Worcester Technical High School
## STUDENT DEMOGRAPHICS

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHITE</td>
<td>52%</td>
</tr>
<tr>
<td>HISPANIC</td>
<td>34%</td>
</tr>
<tr>
<td>AFRICAN AMERICAN</td>
<td>10%</td>
</tr>
<tr>
<td>ASIAN</td>
<td>3%</td>
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<tr>
<td>NAT AMERICAN</td>
<td>1%</td>
</tr>
<tr>
<td>GENDER</td>
<td></td>
</tr>
<tr>
<td>MALE</td>
<td>51%</td>
</tr>
<tr>
<td>FEMALE</td>
<td>49%</td>
</tr>
<tr>
<td>ESL</td>
<td>4%</td>
</tr>
<tr>
<td>SPECIAL NEEDS</td>
<td>19%</td>
</tr>
<tr>
<td>LOW INCOME</td>
<td>62%</td>
</tr>
<tr>
<td>GRADE 8 MCAS SCORES</td>
<td>MATH</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------</td>
</tr>
<tr>
<td>FAILURE</td>
<td>54 %</td>
</tr>
<tr>
<td>NEEDS IMPROVEMENT</td>
<td>33 %</td>
</tr>
<tr>
<td>TOTAL PERCENT OF STUDENTS THAT FAILED OR NEEDS IMPROVEMENT</td>
<td>87 %</td>
</tr>
</tbody>
</table>
Key Strategy

Do 1 or 2 things really well
OPEN RESPONSE STRATEGY

- Staff development
- Establish school-wide procedures
- Posters to train students
- Establish assessment rubric
- Question banks
- Develop student friendly ways to encourage participation
Open Response Strategy Initiative

“Road to Success”

Saturation
ROAD TO SUCCESS FOR OPEN RESPONSE QUESTIONS

Start reading the question

Underline key words in the question

Comprehend what is being asked

Compose your thoughts and ideas

Explain your answer in 8-12 sentences

Show evidence from passage to support your answer

Stop and review everything

Created by Worcester Technical High School
Create Open Response Question Banks

• Develop open response questions, scoring rubric and anchor papers for each academic and technical area

• Professional Development for teachers
World Premier of “Road to Success for Open Response Questions”

By Herman Banks-English Teacher
Results from open response initiative

• 40% increase in 3 & 4 scores in ELA
• 15% increase in 3 & 4 in Math
Math Specifics
Obstacles to Success

• 87% of students not proficient at entrance
• MCAS results delay
• Sending school dictates level
• Student attitude
How We Approached Improvement Initially

1. Massachusetts State Frameworks
2. Teachers analyzed MCAS item analysis
3. The format for the lesson plan
4. MCAS problem bank
The Next Steps

1. School Improvement Plan – Open Response Initiative
2. Professional Development – Open Response using student work
3. Senteo and the MCAS library of questions
4. Math/Technical program integration
The Latest Steps

1. School Improvement Plan – Open Response Initiative continued
2. Curriculum Maps rewritten
3. Lesson Plan templates rewritten
Algebra 1 Curriculum Map

- Review Chapters by October 1
- 1.1-1.7 Expressions, Equations and Functions
- 2.1-2.7 Properties of Real Numbers
- 3.1-3.8 Solving Linear Equations
- By Thanksgiving
- 4.1-4.6 Graphing Linear Equations and Functions
- By Xmas
- 5.1-5.7 Writing Linear Equations
- By January 31
- 6.1-6.7 Solving and Graphing Linear Inequalities
- By February vacation
- 7.1-7.6 Systems of Equations and Inequalities
- By March 15
- 8.1-8.4 Exponents and Exponential Functions
- By April vacation
- 9.1-9.8 Polynomials and Factoring
- By May 31
- 10.1-10.8 Quadratic Equations and Functions
- By end of school in June
- 13.1-13.8 Probability and Data Analysis
Geometry Curriculum Map

1st Semester

• Ch. 1 Essential of Geometry
  Topics - points, lines, planes, segments and congruence, midpoint and distance formulas, measure and classify angles, angle pair relationships, polygons, perimeter, circumference and area

• Ch. 3 Parallel and Perpendicular Lines
  Topics – pairs of lines and angles, parallel lines and transversals, find and use slopes of lines, write and graph equations of lines, perpendicular lines

• Ch. 4 Congruent Triangles
  Topics - Angle sum properties, congruence and triangles, SSS, SAS, HL, ASA, AAS, use congruent triangles, use isosceles and equilateral triangles, perform congruence transformations.

• Ch. 5 Relationships with Triangles
  Topics – perpendicular bisectors, angle bisectors of triangles, medians and altitudes

• Ch 7 (7.1-7.4) Right Triangles
  Topics – Pythagorean Theorem, similar right triangles, special right triangles
<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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<tbody>
<tr>
<td><strong>Lesson 1.1</strong></td>
<td><strong>Variable Expressions</strong></td>
<td><strong>Study Grade 1-3</strong></td>
<td><strong>Quiz 1.1</strong></td>
<td><strong>Courage</strong></td>
</tr>
<tr>
<td><strong>Objective:</strong> Write numerical expressions for verbal expressions</td>
<td><strong>Objective:</strong> Find patterns in a sequence and generate and display</td>
<td><strong>Objective:</strong> Use first and second differences to identify patterns</td>
<td><strong>Objective:</strong> Practice 1.1</td>
<td><strong>Objective:</strong> Practice 2.3</td>
</tr>
<tr>
<td><strong>HW:</strong> Practice 1.1</td>
<td><strong>HW:</strong> Read to learn &amp; practice</td>
<td><strong>HW:</strong> Extra Practice</td>
<td><strong>HW:</strong> Extra Practice</td>
<td><strong>Quiz:</strong> 7.6</td>
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<tr>
<td><strong>Open Response:</strong> RT 7.3</td>
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**Lesson Plans, Grade 9**

<table>
<thead>
<tr>
<th>Teacher:</th>
<th>Week Of:</th>
<th>Periods</th>
<th>Subject:</th>
<th>Algebra I</th>
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<tbody>
<tr>
<td><strong>Topic</strong></td>
<td>Lesson will cover:</td>
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<tr>
<td><strong>Objective</strong></td>
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<tr>
<td><strong>Methods</strong></td>
<td>Direct Instruction</td>
<td>Open Response</td>
<td>Other:</td>
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<tr>
<td></td>
<td>Worksheets</td>
<td>Journal Article</td>
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<tr>
<td></td>
<td>Discussion</td>
<td>Calculator</td>
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<tr>
<td><strong>Assessment</strong></td>
<td>Worksheet</td>
<td>Quiz</td>
<td>Teacher Directed Q &amp; A</td>
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<td></td>
<td>Open Response</td>
<td>Test</td>
<td>Informal Observation</td>
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<td>Project</td>
<td>Presentation</td>
<td>Other</td>
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<td><strong>School Improvement Plan</strong></td>
<td>Rudimentary Math Skills</td>
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<td>MCAS</td>
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<td>Problem Solving</td>
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<td>Grade Level Content Area Math</td>
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<tr>
<td><strong>Materials/Texts/Chapters</strong></td>
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<td><strong>MA/Math Standards</strong></td>
<td>Number Sense &amp; Operations</td>
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<tr>
<td></td>
<td>10.N.1 Properties of Operations/Real Numbers</td>
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<td><strong>Patterns, Relations, &amp; Algebra</strong></td>
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<td>10.P.2 Representations of Lines (Slope)</td>
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<td>10.P.5 Quadratic Expressions</td>
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<td><strong>Geometry</strong></td>
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<td>10.G.1 Identification of Figures</td>
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<td>10.G.4 Congruence/Similarity Correspondences</td>
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<td>10.G.6 Specific Triangles</td>
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<td>10.G.8 Finding Linear Equations</td>
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<td>10.G.10 Visualization/Transformation of Solid Objects</td>
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<td></td>
<td><strong>Measurement</strong></td>
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<tr>
<td></td>
<td>10.M.1 Perimeter/Circumference/Area of figures</td>
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<td></td>
<td><strong>Data Analysis, Statistics and Probability</strong></td>
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<td></td>
<td>10.D.1 Select, create, interpret graphs &amp; tables/ Mean, Median, Mode, Range</td>
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<td>10.D.2 Approximate lines of best fit</td>
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Learning Standards for Grades 9
Patterns, Relations and Algebra

Date beginning 05/01/09

Teacher Name Mrs. Copeland
Grade 9

Periods 2, 4

Methodology
Direct Instruction ☑ Journal ☐ SIP/ELL Requirement ☑
Worksheets ☑ Calculator ☐ Smartboard ☑
Discussion ☑ Other MCAS packet

Assessment
Worksheet ☑ Quiz ☐ Teacher Directed Q & A ☑ Senteo ☑
Open Response ☑ Test ☐ Informal Observation ☑
Project ☐ Presentation ☐ Other ☑

Learning Objectives

Patterns, Relations, and Algebra

Understand patterns, relations, and functions
Represent and analyze mathematical situations and structures using algebraic symbols
Use mathematical models to represent and understand quantitative relationships
Analyze change in various contexts

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

10.P.1 Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative, recursive (e.g., Fibonacci Numbers), linear, quadratic, and exponential functional relationships.

10.P.2 Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and x- and y-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the “point-slope” or “slope y-intercept” formulas. Explain the significance of a positive, negative, zero, or undefined slope.

10.P.3 Add, subtract, and multiply polynomials. Divide polynomials by monomials.

10.P.4 Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms; factoring (e.g., $a^2 - b^2 = (a + b)(a - b)$, $x^2 + 10x + 21 = (x + 3)(x + 7)$, $5x^4 + 10x^2 - 5x^2 = 5x^2 (x^2 + 2x - 1)$); identifying and canceling common factors in rational expressions; and applying the properties of positive integer exponents.

10.P.5 Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods.
10.P.6  Solve equations and inequalities including those involving absolute value of linear expressions (e.g., \(|x - 2| > 5\)) and apply to the solution of problems.

10.P.7  Solve everyday problems that can be modeled using linear, reciprocal, quadratic, or exponential functions. Apply appropriate tabular, graphical, or symbolic methods to the solution. Include compound interest, and direct and inverse variation problems. Use technology when appropriate.

10.P.8  Solve everyday problems that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution. Use technology when appropriate. Include mixture, rate, and work problems.

X = In Progress  C = Complete

Worksheet included  yes☒  no☐

Notes:
Technology

• Dell Laptops
• Email
• Smart Sympodium
• Cisco Systems VOIP Telephones
• Access to computer labs
• Smart Notebook
• Smart Senteo
chapter 1 test

Progress:

100%

50%

0%

Question Number

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Chapter 1 test

Results:
Look of Success
HOMELESS TO HARVARD

A SCHOOL WIDE STUDENT EVENT

CBS COVERAGE
TO DATE

STUDENT ATTENDANCE  95 %

9TH GRADE  96.2 %

DROP OUTS  5

SUSPENSIONS  - 111