Mathematics Class Slides

Bronx Early College Academy

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21 April 2020

11.0 Scanning and uploading written work to Gradescope, Wednesday 22 April

11.1 Algebra review, Literals, Wednesday 22 April

11.2 Literals, radicals, trig conventions Friday 24 April

11.3 Literals, radicals, trig conventions Wednesday 29 April

11.3 Literals, radicals, trig conventions Thursday 30 April

11.4 Cosine and sine Monday 4 May

11.4 Cosine and sine (10.3) Wednesday 6 May

GQ: How do we document our mathematical reasoning?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.1 Wed. 22 April

Written work must be submitted following standard protocols

1. Title and label (lined paper)

   10.2 Geometry First, Last name
   11.1 Literals (*Assignment*)
   22 April 2020 (*Date*)

   Number problems down the left (drawings, notes on the right)
2. Photograph and convert to pdf with an app:
   Adobe Scan, Evernote Scannable, or Genius Scan
3. Login and upload to Gradescope.com (class code: MG8X2G)

GQ: How do we apply algebra to equations with literals?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.1 Wed. 22 April

Do Now: Submit Present; Answer these questions by chat

- What's the best day for Chess Club?
  (Congratulations chess champion Ahmed!)
- What type of phone do you have?

Tech: turning in written work by uploading to Gradescope

Lesson:
Solving equations with multiple unknowns
Deltamath practice problems

Homework: Complete handout problem set, due by 10:00pm
(submit on time for full credit. late work: 80%)

GQ: How do we apply algebra to equations with literals?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.1 Wed. 22 April

Simplify each expression by "collecting like terms"

1. $3x + 2x$
2. $5\pi - 2\pi + 4\pi$

GQ: How do we apply algebra to equations with literals?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.1 Wed. 22 April

Simplify each expression by "collecting like terms"

1. $3x + 2x$
   - ☐ $5 + x$
   - ☐ $(x + x + x) + (x + x)$
   - ☐ $5x$
   - ☐ $(3 + 2)x$
2. $5\pi - 2\pi + 4\pi$
   - ☐ $3\pi + 4$
   - ☐ $(5 - 2 + 4)\pi$
   - ☐ $7 + \pi$
   - ☐ $7 \times \pi$

GQ: How do we apply algebra to equations with literals?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.1 Wed. 22 April

Simplify each expression by "collecting like terms"

1. $3x - 2x + 7y$
2. $5z + 5\pi - 2\pi + z$
3. $-k + 7\sqrt{2} + 2k + 3\sqrt{2}$
4. $5\pi x - 2\pi x + 9y$

GQ: How do we apply algebra to equations with literals?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.1 Wed. 22 April

Solve each equation for the unknown

1. $\frac{k}{\sqrt{3}} = 11$

2. $5z - 2\pi = 4\pi + z$

GQ: How do we apply algebra to equations with literals?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.1 Wed. 22 April

Solve each equation for the unknown

1. $4x - x\sqrt{3} = 11$
2. $5\pi x - 2\pi x = \pi x + 14$

GQ: How do we apply algebra to equations with literals?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.2 Friday 24 April

Do Now: Submit Present; Answer the question by chat

- Give an example of a *literal*, a value expressed with a symbol (do not use x)

Chess Club tournament today 1:30 - 2:30 (LiChess)

Lesson: Operations on radicals (square roots)
Applications with literals from trigonometry, science

Deltamath practice problems

Homework: Complete handout problem set, due by 10:00pm

Properties of square roots

Definition: $(\sqrt{a})^2 = a$

note: $(-\sqrt{a})^2 = a$

Addition

$\sqrt{b} + \sqrt{b} = 2\sqrt{b}$,

but $\sqrt{a} + \sqrt{b} = \sqrt{a} + \sqrt{b}$

Multiplication

$\sqrt{c} \times \sqrt{d} = \sqrt{cd}$

Inverse (reciprocal)

$$\sqrt{\frac{1}{k}} = \frac{1}{\sqrt{k}}$$

Notation conventions

Greek letters:

α alpha, β beta, γ gamma, δ delta, ϵ epsilon

π pi, θ theta, σ sigma, ϕ phi

Capital Greek letters: Σ Sigma, Δ Delta

Angle measures: 45°, $\frac{5}{6}\pi$ radians, x, θ, A

Trigonometry situations

The tangent of an angle in a right triangle is the ratio of the opposite side's length to the length of the leg adjacent to the angle

Solve for the missing side length, x

1. $\tan\theta = \dfrac{x}{10}$

2. $\tan\theta = \dfrac{20}{x}$

GQ: How do we simplify radicals?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.3 Wed. 29 April

Do Now: Submit Present; Answer the Google form

- Solve for x: $4x - 15y - z = 20 + y - 5z$
- Solve for k: $3k - mk + 7 = np$

Review: literals in equations

Lesson: Simplifying radicals (square roots) by factoring
Deltamath practice problems

Homework: Complete handout problem set, due by 10:00pm

GQ: How do we simplify radicals?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.3 Thurs 30 April

Do Now: Submit Present; Answer the Google form

Solve for x: $4x - 15y - z = 20 + y - 5z$

(a) $x = 16y - 4z + 20$

(b) $x = 4y + z - 5$

(c) $x = 4y - z + 5$

(d) $x = 4y - 4z + 20$

Review: literals in equations (e.g. $V = \frac{1}{3}\pi r^2 h$, solve for r)

Lesson: Simplifying radicals (square roots) by factoring
Deltamath practice problems

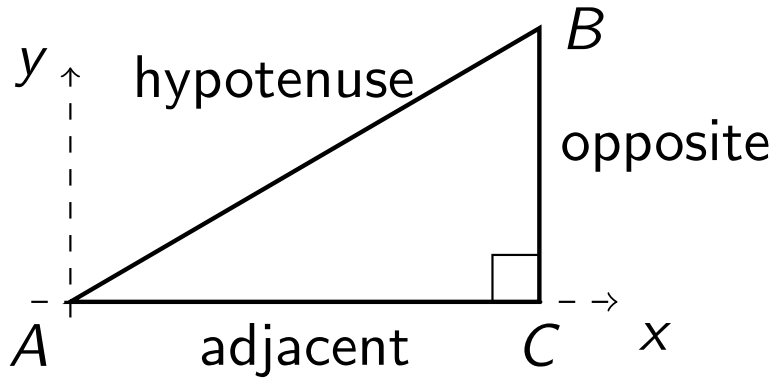
Homework: Complete handout problem set, due by 10:00pm

GQ: How do we use cosine and sine ratios?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.4 Monday 4 May

Do Now: Submit Present; Answer the Google form

$\triangle ABC$ in standard position: vertex A at $(0, 0)$, right $\angle C$ above x-axis



Review: Pythagorean theorem; tangent (opposite over adjacent)

Lesson: Cosine and sine ratios, Deltamath practice problems

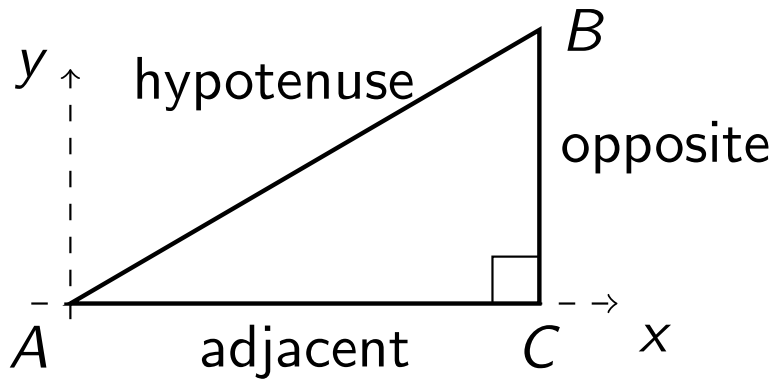
Homework: Complete handout problem set, due by 10:00pm

GQ: How do we use cosine and sine ratios?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.4 Wednesday 6 May

Do Now: Submit Present; Answer the Google form

$\triangle ABC$ in standard position: vertex A at $(0, 0)$, right $\angle C$ above x-axis



Review: Pythagorean theorem; tangent (opposite over adjacent)

Lesson: Cosine and sine ratios, Peardeck group work problem set