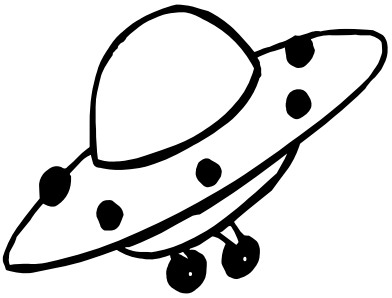
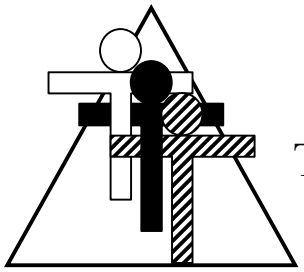
FOCUS ON

Solving Systems of Equations



By Brad Fulton
2005 CLMS Educator of the Year



Teacher to Teacher Press
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Brad Fulton and Bill Lombard

Teacher to Teacher Press

"*Building Mathematical Skill on a Foundation of Understanding*"

Brad Fulton

- **Consultants**
- **Educators**
- **Authors**
- **Seminar leaders**
- **Teacher trainers**
- **Conference speakers**

Bill Lombard

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Known throughout the country for motivating and engaging teachers and students, Brad and Bill have authored over ten books that provide easy-to-teach yet mathematically-rich activities for busy teachers. In addition, they have co-authored six teacher training manuals full of activities and ideas that help teachers who believe mathematics must be both meaningful and powerful.

Seminar leaders and trainers of mathematics teachers

- California Math Council and NCTM presenters
- Lead trainers for summer teacher training institutes
- Trainers/consultants for district, county, regional, and national workshops

Authors and co-authors of mathematics curriculum

- *Simply Great Math Activities* series: five books covering all major strands
- *Math Discoveries* series: bringing math alive for students in middle schools
- Teacher training seminar materials handbooks for elementary, middle, and secondary school

Available for workshops, keynote addresses, and conference sessions.

All workshops provide participants with complete and ready-to-use activities. These activities require minimal preparation, use materials commonly found in classrooms, and give clear and specific directions and format. Participants will also receive journal prompts, homework suggestions, and ideas for extensions and assessment.

Brad and Bill's math activities are the best I've seen in 30 years of teaching!
Wayne Dequer, 7th grade math teacher

"The high-energy, easy-to-follow handouts were clear. The instructors were great!"
DeLinda Van Dyke, middle school teacher

References available upon request

This resource manual is dedicated to the students of Brad Fulton and Bill Lombard, who have been sources of inspiration to us as teachers. Without these students our lives would not be as rich and rewarding as they are.

For consultant services contact us at

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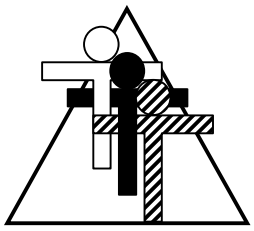

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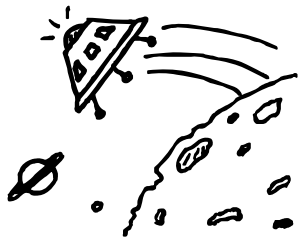
Money From Mars

- ☑ Allows students to work with two variables painlessly
- ☑ Helps students solve for two unknowns
- ☑ Adaptable for grades 2 through 10!
- ☑ Demonstrates dependent and independent variables
- ☑ Incorporates multiple representations
- ☑ Leads students into the Ax+By=C form
- ☑ Makes a seamless transition to simultaneous equations
- ☑ Shows the interconnections between graphs, t-tables, and data charts
- ☑ Easy and fun!

Name _____

Money from Mars 1

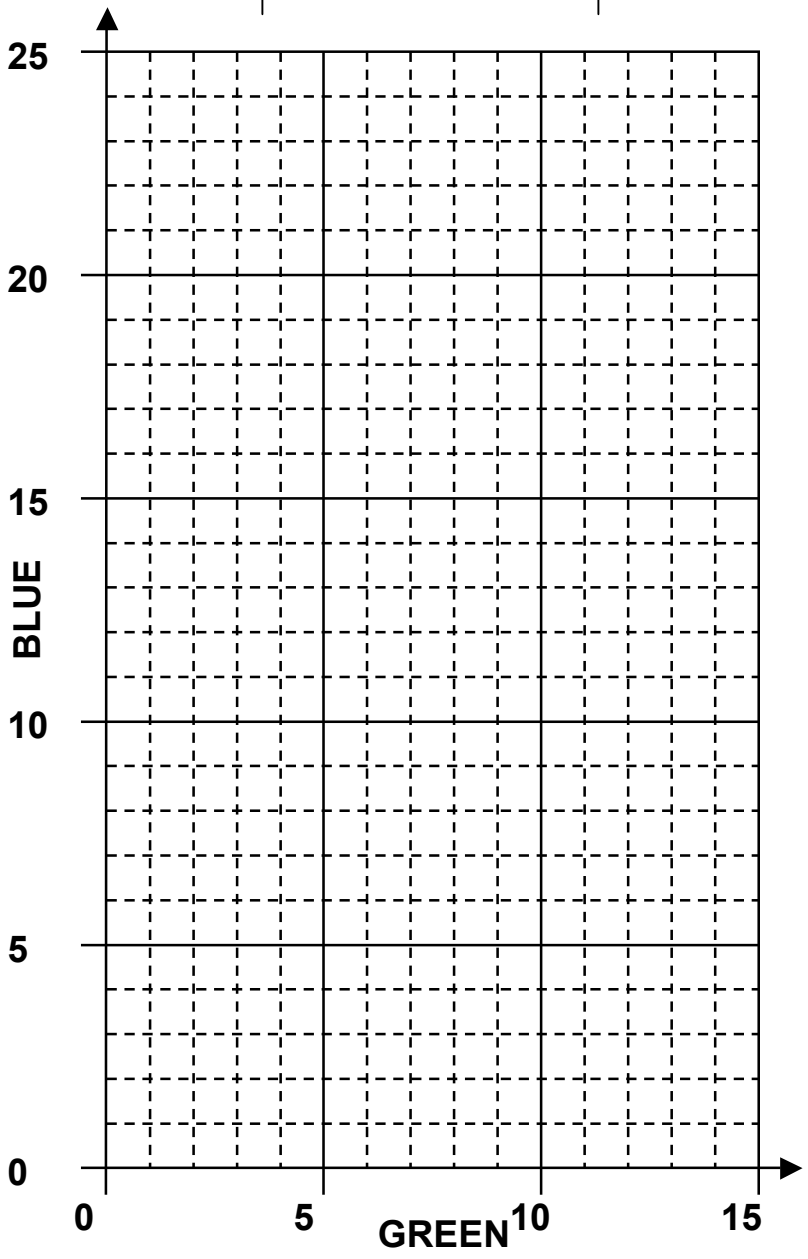
G G G B B = 24



G B B = 16

G	B

G	B



Money from Mars
An Algebraic Solution (problem 1)

$3g + 2b = 24$
$1g + 2b = 16$

$3g + 2b = 24$
$-\ (1g + 2b = 16)$ Subtract

$\frac{2g}{2} = \frac{8}{2}$ Divide by the coefficient.

$g = 4$

$3(4) + 2b = 24$ Substitute.
$12 + 2b = 24$ Multiply
$12 + 2b = 24$
$-12 \quad -12$ Subtract.
$2b = 12$
$\frac{2b}{2} = \frac{12}{2}$ Divide by the coefficient

$b = 6$

Name _____

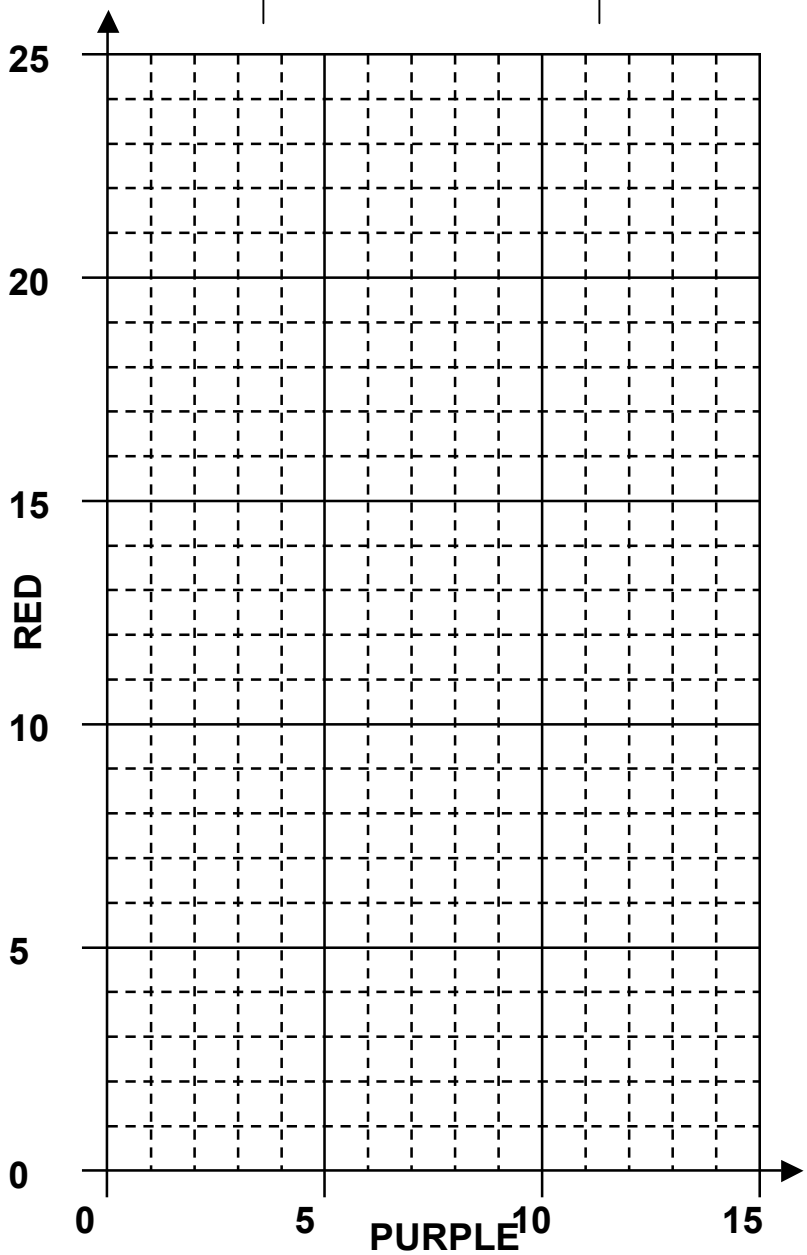
Money from Mars 2

P	R

P	R

P P P P R R R = 48

P P R R R = 30

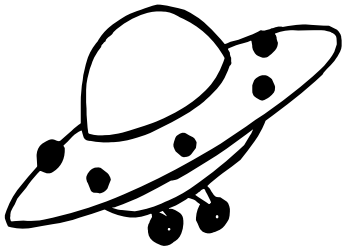


Name _____

Y B

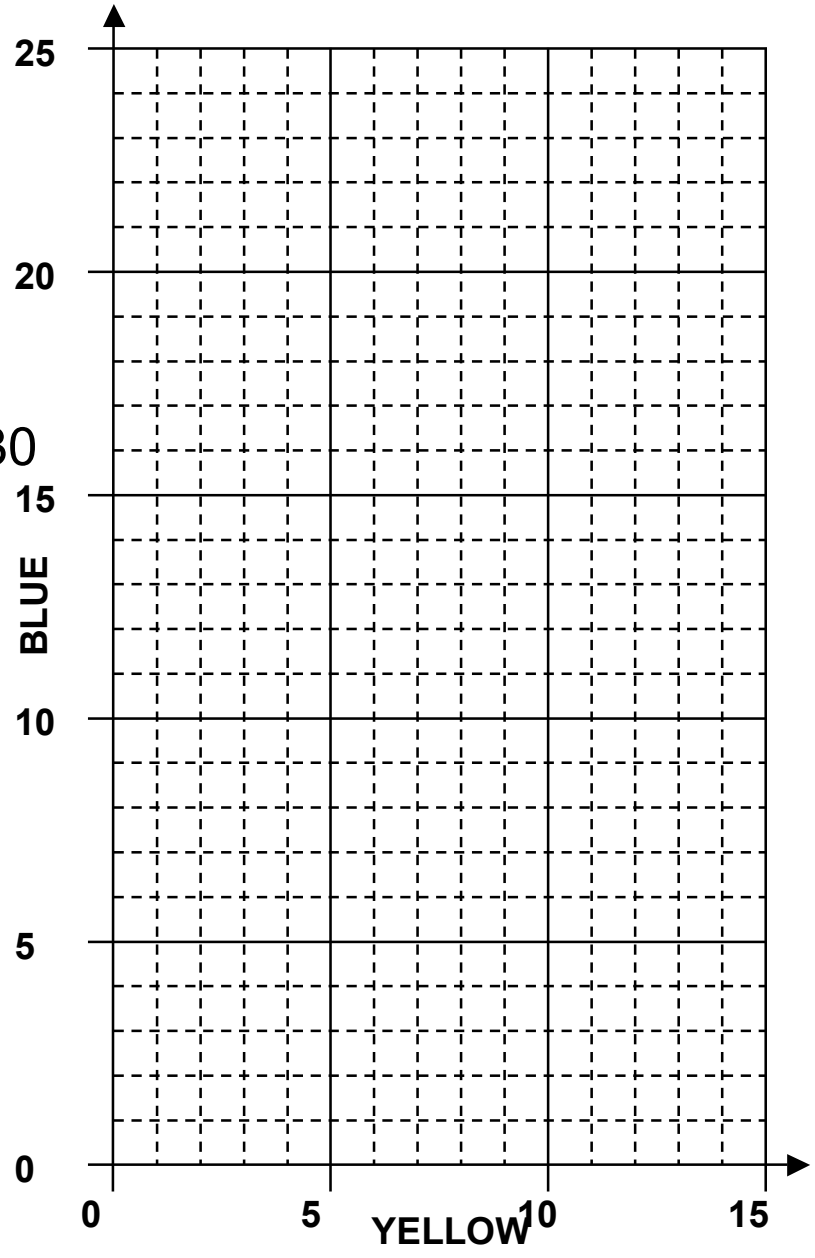
Y B

Money from Mars 3



Y Y B = 14

Y Y B B B B B = 30



Name _____

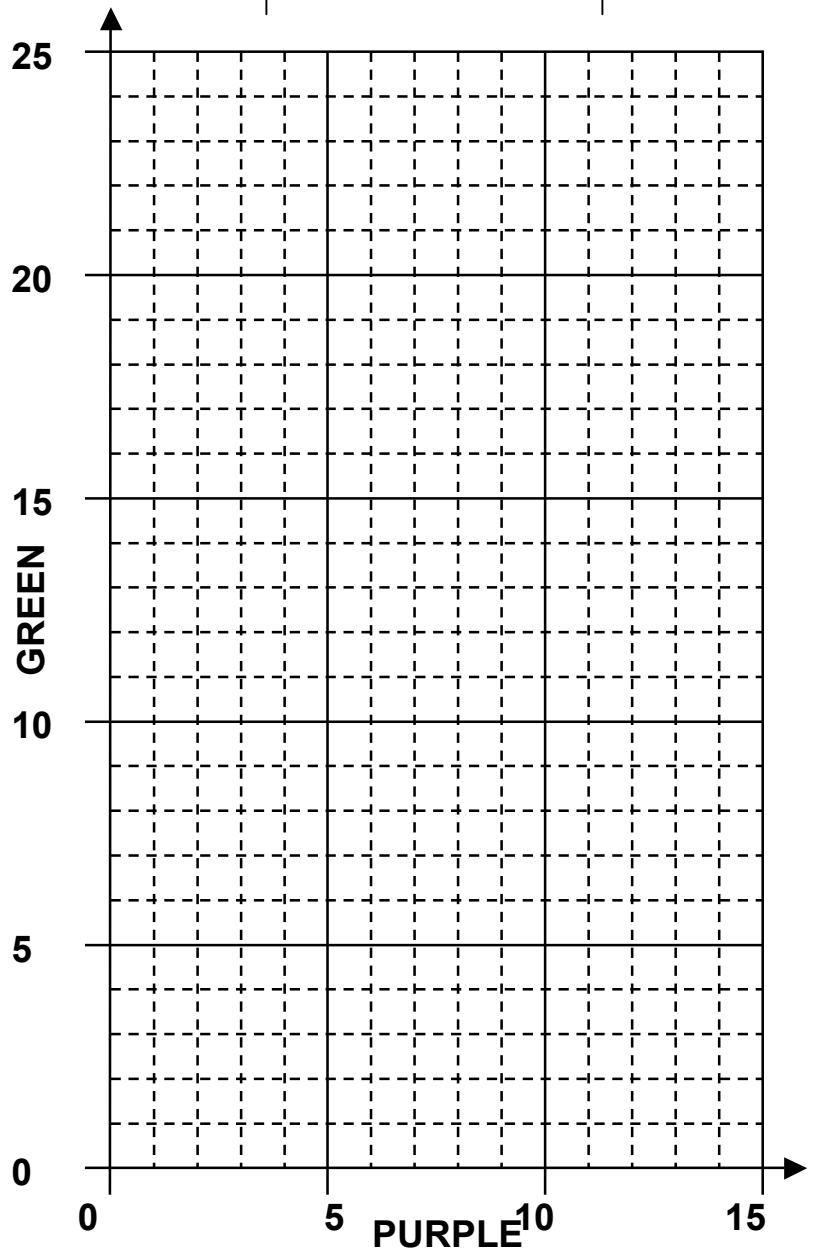
Money from Mars 4

P P P G = 15

P P G G G = 24

P	G

P	G



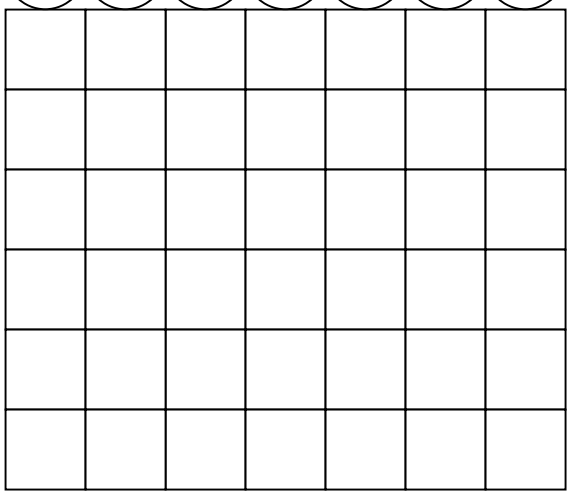
Name _____

Money from Mars 5

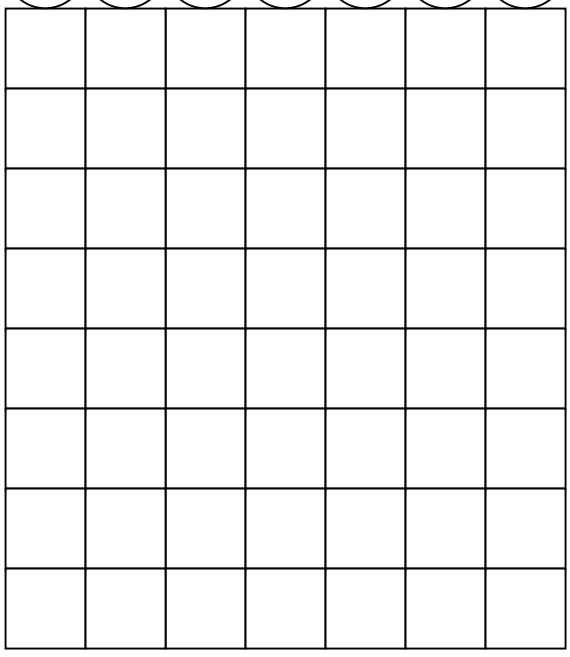
R	G

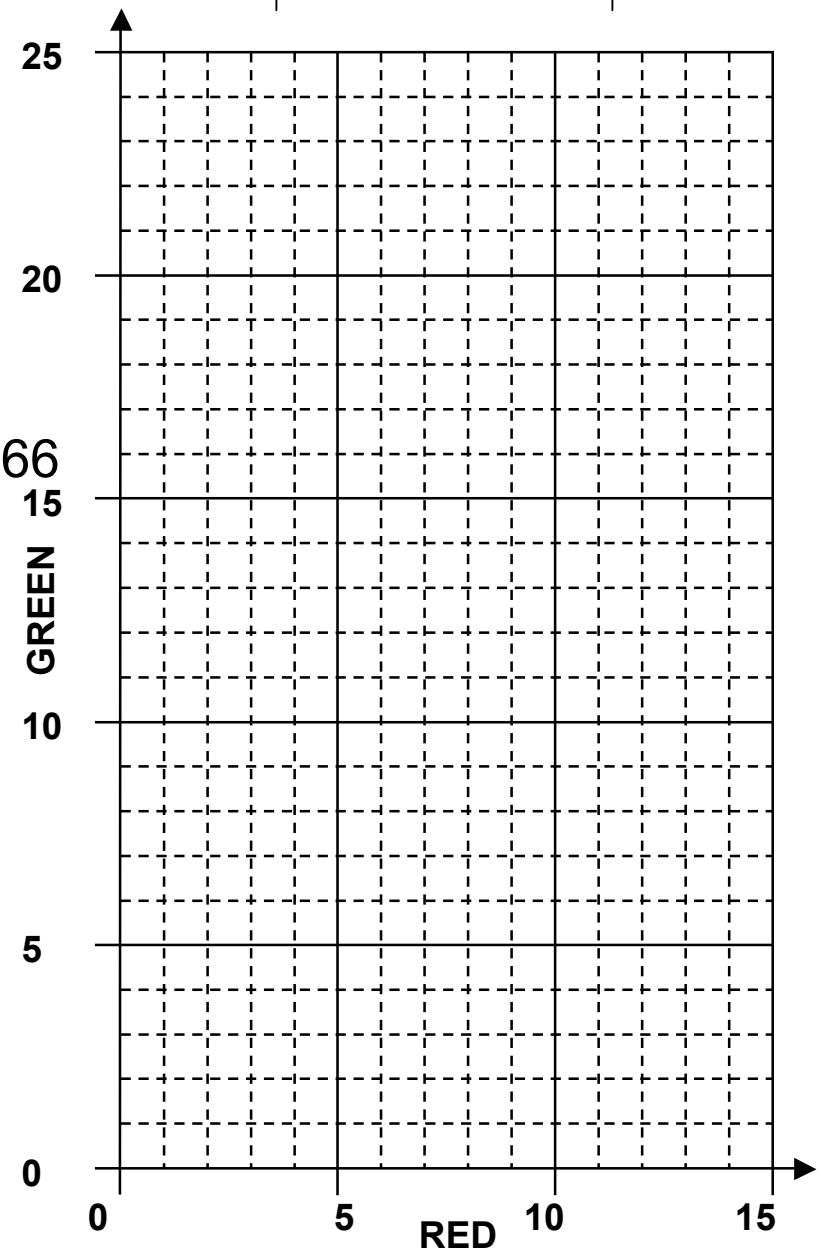
R	G

R R R R G G G = 48



R R G G G G G = 66





Money from Mars
An Algebraic Solution (problem 5)

$4r + 3g = 48$

$2r + 5g = 66$ Multiply the second equation by 2.

$4r + 10g = 132$

$4r + 3g = 48$ Subtract the first equation.

$7g = 84$

$\frac{7g}{7} = \frac{84}{7}$ Divide by the coefficient.

$g = 12$

$4r + 3(12) = 48$ Substitute.

$4r + 36 = 48$ Multiply

$4r + 36 = 48$

$-36 \quad -36$ Subtract.

$4r = 12$

$\frac{4r}{4} = \frac{12}{4}$ Divide by the coefficient

$r = 3$

Soluitons

Problem 1:
$3g + 2b = 24$
$g + 2b = 16$ $g = 4, b = 6$

Problem 2
$4p + 3r = 48$
$2p + 3r = 30$ $p = 9, r = 4$

Problem 3
$2y + 1b = 14$
$2y + 5b = 30$ $y = 5, b = 4$

Problem 4
$3p + 1g = 15$
$2p + 3g = 24$ $p = 3, g = 6$

Problem 5
$4r + 3g = 48$
$2r + 5g = 66$ $r = 3, g = 12$

Standards That May Be Taught Using Money from Mars

Grade	Standard	Description
2	Num. 5.1	Solve problems using combinations of coins and bills.
3	Alg. 2.1	Solve simple problems involving a functional relationship between two variables
4	Alg. 1.1	Use letters to stand for any number in simple expressions or equations.
5	Alg. 1.1	Use information taken from a graph or equation to answer questions about a problem situation
5	Alg. 1.1	Use a letter to represent an unknown number
5	Alg. 1.4	Identify and graph ordered pairs
5	Alg. 1.5	Solve problems involving linear functions
6	Alg. 1.3	Apply algebraic order of operations
6	Alg. 2.0	Students analyze tables, graphs, and rules to solve problems involving rates and proportions
7	Alg. 1.1	Use variables and appropriate operations to write an equation
7	Alg. 1.4	Use algebraic terminology
7	Alg. 1.5	Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph
7	Alg. 3.3	Graph linear functions, noting that the vertical change per unit of horizontal change is called the slope
8	6.0	Graph a linear equation and compute the x- and y-intercepts
8	9.0	Students solve a system of linear equations in two variables algebraically and are able to interpret the answer graphically

MORE! MORE! MORE!

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- Free sample chapters from our books
- Downloadable handouts from our workshops
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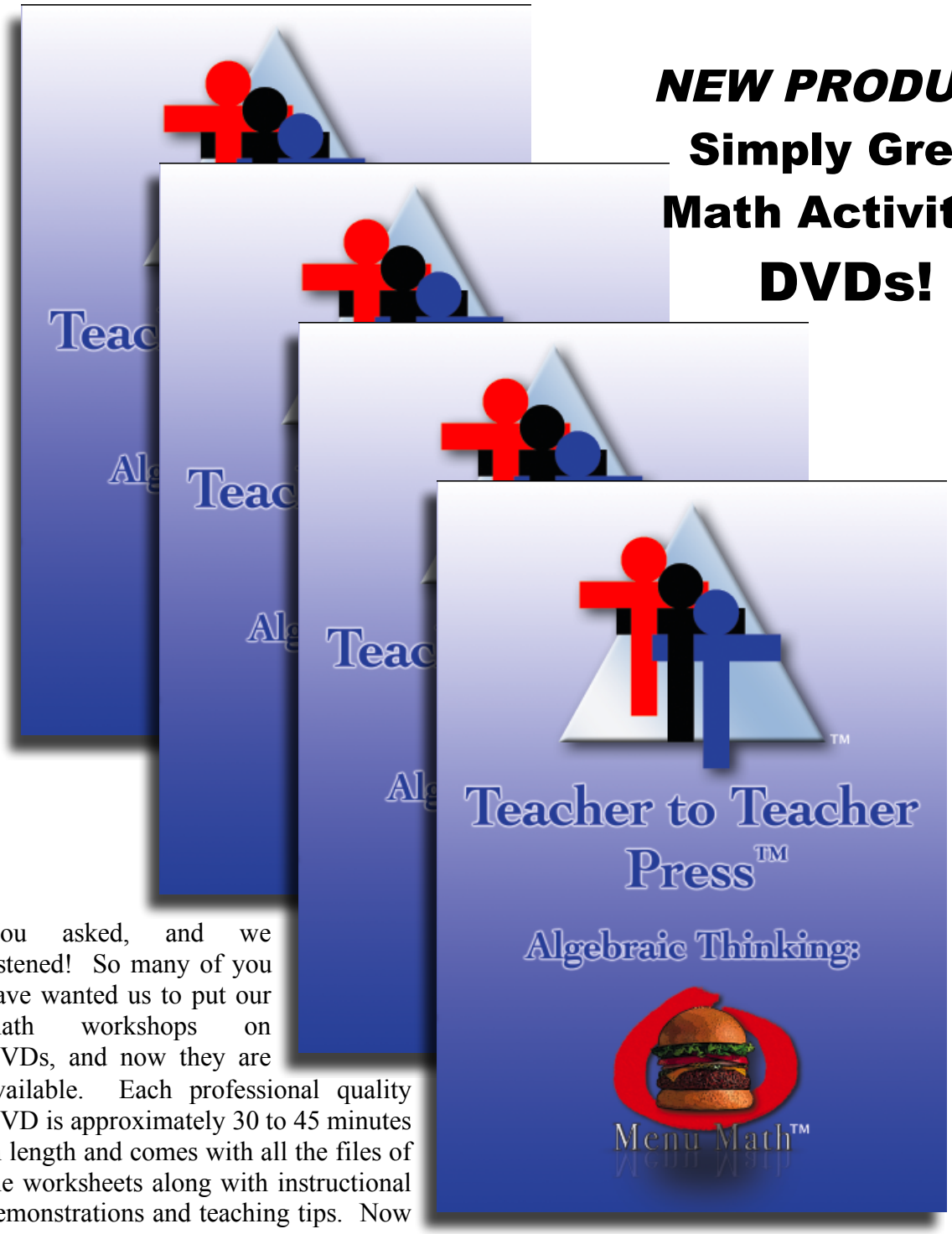
- Links to other valuable resource websites
- Order forms for our materials
- A bibliography of great mathematical reading
- Calendars showing where and when you can hear Bill and Brad present

Happy surfing!
Brad and Bill



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Simply Great Math Activities DVDs!

You asked, and we listened! So many of you have wanted us to put our math workshops on DVDs, and now they are available. Each professional quality DVD is approximately 30 to 45 minutes in length and comes with all the files of the worksheets along with instructional demonstrations and teaching tips. Now you can "attend" your own Bill and Brad workshop anytime you want. We offer DVD versions of some of our most popular activities. Check our website to see the latest titles.

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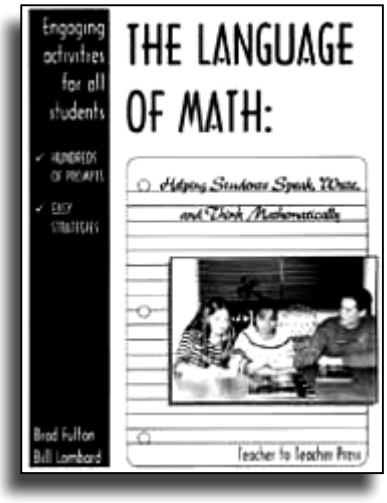
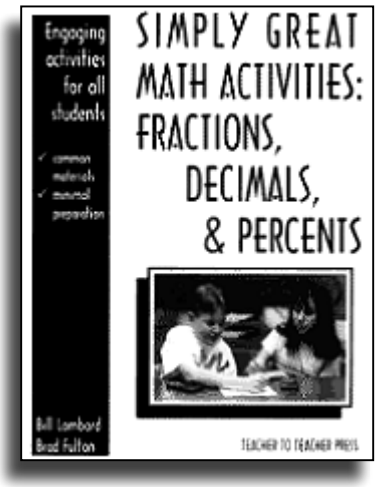
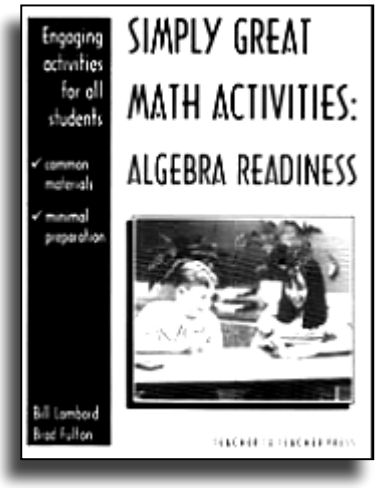
Books by Brad and Bill



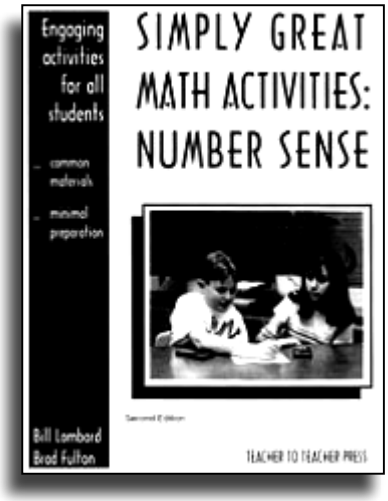
The Language of Math helps teachers create a classroom environment rich in mathematical thinking by showing them how to easily incorporate oral and written language into their math classes. Over 100 journal and discussion starters are included along with extensive



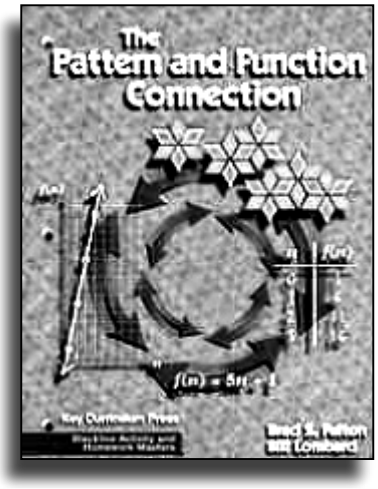
Here are a dozen unique and conceptual activities that will help your students add, subtract, multiply and divide fractions as well as connect them to decimal and percent representations. Both you



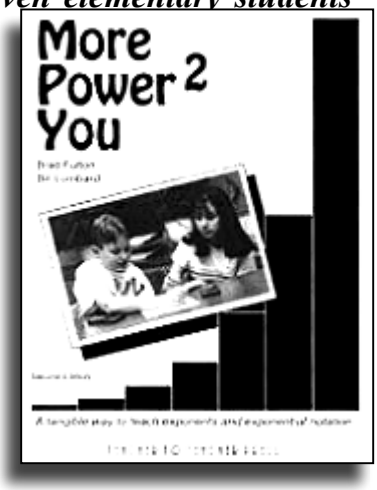
Teachers are raving about how effective these activities have been in their classrooms. Children as young as fourth grade and college students alike say that algebra is easy and makes sense



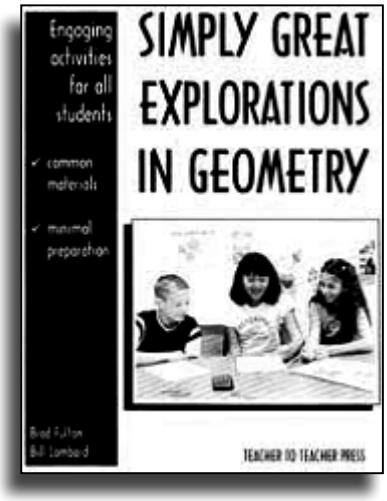
Students don't even think they are doing math sometimes because these activities are so fun and engaging, but they are developing rich and valuable number sense as they explore these



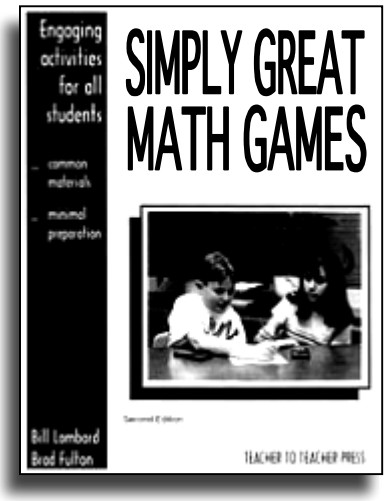
Our first book is still one of our most popular. Every teacher we talk to who has tried this approach to functions has been amazed at what their students have learned and accomplished. Over 150 pages of multiple representations of functions cover such concepts as slope, intercept, and function notation. Even elementary students



***Exponents will finally make sense to your students after they participate in the unique activities found in this book. Both positive and negative exponents are demonstrated conceptually. Your students will even be able to explain* why $n^0 = 1$.**



Over one dozen geometry activities will excite your students as they discover the connections between geometry and fractions, decimals, percents, and even algebra. Area formulas, angle measurement, polygon attributes, vocabulary, and construction



A dozen engaging and educational games await you and your students in this creative and highly adaptable book. You'll find games that reinforce basic operations with whole numbers, fractions, decimals, and integers as well as algebraic skills. Game masters will serve a spectrum of grade levels

Download* free *sample chapters at our website:

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SIMPLY GREAT MATH INSTRUCTIONAL DVDS ..... **New Product!**

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Conceptually rich yet easy activities to help your students learn to add and multiply integers and fractions, work with prime and composite numbers, apply principles of probability, graph, use order of operations, develop geometric vocabulary and skills, understand estimation and decimal place value, and much more!

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Eleven extensive ready-to-teach and mathematically rich activities will captivate your students' interest. Many of the activities can be extended into week-long explorations. The book includes homework masters, transparency masters, journal prompts and simple directions.

Simply Great Math Activities: Fractions, Decimals, and Percents

A dozen incredible and innovative activities will captivate and educate your students. They will learn creative and clever tricks that make fractions less frightening. The book includes homework and transparency masters, journal topics, easy-to-follow directions, and much more.

Simply Great Math Activities: Algebra Readiness

These motivating activities will work for young students just beginning to work on algebra concepts, while ideas for extensions make them just as appropriate for older students in formal algebra classes. The book includes homework ideas, transparency masters, journal prompts and simple directions.

Simply Great Math Activities: Geometry Explorations

Students use geometry as a tool to explore unique mathematical situations. Area formulas, volume, surface area, compass and straightedge constructions, angle measurement, the Pythagorean Theorem and more are covered in unique ways that promote deeper understanding. Algebraic principles and fraction concepts are embedded.

More Power^2 You!

A unit that actually makes the concept of exponents and exponential growth tangible! Lead your students on a journey traveling from physical and manipulative models to graphical and symbolic formats. They will even be able to explain why $n^0 = 1$. The book includes student worksheets, homework, teacher lessons, journal prompts, and ideas for extensions.

The Language of Math: Helping Students Speak, Write, and Think Mathematically

Everything you need to incorporate oral and written language into your classroom lessons, complete with easy tips for leading rich mathematical discussions, and great ideas for **easily** managing written work. There are over 70 transparency masters, 100 journal prompts, and masters for making your own math journals. Writing and speaking mathematically has never been easier!

The Pattern and Function Connection

This three-week unit is the easy and effective way to introduce students to linear functions. Students will move from physical and manipulative models to pictorial and graphical representations, then finally to symbolic expressions for linear equations. The book includes student worksheets, homework, teacher lessons, journal prompts, and ideas for extensions.

24 Pattern Cards

A fantastic supplement and great time saver! These full – color 11" by 17" cards are printed on heavy matte-finish card stock that is easy on the eyes and will stand up to years of student use. Students will enjoy working with the patterns so much, they won't notice how much they are learning about functions and algebra. They are a great companion to go with either of our titles: *The Pattern and Function Connection* or *Simply Great Math Activities: Algebra Readiness*.

Transparencies of Pattern Cards

Another great addition to *The Pattern and Function Connection* or *Simply Great Math Activities: Algebra Readiness* family of products. These brilliant transparencies are full – color representations of the Pattern Cards listed above. Use them for whole-class instruction to introduce the powerful mathematics of either book. The bright and clear colors will capture your students' interest, introduce them to the beauty of patterns, and send them well on their way to algebraic learning. Can be ordered separately or at a package discount with other Pattern and Function products.

