Grades 6-8 FCAT Mathematics Reference Sheet

<table>
<thead>
<tr>
<th>Area</th>
<th>KEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triangle: $A = \frac{1}{2} bh$</td>
<td>$b = \text{base}$</td>
</tr>
<tr>
<td></td>
<td>$d = \text{diameter}$</td>
</tr>
<tr>
<td></td>
<td>$h = \text{height}$</td>
</tr>
<tr>
<td></td>
<td>$l = \text{length}$</td>
</tr>
<tr>
<td></td>
<td>$w = \text{width}$</td>
</tr>
<tr>
<td></td>
<td>$A = \text{area}$</td>
</tr>
<tr>
<td></td>
<td>$C = \text{circumference}$</td>
</tr>
<tr>
<td></td>
<td>$S.A. = \text{Surface area}$</td>
</tr>
<tr>
<td></td>
<td>$V = \text{volume}$</td>
</tr>
</tbody>
</table>

Use 3.14 or $\frac{22}{7}$ for $\pi$

**Pythagorean theorem:**

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

**Circumference**

$$C = \pi d = 2\pi r$$

**In a polygon, the sum of the measures of the interior angles is equal to $180(n - 2)$, where $n$ represents the number of sides.**

**Conversions**

- 1 yard = 3 feet = 36 inches
- 1 mile = 1,760 yards = 5,280 feet
- 1 acre = 43,560 square feet
- 1 hour = 60 minutes
- 1 minute = 60 seconds
- 1 liter = 1000 milliliters = 1000 cubic centimeters
- 1 pound = 16 ounces
- 1 ton = 2,000 pounds

Metric numbers with four digits are represented without a comma (e.g., 9960 kilometers). For metric number greater than four digits, a space is used instead of a comma (e.g., 12 500 liters).
Grades 9-10 FCAT Mathematics Reference Sheet

<table>
<thead>
<tr>
<th>Shape</th>
<th>Area</th>
<th>Volume</th>
<th>Total Surface Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triangle</td>
<td>( A = \frac{1}{2} bh )</td>
<td>( V = \frac{1}{3} \pi r^2 h )</td>
<td>( \text{S.A.} = \frac{1}{2} (2\pi r l) + \pi r^2 = \pi rl + \pi r^2 )</td>
</tr>
<tr>
<td>Rectangle</td>
<td>( A = lw )</td>
<td>( V = \frac{1}{3} lwh )</td>
<td>( \text{S.A.} = 4 (\frac{1}{2} l l) + l^2 = 2l^2 + l^2 )</td>
</tr>
<tr>
<td>Trapezoid</td>
<td>( A = \frac{1}{2} h (b_1 + b_2) )</td>
<td>( V = )</td>
<td>( \text{S.A.} = 4\pi r^2 )</td>
</tr>
<tr>
<td>Parallelogram</td>
<td>( A = bh )</td>
<td>( V = \pi r^2 h )</td>
<td>( \text{S.A.} = 2\pi rh + 2\pi r^2 )</td>
</tr>
<tr>
<td>Circle</td>
<td>( A = \pi r^2 )</td>
<td>( V = )</td>
<td>( \text{S.A.} = 2(lw) + 2(hw) + 2(lh) )</td>
</tr>
</tbody>
</table>

**KEY**

- \( b = \text{base} \)
- \( d = \text{diameter} \)
- \( h = \text{height} \)
- \( r = \text{radius} \)
- \( l = \text{length} \)
- \( w = \text{width} \)
- \( \ell = \text{slant height} \)
- \( A = \text{area} \)
- \( C = \text{circumference} \)
- \( V = \text{volume} \)

S.A. = Surface area

Use 3.14 or 22/7 for \( \pi \)

Circumference

\[ C = \pi d = 2\pi r \]

In the following formulas, \( n \) represents the number of sides.

In a polygon, the sum of the measures of the interior angles is equal to \( 180(n - 2) \).

In a regular polygon, the measure of an interior angle is equal to \( \frac{180(n - 2)}{n} \).
Grades 9-10 FCAT Mathematics Reference Sheet

<table>
<thead>
<tr>
<th>Pythagorean theorem:</th>
<th>Distance between two points $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$:</th>
</tr>
</thead>
<tbody>
<tr>
<td>$c^2 = a^2 + b^2$</td>
<td>$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$y = mx + b$</th>
<th>Midpoint between two points $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slope-intercept form of an equation of a line, where $m =$ slope and $b =$ the y-intercept:</td>
<td>$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$d = rt$</th>
<th>$I = p rt$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance, rate, time formula, where $d =$ distance, $r =$ rate, $t =$ time.</td>
<td>Simple interest formula, where $p =$ principal, $r =$ rate, $t =$ time.</td>
</tr>
</tbody>
</table>

Conversions

1 yard = 3 feet = 36 inches
1 mile = 1,760 yards = 5,280 feet
1 acre = 43,560 square feet
1 hour = 60 minutes
1 minute = 60 seconds

1 liter = 1000 milliliters = 1000 cubic centimeters
1 meter = 100 centimeters = 1000 millimeters
1 kilometer = 1000 meters
1 gram = 1000 milligrams
1 kilogram = 1000 grams

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 pound = 16 ounces
1 ton = 2,000 pounds

Metric numbers with four digits are represented without a comma (e.g., 9960 kilometers). For metric number greater than four digits, a space is used instead of a comma (e.g., 12 500 liters).
DIRECTIONS: Refer to your FCAT Mathematics Reference Sheet to answer each of the following.

1. Make a drawing of a trapezoid.

2. Write the formula for the volume of a sphere. What is the volume of a sphere with a radius of 3 inches?

3. Write the formula for the total surface area and the volume of a right circular cylinder. Use the correct formula to find how many ounces of broth could be held in a cylinder that has a radius of 2 inches and a height of 7 inches if every cubic inch of volume contains one-fourth ounce of broth. Round your answer to the nearest whole number.

4. Find the circumference of a circle with a radius of 14 cm. Use the fractional value for pi (π) that is given on your reference sheet.

5. What is the sum of the interior angles of a regular pentagon? (5 sides)

6. If the equation of a given line is \( y = \frac{1}{4}x + 2 \), what is the slope of the line, and what is its y-intercept?

7. Write out the Pythagorean Theorem. The hypotenuse is represented by the letter and the two legs are represented by the letters and . Find the length of the hypotenuse of an isosceles right triangle with legs of 5 units. Round your answer to the nearest hundredth or give the exact square root answer.

8. Write the formula for the distance between two points. Use this formula to find the distance between the points (-1, -1) and (3, 3).

9. Write the formula for simple interest. Find the simple interest on a loan of $300 for 8 months at 6% annual interest.
10. Write the distance, rate, time formula. Using this formula, how long does it take you to drive 780 miles at 65 mph?

11. Write the formula for the midpoint between two points. Find the coordinates of the midpoint between the points (8, -3) and (-2, 11).

12. How many inches are in a yard? How many in \(\frac{1}{4}\) yard?

13. There are feet in a mile. What part of a mile is 1320 feet?

14. How many cups are in one gallon?

15. How many ounces are in one quart?

Find the area of each figure.

16.

17.

18.

Find the volume of each figure.

19.

20.

Used by permission of Cheryl Greenfield, Gibbs High School, 2002.