12.1 IB Math - Unit 9: Probability

Bronx Early College Academy

Christopher J. Huson PhD

18 March 2019

7.1 Venn diagrams, Monday 18 March

7.2 Deltamath probability review. Tuesday 19 March

7.3 Expected value, Wednesday 20 March

7.4 Conditional probability, trees with & without replacement, Thursday 21 March

7.5 Binomial distribution, Friday 22 March

7.6 Binomial distribution, Monday 25 March

7.7 Deltamath binomial expansion review. Tuesday 26 March

7.8 Binomial expansion review. Thursday 28 March

7.9 Deltamath binomial expansion review. Friday 29 March

GQ: How do we notate sample spaces with Venn diagrams?

CCSS: HSS.CP.A.3 Understand conditional probability 7.1 Monday 18 March

Do Now: Draw a Venn diagram of these 110 students:

- 25 students took physics
- 45 students took biology
- 48 students took mathematics
- 10 students took physics and mathematics
- 8 students took biology and mathematics
- 6 students took biology and physics
- 5 students took all three subjects

How many took biology, but neither physics nor mathematics?
How many students did not take any of the three subjects?

Lesson: Sets, complements, union, intersection, empty set

Homework: Problem set

GQ: How do we notate sample spaces with Venn diagrams?

CCSS: HSS.CP.A.3 Understand conditional probability 7.2 Tuesday 19 March

Do Now Quiz: Trig, calculus practice, with calculator

1. *Medium* Middling exam problems
2. *Spicy* Middling and extended exam problems

Lesson: Deltamath probability (trigonometry & calculus) review
Homework: Complete Deltamath problem set, review quiz answers

GQ: How do we calculate expected value?

CCSS: HSS.MD.A.3 Develop a probability distribution for a random variable 7.3

Wednesday 20 March

Do Now: Algebra practice, with calculator

Lesson: Expected value

Homework: Problem set

GQ: How do we add the probabilities of multiple events?

CCSS: HSS.CP.A.3 Understand conditional probability 7.4 Thursday 21 March

Do Now Quiz: Trig, calculus practice, with calculator

1. *Medium* Middling exam problems
2. *Spicy* Middling and extended exam problems

Lesson: Conditional probability, trees with & without replacement
Homework: Problem set

GQ: How do we model a series of events?

CCSS: HSS.MD.A.3 Develop a probability distribution for a random variable 7.5 Friday 22 March

Do Now: Make a tree representing three coin flips

1. What is the probability of each outcome?
2. If order doesn't matter, how can the results be consolidated into a probability distribution of the total number of heads?

Lesson: Binomial expansion p. 186-8
Homework: Problem set

GQ: How do we model a series of events?

CCSS: HSS.MD.A.3 Develop a probability distribution for a random variable 7.6 Monday 25 March

Do Now: Sequences review, Exercise 6L #1-4 p. 182-3

1. Use the sequences formulas on the formula sheet
2. The equation for compound interest (try to remember it first) is $P_n = P_0(1 + \frac{i}{c})^{cn}$

Lesson: Binomial expansion p. 186-8
Assessment: Exercise 6N p. 187
Homework: Exercise 6O p. 188

GQ: How do we model a series of events?

CCSS: HSS.MD.A.3 Develop a probability distribution for a random variable 7.7 Tuesday 26 March

Do Now Quiz: Trig Paper 1, without calculator

1. *Medium* Middling exam problems: Periodic functions

Lesson: Deltamath probability (trigonometry & calculus) review
Homework: Complete Deltamath problem set, review quiz answers

GQ: How do we model a series of events?

CCSS: HSS.MD.A.3 Develop a probability distribution for a random variable 7.8 Thursday 28 March

Do Now: Trig skills check, *without calculator*

1. What is the amplitude, midline, and period of $f(x) = 2\sin \pi x + 2$?
2. Sketch $g(x) = 3\cos 2(x - \frac{\pi}{2})$ over $0 \leq x \leq 2\pi$. Label its extrema as ordered pairs and the x-intercepts with their values.
3. Write down $\sin \frac{\pi}{6}$, $\cos \frac{2\pi}{3}$
4. Write down the solution set of $\sin x = \frac{1}{2}$ over $0 \leq x \leq 2\pi$.

Assessment: Enter spiral review scores in personal tracker grids
Homework review
Lesson: Expected values, binomial expansion, modeling problems
Homework: Calculus review problem set

GQ: How do we model a series of events?

CCSS: HSS.MD.A.3 Develop a probability distribution for a random variable 7.9 Friday 29 March

Do Now Quiz: Trig skills check, *without calculator*

1. What is the amplitude, midline, and period of $f(x) = 5\sin 2x - 3$?
2. Sketch $g(x) = 2\sin \pi(x-1)$ over $0 \leq x \leq 4$. Label its extrema as ordered pairs and the x-intercepts with their values.
3. Write down $\sin \frac{\pi}{3}$, $\cos \frac{2\pi}{3}$
4. Write down the solution set of $\sin x = \frac{\sqrt{2}}{2}$ over $0 \leq x \leq 2\pi$.

Calculus homework review
Lesson: Expected values, binomial expansion, modeling problems
Homework: Problem set