Mathematics Class Slides

Bronx Early College Academy

Chris Huson

13-17 September 2021

BECA / Dr. Huson / 11.1 IB Math Unit 1

1.1 1st day of Geometry, Segment addition, 13 Sept

1.2 Function domain and range

1.5 Problem sets working with functions

1.6 Problem sets working with functions

1.7 Do Now Quiz functions

1.8 PreTest review functions

1.9 Linear models

1.9 Linear models

1.10 Linear models

1.11 Linear models

1.3 Precision and significant figures, 3 Oct

1.4 Error bounds, 4 Oct

1.5 Exponents & scientific notation, 5 Oct

1.9 Deltamath: scientific notation, trig 6 Oct

1.17 review, bounds, 7 Oct

Learning Target: I can measure and diagram my world

CCSS: HSG.CO.A.1 Know precise geometric definitions 1.1 Monday 13 Sept

Welcome back to school

Do Now: Measurement

1. Notebook first page: Name / Course / Instructor
2. Diagram people closest to you and their distance
3. Early finishers: Calculate diagonal distances

Supply list: Composition book, looseleaf, pencils & pens, compass and ruler; Optional: calculator, folder

Lesson: Linear functions, slope, solving; vertical line test p 4-6

Homework: Diagram your bedroom (with measurements), or another room

Learning Target: I can apply domain and range

CCSS: HSF.IF.C.7 Analyze functions 1.2 Tuesday 14 Sept

Do Now: In your notebook

1. Solve for x:
   $$x - 7 = 11 \qquad 2(x - 5) \geq 4$$
2. What is the slope of the line $y = 3x - 2$?
3. $f(x) = x^2 - 3$. Find $f(1)$

Lesson: Domain, range, function review pp 204-8

Groupwork: Investigation 1 pp 206-8

Homework: Skills Check p 205

Learning Target: I can employ the language of functions

CCSS: HSF.IF.C.7 Analyze functions 1.5 Monday 20 Sept

Do Now: In your notebook

1. Solve for x:
   $$2x - 9 = 3 \qquad 3(x - 3) \leq 12$$
2. What is the slope of the line $y = 2x - 5$?
3. $f(x) = x^2 + 6$. Find $f(2)$

Lesson: Independent and dependent variables

Linear equations and function review pp 204-8

Groupwork: Exercises 5C pp 220-221

Learning Target: I can use functions to model situations

CCSS: HSF.IF.C.7 Analyze functions 1.6 Tuesday 21 Sept

Do Now: Pyramid lifting routine problem (Bill Geiger)

Set 1: 135 lbs, 15 reps
Set 2: 185 lbs, 12 reps
Set 3: 205 lbs, 10 reps
Set 4: 225 lbs, 8 reps
Set 5: 245 lbs, 6 reps
Set 6: 265 lbs, 4 reps

1. On the third set, when $x = 3$, how much weight is lifted?
2. On which set is the weight 245 pounds?
3. Interpret the ordered pair $(2, 185)$ in this context.
4. Does the weight increase by a constant amount with each set?

Prequiz handout; Function review pp 204-220

Learning Target: I can use functions to model situations

CCSS: HSF.IF.C.7 Analyze functions 1.7 Wednesday 22 Sept

Do Now Quiz

1. On the third set, when $x = 3$, how much weight is lifted?
2. On which set is the weight 245 pounds?
3. Interpret the ordered pair $(2, 185)$ in this context.
4. Does the weight increase by a constant amount with each set?

Review simplifying radicals, solving equations with fractions
Function review pp 204-220
Test Friday on functions

Learning Target: I can use functions to model situations

CCSS: HSF.IF.C.7 Analyze functions 1.8 Thursday 23 Sept

Do Now: Algebra warmup problems

Given the linear function $f(x) = -2x + 12$

1. Find $f(0)$
2. $f(x) = 0$. Find x.

Function review pp 204-220. Test tomorrow on functions

Learning Target: I can use linear equations to model situations

CCSS: HSF.IF.C.7 Analyze functions 1.9 Monday 27 Sept

Do Now: Investigation 5 page 221

Answer questions 1, 2, and 3 (including the table on page 222)

Function test makeup: Sabrina, Qwaa, Sthefani.

Groupwork: problems 5D page 225-6

I can use linear equations to model situations

Investigation 5 page 221 1.9 Monday 27 Sept

Linear functions:

$f(x) = 2x + 1$

$g(x) = -3x + 2$

$h(x) = 3$

Learning Target: I can use linear equations to model situations

CCSS: HSF.IF.C.7 Analyze functions 1.10 Tuesday 28 Sept

Do Now: Example 6 page 222

Compare the two linear models (d) and (e). (formulas page 222)

1. Which has the greater rate of change?
2. Which has the higher initial value?

Function test makeup: Sthefani.

Lesson: Calculating rate of change (slope or gradient)

Variables and parameters Groupwork: problems 5D page 225-6

Learning Target: I can use linear equations to model situations

CCSS: HSF.IF.C.7 Analyze functions 1.11 Wednesday 29 Sept

Do Now: Calculate your mastery score Functions

Let x be the number of points correct on #1-8

1. $f(x) = \frac{x}{10} + 0.33$
2. $max(1, min(4, f(x)))$

Function test review, test corrections

Lesson: Calculating rate of change (slope or gradient)

Variables and parameters Groupwork: problems 5D page 225-6

Functions mastery score (problems #1-8)

Let x be the number of points

1. $f(x) = \frac{x}{10} + 0.33$
2. $max(1, min(4, f(x)))$
3. Example, 25 points $f(25) = \frac{25}{10} + 0.33 = 2.8$

IB test scoring, points:

1. "A1" - correct/Accurate value
2. "M1" - proper Method used
3. "R1" - good Reasoning
4. "N1" - No work, but partial credit
5. "ft" - correct, but Following Through on previous errors

Learning Target: What is the appropriate precision for a calculation?

CCSS: MP5 Attend to precision

2.1 Monday 4 Oct

Do Now: Textbook chapter warmup, use looseleaf paper

1. Skills check #1-3 p. 3

Lesson: Rounding, significant figures, error bars pp. 1-5
Exercise 1A, #1-2, p. 5

Homework: Calculation and rounding practice

Learning Target: How do we measure the bounds of errors?

CCSS: MP5 attend to precision 2.2 Tuesday 4 Oct

Do Now: Calculator practice

1. Chapter review #1 p. 39
2. Pay careful attention to saving calculator values, rather than copying to paper and reentering.
3. Check your answers in back of book, p. 766

Lesson: Bounds and errors pp. 6-8

Practice exercises 1B p. 8-9
Homework: Function substitution, domain and range

Learning Target: How do we write very large or small numbers?

CCSS: MP5 attend to precision 2.3 Wednesday 5 Oct

Do Now: Precision practice

1. Practice exercises 1B p. 8-9
2. Pay careful attention to saving calculator values, rather than copying to paper and reentering.
3. Check your answers in back of book, p. 765

Lesson: Exponents & scientific notation pp. 9-12

Note exponent rules top of page 11

Homework: Practice exercises 1C p. 12-13

GQ: How do we practice the law of sines?

CCSS: MP5 attend to precision 2.4 Thursday 6 Oct

Deltamath practice: scientific notation, trig

1. Laptops, login with Teacher ID 546068
2. Do Deltamath sections in order
   Practice comes first, then new topics
3. Work extra problems on the skills you need to practice

New material: The sine formula for the area of a triangle page 22
Radian / degree conversion; law of cosines

Homework: Complete Deltamath problems, 10:00PM deadline

GQ: How do we calculate the bounds around a value?

CCSS: MP5 attend to precision 2.5 Friday 7 Oct

Do Now Quiz: Calculate Body Mass Index (link)

BMI is a measure of a healthy personal weight, $BMI = \frac{w}{h^2}$

w is a person's weight in kilograms and h is height in meters

1. Given a height of 170 cm and weight of 77 kg, find the BMI
2. These measurements are not exact. Assuming the height is between 169-171 cm and weight 76-78 kg, find the bounds of the BMI.

Lesson: Solid geometry, Chapter Summary

Homework: Chapter review 11-17 p. 39-40 (revisit problems)

GQ: How do we calculate the bounds around a value?

CCSS: MP5 attend to precision

Solution to Do Now Quiz: Calculate Body Mass Index (7)

1. $BMI = \dfrac{77}{1.70^2}$ M1 A1 allow 170^2

$= 26.64359\ldots$

≈ 26.6 A1 (N2))

2. Lowerbound: $BMI = \dfrac{76}{1.71^2}$ M1 A1

$= 25.9909\ldots$

≈ 26.0

Upperbound: $BMI = \dfrac{78}{1.69^2}$

$= 27.30996\ldots$

≈ 27.3 A1 A1 (N3)

award M1 A1 f.t. for 26.6, 26.7

Proper header with full name, date, and title (5 percentage points)

GQ: How do we calculate the bounds around a value?

CCSS: MP5 attend to precision

Quiz Corrections: Calculate Body Mass Index required

- Proper header with full name, date, and title
- Work downward in single column on left, in pen (you can add notes and diagrams on the right)
- Skip a line and number the problem
- Label to the left of equals sign (e.g. $BMI =$)
- Show substitution step
- Write the full calculator display (with ellipse)
- Show the rounded value, 3 sig-figs (exact value is also ok)

Copy this checklist into your notebook