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**8.2b Do Now: Estimating and measuring angles, length, and area**

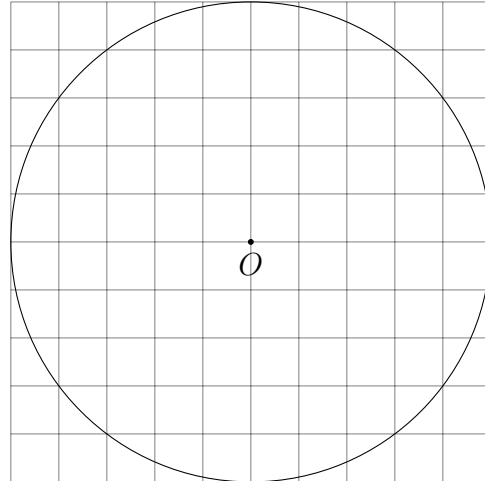
1. In your notebook, write the formulas for the area and circumference of circles:

$$A = \pi r^2$$

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

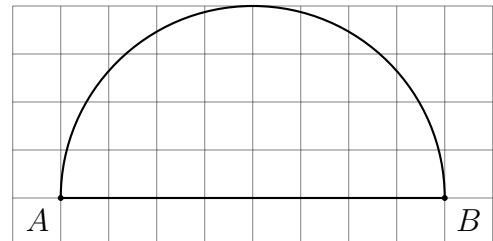
2. Given the circle centered at  $O$  with radius  $r = 5$ .

(a) Find the circumference of a circle.



(b) Find the area of the circle.

3. Given the semi-circle shown with diameter  $AB = 8$ . Find its area and perimeter.



4. Find the radius of a circle having an area of  $49\pi$ .

5. Find the diameter of a circle with a circumference of 62.832.

**Classwork: Estimating and measuring angles, length, and area**

6. Find the area of a semi-circle with radius of 7 centimeters.

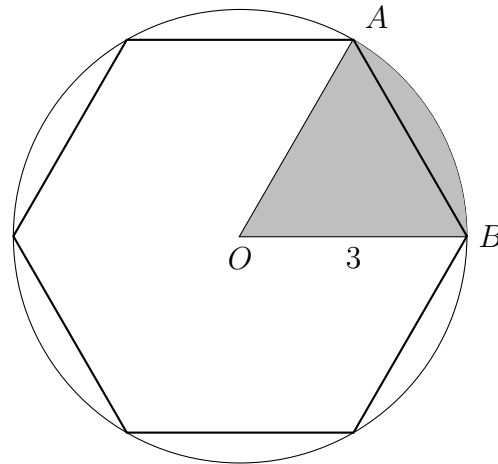
7. Given circle  $O$  with radius  $OB = 3$  cm.

(a) Find the circumference of circle  $O$ .

(b) Find the area of the circle.

(c) A hexagon is inscribed in the circle, with  $A$  and  $B$  two of its vertices.

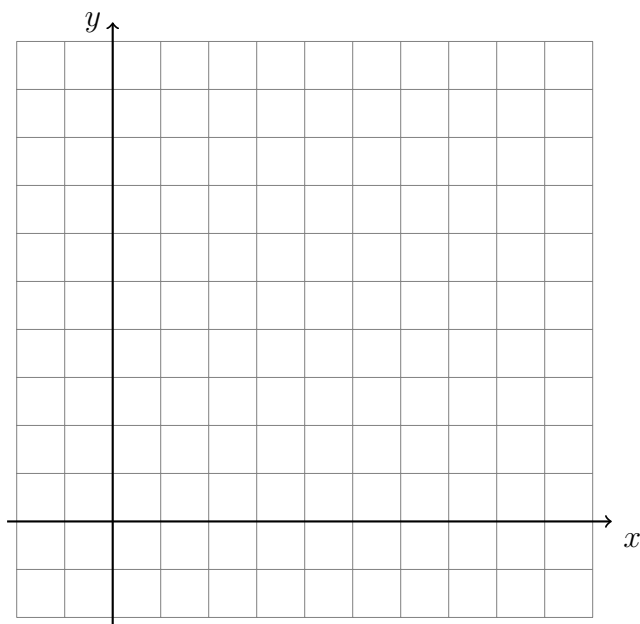
Find the area of the sector  $AOB$ .



8. Find the volume of a pyramid ( $V = \frac{1}{3}Bh$ ) having a height of 11.3 inches and with a square base having side lengths of 7 inches. Express your result to the *nearest cubic inch*.

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9. Find the volume of a hemisphere with a radius of 30 inches, to the *nearest whole cubic inch*. (The formula for the volume of a *sphere* is  $V = \frac{4}{3}\pi r^3$ )
10. Given  $R(-2, 0)$  and  $S(3, 5)$ , find the length of  $\overline{RS}$ . Simplify the radical.
11. On the graph, draw polygon ABCDEF with vertices A(1, 1), B(1, 4), C(3, 4), D(3, 7), E(8, 7), and F(8, 1). Find the perimeter and the area of the polygon.



## High School Math Reference Sheet

1 inch = 2.54 centimeters	1 kilometer = 0.62 mile	1 cup = 8 fluid ounces
1 meter = 39.37 inches	1 pound = 16 ounces	1 pint = 2 cups
1 mile = 5280 feet	1 pound = 0.454 kilogram	1 quart = 2 pints
1 mile = 1760 yards	1 kilogram = 2.2 pounds	1 gallon = 4 quarts
1 mile = 1.609 kilometers	1 ton = 2000 pounds	1 gallon = 3.785 liters
		1 liter = 0.264 gallon
		1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pyramid	$V = \frac{1}{3}Bh$

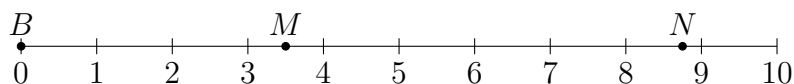
Pythagorean Theorem	$a^2 + b^2 = c^2$
Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Arithmetic Sequence	$a_n = a_1 + (n - 1)d$
Geometric Sequence	$a_n = a_1 r^{n-1}$
Geometric Series	$S_n = \frac{a_1 - a_1 r^n}{1 - r}$ where $r \neq 1$
Radians	1 radian = $\frac{180}{\pi}$ degrees
Degrees	1 degree = $\frac{\pi}{180}$ radians
Exponential Growth/Decay	$A = A_0 e^{k(t - t_0)} + B_0$

### Estimating and measuring

12. The point  $P$  falls  $A(0)$  and  $B(10)$  on the numberline  $\overleftrightarrow{AB}$  as shown below.



- (a) Estimate the value of  $P$  without using any tools.
- (b) Find the position of  $P$  as accurately as you can with a ruler.
13. The distance from  $B$  on the line is scaled so that each centimeter represents one foot.

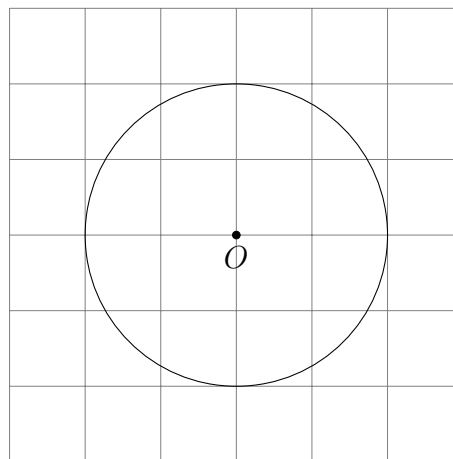


- (a) Estimate the distance of  $M$  from  $B$  in feet and inches (by eye).
- (b) Using a ruler, find the distance between  $M$  and  $N$  in feet and inches.
14. Given the circle  $O$  with diameter  $D = 4$ .

- (a) Estimate the area by counting the squares in the grid.

- (b) Calculate the area.

- (c) Quantify the error in your estimate as a percentage.



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15. Given circle  $O$  with chords  $\overline{AD}$  and  $\overline{BE}$  intersecting at  $C$ , as shown in the diagram. Use a protractor to measure each angle.

(a) Find the  $m\angle A$ .

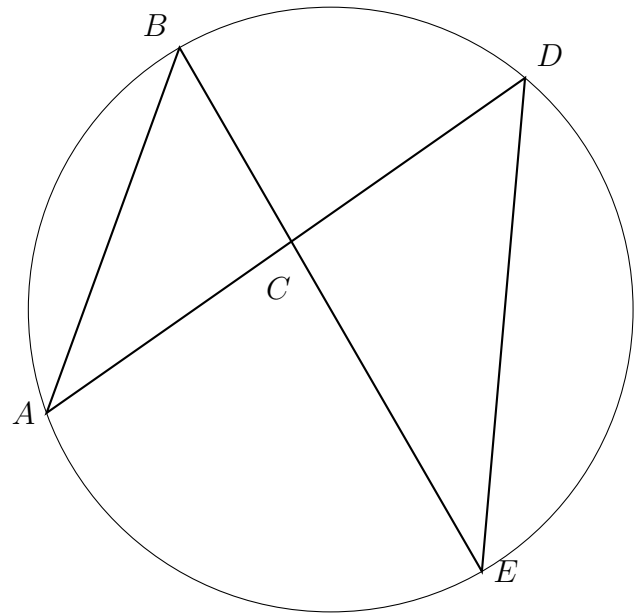
(b) Find the  $m\angle B$ .

(c) Find the  $m\angle D$ .

(d) Find the  $m\angle E$ .

(e) Given that  $BE = 8$   
Find  $BC$ .

(f) Find  $EC$ .



16. The diagram below is drawn to scale. Given that  $BE = 10$  and  $DE = 5$ , find  $AC$ .

