Mathematics Class Slides

Bronx Early College Academy

Chris Huson

25 November 2019

BECA / Dr. Huson / Geometry Unit 6: Analytic Geometry

6.1 Intro to the coordinate plane and linear functions, 25 November

6.2 Laptop - Graphing functions on coordinate plane, 26 November

6.3 Coordinate geometry practice, 27 November

6.4 Assessment: distance formula, Monday 2 December

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6.5 Laptop or by hand - Radical spiral, 3 December

6.5 Re-Assessment: distance formula, Tuesday 3 December

6.6 Midpoint formula, Wednesday 4 December

6.7 Midpoint formula, distance quiz, Thursday 5 December

6.8 Tangent introduction, Euclid's Orchard, Friday 6 December

6.9 Regents proofs using analytic geometry, Monday 9 December
Quiz followup: distance formula, radical simplification, convert linear equations to slope-intercept form

6.10 Laptop practice - Deltamath review, 10 December

6.11 Test review, Wednesday 11 December

6.12 Analytic geometry unit exam, Thursday 12 December

6.13 Geogebra writing project, Friday 13 December

GQ: How do we plot lines on the coordinate plane?

CCSS: HSG.GPE Express geometric properties with equations 6.1 Monday 25 Nov

Do Now: Plotting points and lines

1. Modeling geometric situations with an algebraic equation
2. Slope-intercept form of linear equations
3. Dilation of a line centered at the origin

Review exam results
Lesson: Perpendicular and parallel slopes

Homework: Test corrections due tomorrow

GQ: How do we work on the coordinate plane?

CCSS: HSG.GPE Express geometric properties with equations 6.2 Tuesday 26 Nov

Do Now: Deltamath practice

1. Graphing linear equations
2. Perpendicular and parallel slopes
3. Function and algebraic manipulations

10.1 meets in Room 414 first period tomorrow (advisory schedule)

Homework: Complete Deltamath homework section

GQ: How do we plot lines on the coordinate plane?

CCSS: HSG.GPE Express geometric properties with equations 6.3 Wednesday 27 Nov

Do Now: Plotting points and lines

1. Modeling geometric situations with an algebraic equation
2. Slope-intercept form of linear equations
3. Dilation of a line centered at the origin

Review exam results
Lesson: Perpendicular and parallel slopes

Homework: Test corrections due tomorrow

GQ: How do we plot lines on the coordinate plane?

CCSS: HSG.GPE Express geometric properties with equations 6.4 Monday 2 Dec

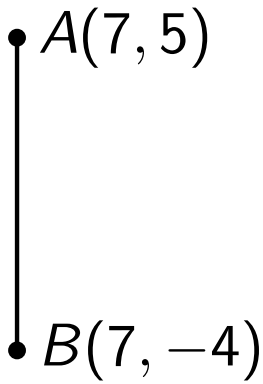
Do Now: Plotting, measuring, and translating on the x-y plane

1. Measure horizontal and vertical distances
2. Measure diagonal distances
3. Parabolas, quadratic functions, & function translation

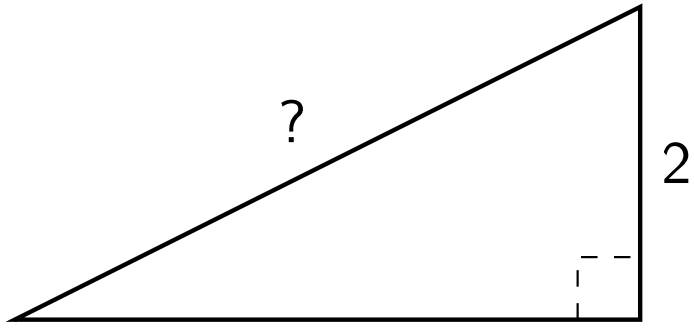
Lesson: the distance formula (Pythagorean theorem)
Review perpendicular and parallel slopes

Homework: Khan Academy distance practice

Assessment: Distance formula (on looseleaf paper)



1. Given $A(7, 5)$ and $B(7, -4)$, find AB.



2.

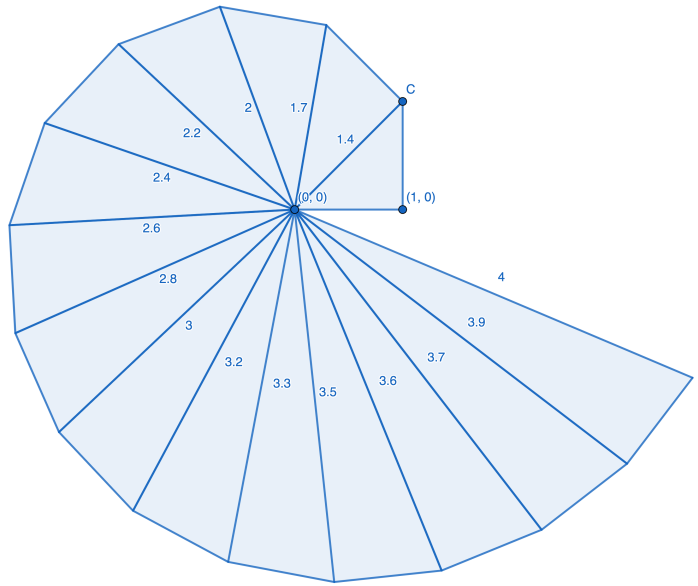
3. What is the length of $\overline{CD}$ if $C(1, -2)$ and $D(7, 6)$?

GQ: How do we calculate distance given coordinates?

CCSS: HSG.GPE Express geometric properties with equations 6.5 Tuesday 3 Dec

Do Now Assessment

Project paper: Use paper & pencil or MS Word & Geogebra



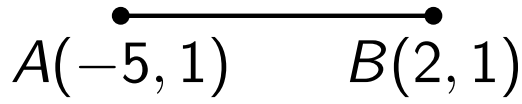
1. Radical spiral
2. Briefly explain how the spiral is constructed in the text.

Lesson: Drawing perpendicular figures in Geogebra

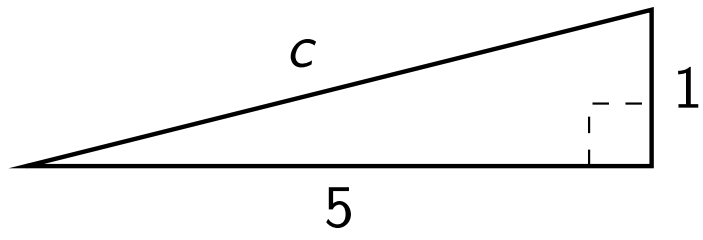
Homework: Complete the project paper (due 10:00pm)

Assessment: Distance formula (on looseleaf paper)

1. Find AB, $A(-5, 1)$ and $B(2, 1)$.



2. Find c.



3. What is the length of $\overline{CD}$ if $C(-1, 15)$ and $D(4, 3)$?

   Use $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

GQ: How do we find the midpoint of a line segment?

CCSS: HSG.GPE Express geometric properties with equations 6.6 Wednesday 4 Dec

Do Now pre-quiz: Distance, slope, Pythagorean formula

1. Bisecting horizontal and vertical distances
2. Measure diagonal distances
3. Right triangle situations

Lesson: Midpoint formula (directed segment & averaging forms)
Review area and volume

Homework: Khan Academy distance practice

GQ: How do we find the midpoint of a line segment?

CCSS: HSG.GPE Express geometric properties with equations 6.7 Thursday 5 Dec

Do Now Quiz: Distance, slope, Pythagorean formula

1. Bisecting horizontal and vertical distances
2. Measure diagonal distances
3. Right triangle situations

Lesson: the midpoint formula practice
Review rounding and decimal places

Homework: Handout midpoint practice

GQ: How do we map angles to slope?

CCSS: HSG.GPE Express geometric properties with equations 6.8 Friday 6 Dec

Do Now: Euclid's Orchard

1. Calculate the slope of triangles in the 1st quadrant
2. Measure their vertex angle measures in degrees
3. Make a table of the function mapping angle measure to slope

Lesson: Introduction to the tangent function
Homework: Trigonometry intro to tangent (exam Thursday)

GQ: How do we prove properties of polygons on the plane?

CCSS: HSG.GPE Express geometric properties with equations 6.9 Monday 9 Dec

Do Now: Practic analytic geometry standards

1. Perpendicular and parallel slopes of linear equations
2. Calculate decimal approximations of the tangent function and radicals
3. Apply the distance formula
4. Midpoints of segments in the coordinate plane

Lesson: Proofs using slope, distance, and midpoint formulas
Homework review tangent; slope and the distance formula (based on assessment)

Homework: Pre-test (exam Thursday)

Quiz followup

Apply the best distance formula

$$d = |x_2 - x_1| \qquad \text{or} \qquad d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

1. $A(-4, 2), B(5, 2)$
2. $C(-1, 2), D(5, 10)$

Simplify radicals by factoring

$$\sqrt{a^2 b} = \sqrt{a^2}\sqrt{b} = a\sqrt{b}$$

1. $\sqrt{75}$
2. $\sqrt{18}$

Convert to slope-intercept form

$$ax + by = c \rightarrow y = mx + b$$

1. $2x - 5y = 15$
2. $-3x + 6y = -12$

GQ: How do we use equations to solve geometry problems?

CCSS: HSG.GPE Express geometric properties with equations 6.10 Tuesday 10 December

Do Now Re-quiz (10.2): Slope & distance

Classwork: Deltamath practice

1. Graphing linear equations
2. Perpendicular and parallel slopes
3. Function and algebraic manipulations

Afterschool help Wednesday 2:20-3:30

Homework: Complete Deltamath homework section,
(exam Thursday)

GQ: How do we use equations to solve geometry problems?

CCSS: HSG.GPE Express geometric properties with equations 6.11 Wednesday 11 Dec

Do Now: Applying the tangent function

1. Calculate the tangent of an angle using a calculator
2. Calculate the tangent of an angle given a slope, or $\triangle$ side lengths
3. Solving for the a triangle's sides given a vertex angle measure
4. Inverse function on the calculator $tan^{-1}(x)$

Lesson: Review of problems using coordinate geometry
Afterschool help studying for test, today 2:20-3:30

Homework: Pre-test (exam tomorrow); Intensives next week

GQ: How do we use equations to solve geometry problems?

CCSS: HSG.GPE Express geometric properties with equations 6.12 Thursday 12 Dec

Unit exam: Analytic geometry

1. Distance, slope, Pythagorean formula
2. Bisecting horizontal and vertical distances
3. Measure diagonal distances
4. Right triangle situations
5. Spicy: ratio partition, proof, radicals

Lesson: the midpoint formula practice
Review rounding and decimal places

Homework: Handout tangent practice

GQ: How do we use equations to solve geometry problems?

CCSS: HSG.GPE Express geometric properties with equations 6.13 Friday 13 Dec

Geogebra modeling project paper

1. Distance, slope, Pythagorean formula
2. Bisecting horizontal and vertical distances
3. Measure diagonal distances
4. Right triangle situations

Lesson: the midpoint formula practice
Homework: Handout tangent practice; Intensives next week