

**Definitions and Formulas  
for Core Academic Skills Assessment—Mathematics**

**Definitions**

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|                                      |                                      |                                      |
|--------------------------------------|--------------------------------------|--------------------------------------|
| $>$ is greater than                  | $\triangle ABC$ triangle $ABC$       | $A \cup B$ set $A$ union set $B$     |
| $<$ is less than                     | $\overleftrightarrow{AB}$ line $AB$  | $A \cap B$ set $A$ intersect set $B$ |
| $\pi \approx 3.14$                   | $\overline{AB}$ line segment $AB$    | $\emptyset$ empty set                |
| $\angle$ angle                       | $AB$ the length of line segment $AB$ |                                      |
| $m\angle A$ the measure of angle $A$ |                                      |                                      |

**Conversions for Units of Measurement**

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|                        | U.S. Standard  | Metric  | Time   |
|------------------------|--|---|--|
| <b>Distance</b>        | 12 inches = 1 foot<br>3 feet = 1 yard<br>5280 feet = 1 mile<br>1 inch = 2.54 centimeters | 1 kilometer = 1000 meters<br>1 meter = 100 centimeters<br>1 centimeter = 10 millimeters | 1 minute = 60 seconds<br>1 hour = 60 minutes<br>1 day = 24 hours |
| <b>Volume (liquid)</b> | 1 gallon = 4 quarts<br>1 quart = 32 ounces<br>1 quart $\approx$ 0.95 liters              | 1 liter = 1000 milliliters<br>1 cubic centimeter = 1 milliliter                         |  |
| <b>Mass</b>            | 1 pound = 16 ounces<br>1 ton = 2000 pounds<br>2.2 pounds $\approx$ 1 kilogram            | 1 gram = 1000 milligrams<br>1 kilogram = 1000 grams                                     |  |

**Formulas**

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Note: Not all formulas necessary are listed, nor are all formulas listed used on this test.

Simple interest  $I = P \times r \times t$

Compound interest  $A = P(1 + r)^t$

Midpoint  $\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

Distance  $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Pythagorean theorem  $c^2 = a^2 + b^2$

${}_n P_r = \frac{n!}{(n-r)!}$

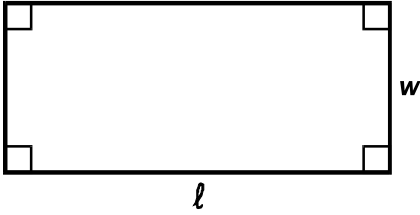
${}_n C_r = \frac{n!}{(n-r)!r!}$

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**Formulas (continued)**

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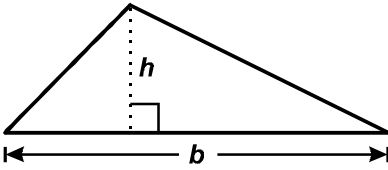
**Rectangle**



$$\text{Area} = lw$$

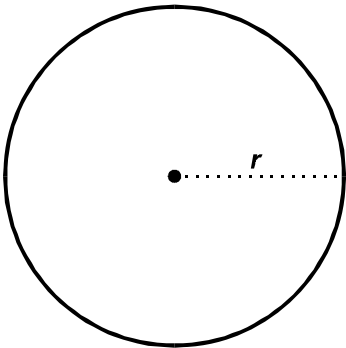
$$\text{Perimeter} = 2l + 2w$$

**Triangle**



$$\text{Area} = \frac{1}{2}bh$$

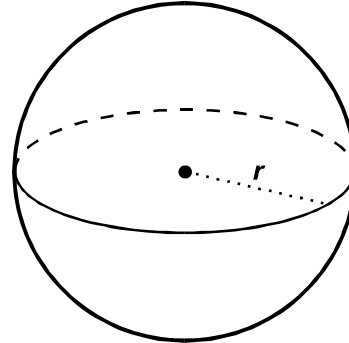
**Circle**



$$\text{Area} = \pi r^2$$

$$\text{Circumference} = 2\pi r$$

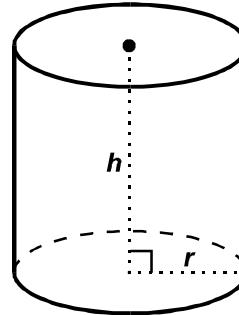
**Sphere**



$$\text{Surface area} = 4\pi r^2$$

$$\text{Volume} = \frac{4}{3}\pi r^3$$

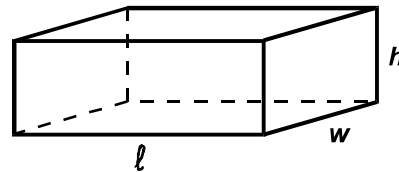
**Right cylinder**



$$\text{Surface area} = 2\pi rh + 2\pi r^2$$

$$\text{Volume} = \pi r^2 h$$

**Rectangular solid**



$$\text{Surface area} = 2lw + 2lh + 2wh$$

$$\text{Volume} = lwh$$

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**End of Definitions and Formulas**