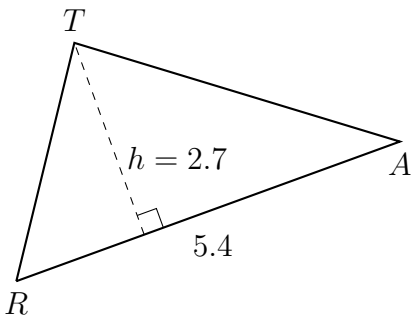
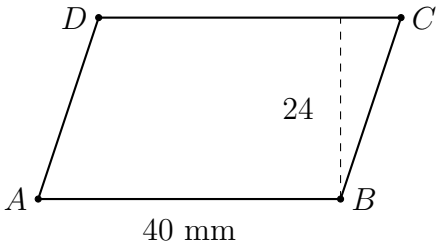
Circle area and circumference

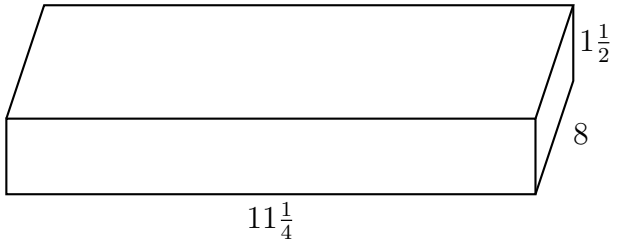
1. Find the area of $\triangle RAT$. The altitude h of the triangle is 2.7 centimeters and the base $RA = 5.4$ cm. Show work by writing an equation before making the calculation.



2. Find the area of the parallelogram $ABCD$ shown below, with $AB = 40$ millimeters and height $h = 24$ mm.



3. A wooden cutting board is $11\frac{1}{4}$ inches long, 8 inches wide, and $1\frac{1}{2}$ inches thick. Find the volume of wood in cubic inches. (**diagram not to scale**)



Model the situation with an equation. Use the formula sheet on the last page. You must start with a labeling variable. Do NOT solve!

4. *Worked example:* Find the radius of a circle circumference of 14.7.

$$C = 2\pi r = 14.7$$

5. A prism has a base area of 20 square centimeters. Its volume is 200 cubic centimeters. Find the prism's height, h.

6. A water tank in the shape of a cylinder has a volume of 250 cubic feet. Its height is 12 feet. Find the radius of the base of the tank.

7. A spherical cork fishing net float has a volume of 4000 cubic centimeters. Find its radius.

8. The volume of a cone having a **diameter** of 10 inches is 200 cubic inches. Find the cone's height.

9. The volume of the Great Pyramid of Giza, the tomb of Pharoah Khufu, is approximately 2,500,000 cubic meters. It is 140 meters tall. Find the area of its base.

10. The smaller pyramid for his wife, Queen Meretites, has a square base with an area of 2500 square meters. Find the length of the side of its base, s.

11. In your notebook, write the formulas for the area and circumference of circles:

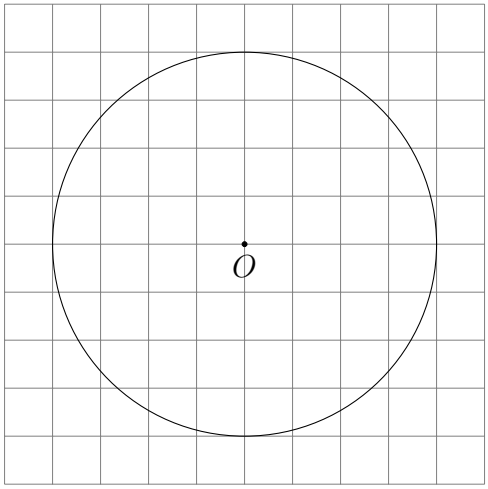
$$A = \pi r^2$$

$$C = \pi D = 2\pi r$$

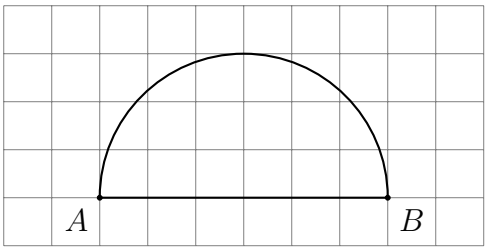
12. Given the circle centered at O with radius $r = 4$.

    (a) Find the circumference of a circle.

    (b) Find the area of the circle.



13. Given the semi-circle shown with diameter $AB = 6$. Find its area and perimeter.



14. Find the radius of a circle having an area of 25π.

15. Find the diameter of a circle with a circumference of 31.416.

Equation-of-a-circle algebra competencies

16. Expand each binomial-squared expression to the form $ax^2 + bx + c$.

    (a) $(x + 3)(x + 3)$

    (b) $(x + 2)^2$

    (c) $(x + 5)^2$

    (d) $(x + 7)^2$

17. Simplify each radical.

    (a) $\sqrt{50}$

    (b) $\sqrt{18}$

    (c) $\sqrt{27}$

    (d) $\sqrt{24}$

18. Solve for the appropriate variable (h and r).

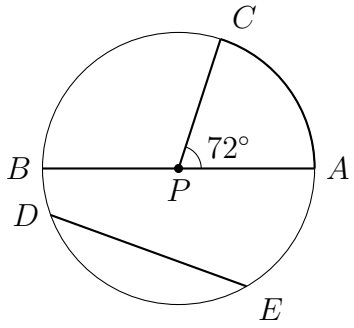
    (a) $Area = \frac{1}{2}(14.8)h = 62.9$

    (b) $Area = \pi r^2 = 483$

Vocabulary study sheet: Circles (tear this sheet off and save it)

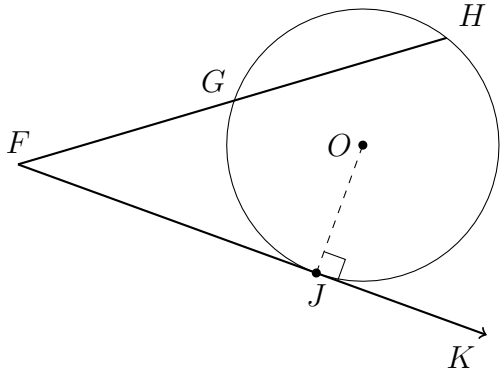
19. **Internal line segments:** Circle with center at point P, as shown.

    - Diameter $\overline{AB}$
    - Radius $\overline{CP}$
    - Chord $\overline{DE}$
    - Central angle $\angle APC$
    - Arc $\overset{\frown}{AC}$ (with measure $m\overset{\frown}{AC} = 72°$)



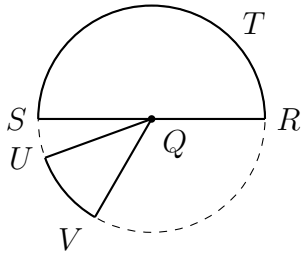
20. **External lines:** Circle with center at point O, at right.

    - Secant $\overline{FGH}$
    - Radius $\overline{OJ}$
    - Tangent $\overline{FJK}$
    - Point of tangency J
    - Note: $\overline{OJ} \perp \overline{FJK}$



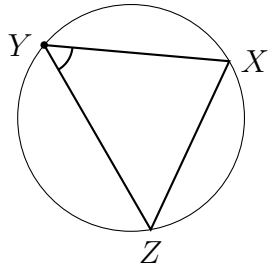
21. **Areas:** Circle with center at point Q.

    - Diameter $\overline{RS}$
    - Semi-circle RST
    - Sector QUV



22. **Inscribed polygons and angles:** Circle with triangle inscribed.

    - Inscribed $\triangle XYZ$
    - Inscribed $\angle XYZ$



23. Triangle vocabulary: vertex, side, hypotenuse, acute, obtuse, perpendicular, median, altitude, perpendicular bisector

24. Situations with right triangle hypotenuses as circle radii.

25. Use the tangent function to determine the measure of the central angle θ.

26. A regular pentagon is inscribed in a circle as shown below. What is the measure of the central angle between two consecutive vertices, $m\angle AOB$?