

# WOODLAWN HIGH SCHOOL

## Mathematics, Science & Pre-Engineering

The Mathematics, Science & Pre-Engineering program provides students with a highly competitive college preparatory program, offering challenging courses of study at the gifted and talented level in the fields of mathematics, science and engineering. Using Project Lead The Way engineering curriculum, students are introduced to the scope, rigor, and discipline of engineering and engineering technology. Students have the opportunity to earn articulated college credit.

**BCPS Magnet Transportation Information:** Woodlawn High (Southwest Area)

Transportation is provided at community pick-up points only for students who are zoned for a Southwest or Northwest area high school, as well as those who would otherwise attend Dulaney or Towson High School.

**Open House:** Tuesday, October 25, 2011 Program starts at 6 p.m.

### 2012-2013 Assessment Guidelines

|                          |          |                             |        |
|--------------------------|----------|-----------------------------|--------|
| <b>Assessment Dates:</b> | Grade 9  | Monday, January 9, 2012     | 6 p.m. |
|                          | Grade 10 | Wednesday, January 11, 2012 | 6 p.m. |


**Assessment reminders will be mailed to all applicants.**

Parents/Guardians of applicants who have NOT received notification at least five (5) days prior to the assessment date MUST contact the school to verify/schedule an appointment.

**Parent(s)/guardian(s)** should contact both the school and Magnet Office immediately if the applicant cannot attend or complete the scheduled assessment due to an unforeseen illness or emergency. Please be aware that assessments will not be rescheduled without documentation verifying the illness or emergency.

**Inclement Weather Date:** Wednesday, January 18, 2012 6 p.m.

**Inclement Weather:** In the event that schools are closed due to inclement weather, weeknight magnet assessments will be postponed. Weekend magnet assessments will be postponed if the snow emergency plan is put into effect for Baltimore County. Postponed assessments will occur on the designated inclement weather date.

|                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Woodlawn High School</b><br>1801 Woodlawn Drive<br>Woodlawn, MD 21207                                                                                                                                        | <b><u>Directions to Woodlawn High School:</u></b><br><br>From I-695 <ul style="list-style-type: none"><li>Exit onto MD-122 East/Security Blvd, Exit 17, toward Woodlawn.</li><li>Turn left onto MD-122 East/Security Blvd.</li><li>Turn left onto Woodlawn Drive.</li><li>Woodlawn High School is on the right.</li></ul> |
|  A map of the Woodlawn area in Maryland, showing major roads and a red star indicating the location of Woodlawn High School. |                                                                                                                                                                                                                                                                                                                           |
| <b><u>Magnet Coordinator</u></b><br>Sommer Joe<br>(410) 944-5212 (410) 887-1309<br>sjoe@bcps.org                                                                                                                |                                                                                                                                                                                                                                                                                                                           |

# WOODLAWN HIGH SCHOOL

## Mathematics, Science & Pre-Engineering

### Prior to the Assessment

Complete the 2012-2013 Applicant Self-Evaluation included with these guidelines.

**Interest Essay:** Applicants must complete the *Student Essay* on the form provided in these guidelines. Applicants must bring the completed *Student Essay* with them to the assessment.

**How to prepare for the interview:** Applicants should be aware of the benefits and limitations of mathematics, science, engineering, and technology as it relates to daily life.

**How to prepare for the test:** Applicants can prepare for the test portion of the assessment by reviewing mathematics and science concepts taught in Grades 7 and 8. Applicants can review mathematics concepts that include solving word problems, algebraic equations, and rate problems; simplifying mathematical expressions; recognizing numerical patterns; and comparing fractions. Applicants can review science concepts that include metric units of measure, affects of gravity on objects, the scientific method, physical properties of substances, reproductive genetics, and the process of respiration. Sample questions are attached.

### On the Day of the Assessment

The assessment takes approximately 2 hours.

It is the responsibility of the parent(s)/guardian(s) to:

- ensure that the applicant attends the assessment on the scheduled date and time.
- contact the schools if scheduled magnet assessment appointments conflict.

***Failure to attend the assessment WILL result in disqualification.***

### Registration Information

Applicants will need to bring two #2 pencils to take the assessment. Assessments will begin at 6 p.m. Applicants should be accompanied by at least one parent/guardian. Applicants should arrive 15 minutes prior to the scheduled assessment time and will need to register for the assessment in the main lobby. Applicants arriving more than 15 minutes after the scheduled assessment time will not be allowed into the testing area. On average, the entire assessment takes approximately 2 hours. Parents may wait in the building or return to the school by 8 p.m.

*Electronic devices, such as iPods and cellular phones, **are not allowed** in the testing areas.*

|                                                                                        |
|----------------------------------------------------------------------------------------|
| Documented testing accommodations, as appropriate to the assessment, will be provided. |
|----------------------------------------------------------------------------------------|

# WOODLAWN HIGH SCHOOL

## Mathematics, Science & Pre-Engineering

### Assessment Description

On the day of the assessment, applicants will submit the writing assessment, participate in an interview, and complete a mathematics and science test.

#### Writing Assessment: (15 pts)

Before coming to the assessment, applicants must write an essay, addressing the prompt that is included with these assessment guidelines. Applicants must bring the completed essay to the assessment. Do NOT submit the essay with the application. The writing assessment will be scored using a standard rubric on a 15 point scale.

#### Science/Mathematics Test: (25 points)

The test consists of 20 selected-response questions that cover a variety of concepts in mathematics and science. Applicants will be given an opportunity to complete the assessment in full.

#### Interview: (10 pts)

Students will be asked to respond to two, program-related, open-ended questions before a panel of 3 judges. Using a standard rubric, the judges will evaluate the applicant's ability to effectively address the questions, as well as the completeness and quality of the responses.

## Magnet Events

|                                    |                                                                      |                         |
|------------------------------------|----------------------------------------------------------------------|-------------------------|
| <b>Magnet EXPO!</b>                | <b>Saturday, September 24, 2011</b><br><b>Crowne Plaza Timonium</b>  | <b>10 a.m. - 2 p.m.</b> |
| <b>Magnet Application Meetings</b> | <b>Tuesday, September 27, 2011</b><br><b>Woodlawn HS Auditorium</b>  | <b>6p.m.</b>            |
|                                    | <b>Wednesday, September 28, 2011</b><br><b>Kenwood HS Auditorium</b> | <b>6p.m.</b>            |
| <b>Application Deadline</b>        | <b>Wednesday, November 30, 2011</b>                                  |                         |

Application packets are available at [www.bcps.org/offices/omp](http://www.bcps.org/offices/omp). Applications must be hand delivered or postmarked on or before **November 30, 2011**. Late applications are not processed



# WOODLAWN HIGH SCHOOL MAGNET PROGRAM

## MATHEMATICS, SCIENCE & PRE-ENGINEERING

### Math/Science Practice Problems

1. Evaluate each expression

a.  $4(5-3)^2$

b.  $5(9+3) - 3(4)$

c.  $25 - 1/3(18+9)$

2. Evaluate each expression if  $a = 2$ ,  $b = 5$ ,  $x = 4$ ,  $n = 10$

a.  $x^2 - 4n$

b.  $bx + an$

c.  $n^2 + 3(a+4)$

3. Simplify

a.  $|10 - 22|$

b.  $\left|\frac{1}{2} - \frac{1}{4}\right|$

c.  $\left(\frac{2}{3}y^3\right)(3y^2)^3$

d.  $a^5(a)(a^7)$

4. Solve each equation

a.  $7x + 6 = -36$

b.  $5x + 4x = -72$

c.  $-\frac{4}{13}x - 7 = 6$

5. Write an algebraic equation for each statement

a. 4 less than one-half the cube of a number  $x$  is 3

b. -10 increased by 4 times a number  $x$  is 2

6. Find the solution set for each equation, given the replacement set

a.  $2y = 8 - 4x$ ;  $\{(2,0), (0,4), (0,2), (-4,12)\}$

b.  $3x + 4y = 10$ ;  $\{(3, 0.25), (-10,5), (2,1), (5,5)\}$

7. Convert 10 meters to equivalent:

a. centimeters

b. millimeters

c. kilometers

8. List the steps of the scientific method.

9. What is the Law of Conservation of Mass?

# WOODLAWN HIGH SCHOOL MAGNET PROGRAM

## MATHEMATICS, SCIENCE & PRE-ENGINEERING

### Answer Key

#### Math/Science Practice Problems

1. Evaluate each expression

a.  $4(5-3)^2$

**16**

b.  $5(9 + 3) - 3(4)$

**48**

c.  $25 - 1/3(18 + 9)$

**16**

$4(5 - 3)^2$

$4(2)^2$

$4(4)$

$16$

*Hint: Remember the order of operations*

2. Evaluate each expression if  $a = 2, b = 5, x = 4, n = 10$

a.  $x^2 - 4n$

**-24**

b.  $bx + an$

**40**

c.  $n^2 + 3(a + 4)$

**38**

$x^2 - 4n$

$(4)^2 - 4(10)$

$16 - 40$

$- 24$

*Hint: substitute the vales into the expression, then simplify*

3. Simplify

a.  $|10 - 22|$

**12**

b.  $\left| \frac{1}{2} - \frac{1}{4} \right|$

**1/4**

c.  $\left( \frac{2}{3} y^3 \right) (3y^2)^3$

**$18y^9$**

d.  $a^5(a)(a^7)$

**$a^{13}$**

4. Solve each equation

a.  $7x + 6 = -36$

**$x = -6$**

b.  $5x + 4x = -72$

**$x = -8$**

c.  $-\frac{4}{13}x - 7 = 6$

**$x = -4$**

$7x + 6 = -36$

$7x = -36 - 6$

$7x = -42$

$\frac{7x}{7} = \frac{-42}{7}$

$x = -6$

*Hint: use inverse operations to isolate the variable*

# WOODLAWN HIGH SCHOOL MAGNET PROGRAM

## MATHEMATICS, SCIENCE & PRE-ENGINEERING

### Answer Key

5. Write an algebraic equation for each statement

a. 4 less than one-half the cube of a number  $x$  is 3

$$\frac{1}{2}x^3 - 4 = 3$$

b. -10 increased by 4 times a number  $x$  is 2

$$-10 + 4x = 2$$

*Hint: translate key words into mathematical operations*

*Less than, fewer – subtraction*

*Is – equals*

*Of, product – multiplication*

*More, increase - addition*

6. Find the solution set for each equation, given the replacement set

a.  $2y = 8 - 4x$ ;  $\{(2,0), (0,4), (0,2), (-4,12)\}$

|                 |                 |                 |                    |
|-----------------|-----------------|-----------------|--------------------|
| $2y=8-4x$ (2,0) | $2y=8-4x$ (0,4) | $2y=8-4x$ (0,2) | $2y=8-4x$ (-4,-12) |
| $2*0=8-4*2$     | $2*4=8-4*0$     | $2*2=8-4*0$     | $2*12=8-4*(-4)$    |
| $0=8-8$         | $8=8-0$         | $4=8-0$         | $24=8+16$          |
| $0=0$           | $8=8$           | $4\neq 8$       | $24=24$            |

b.  $3x + 4y = 10$ ;  $\{(3, 0.25), (-10,5), (2,1), (5,5)\}$

|                          |                         |                       |                       |
|--------------------------|-------------------------|-----------------------|-----------------------|
| $3x + 4y = 10$ (3, 0.25) | $3x + 4y = 10$ (-10, 5) | $3x + 4y = 10$ (2, 1) | $3x + 4y = 10$ (5, 5) |
| $3*3 + 4*0.25 = 10$      | $3*-10.5 + 4*5 = 10$    | $3*2 + 4*1 = 10$      | $3*5 + 4*5 = 10$      |
| $9 + 1 = 10$             | $-31.5 + 20 = 10$       | $6 + 4 = 10$          | $15 + 20 = 10$        |
| $10 = 10$                | $-11.5 \neq 10$         | $10 = 10$             | $35 \neq 10$          |

7. Convert 10 meters to equivalent:

a. centimeters

b. millimeters

c. kilometers

***10 meters = 1000 centimeters***

***10 meters = 10,000 millimeters***

***10 meters = 0.01 kilometers***

8. List the steps of the scientific method.

- 1. Observation***
- 2. Question***
- 3. Hypothesis***
- 4. Prediction***
- 5. Experiment***
- 6. Theory***

9. What is the Law of Conservation of Mass?

***Law of Conservation of Mass is a relation stating that in a chemical reaction, the mass of the products equals the mass of the reactants.***

**WOODLAWN HIGH SCHOOL  
 APPLICANT SELF-EVALUATION 2012-2013  
 Mathematics, Science & Engineering**

**DO NOT include this worksheet with your application.**

**Important:** All applications must be postmarked by the application deadline of **November 30, 2011**. Incomplete applications will not be considered for admission.

**Admission Criteria**

| Magnet Program                     | Admission Criteria                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mathematics, Science & Engineering | <ul style="list-style-type: none"> <li>✓ Algebra I or higher in grade 8; Algebra II or higher in grade 9</li> <li>✓ B average (2.5 or better) in, Mathematics and Science</li> <li>✓ C average(1.5 or better) in, English/Language Arts and Social Studies</li> <li>✓ Performance on Mathematics &amp; Science Assessment</li> <li>✓ Performance on Written Assessment</li> <li>✓ Performance on Interview</li> </ul> |

**Magnet Assessment Date**

On January 9, 2012, (inclement weather date: January 18, 2012) all Grade 9 applicants and January 11, 2012, (inclement weather date: January 18, 2012) all Grade 10 applicants will be required to attend the assessment at Woodlawn High School. Applicants should be accompanied by at least one parent/guardian. All applicants should arrive by 5:45 p.m.

**Placement Prior to the Lottery**

According to Superintendent's Rule 6400, *at the high school level where the number of qualified applicants exceeds the number of available seats, up to 20% of the seats may first be filled with candidates who show exceptional commitment and promise in the specialized program as evidenced by their performance on the approved magnet assessment(s). The remaining seats will be filled using the centralized random lottery selection process from the remaining pool of qualified applicants.* Specifically, applicants who earn the highest combined score on the writing assessment, the math & science test, and the interview may fill up to 20% of the seats available in the magnet program.

**Qualifying for Admission**

The applicant must earn at least 80 points from the stated criteria in order to qualify for admission.

**Entrance Worksheet**

Use the worksheet provided to determine if you may qualify for admission.

**How to Calculate Your Grade Average**

Convert your marking period grades to points (A=4, B=3, C=2, D=1, E=0). Then divide by the number of marking periods.

| Subject           | Last Year's Report Card                  |                                          |                                          |                                                          | Current Year's Report Card               | Total Points | Total Marking Periods (4 or 5) | Grade Average |
|-------------------|------------------------------------------|------------------------------------------|------------------------------------------|----------------------------------------------------------|------------------------------------------|--------------|--------------------------------|---------------|
|                   | 1 <sup>st</sup> marking pd. grade/points | 2 <sup>nd</sup> marking pd. grade/points | 3 <sup>rd</sup> marking pd. grade/points | 4 <sup>th</sup> marking pd. grade/points (if applicable) | 1 <sup>st</sup> marking pd. grade/points |              |                                |               |
| English/Lang Arts |                                          |                                          |                                          |                                                          |                                          |              |                                |               |
| Math              |                                          |                                          |                                          |                                                          |                                          |              |                                |               |
| Science           |                                          |                                          |                                          |                                                          |                                          |              |                                |               |
| Social Studies    |                                          |                                          |                                          |                                                          |                                          |              |                                |               |

WOODLAWN HIGH SCHOOL  
Grade 9 APPLICANT SELF-EVALUATION 2012-2013  
Mathematics, Science & Engineering

**DO NOT include this worksheet with your application.**

**Important:** All applications must be postmarked by the application deadline of **November 30, 2011**. Incomplete applications will not be considered for admission.

| Criteria                                                                                   |                                       | Scoring Tool                                                                                                                                                                                                            |           | My information                                               | My Score                       |
|--------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------|--------------------------------|
| <b>Admission Criterion #1</b><br>Math Enrollment                                           | Algebra I                             | Algebra I and higher                                                                                                                                                                                                    | 10 points | My Grade 8 math course is _____<br>(record math course here) | _____/10 pts                   |
|                                                                                            |                                       | Algebraic Thinking 2,                                                                                                                                                                                                   | 5 points  |                                                              |                                |
|                                                                                            |                                       | Pre-Algebra, Math 8, or below                                                                                                                                                                                           | 0 Points  |                                                              |                                |
| <b>Admission Criterion #2</b><br>Grade Average (see "How to Calculate Your Grade Average") | C average or higher (1.5 or higher)   | <b>English/Language Arts and Social Studies:</b><br>Score 10 points for each average equaling "C" (1.5) or better.<br>Score 0 points for each average less than "C" (less than 1.5)                                     |           | English /Lang. Arts Average: _____                           | _____/10 pts                   |
|                                                                                            |                                       |                                                                                                                                                                                                                         |           | Social Studies Average: _____                                | _____/10 pts                   |
|                                                                                            | B average or higher (2.5 or higher)   | <b>Math and Science:</b><br>Score 10 points for each average equaling "B" (2.5) or better.<br>Score 5 points for each average equaling "C" (1.5 – 2.4)<br>Score 0 points for each average less than "C" (less than 1.5) |           | Mathematics Average: _____                                   | _____/10 pts                   |
|                                                                                            |                                       |                                                                                                                                                                                                                         |           | Science Average: _____                                       | _____/10 pts                   |
| <b>Admission Criterion #3</b><br>Essay                                                     | Score determines total points earned. | Applicants may earn up to 15 points.                                                                                                                                                                                    |           | To be determined on January 9, 2012.                         | _____/15 pts                   |
| <b>Admission Criterion #4</b><br>Interview                                                 | Score determines total points earned. | Applicants may earn up to 10 points.                                                                                                                                                                                    |           | To be determined on January 9, 2012.                         | _____/10 pts                   |
| <b>Admission Criterion #5</b><br>Math & Science Test                                       | Score determines total points earned. | Applicants may earn up to 25 points.                                                                                                                                                                                    |           | To be determined on January 9, 2012.                         | _____/25 pts                   |
| <b>Points to Qualify</b>                                                                   | <b>80 points</b>                      |                                                                                                                                                                                                                         |           |                                                              | <b>My Score:</b> _____/100 pts |

**FINAL REMINDER: DO NOT include this worksheet with your application.**  
**FOR STUDENT SELF-ASSESSMENT USE ONLY – does not indicate qualification for programs.**

**WOODLAWN HIGH SCHOOL**  
**Grade 10 APPLICANT SELF-EVALUATION 2012-2013**  
**Mathematics, Science & Engineering**

**DO NOT include this worksheet with your application.**

**Important:** All applications must be postmarked by the application deadline of **November 30, 2011**. Incomplete applications will not be considered for admission.

| Criteria                                                                                          |                                       | Scoring Tool                                                                                                                                                                                                            |           | My information                                               | My Score                       |
|---------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------|--------------------------------|
| <b>Admission Criterion #1</b><br>Math Enrollment                                                  | Algebra II                            | Algebra II and higher                                                                                                                                                                                                   | 10 points | My Grade 9 math course is _____<br>(record math course here) | _____/10 pts                   |
|                                                                                                   |                                       | Algebra I                                                                                                                                                                                                               | 5 points  |                                                              |                                |
|                                                                                                   |                                       | Algebraic Thinking 2, Pre-Algebra, Math 8, or below                                                                                                                                                                     | 0 Points  |                                                              |                                |
| <b>Admission Criterion #2</b><br>Grade Average<br><br>(see "How to Calculate Your Grade Average") | C average or higher (1.5 or higher)   | <b>English/Language Arts and Social Studies:</b><br>Score 10 points for each average equaling "C" (1.5) or better.<br>Score 0 points for each average less than "C" (less than 1.5)                                     |           | English /Lang. Arts Average: _____                           | _____/10 pts                   |
|                                                                                                   |                                       |                                                                                                                                                                                                                         |           | Social Studies Average: _____                                | _____/10 pts                   |
|                                                                                                   | B average or higher (2.5 or higher)   | <b>Math and Science:</b><br>Score 10 points for each average equaling "B" (2.5) or better.<br>Score 5 points for each average equaling "C" (1.5 – 2.4)<br>Score 0 points for each average less than "C" (less than 1.5) |           | Mathematics Average: _____                                   | _____/10 pts                   |
|                                                                                                   |                                       |                                                                                                                                                                                                                         |           | Science Average: _____                                       | _____/10 pts                   |
| <b>Admission Criterion #3</b><br>Essay                                                            | Score determines total points earned. | Applicants may earn up to 15 points.                                                                                                                                                                                    |           | To be determined on January 11, 2012.                        | _____/15 pts                   |
| <b>Admission Criterion #4</b><br>Interview                                                        | Score determines total points earned. | Applicants may earn up to 10 points.                                                                                                                                                                                    |           | To be determined on January 11, 2012.                        | _____/10 pts                   |
| <b>Admission Criterion #5</b><br>Math & Science Test                                              | Score determines total points earned. | Applicants may earn up to 25 points.                                                                                                                                                                                    |           | To be determined on January 11, 2012.                        | _____/25 pts                   |
| <b>Points to Qualify</b>                                                                          | <b>80 points</b>                      |                                                                                                                                                                                                                         |           |                                                              | <b>My Score:</b> _____/100 pts |

**FINAL REMINDER: DO NOT include this worksheet with your application.**  
**FOR STUDENT SELF-ASSESSMENT USE ONLY – does not indicate qualification for programs.**