Mathematics Class Slides

Bronx Early College Academy

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4 November 2019

5.1 Transformations intro, dilation constructions, 4 November

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5.2 Dilation calculations of triangle, 6 November

5.2 Project rubric - Polygon angle sum table in Word

5.3 Unit conversions in real world situations, 7 November

5.4 Dilation calculations of triangle, 8 November

5.5 Laptop Project - Dilation on coordinate plane, 12 November

5.6 Translation, 13 November

5.7 Rotation around the origin, 14 November

GQ: How do we construct a triangle with double the side lengths?

CCSS: HSG.CO.A.1 Know precise geometric definitions 5.1 Monday 4 Nov

Do Now: Exam early finishers problems

1. Modeling geometric situations with an algebraic equation
2. Complex angle combinations
3. Constructions with a purpose

Review exam results; Test corrections due Friday
Dilation constructions
Lesson: Translation, dilation, reflection

Homework: Problem set 5-1 Khan Academy transformations (due Tuesday 10:00PM)

GQ: How do we notate transformations?

CCSS: HSG.CO.A.1 Know precise geometric definitions 5.1 Monday 4 Nov

Terminology and notation for transformations

1. A preimage is mapped to the image, $A \to A'$
2. Translation or slide: $T_{+1,-3}$ or $(x, y) \to (x + 1, y - 3)$ (or as a vector or arrow)
3. Rotation around a point by an angle measure, $R_{30^\circ,(0,0)}$
4. Reflection over a line, r_{x-axis}
5. Dilation by a factor k centered at a point, $D_{\times 2,(0,0)}$

Rigid motions or isometries are transformations that maintain lengths and angles (translation, reflection, rotation, but not dilation)

GQ: How do we calculate the lengths of △s under dilation?

CCSS: HSG.CO.A.1 Know precise geometric definitions 5.2 Wednesday 6 Nov

Do Now: Dilation of a triangle

- Dilate a given triangle with scale factor $k = 3$
- Calculate the resulting lengths of the image
- Solve for the scale factor and apply it

Portfolio binder checklist, due Wednesday (parent conferences)
Lesson: Triangle in standard position, side length notation
Modeling with $A'B' = k \times AB$

Homework: 5.2 Khan Academy dilation practice

GQ: How do we communicate patterns polygons follow?

CCSS: HSG.CO.A.1 Know precise geometric definitions 4.8 Tuesday 29 Oct

Project rubric: Polygon paper, 29 October
Use Geogebra & MS Word to write a 1-2 page paper

1. Include a polygon (20)
2. Dotted diagonals (5)
   Spicy: add color, marked angle measures (+5, +5)
3. In MS Word table (20)
4. Use the equation editor (20)
   Spicy: Caption to the table (+5)
5. Follow MLA format. (20)
   If not a single page, manage page break (-5)
6. Email pdf and MS Word .docx files
   Subject line: Polygon exploration (5)

GQ: How do we apply unit conversions in real world situations?

CCSS: HSG.CO.A.1 Know precise geometric definitions 5.2 Wednesday 6 Nov

Do Now Handout: Applied situations

- Floorplan square footage and wall surface area
- Conversions to desired requirements (cost, time, supplies, etc.)
- Volume

Portfolio binder checklist, due next Wednesday (parent conferences) Lesson: Rates of coverage, cost, weight, work

Unit conversions: $\times \frac{\text{desired unit}}{\text{given unit}}$

Homework: 5.3 Deltamath Prequiz (online Do Now quiz tomorrow)

GQ: How do we calculate the lengths of △s under dilation?

CCSS: HSG.CO.A.1 Know precise geometric definitions 5.4 Friday 8 Nov

Do Now: Dilation and similarity practice

- Dilate a given triangle with scale factor
- Applying dilations on the coordinate plane
- Finding corresponding lengths for similar figures

Portfolio binder checklist, due Wednesday (parent conferences)
Lesson: Properties of similar figures, notation

Homework: Complete problem sets, portfolio projects and exams

GQ: How do we communicate examples of dilations?

CCSS: HSG.CO.A.1 Know precise geometric definitions 5.5 Tuesday 12 Nov

Do Now Quiz: Deltamath dilation calculations

Project: Examples of dilation on the coordinate plane

1. Use Geogebra & MS Word to write a 1+ page paper
2. The Geogebra *Graphing Calculator* works with *x*-*y* coordinates
3. Include the following graphs
   - 3.1 A triangle in standard position dilated centered at the origin
   - 3.2 A polygon dilated with a center not on the origin
   - 3.3 A line and its image after a dilation centered at the origin
     Spicy: State the equations of the two lines
4. Use the equation editor and captions. Follow MLA.
5. Email pdf and MS Word .docx files, with the subject line Dilation assignment

Homework: Complete exploration paper (10:00 deadline)

GQ: How do we slide objects on the plane?

CCSS: HSG.CO.A.1 Know precise geometric definitions 5.6 Wednesday 13 Nov

Do Now: Regents problems

- Dilate a given triangle: What do we always do first in geometry?
  Draw a picture! (then answer the question)
- Applying dilations on the coordinate plane
- Finding corresponding lengths for similar figures

Afterschool today; parent conferences tomorrow 4:00-7:00, Friday
Portfolio binder checklist, due today (parent conferences)

Lesson: Translation

Homework: Khan Academy translation practice

GQ: How do we rotate objects on the plane?

CCSS: HSG.CO.A.1 Know precise geometric definitions 5.7 Thursday 14 Nov

Do Now Quiz: Regents dilation problems

- Applying dilations to line segments on the coordinate plane
- Finding corresponding lengths for similar figures

Parent conferences 4:00 - 7:00, tomorrow 12:00 - 2:20 Lesson: Rotation around the origin

Homework: Khan Academy rotation practice