

Remote Learning Packet

NB: Please keep all work produced this week. Details regarding how to turn in this work will be forthcoming.

March 30 - April 3, 2020

Course: 9 Geometry

Teacher(s): Mr. Mooney sean.mooney@greatheartsirving.org

Weekly Plan:

Monday, March 30

- Read/Review III.29, write it out in two-column format, and answer questions.
- Demonstrate III.29 from memory.

Tuesday, March 31

- Read III.30, write it out in two-column format, and answer questions.
- Perform III.30 construction.

Wednesday, April 1

- Read III.31, write it out in two-column format, and answer questions.
- Begin practicing demonstration.

Thursday, April 2

- Demonstrate III.31 from memory.
- Read III.32, write it out in two-column format, and answer questions.

Friday, April 3

- Demonstrate III.32 from memory.
- Review all Book III enunciations.

Statement of Academic Honesty

I affirm that the work completed from the packet is mine and that I completed it independently.

I affirm that, to the best of my knowledge, my child completed this work independently

Student Signature

Parent Signature

Monday, March 30 - Book III Proposition 29

Dear students,

Welcome back to Geometry! I wish with all of my heart that we were together at school once more, and I sincerely hope that our time away will be brief. That being said, I am confident in your ability to do an excellent job continuing your Geometry education remotely. Indeed, you probably realized at some point in Book III that you were capable of reading and understanding Euclid's propositions fairly well on your own. It is almost as if we spent the whole year preparing for remote learning! So, let us begin!

For today, please read Euclid's III.29 and write it out in two-column on a blank sheet of paper. Then, on the same sheet of paper answer the following questions:

1. In your own words, describe what is being proven (please put it into if-then grammatical form: that is, "If such-and-such is the case, then such-and-such will be true.").
2. How does this proposition relate to III.28?
3. How do we know that the angle BKC is equal to the angle ELF?

When you have finished this, prepare it for demonstration. If you have a whiteboard, use it! If not, a sheet of paper and a pencil will work just fine. When you feel like you have it memorized, demonstrate it for a fellow human being (parents, siblings, friends via skype, etc.).

Tuesday, March 31

The proposition for today, III.30, is a construction proof. We have known for a while that we can cut straight lines in half--but what about the curved line of a circle? Proposition 30 shows us that we can indeed bisect circumferences of circles.

Before reading, I encourage you to invent a method yourself and prove that it works (this is very fun, but not required). Then, 1) read the proposition, 2) write it out in two-column format, and 3) perform the construction on a blank sheet of paper (these are fun *and* required).

Wednesday, April 1

Today I would like you to put the rest of Euclid's Elements into two-column format...April Fools!

Today's proposition is the glorious III.31. I know that in some classes, we came up against this incredible truth and actually looked at other possibilities of proving it (e.g. based on III.20). If you would like, read the enunciation and spend a few minutes trying to prove it. Then, complete the following:

- 1) Read III.31 and write it out in two-column format.
- 2) Answer the following questions about III.31:
 - a) Describe, in your own words, the five truths proven in this proposition. (Remember what Euclid means when he says angle **of** a segment. An angle **in** a segment and an angle **of** a segment are very different things!)
 - b) Explain how Euclid reasons to the fact that "the angle ABC is less than a right angle."
 - c) How are the truths about angles **of** segments clear (or "manifest") based on what was proven earlier?
- 3) Begin practicing the demonstration. It does not need to be perfect yet--you will be given time to finish in tomorrow's lesson.

Thursday, April 2

Dear students, today we will finish with III.31 and then we will look at III.32.

First, 1) spend time practicing the demonstration of III.31, and then demonstrate it, as before, to a fellow human being that you can get to listen to you (if they are familiar with Euclid, even better!).

Then, 2) read III.32 and write it out in two-column format on a blank sheet of paper. Think very carefully as you go through the two-column: there are several uses of common notions in this proof that may be tricky to detect since they are not given in brackets as the propositions are. Do your best not to leave any reasons blank!

Friday, April 3

Dear students, today we will simply finish our study of III.32.

First, 1) referring both to Euclid and to your two-column notes, answer the following questions on a blank sheet of paper (or, if you'd like, on the same sheet of paper as your two-column notes):

- a) Explain in your own words what is being proven in this proposition. (NB: The term "alternate segment" has never been used, but I think you can figure it out. It is "alternate" in relation to the angle formed by the tangent and the chord. It will also help to look to Euclid's "I say that" and see what is being proven in terms of the diagram.)
- b) Explain how I.32 helps us to know that "Therefore the remaining angles BAD, ABD are equal to one right angle." Is it *just* I.32 that we are using? Is there a common notion at work here? Explain.
- c) How is III.22 used to prove that angle DBE is equal to the angle DCB? Why does this need to be proven? (That is, why are we not done after proving that the angle DBF is equal to the angle BAD?)

Then, 2) prepare III.32 for demonstration. When you feel ready, demonstrate it from memory to a fellow human being.

Note: Please compile and save *all* of the written work that I have asked you to complete for this week.