



Kalisa

- 14 years old, 8th Grade
- Enjoys school, especially art and music and, straight "A" student, wants to be a teacher
- Assessments have shown Kalisa is gifted in Math

"Math is my favorite subject, but sometimes I get through my work quickly and then I get bored. Sometimes I wonder why I need to learn all of this stuff."

Programs to engage Advanced Learners

CGP Education's programs have many features designed to stretch and engage **Advanced Learners** like Kalisa. We've included **detailed guidance** for teachers on tailoring all Lessons to address the needs of a variety of student levels. All of our classroom exercises, practice questions and homework assignments can be done at Level Three which is perfect for Advanced Learners. We have deliberately made our **Chapter Investigations** with open ended extensions. This means that advanced students can develop them into mini real-world projects using challenging Math to see the relevance of Math beyond the classroom.

In addition, the Teacher Textbook includes countless suggestions to keep Advanced Learners like Kalisa enthusiastic — many of them involving Math in real-life contexts.

Digital components to generate tailored exercises

Our Assessment Test Generator CD-ROM allows teachers to create tests for **specific students**. Students like Kalisa can do lengthy tests with plenty of **tough questions** while her classmates do something completely different — all in a format that is easy for the teacher to use. We've gone the extra mile to take the hard work out of teaching multiple-level classes.

Chapter 6 Investigation
Pascal's triangle

Part 1: Investigate patterns in Pascal's Triangle. Here are some examples. Look at the numbers in the diagonal lines of the triangle. Investigate "hockey stick" shapes, like the one shown on the right. Find the sum of each row of numbers. What do you notice? Find rows in which the second number is prime. What is special about these rows?

Open-ended Extension

If there are two children in a family, there can either be two girls, two boys, or a girl and a boy.

The probability of each combination and the ratios of the probabilities are shown in the table:

Combination	Probability	Ratio of probabilities
2 girls	$\frac{1}{4}$	1:3
1 girl, 1 boy	$\frac{2}{4}$	2:1
2 boys	$\frac{1}{4}$	1:3

Investigate the link between Pascal's Triangle and the probabilities of combinations of boys and girls in families with different numbers of children. Does it matter which order the boys and girls are born in? Why or why not?

Round 1

Although it's just a game, it can be used to illustrate Pascal's Triangle.

Test Summary

Duration: 75 minutes

Length: 25 questions (7 pages)

Subject: Chapter / Section

Number of questions: 17 multiple choice, 14 free response

CGP Education — **engaging** California Math students!