



# Algebra 1 | Level

## GRADE POINTS EARNED for an A = 4.0

### PREREQUISITES

- Solve equations with variables on both sides of the equation
- Calculate slope from two points and from a graph
- Graph equations in slope-intercept form

### CROSS CURRICULAR CONNECTIONS

- n/a

### OUTSIDE READING

- Little to no outside reading required

### HOMEWORK

- Less than 30 minutes per evening

### COMPLEXITY LEVEL

- 3 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Independent Practice
- Structured Note-Taking (Teacher Led)

### OTHER IMPORTANT INFORMATION

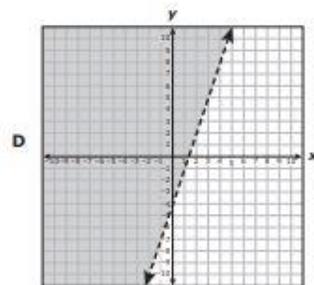
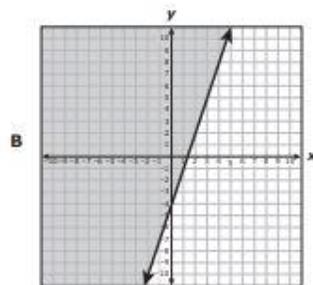
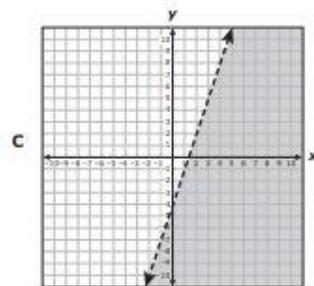
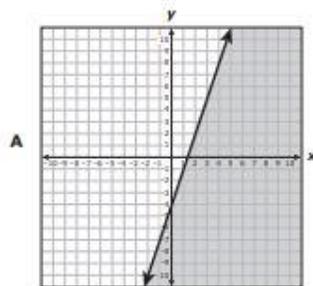
This course addresses the essential knowledge and skills for Algebra 1 and is designed to prepare students for the STAAR End-of-Course exam.

## SAMPLE TEST QUESTIONS

16 Which expression is equivalent to  $(10 + 7r - r^2) + (-6r^2 - 18 + 5r)$ ?

- F  $-7r^2 + 2r + 8$
- G  $7r^2 + 12r + 8$
- H  $-7r^2 + 12r - 8$
- J  $7r^2 + 2r - 8$

17 Which graph best represents the solution set of  $y > 3x - 4$ ?







## Geometry | *Level*

**GRADE POINTS EARNED**  
for an **A = 4.0**

### PREREQUISITES

- Algebra 1

### CROSS CURRICULAR CONNECTIONS

- n/a

### OUTSIDE READING

- Little to no outside reading required

### HOMEWORK

- Less than 30 minutes per evening

### COMPLEXITY LEVEL

- 3 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

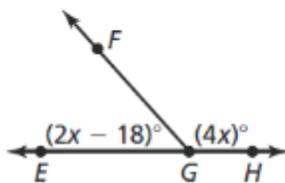
- Teacher Guided Instruction
- Lecture
- Independent Practice
- Collaborative Groups
- Higher Critical Thinking (Analysis, Debates, Evaluations, Open-Ended Questions, etc.)
- Application Focused Instruction
- Structured Note-Taking (Teacher Led)

### OTHER IMPORTANT INFORMATION

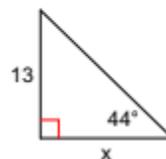
Students need to attend each class and be prepared and ready to learn. Students will realize success in this course if they provide maximum effort in the classroom

### SAMPLE TEST QUESTIONS

Find the measure of  
Find  $x$ .



Find the missing side. Round to the nearest tenth.



Write a linear equation in slope-intercept form of the line that passes through the point  $(-1, 3)$  and is parallel to  $3x + y = 5$ .



## Geometry | *Honors / PreAP*

### GRADE POINTS EARNED for an A = 5.0

### PREREQUISITES

- Algebra 1 Content

### CROSS CURRICULAR CONNECTIONS

- English 1 Content

### OUTSIDE READING

- Less than 30 minutes of reading required outside of class

### HOMEWORK

- 30-60 minutes per evening

### COMPLEXITY LEVEL

- 4 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Independent Practice
- Collaborative Groups
- Higher Critical Thinking (Analysis, Debates, Evaluations, Open-Ended Questions, etc.)
- Open-Ended Note-Taking (Student Led)

### OTHER IMPORTANT INFORMATION

The pacing and content in this course requires students to spend time outside of class preparing for, and reviewing, the material covered in class.

### SAMPLE TEST QUESTIONS

- 1) Identify the hypothesis and conclusion of the conditional statement.

"If it is raining then it is cloudy."

- 2) There is a myth that a duck's quack does not echo. A group of scientists observed a duck in a special room, and they found that the quack does echo. Therefore, the myth is false.

Is the conclusion a result of inductive or deductive reasoning?

- 3) What reflection, or composition of reflections, always produces the same image as a rotation 180 degrees about the origin?



## Math Models | *Level*

### GRADE POINTS EARNED for an A = 4.0

### PREREQUISITES

- Solve multi-step one-variable equations and literal equations for a specific variable
- Graph functions and identify the key attributes of the lines (such as intercepts and slope)

### CROSS CURRICULAR CONNECTIONS

- Students will solve equations/problems that involve formulas used in Chemistry and Physics, such as Hooke's Law and Boyle's Law.

### OUTSIDE READING

- Little to no outside reading required

### HOMEWORK

- Can be finished in class

### COMPLEXITY LEVEL

- 2 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Independent Practice
- Collaborative Groups
- Structured Note-Taking (Teacher Led)

### OTHER IMPORTANT INFORMATION

This class has a lot of application to the real world. We discuss and calculate wages, taxes, payments (car, house, furniture) and create budgets. We look in to banking accounts and when it might be an advantage to pay with cash, debit or credit, as well as savings accounts that are calculated with simple interest vs. compound interest. This class will also review necessary Algebra I skills to help students be more successful in Algebra II their senior year.

### SAMPLE TEST QUESTIONS

Aaron deposited \$2,000 in a bank at a simple interest rate of 6.25%. What would be the **balance** after 5 years?

- f. \$ 6,250
- g. \$ 650
- h. \$ 2,625
- j. \$ 8,250

Natasha is buying a new car for \$19,000 for 60 month loan. What would her **monthly payments** be if she had a 3% APR?

- a. \$321.41
- b. \$331.41
- c. \$364.17
- d. \$361.41

Hooke's Law for an elastic spring states that the distance a spring stretches **varies directly** as the force applied. If a force of 140 newtons stretches a spring 4 cm, how much will a force of 368 newtons stretch the same spring?

- a. 10.5 cm
- b. 12,880 cm
- c. 35 cm
- d. 1.5 cm

Boyle's law states the volume of a gas **varies inversely** to pressure of the gas. The initial volume of the gas is 13 cu. meters and the pressure is 5 kilopascal. If the pressure is increased to 7 kilopascals, what would the volume of the gas be?

- f. 18.2 cu. meters
- g. 9.28 cu. meters
- h. 65 cu. meters
- i. 2.69 cu. meters



## Algebra 2 | *Level*

### GRADE POINTS EARNED for an A = 4.0

#### PREREQUISITES

- Students should know how to
  - Graph/write linear functions
  - Graph and solve quadratic functions
  - Factor quadratics
  - Solve equations

### CROSS CURRICULAR CONNECTIONS

- Solving motion problems in physics

#### OUTSIDE READING

- Little to no outside reading required

#### HOMEWORK

- Less than 30 minutes per evening

### COMPLEXITY LEVEL

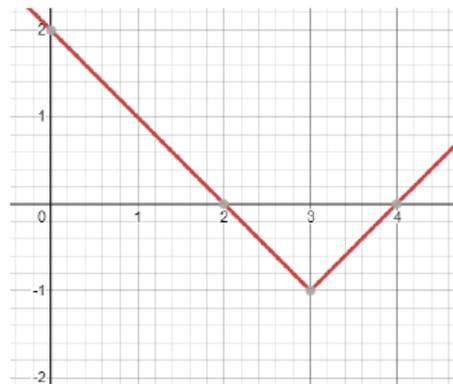
- 3 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Lecture
- Independent Practice
- Collaborative Groups

### SAMPLE TEST QUESTIONS

What is the vertex of  $f(x)$ ? Is it a maximum or minimum?



Solve the absolute value equation  $|x - 4| + 3 = 3$

Write the equation of a parabola with the vertex at  $(4, 3)$  and the focus at  $(0, 3)$  that opens to the left.

**Algebra 2 | *Honors / PreAP*****GRADE POINTS EARNED  
for an A = 5.0****PREREQUISITES**

- Students should know how to
  - Graph functions
  - Factor quadratics
  - Solve equations.

**CROSS CURRICULAR  
CONNECTIONS**

- Solving motion problems in physics

**OUTSIDE READING**

- Little to no outside reading required

**HOMEWORK**

- Less than 30 minutes per evening

**COMPLEXITY LEVEL**

- 4 out of 5

**WHAT DOES INSTRUCTION  
LOOK LIKE**

- Teacher Guided Instruction
- Lecture
- Independent Practice
- Collaborative Groups
- Higher Critical Thinking (Analysis, Debates, Evaluations, Open-Ended Questions, etc.)

**SAMPLE TEST QUESTIONS**

Solve the following quadratic function:  $2x^2 + 5x - 3 = 0$

Multiply the following and simplify:  $(5 + 3i)(-2 - 7i)$

Solve the system graphically: 
$$\begin{cases} 2x - y = 3 \\ y + 6 = 2(x + 1)^2 \end{cases}$$



## College Prep Math | *Level*

### GRADE POINTS EARNED for an A = 4.0

### PREREQUISITES

- Algebra I
- Algebra II

### CROSS CURRICULAR CONNECTIONS

- n/a

### OUTSIDE READING

- Little to no outside reading required

### HOMEWORK

- Less than 30 minutes per evening

### COMPLEXITY LEVEL

- 3 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Independent Practice
- Collaborative Groups
- Structured Note-Taking (Teacher Led)

### OTHER IMPORTANT INFORMATION

This course is intended to prepare students for the study of entry-level college mathematics to enter post-secondary coursework or careers with no additional remediation in mathematics. Coursework will help prepare students for the TSI test.



## College Algebra | *Dual Credit*

### GRADE POINTS EARNED for an A = 6.0

#### PREREQUISITES

- Solve quadratics
- Know the graph, domain, range, and table for the functions
  - $y = x^2$
  - $y = x^3$
  - $y = \sqrt{x}$
  - $y = \sqrt[3]{x}$
  - And other parent functions from Algebra 2
- Apply transformations to the graphs of the functions.
- Multiply and divide fractions  
$$\frac{(2x+3)}{(x-1)} \cdot \frac{(x^2-1)}{(4x+6)}$$

$$\frac{5x}{6} \div \frac{2}{7x}$$

#### CROSS CURRICULAR CONNECTIONS

- n/a

#### OUTSIDE READING

- Little to no outside reading required

#### HOMEWORK

- 30-60 minutes per evening

#### COMPLEXITY LEVEL

- 4 out of 5

#### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction, Lecture
- Independent Practice
- Structured Note-Taking (Teacher Led)

#### OTHER IMPORTANT INFORMATION

Many of the topics in this course were learned in Algebra2. However, this course moves faster and is more in depth than the Algebra2 course. There are also a few new topics introduced during the dual credit portion of the course. NOTE: only the Spring semester is Dual Credit.

### SAMPLE TEST QUESTIONS

Solve the equation  $3x^2 - 5x + 2 = 0$

Use a 5-point table to graph the function  $y = 2(x - 1)^3 + 7$ , then describe the transformation from the parent function and determine the domain and range.

Solve  $\ln(x - 3) = 5$



## PreCalculus | *Honors / PreAP*

### GRADE POINTS EARNED for an A = 5.0

#### PREREQUISITES

- Know the graph, domain, range, and table for the functions
  - $y = x^2$
  - $y = x^3$
  - $y = \sqrt{x}$
  - $y = \sqrt[3]{x}$
  - And other parent functions from Algebra 2
- Apply transformations to the graphs of the functions.
- Multiply and divide fractions

### CROSS CURRICULAR CONNECTIONS

- Physics
  - Rotations
  - Vectors

#### OUTSIDE READING

- Little to no outside reading required

#### HOMEWORK

- 30-60 minutes per evening

#### COMPLEXITY LEVEL

- 3 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Lecture
- Independent Practice
- Higher Critical Thinking (Analysis, Debates, Evaluations, Open-Ended Questions, etc.)
- Structured Note-Taking (Teacher Led)

#### OTHER IMPORTANT INFORMATION

Precalculus has many topics that will be new to students, such as vectors, polar equations, trigonometry, and conics.

### SAMPLE TEST QUESTIONS

Solve the equation  $3\cos^2x - 5\cosx + 2 = 0$

Simplify  $\frac{1-\cos^2x}{\cosx}$

Graph  $\frac{(x-4)^2}{9} - \frac{(x+2)^2}{16} = 1$



## PreCalculus | *Dual Credit*

### GRADE POINTS EARNED for an A = 6.0

#### PREREQUISITES

- Know the graph, domain, range, and table for the functions
  - $y = x^2$
  - $y = x^3$
  - $y = \sqrt{x}$
  - $y = \sqrt[3]{x}$
  - And other parent functions from Algebra 2
- Apply transformations to the graphs of the functions.
- Multiply and divide fractions:

### CROSS CURRICULAR CONNECTIONS

- Physics- rotations and vectors

#### OUTSIDE READING

- Little to no outside reading required

#### HOMEWORK

- 30-60 minutes per evening

#### COMPLEXITY LEVEL

- 4 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Lecture
- Independent Practice
- Structured Note-Taking (Teacher Led)

#### OTHER IMPORTANT INFORMATION

There will be several new topics including, vectors, conics, polar equations, and trigonometry. Students must maintain a minimum grade to continue to the second semester.

### SAMPLE TEST QUESTIONS

Solve the equation  $3\cos^2x - 5\cos x + 2 = 0$

Simplify  $\frac{1-\cos^2x}{\cos x}$

Graph  $\frac{(x-4)^2}{9} - \frac{(x+2)^2}{16} = 1$



## AP Calculus AB | *AP*

### GRADE POINTS EARNED for an A = 6.0

#### PREREQUISITES

- Pre-Calculus.
- Students should have strong prerequisite knowledge of solving polynomials
- Trigonometric functions
- Graphing functions
- Analyzing data and tables

#### CROSS CURRICULAR CONNECTIONS

- Solving Real World Applications using rates, areas, and analysis.

#### OUTSIDE READING

- Little to no outside reading required

#### HOMEWORK

- 30-60 minutes per evening

#### COMPLEXITY LEVEL

- 5 out of 5

#### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Lecture
- Independent Practice
- Collaborative Groups
- Higher Critical Thinking (Analysis, Debates, Evaluations, Open-Ended Questions, etc.)
- Application Focused Instruction

#### OTHER IMPORTANT INFORMATION

Calculus AB is an Advance Placement Class that will take a student through content from Calculus 1. Students will work with limits, derivatives, and integrals throughout the course.



## AP Calculus BC | *AP*

### GRADE POINTS EARNED for an A = 6.0

#### PREREQUISITES

- Pre-Calculus
- Strong prerequisite knowledge of solving polynomials
- Trigonometric functions
- Graphing function
- Analyzing data and tables

#### CROSS CURRICULAR CONNECTIONS

- Solving real world applications using rates, areas, and analysis

#### OUTSIDE READING

- Little to no outside reading required

#### HOMEWORK

- 30-60 minutes per evening

#### COMPLEXITY LEVEL

- 5 out of 5

#### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Lecture
- Independent Practice
- Collaborative Groups
- Higher Critical Thinking (Analysis, Debates, Evaluations, Open-Ended Questions, etc.)
- Application Focused Instruction

#### OTHER IMPORTANT INFORMATION

Calculus BC will get a student through a Calculus 2 curriculum. It is paced for the student to get through 2 semesters of College Calculus.



## Multi-Variable Calculus | *Unclassified*

### GRADE POINTS EARNED for an A = 6.0

### PREREQUISITES

- AP Calculus BC

### CROSS CURRICULAR CONNECTIONS

- Solving real world applications using rates, areas and analysis

### OUTSIDE READING

- Little to no outside reading required

### HOMEWORK

- 30-60 minutes per evening

### COMPLEXITY LEVEL

- 5 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Lecture
- Independent Practice
- Collaborative Groups
- Higher Critical Thinking (Analysis, Debates, Evaluations, Open-Ended Questions, etc.)
- Application Focused Instruction

### OTHER IMPORTANT INFORMATION

Multi-Variable calculus takes the concepts learned in the single variable calculus course and extends them to multiple dimensions.



## Statistics | AP

### GRADE POINTS EARNED for an A = 6.0

### PREREQUISITES

- Algebra 2
- English 2

### CROSS CURRICULAR CONNECTIONS

- Writing analysis involving a careful examination and evaluation of details in provided texts and scenarios.

### OUTSIDE READING

- More than 60 minutes of reading required outside of class

### HOMEWORK

- 30-60 minutes per evening

### COMPLEXITY LEVEL

- 5 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Independent Practice
- Collaborative Groups
- Higher Critical Thinking (Analysis, Debates, Evaluations, Open-Ended Questions, etc.)
- Intensive Writing
- Structured Note-Taking (Teacher Led)
- Open-Ended Note-Taking (Student Led)

### OTHER IMPORTANT INFORMATION

AP Statistics is an Advanced Placement course. The pacing and content in this course requires students to spend time outside of class preparing for, and reviewing, the material covered. Students can expect to work on the course material for at least 30 minutes per evening.

### SAMPLE TEST QUESTIONS

Multiple Choice - Can a vegetarian or low-salt diet reduce blood pressure? Men with high blood pressure are assigned at random to one of four diets; (1) normal diet with unrestricted salt; (2) vegetarian with unrestricted salt; (3) normal with restricted salt; (4) vegetarian with restricted salt. This experiment has . . . (select from one of five multiple choice responses)

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Multiple Choice - Researchers randomly selected 1700 people from Canada who had never suffered a heart attack and rated the happiness of each person. Ten years later, the researchers followed up with each person and found that people who were initially rated as happy were less likely to have a heart problem. Which of the following is the most appropriate conclusion based on this study? (select from one of five multiple choice responses)



## Computer Science Principles | AP

### GRADE POINTS EARNED for an A = 6.0

#### PREREQUISITES

- It is recommended that a student in the AP Computer Science
- Principles course should have successfully completed a first year
- high school algebra course with a strong foundation on basic
- linear functions and composition of functions, and problem solving
- strategies that require multiple approaches and collaborative
- efforts.

### CROSS CURRICULAR CONNECTIONS

- Mathematical process standards.

#### OUTSIDE READING

- Little to no outside reading required

#### HOMEWORK

- Can be finished in class

#### COMPLEXITY LEVEL

- 4 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Independent Practice
- Collaborative Groups
- Higher Critical Thinking (Analysis, Debates, Evaluations, Open-Ended Questions, etc.)
- Application Focused Instruction

### OTHER IMPORTANT INFORMATION

The AP Computer Science Principles course is designed to be equivalent to a first- semester introductory college computing course. In this course, students will develop computational thinking skills vital for success across all disciplines, such as using computational tools to analyze and study data and working with large data sets to analyze, visualize, and draw conclusions from trends.

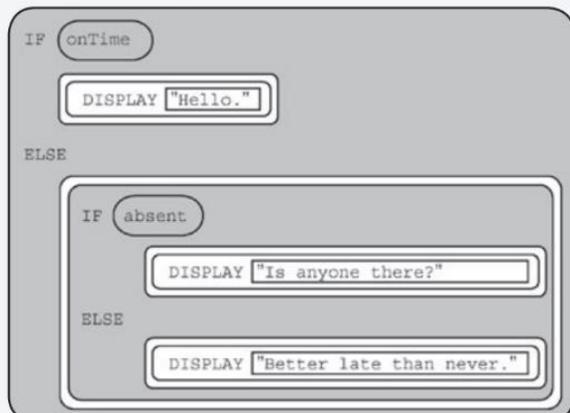
### SAMPLE TEST QUESTIONS

A car manufacturer uses simulation software during the design process for a new car. Which of the following are reasons to use simulation software in this context?

- Using simulation software can save the company money by helping to compare designs early in the process, before prototype cars are built.
- Using simulation software can help to identify safety issues by providing data about how different mechanical components will interact in a wide variety of situations.
- The manufacturer can present simulation software to customers to demonstrate different design possibilities.

#### Sample Multiple-Choice Question

Consider the code segment below.



If the variables `onTime` and `absent` both have the value `false`, what is displayed as a result of running the code segment?

- (A) Is anyone there?
- (B) Better late than never.
- (C) Hello. Is anyone there?
- (D) Hello. Better late than never.

Answer: B



## Computer Science I | *Honors / PreAP*

### GRADE POINTS EARNED for an A = 5.0

#### PREREQUISITES

- It is recommended that a student in the Computer Science I course has successfully completed a first-year high school algebra course with a strong foundation of basic linear functions, composition of functions, and problem-solving strategies that require multiple approaches and collaborative efforts. In addition, students should be able to use a Cartesian (x, y) coordinate system to represent points on a plane.

### CROSS CURRICULAR CONNECTIONS

- Mathematical Process Standards

#### OUTSIDE READING

- Little to no outside reading required

#### HOMEWORK

- Can be finished in class

#### COMPLEXITY LEVEL

- 4 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Independent Practice
- Collaborative Groups
- Higher Critical Thinking (Analysis, Debates, Evaluations, Open-Ended Questions, etc.)

#### OTHER IMPORTANT INFORMATION

Computer Science I will foster students' creativity and innovation by presenting opportunities to design, implement, and present meaningful programs through a variety of media. Students will collaborate with one another, their instructor, and various electronic communities to solve the problems presented throughout the course. I. Students will progress through three programming platforms, Scratch, Jeroo, and Java.

### SAMPLE TEST QUESTIONS

*Complete each sentence or statement.*

1. Fill in the blanks with the most appropriate format specifier for each argument in the output statement shown.

```
System.out.printf("%_____ %_____ %_____", 'B', 10, 2.3);
```

2. Complete the program statement below to produce the output shown, using format specifiers for each underlined portion, and using the variables provided whenever possible.

```
String s = "drive";
```

```
String n = "Rayanne";
```

```
int x = 16;
```

```
System.out.printf("_____  
_____  
_____");
```

Output:

**At age 16 Rayanne will be able to drive.**

3. What is the resulting output for this statement?

```
System.out.printf("%s %s %s %s %s", "1", 2, 3.4, true, "five");
```

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## Computer Science A | AP

### GRADE POINTS EARNED for an A = 6.0

#### PREREQUISITES

- It is recommended that a student in the AP Computer Science A course has successfully
- completed a first-year high school algebra course with a strong foundation of basic linear
- functions, composition of functions, and problem-solving strategies that require multiple
- approaches and collaborative efforts. In addition, students should be able to use a Cartesian (x, y) coordinate system to represent points on a plane.

### CROSS CURRICULAR CONNECTIONS

- Mathematical process standards

#### OUTSIDE READING

- Little to no outside reading required

#### HOMEWORK

- Can be finished in class

#### COMPLEXITY LEVEL

- 4 out of 5

### WHAT DOES INSTRUCTION LOOK LIKE

- Teacher Guided Instruction
- Independent Practice
- Higher Critical Thinking (Analysis, Debates, Evaluations)
- Open-Ended Questions, etc.), Application Focused Instruction

### OTHER IMPORTANT INFORMATION

AP Computer Science A introduces students to computer science through programming.

Fundamental topics in this course include the design of solutions to problems, the use of data structures to organize large sets of data, the development and implementation of algorithms to process data and discover new information, the analysis of potential solutions, and the ethical and social implications of computing systems. The course emphasizes object-oriented programming and design using the Java programming language.

### SAMPLE TEST QUESTIONS

1. Consider the following code segment.

```
int a = 5;
int b = 2;
double c = 3.0;
System.out.println(5 + a / b * c - 1);
```

What is printed when the code segment is executed?

- (A) 0.6666666666666667
- (B) 9.0
- (C) 10.0
- (D) 11.5
- (E) 14.0

2. Consider the `processWords` method. Assume that each of its two parameters is a `String` of length two or more.

```
public void processWords(String word1, String word2)
{
    String str1 = word1.substring(0, 2);
    String str2 = word2.substring(word2.length() - 1);
    String result = str2 + str1;
    System.out.println(result.indexOf(str2));
}
```