## STAAR GEOMETRY

REFERENCE MATERIALS

## CIRCUMFERENCE

| Circle | $C=2 \pi r$ | or | $C=\pi d$ |
| :---: | :---: | :---: | :---: |
| AREA |  |  |  |
| Triangle |  |  | $A=\frac{1}{2} b h$ |
| Rectangle or parallelogram |  |  | $A=b h$ |
| Rhombus |  |  | $A=\frac{1}{2} d_{1} d_{2}$ |
| Trapezoid |  |  | $A=\frac{1}{2}\left(b_{1}+b_{2}\right) h$ |
| Regular polygon |  |  | $A=\frac{1}{2} a P$ |
| Circle |  |  | $A=\pi r^{2}$ |
| SURFACE AREA |  |  |  |
|  | Lateral |  | Total |
| Prism | $S=P h$ |  | $S=P h+2 B$ |
| Pyramid | $S=\frac{1}{2} P l$ |  | $S=\frac{1}{2} P l+B$ |
| Cylinder | $S=2 \pi r h$ |  | $S=2 \pi r h+2 \pi r^{2}$ |
| Cone | $S=\pi r l$ |  | $S=\pi r l+\pi r^{2}$ |
| Sphere |  |  | $S=4 \pi r^{2}$ |

## VOLUME

Prism or cylinder

$$
V=B h
$$

Pyramid or cone

$$
V=\frac{1}{3} B h
$$

Sphere
$V=\frac{4}{3} \pi r^{3}$

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## COORDINATE GEOMETRY

Midpoint

$$
\left(\frac{x_{1}+x_{2}}{2}, \frac{y_{1}+y_{2}}{2}\right)
$$

Distance formula

$$
d=\sqrt{\left(x_{2}-x_{1}\right)^{2}+\left(y_{2}-y_{1}\right)^{2}}
$$

Slope of a line

$$
m=\frac{y_{2}-y_{1}}{x_{2}-x_{1}}
$$

Slope-intercept form of a linear equation

$$
y=m x+b
$$

Point-slope form of a linear equation

$$
y-y_{1}=m\left(x-x_{1}\right)
$$

Standard form of a linear equation

$$
A x+B y=C
$$

## RIGHT TRIANGLES

Pythagorean theorem

$$
a^{2}+b^{2}=c^{2}
$$

Trigonometric ratios

$$
\begin{aligned}
& \sin A=\frac{\text { opposite leg }}{\text { hypotenuse }} \\
& \cos A=\frac{\text { adjacent leg }}{\text { hypotenuse }} \\
& \tan A=\frac{\text { opposite leg }}{\text { adjacent leg }}
\end{aligned}
$$

$$
30^{\circ}-60^{\circ}-90^{\circ} \text { triangle }
$$



$45^{\circ}-45^{\circ}-90^{\circ}$ triangle


