground 100 feet from the end of the guy wire, the angle of elevation to the top of the tower is 32 degrees. Find the height of the tower, to the *nearest foot*.



40. While sailing a boat offshore, Donna sees a lighthouse and calculates that the angle of elevation to the top of the lighthouse is 3°, as shown in the accompanying diagram. When she sails her boat 700 feet closer to the lighthouse, she finds that the angle of elevation is now 5°. How tall, to the *nearest tenth of a foot,* is the lighthouse?



41. The accompanying diagram shows the approximate linear distances traveled by a sailboat during a race. The sailboat started at point *S*, traveled to points *E* and *A*, respectively, and ended at point *S*.



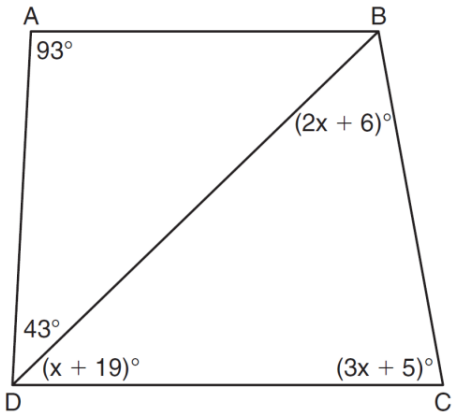
Based on the measures shown in the diagram, which equation can be used to find *x*, the distance from point *A* to point *S*?

(1) $\frac{x}{\sin 65°} = \frac{\sin 75°}{32}$ (3) $\frac{x}{65} = \frac{32}{75}$

(2) $\frac{\sin 65°}{x} = \frac{\sin 75°}{32}$ (4) $\frac{65}{x} = \frac{32}{75}$

42. The measure of the vertex angle of an isosceles triangle is 20 less than 2 times the measure of each base angle. Find the measure of each angle of the triangle.

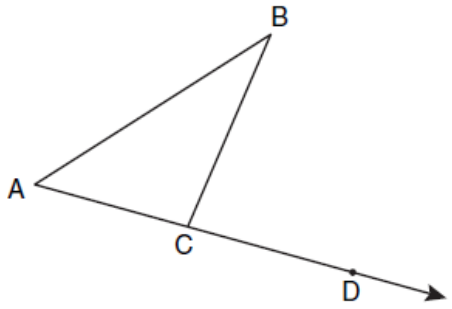
43. In the diagram below of quadrilateral *ABCD* with diagonal $\overline{BD}$, $m\angle A = 93°$, $m\angle ADB = 43°$, $m\angle C = 3x+5$, $m\angle BDC = x+19$, and $m\angle DBC = 2x+6$. Determine if $\overline{AB}$ is parallel to $\overline{DC}$. *Explain* your reasoning.



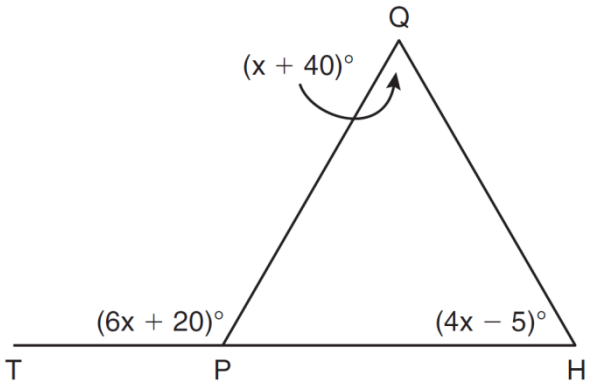
44. In ΔABC, the measure of $\angle B$ is 21 less than four times the measure of $\angle A$, and the measure of $\angle C$ is 1 more than five times the measure of $\angle A$. Find the measure, in *degrees*, of each angle of ΔABC.

45. In the diagram below, ΔABC is shown with $\overline{AC}$ extended through point *D*. If $m\angle BCD = 6x + 2$ $m\angle BAC = 3x + 15$, and $m\angle ABC = 2x - 1$, what is the value of *x*?

(1) 12
(2) $14\frac{10}{11}$
(3) 16
(4) $18\frac{1}{9}$



46. In the diagram below of ΔHQP, side $\overline{HP}$ is extended through *P* to *T*, $m\angle QPT = 6x + 20$, $m\angle HQP = x + 40$, and $m\angle PHQ = 4x - 5$. Find $m\angle QPT$.



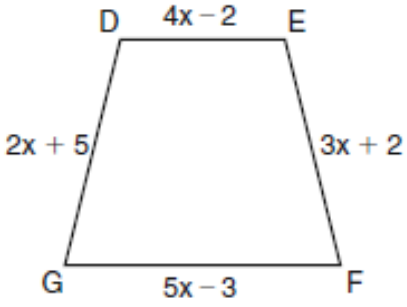
47. If the diagonals of a quadrilateral do *not* bisect each other, then the quadrilateral could be a

(1) rectangle
(2) rhombus
(3) square
(4) trapezoid

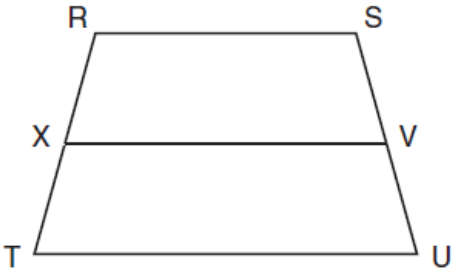
48. Isosceles trapezoid *ABCD* has diagonals $\overline{AC}$ and $\overline{BD}$. If $AC = 5x + 13$ and $BD = 11x - 5$, what is the value of *x*?

(1) 28
(2) $10\frac{3}{4}$
(3) 3
(4) $\frac{1}{2}$

49. In the diagram below of isosceles trapezoid *DEFG*, $\overline{DE} \parallel \overline{GF}$, $DE = 4x - 2$, $EF = 3x + 2$, $FG = 5x - 3$, and $GD = 2x + 5$. Find the value of *x*.



50. In the diagram below of trapezoid *RSUT*, $\overline{RS} \parallel \overline{TU}$, *X* is the midpoint of $\overline{RT}$, and *V* is the midpoint of $\overline{SU}$. If $RS = 30$ and $XV = 44$, what is the length of $\overline{TU}$?



51. The diagram below shows isosceles trapezoid *ABCD* with $\overline{AB} \parallel \overline{DC}$ and $\overline{AD} \cong \overline{BC}$. If $m\angle BAD = 2x$ and $m\angle BCD = 3x + 5$, find $m\angle BAD$.