ABSTRACT
        This guide focuses on the Square One TV game shows,
which explore areas ranging from probability and statistics to
geometry. Eight game shows are described including the game rules,
materials, directions, strategies for playing the games, actual game
questions, and reproducible student pages. Follow-up activities
provide ideas for using the games on a continuing basis. Also
included are curriculum goals for Square One TV. Topics covered
include place value, probability, multiplication, strategic thinking,
addition, geometry, percentages, estimation, mathematical operations,
cubed numbers, and mathematical misconceptions. (KR)

SQUARE ONE TV is a unique television series about mathematics, produced by the Children's Television Workshop (CTW), creators of SESAME STREET, THE ELECTRIC COMPANY, and 3-2-1 CONTACT. The first thing you should know about SQUARE ONE TV is that WE WANT YOU TO COPY OR VIDEOTAPE IT OFF THE AIR, AND USE IT IN THE CLASSROOM. It's perfectly legal, as long as you erase the tapes within three years. SQUARE ONE TV airs Monday through Friday on most member stations of the Public Broadcasting Service (PBS). It's aimed at the nation's fourteen million eight- to twelve-year-olds. Each half-hour show includes several segments, many of which parody familiar television formats, such as game shows, sit-coms, cartoons, music videos, and commercials.

In its recently published "Curriculum and Evaluation Standards for School Mathematics" the National Council of Teachers of Mathematics outlines its recommendations for the future of mathematics education. The NCTM document expresses overarching concerns with mathematics as reasoning, problem solving, and communication. SQUARE ONE TV shares these concerns, as demonstrated by its curriculum goals and its overall approach to mathematics education. You can use SQUARE ONE TV and the activities in this teacher's guide to support the NCTM's approach and to develop several of the specific content areas recommended in the Standards.

USING THE TEACHER'S GUIDE

This teacher's guide focuses on the game shows, which are an important part of SQUARE ONE TV. Each game format explores one or more mathematical content areas. Just as the games were designed for a broad spectrum of viewers, the teacher's guide provides a range of activities that we hope will be suitable in a variety of circumstances.

The guide devotes two pages to each of the game formats. In the sections titled "In Brief," you'll find short introductions to help you tell at a glance which games are suitable for the subjects you're working on with your class. The "Game Rules" will give you an idea not only of how the games are played on TV, but also of how you can play them in class.* Each "Step-by-Step Activity" is accompanied by a reproducible student page, which can be used as the basis for a class-length activity. Feel free to copy these pages or any other material in the guide for your own in-school use. Follow-up activities are also included to provide ideas for using the games on a continuing basis. Also included in the guide is a pull-out program listing. This insert contains segment-by-segment rundowns of each program, along with curriculum goals for each segment (see SQUARE ONE TV Curriculum Goals on pages 21–22).

USING THE GAME SHOWS IN THE CLASSROOM

SQUARE ONE TV was primarily designed for home viewing; still, many teachers find it suitable for the classroom. The key to in-class use of the series is selecting material that best matches your curricular goals. Most often this involves the use of segments rather than entire thirty-minute programs. The following suggestions are intended to help you make the most of the game shows and other segments of SQUARE ONE TV in your class.

1. Try to tape as many of the SQUARE ONE TV programs off the air as you can. This will give you the broadest possible selection of game shows to choose from.

2. Be sure you preview the program, familiarize yourself with the game rules, and review the printed material before using the games in class. You may also want to encourage students to watch a whole show at home, so they'll be familiar with its spirit.

3. When using one of the game shows, we suggest you:

   • Prepare a few questions to help focus students' attention prior to viewing
   • Show an entire game show once or twice to familiarize students with the games
   • Review the rules prior to in-class game play
   • Follow up watching and playing the games with the related activities and extensions provided

4. The SQUARE ONE TV game shows can make excellent ongoing activities for your class. Once the class has mastered a game, challenge another class to a match, or move on to another game for more fun.

*As you become familiar with the game rules for each show you'll find that there are variations on how to play some of the games. In "Close

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erating

Who's   Students will see t
nd the   times B wins—and
en the   about:
le, you
he
a
at it !!!

...han the other? Test them out.
...vity page and try the following

...d then 7
...d then 1
...d then 2

...etimes strategy A wins, some-
...es the two strategies tie. What

...d then 9
...d then 3
...d then 1

...all the blanks on the activity

BUT WHO'S COUNTING?

Strategy A: If the first digit is 5 or more, put it in the tens' place. Otherwise put it in the ones' place.

A
B
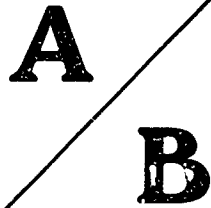
Strategy B: Always put the first digit in the tens' place.

Second Spin

9
8
72
7   27
6
55
5   55
4
3
72
2   72
14
1   41
0

0   1   2   3   4   5   6   7   8   9

First Spin

LDREN'S TELEVISION WORKSHOP

8

STEP-BY-STEP ACTIVITY:

It's not always easy to see what strategies the players are using on "But Who's Multiplying?"—but the following activity will convince your students that there's more to this game than just knowing the multiplication tables. In this activity, we have explored only one of the many possible strategies. Examine the game further with your class, and see what other possibilities there are.

What you need: copies of the activity page, colored checkers or markers. It may also help to have an overhead transparency of the game board.

What to do: 1. Watch a couple of games of "But Who's Multiplying?" with your class. Then distribute the activity page.

2. Have the class examine the game board. Certain numbers—for example, 11 and 13—are left out. Why? Is it only primes that are missing? Does the game board contain any primes at all? Why do you think the game board is designed this way?

3. Try a sample game (forget about the time limit for now). Suppose that Red goes first and plays the red factor ring on 2 and the blue factor ring on 9. How many possible three-in-a-rows are there that include the product 18? Why might this be a better move than red ring on 2 and blue ring on 3? To help students visualize this problem, have them consider the geometry of the game board. A blank grid like those below will help them see that squares near the center of the game board have many more possible three-in-a-rows than squares near the edges.
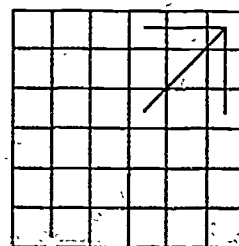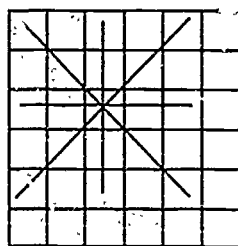
4. Have the class consider every square on the game board. In each one they should record the number of three-in-a-rows that include that square. What patterns emerge? What strategies does this pattern suggest—are there some squares that seem to be better plays than others?

Follow-up: Consider the strategy suggested by the main activity. If Red goes first and puts the red ring on 5 and the blue ring on 4, what would be a good response for Blue? Why might blue ring on 1 be a bad idea? Why might blue ring on 8 be better? Why might blue ring on 2 be better still? Don't forget to consider Blue's ability to block Red's potential three-in-a-rows.

BUT WHO'S MULTIPLYING?

PRODUCT BOARD

1	2	3	4	5	6
7	8	9	10	12	14
15	16	18	20	21	24
25	27	28	30	32	35
36	40	42	45	48	49
54	56	63	64	72	81

| 1	2	3	4	5	6	7	8	9

FACTOR BOARD

IN BRIEF:

No, it's not baseball—this triple play involves addition, multiplication, and geometry. It's an exciting way to practice basic arithmetic while learning to recognize equilateral triangles. It's also a game of strategy and quick think' g.

GAME RULES:

The object is to make an equilateral triangle on the game board by claiming three numbers that are its vertices. Treat the numbers on the game board as either products or sums. Spin the two game wheels until each one stops at a number. Then either multiply or add the numbers to match a number on the game board. If a wheel happens to stop on a SQUARE ONE TV symbol, you're in luck! Use it to represent any number you want. Call out the product or sum of the numbers you've spun, and claim the matching number on the game board. Whoever makes an equilateral triangle* on the game board first—and shouts "Triple Play!"—wins. With "Triple Play," your class will have fun *and* see each problem from three angles!
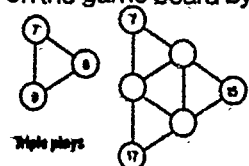
*Note that only triangles whose sides are formed by the lines on the game board are valid.

STEP-BY-STEP ACTIVITY:

"Triple Play" moves very quickly—but understanding the mathematics of the game board will help you make the right moves.

What you need: copies of the activity page, scissors, paste, dice, colored checkers or markers. It may also be helpful to duplicate the master of the game board onto an overhead transparency.

What to do: 1. After viewing "Triple Play," distribute copies of the activity page. In place of the game wheels, let your students construct special "Triple Play" dice by cutting out the numbers and logo on the activity page and pasting them to the faces of two dice. Numbers 1 through 6 should go on one die; numbers 7, 8, 9, 10, 12 and the logo should go on the other. Then let the class play several games of "Triple Play."

2. Look at the game board. Each number on it is a vertex of more than one equilateral triangle. Let your students find the six triangles which have 24 as a vertex. How many triangles have 54 as a vertex? How about 10? Once the class has counted these, ask them which of the three numbers might be the best starting move, and why.

3. Next to each number on the board, let the class record the number of equilateral triangles for which it is a vertex.

4. What patterns do students see in their answers? Is there any symmetry? Why are all the answers down the middle line even numbers?

Follow-up 1: a. Using the strategy suggested by the main activity, can the class locate the best starting positions on the board? Are there some they would like to avoid? Why?

b. Discuss a hypothetical game with the class. You're first. On your first roll, you get 10 and 1. Should you multiply or add? Why might it be better to multiply? Now suppose your opponent rolls 7 and 1. Should he multiply or add? Consider that it might pay for him to try to block one (or more) of your triangles if he can. What if your opponent gets 3 and 8 on his first spin? How about 9 and 4? In each case, discuss (1) the number of your triangles that your opponent's move would block, and (2) the number of triangles that would be opened up for your opponent.

Follow-up 2: How many equilateral triangles are there on the whole board? It isn't just the sum of all the numbers you found in the first part of the activity!

TRIPLE PLAY

GAME
BOARD

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 |

14
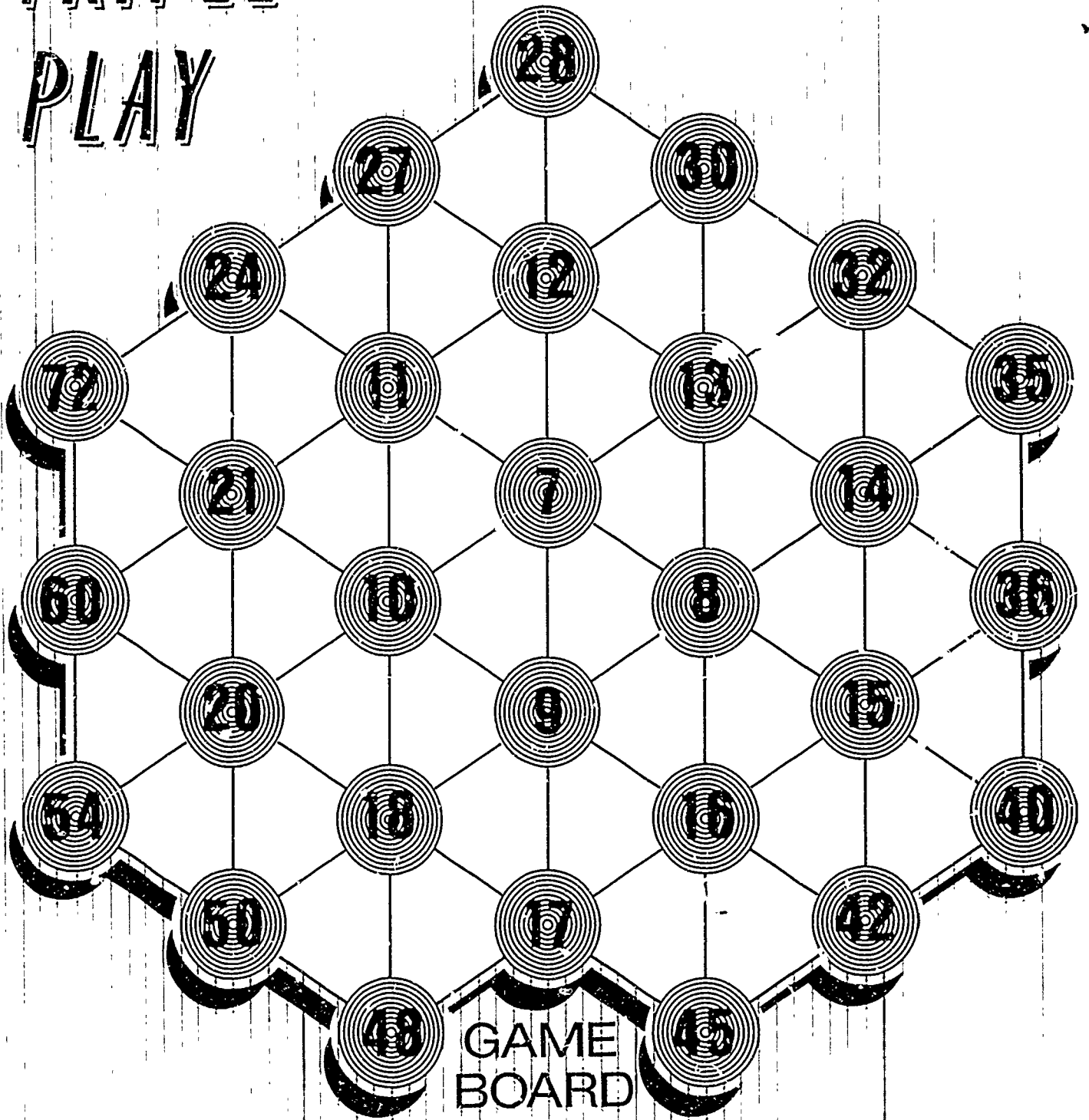
GAME RULES:

Name your favorite snack. Is it pizza? Ice cream? Raw cauliflower? Think hard before answering, because in this game, only the most popular answers count!

Here's how to play. There are two teams, each with three contestants. At the beginning of the game, the host reads a survey question, like, "Name something you see at a parade." Then, alternating teams, he asks each contestant to guess at the most popular choices made by elementary school students in an actual survey. Each team is allowed a "huddle," in which they can discuss their answer among themselves.

When one of the five top choices* is guessed, the appropriate piece is displayed on a pie chart. The team that accumulates over 50 percent of the pie is the winner!

*Note that the less popular choices made in the survey are actually discarded. The top five choices serve as the base
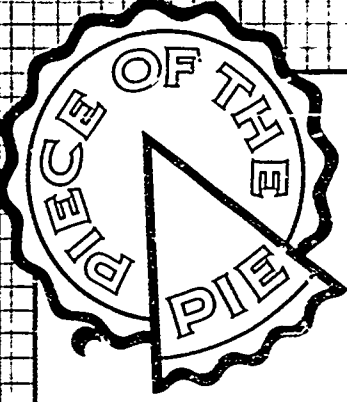
QUESTION_____

_____

_____

DATA

ANSWERS	NUMBER OF RESPONSES

TOP 5 ANSWERS	NUMBER	% OF TOTAL
1._____ _____		
2._____ _____		
3._____ _____		
4._____ _____		
5._____ _____		
TOTAL:		
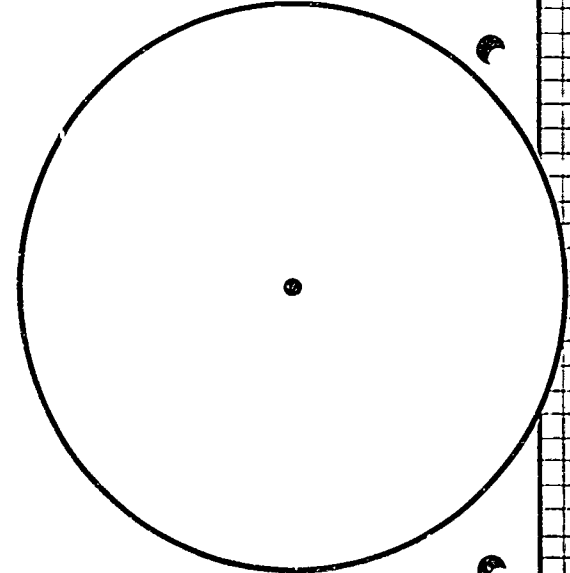
GAME RULES:

All eyes are on stage for each exciting episode of "Close Call." The host presents student contestants with a visual estimation task like one of these: How many pieces are in this jigsaw puzzle? How many peanut-butter jars tall is that elephant on stage?

There are three rounds. After they're shown an estimation task and a referent, contestants get ten seconds to make their estimate and write it down. Then they reveal their answers one by one. Whoever makes the closest estimate in each of the first two rounds qualifies for the final championship round.

Once your class understands how the game works, try playing for points: the better the estimate, the higher the score. You can even get the class audience into the act by asking them to vote on how close the contestants' championship estimations come to the real answer. Is there a game show that's faster, wilder, more unpredictable? If there is, it's a close call!

ur class to think about how they would make their own estimates, e methods. Then try the following activity.

e.

uestion. Have students answer these, using the referent provided ferent is a line which is 1 cm long. This can be used to estimate Since the curve zigzags a total of 16 times, the total length would

a variety of ways and to keep track of their methods. Do different

ompare their analyses with one another. Does the class believe rs? Why?

ach group should create one or more estimation tasks, along with lassmates to their own game of "Close Call!"

us. Pose a daily or weekly estimation challenge for your class.

he school in square meters?
ooms in the entire building?
weigh together?
once around the whole school building?
sch orium?

P R O G R A M   G U I D E

This guide is a quick reference to the various segments of the daily shows on SQUARE ONE TV. Two seasons are represented, a total of 115 shows.

To assist you in identifying subject matter that fits with your lessons, each segment description is followed by a content code which is based on the SQUARE ONE TV curriculum goals (see Teacher's Guide contents). You can use this information to integrate segments into your lesson plans. Each segment has also been timed; segment lengths are provided to help you plan your lessons. We encourage you to tape programs or program segments off the air for in-class use. It's perfectly legal, as long as you erase the tapes within three years.

Titles of the Mathnet episodes appear at the end of each show listing. Short pieces such as Warnings and Newsbreaks are not indicated in this guide.

You can also use the program guide to get a sense of a whole show's contents before it is broadcast (broadcast schedules for your area can be obtained from your local PBS station). Each show is identified by a show number noted here. You'll see the number on your TV screen during the opening credits of the program.

SEASON I

———— W E E K   O N E ————

Length ► Title and Description ► Content Areas

SHOW NUMBER 101

3:18	**Infinity:** Graphic suggestions of infinity	D1 B1
1:21	**Mathman:** Multiples of 3	B2
2:23	**Phoner—The Answer is 3:** Algorithm that always gives the answer 3	D2 B1
4:41	**Battle of the Bulge Caterers—Sandwiches:** Combinations from 2 meats and 3 cheeses	E1 D2
1:27	**Oops! Subtraction 300 – 163:** Borrowing mistake in subtraction	A2 B1
3:25	**Perfect Squares:** Square numbers	B2 B1
1:59	**Bureau of Missing Numbers:** Attributes of 14	B2 B1
8:05	**Mathnet: Problem of the Missing Monkey—1**	C3 D1

SHOW NUMBER 102

7:34	**Star Truck Blandstand:** Average not higher than highest score	F5 F6 F2 B1 B4
2:40	**Rappin' Judge:** Round-trip rate problem	B5 C2 B1
2:04	**Blackstone—Dime, Penny, Nickel:** Trick based on odd and even numbers	B3 B1

Length ► Title and Description ► Content Areas

2:34	**Nines:** Song/digits of multiples of 9 add up to 9	B2 D2 B1
1:27	**The Map:** Estimating time/distance using map/scale	G4 C3 B1
9:40	**Mathnet: Problem of the Missing Monkey—2**	G4 C3 B1 E1

SHOW NUMBER 103

2:45	**Spade Parade: In Search of Yucca Puck—1:** Logic problem sorting out truth and lies	E3
1:19	**Mathman:** Decimals less than .5	A4 D1
2:32	**Spade Parade: In Search of Yucca Puck—2**	
2:05	**Less Than Zero:** Negative numbers	A6 D1
5:48	**But Who's Counting?:** Smallest 5-digit number	A2 D1 F4
1:32	**Data Headache II:** Pie chart	F6
1:58	**You Can Count on It:** Mathematics in the world	C1
8:18	**Mathnet: Problem of the Missing Monkey—3**	G4 B5

SHOW NUMBER 104 Major emphasis: Scale

6:25	**Tony and the Togas:** Roman numerals	A2
1:11	**Oops! Ruler:** Mistake in lining up a ruler	C2
4:30	**Wrong Building:** Importance of proper scaling	G4 C2
3:39	**Shoemaker & Elves:** Interpreting scale and ratio	G4 B5 A3
2:29	**Comic—Shrunken Toothbrush:** Confusion of scale	G4 B5
8:17	**Mathnet: Problem of the Missing Monkey—4**	

SHOW NUMBER 105 Major emphasis: Percents

3:58	**Prime Time Programming Meeting:** Prime numbers	B2
2:25	**Percents:** Equivalent fractions/decimals/percents	A5 A3 A4
:50	**Soda Shoppe:** Computing a tip and rounding up	A5 A4 B4
1:10	**Trout on Your Head:** Horizontal bar graph	F6 A5
6:54	**But Who's Counting?:** Largest sum of two 3-digit numbers	A2 D1 F4
10:01	**Mathnet: Problem of the Missing Monkey—5**	

———— W E E K   T W O ————

SHOW NUMBER 106 Major emphasis: Angles

6:08	**Robin Hood:** Odd and even numbers	B3 B1
1:45	**Cabot & Marshmallow—Hey Cabot:** Multiplying by zero	B1
1:15	**Person on the Street:** Dodecahedron	G6
:20	**Dance of the Geo Shapes:** Dodecahedron	G6 G1

16

Length ▸ Title and Description ▸ Content Areas

5:17 **But Who's Counting?:** Largest 5-digit number	A2 D1 F4
2:23 **Angle Dance:** Body movements illustrate angles	G6
3:00 **Playing the Angle:** Angles and arcs in basketball	G6 F4 C2 A3 A5
.19 **Pong Game:** Billiard geometry	G2 G6
6:27 **Mathnet: Case of the Missing Baseball—1**	G6 G4

SHOW NUMBER 107 Major emphasis: Percents

4:38 **Identity Crisis:** Attributes of zero	A2 A4 B1 D1
2:46 **Lemonade Stand in the Desert:** Percent and decimal relationships	A5 D1 A3
2:47 **Eight Percent of My Love:** Percentages and a pie chart	A5 F6
2:27 **Harry's Hamburger Haven:** Equivalent fractions/decimals/ percents	A4 A5 A3
6:20 **Matinee Movie—Cartablanca:** Rounding up weights	B4 B1
1:52 **Yes, General, Sir:** Permutations of 3 items	E1
5:23 **Mathnet: Case of the Missing Baseball—2**	G4

SHOW NUMBER 108 Minor emphasis: Volume

3:38 **Suds—Popcorn:** Doubling dimensions octuples volume	C2 C1 D2
1:38 **Oops! Decimals:** Mistake lining up decimals in addition	A4 B1
2:20 **Cabot & Marshmallow—Wooden Candy Bars:** Different dimensions—same volume	C2 C1
1:56 **Country and Western Music Pitch:** Fractions	A3 D1
2:15 **Tessellations:** Tessellated patterns on the beach	G3 G6
5:33 **But Who's Multiplying?:** Select factors and give products	B1 B2 D1 F4
1:12 **Mathman:** Factors of 18	B2
1:09 **Groaning Wall:** Mathematical riddles	
6:17 **Mathnet: Case of the Missing Baseball—3**	F4 A9

SHOW NUMBER 109 Minor emphasis: Odd and Even Numbers

7:00 **Phoneymooners—Hole in the Wall:** Area of an irregular shape	C2 C1 G4 B1
3:47 **Navigator:** Using maps and tools to chart a course	C2 G4 G6
2:54 **Blackstone—Heads or Tails:** Coin trick involving parity	B3
3:33 **X...It's the Sign of the Times:** Multiplication symbol	B1
1:12 **Mathman:** Odd numbers	B3
2 **Mathnet: Case of the Missing Baseball—4**	B4 G4 C3 B5

SHOW NUMBER 110 Major emphasis: Combinatorics

3:10 **Superguy: New Cape Caper—1:** Combinations of 3 belts and 3 capes	E1 D2 B1
1:23 **Dweezil—Combinatorics:** Defining combinatorics	E1
3:40 **Superguy: New Cape Caper—2**	
2:18 **Mistakes:** Learning from mistakes	
2:07 **Building Go Boom:** Calculating height	B1 C1
3:10 **Ice Cream Store—Calories:** Bar chart and percents	A5 A3 D1 F6
2:36 **Me and My Shadow:** Comparing 2 and 3 dimensions	G1 C2
6:41 **Mathnet: Case of the Missing Baseball—5**	G4 G6

---WEEK THREE---

SHOW NUMBER 111 Major emphasis: Probability

1:41 **Cabot & Marshmallow: Probability—1:** Probability of 1	F1 D1
1:42 **On the Midway:** Unequal probability	F4 F1 A3
2:10 **Cabot & Marshmallow: Probability—2:** Probability of zero	F1
4:20 **Ghost of a Chance:** Probabilities in several situations	F1 F3
4:27 **Handshake Contest:** Triangular numbers	B2 D2 D1
2:02 **Blackstone—Mental Speller:** Trick based on counting letters	D2
9:51 **Mathnet: Problem of the Passing Parade—1**	B4 B1 B5 G4

SHOW NUMBER 112

5:38 **Paper Race:** Rounding up to estimate cost	B4 B1 A4
3:16 **Burger Pattern:** Triangular number pattern	D2 D1 B1
5:48 **But Who's Counting?:** Largest sum of 2- and 3-digit numbers	A2 D1 F4
2:53 **It's a Palindrome:** Generating palindromes	A2
9:07 **Mathnet: Problem of the Passing Parade—2**	C3 G6 G4

SHOW NUMBER 113 Major emphasis: Fractions

1:15 **Groaning Wall:** Mathematical riddles	
3:11 **Samurai Mathematician:** Comparing fractional pieces of board	D1 A3
3:22 **Diet Lite Wet:** Equivalent fractions/decimals/percents	A3 A5 A4
1:24 **Mathman:** Fractions equivalent to 1/3	A3

Length ► Title and Description ► Content Areas

2:24	**Action at the Fraction Bar:** Fraction vocabulary — A3 A4 A5
3:45	**Good Sports—Fractional Baseball:** Scoring ½ for each base — A3 D1 B1
1:50	**Oops! Division 6 into 4212:** Place value mistake in division — A2 B1
10:06	**Mathnet: Problem of the Passing Parade—3** — C2

SHOW NUMBER 114 Major emphasis: Two-Dimensional Shapes

3:33	**Cabot & Marshmallow—What Is a Name:** Rate problem using logic — B4 B5 B1
4:27	**Whither Weather:** Averages — F2 B1 D1
2:32	**Square Song:** Geometric properties of squares — G6
1:27	**Person on the Street:** Rhombus — G6
3:05	**Blackstone—The Imagination Dice:** Algorithm always giving the answer 10 — D2 B3 B1
:24	**Dance of the Geo Shapes:** Cube — G6 G1
3:51	**In Search of the Giant Squid:** Scale on a submarine map — C1 G4
7:21	**Mathnet: Problem of the Passing Parade—4**

SHOW NUMBER 115

5:06	**Daddy Knows Different—Doubling:** Doubling a penny for 30 days — B1 A1 D2
2:27	**Problem Song:** Rate problem peeling apples — B5 A3 B1
1:12	**Tessellation Animation—Tile:** Tessellated pattern on a tile mosaic — G3 G6
6:41	**But Who's Counting?:** Largest sum of 2- and 3-digit numbers — A2 D1 F4
1:10	**Data Headache I:** Bar chart — F6
9:01	**Mathnet: Problem of the Passing Parade—5** — D2 F4

───── WEEK FOUR ─────

SHOW NUMBER 116 Major emphasis: Spatial Measurement

3:59	**I Love Lupy: Elephants—1:** Estimating room area — C3 C2 G4
1:41	**Frame the Cat:** Smaller units/more accurate measurement — C2 G1 C3
3:58	**I Love Lupy: Elephants—2**
2:58	**Countin' Out the Rhythm:** Counting beats in a musical measure — D2 B1
1:27	**Mathman:** Factors of 12 — B2
3:58	**Blackstone—The Coin Puzzle:** Coin trick based on order and logic — D2
8:35	**Mathnet: Trial of George Frankly—1**

SHOW NUMBER 117 Major emphasis: Area and Perimeter

	Perimeter: Perimeter of irregular shapes — C2 C1

Length ► Title and Description ► Content Areas

1:31	**Oops! Perimeter:** Mistake in calculating perimeter — C2 B1
5:01	**Bandanas:** Area and perimeter of rectangles — C2 G6
2:37	**Math Mimes:** Equal perimeters/different areas — C2
3:50	**Neighborhood Superspy:** Alphanumeric code — D2 D1
:30	**X-Rays:** Geometric shapes describe a sculpture — G6
3:21	**But Who's Adding?:** Select addends and give sums — B1 D1
8:52	**Mathnet: Trial of George Frankly—2** — B4 B5 C2

SHOW NUMBER 118 Major emphasis: Figurate Numbers

3:25	**Perfect Squares:** Square numbers — B2 B1
1:12	**Museum—1:** Painting square numbers — 32 G6
4:38	**Trojan Pie:** Triangular numbers — B2 D2 G6 B1
:57	**Museum—2:** Painting triangular numbers
1:46	**Groaning Wall:** Mathematical riddles
:49	**Museum—3:** Square and triangular numbers
4:35	**But Who's Multiplying?:** Select factors and give products — B1 B2 D1 F4
9:24	**Mathnet: Trial of George Frankly—3** — F4 A2

SHOW NUMBER 119 Major emphasis: Rounding

5:27	**Round Off:** Round to nearest 10, 100, or 1000 — B4 A2
1:21	**Cabot & Marshmallow—Round to Confound:** Inappropriate rounding — B4 B1
3:02	**Round It Off:** Rounding numbers — B4
2:48	**Blackstone—Move the Clip:** Trick using symmetry — G2
:30	**Romance of Geometry:** Two congruent triangles — G6
13:26	**Mathnet: Trial of George Frankly—4** — B1

SHOW NUMBER 120 Major emphasis: Prime Numbers

5:55	**Callous—Candy Box:** Prime number 101; sum of squares — B2 C2 B1
2:16	**Bureau of Missing Numbers:** Attributes of 101 — B2 B1 A1
2:42	**Prime Club:** Prime and nonprime numbers — D2
:55	**Square Dance:** Square number arrays — D2 B2 G6 G2
2:04	**Multiplication Rap:** Importance of multiplication — 32 B1
1:49	**Mathman:** Fractions less than ½ — D1 A3
9:30	**Mathnet: Trial of George Frankly—5** — B5

PROGRAM GUIDE

Length ▸ Title and Description ▸ Content Areas | Length ▸ Title and Description ▸ Content Areas

———— W E E K   F I V E ————

SHOW NUMBER 121 Major emphasis: Common Multiples

:11	**Hundred Square:** Common multiple of 15 and 18	B2 D2
5:00	**Clown School Investigation:** Common multiple of 15 and 18	B2 B1
5:32	**But Who's Counting?:** Largest sum of 2- and 3-digit numbers	A2 D1 F4
4:?1	**Common-Multiple Man:** Common multiples of 12, 16, and 24	B2
2:05	**Less Than Zero:** Negative numbers	A6 D1
:26	**Pos vs. Neg Jousts—Paratroopers:** Adding positive and negative numbers	A6 B1
2:25	**Ratings War:** Double bar graph	F6 F5
6:35	**Mathnet: Problem of the Dirty Money—1**	

SHOW NUMBER 122

3:56	**Thirty-Two Divided by 5—1:** Arithmetic problem of men in a boat	B1 B4
:24	**Concave/Convex:** Concave and convex shapes	G6
2:02	**Thirty-Two Divided by 5—2:** Arithmetic problem of yards of material	B1 B4
:21	**Concave/Convex:** Concave and convex shapes	G6
2:58	**Thirty-Two Divided by 5—3:** Arithmetic problem of people and a bill	B1 B4 A4
4:00	**Blackstone--Name the Number:** Coin trick based on arithmetic	B3
:35	**Odd and Even Hands:** Odd and even numbers	B3
2:30	**Jenny Didn't Call:** Mathematical pattern of behavior	D2
9:24	**Mathnet: Problem of the Dirty Money—2**	A9 A3 G4 B5

SHOW NUMBER 123 Major emphasis: Area of Irregular Shapes

5:49	**King for a Day:** Dividing a trapezoid	G6
1:17	**Person on the Street:** Trapezoid	G6
2:29	**Trapezoid Monks:** Defining a trapezoid	G6
:58	**Mathman:** Even numbers	B3
2:22	**Daddy Knows Different: Lawn Mowing—1:** Area of irregular shape	C2 C4
3:07	**Roman Numeral Blues:** Roman numerals	A2
3:18	**Daddy Knows Different: Lawn Mowing—2**	
0	**Oops! Division 6 into 4212:** Place value mistake in division	A2 B1

| 6:02 | **Mathnet: Problem of the Dirty Money—3** | |

SHOW NUMBER 124 Major emphasis: Factors and Primes

1:30	**Mathman:** Prime numbers	B2
:36	**Matinee Movie: Dialing for Factors—1:** Factors of 84	B2 B1
3:02	**Mr. Bland Builds His Dream House—1:** Rectangular window using 17 panes	B2 B1 G6
1:48	**Matinee Movie: Dialing for Factors—2**	
2:23	**Mr. Bland Builds His Dream House—2:** Rectangular window using 15 or 16 panes	
:18	**Matinee Movie: Dialing for Factors—3**	
1:49	**Bureau of Missing Numbers:** Attributes of 9	B2 B3
2:34	**Nines:** Song/digits of multiples of 9 add up to 9	B2 D2 B1
4:39	**But Who's Adding?:** Select addends and give sum	B1 D1
7:56	**Mathnet: Problem of the Dirty Money—4**	

SHOW NUMBER 125 Minor emphasis: Multiples

4:31	**Amazing Story of 9s—1:** Digits of multiples of 9 add up to 9	B2 D2 B1 A1
:20	**Dance of the Geo Shapes:** Hexahedron	G6 G1
1:03	**Amazing Story of 9s—2**	
:20	**Dance of the Geo Shapes:** Pentagonal pyramid	G6 G1
1:42	**Amazing Story of 9s—3**	
3:26	**Change Your Point of View:** Problem-solving heuristic	D2
2:44	**Blackstone—1 to 8 Mind Reading:** Trick involving odd numbers	B3 D2
2:40	**The Fraction Rap:** Defining fractions	A3 B1
8:41	**Mathnet: Problem of the Dirty Money—5**	A3

———— W E E K   S I X ————

SHOW NUMBER 126 Major emphasis: Data Organization

1:10	**Data Headache III:** Line graph	F6
4:36	**Dragon Maintenance:** Pie chart	F6 A5
2:58	**Graph of Love:** Broken line graph	F6 D1
3:45	**Blackstone—A Card Trick Without Cards:** Trick based on inverse operations	D2 B1
3:18	**Infinity:** Graphic suggestions of infinity	D1 B1
:41	**Infinity (Infinite Regress):** Dynamic suggestion of infinite regress	D1 G2
10:18	**Mathnet: Mystery of the Maltese Pigeon—1**	B1 D1 G4

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SHOW NUMBER 127 Major emphasis: Scale

2:24 **Eagle Express: Tulsa—1:** Using a
map scale to find distance — C1 G4 B1

2:14 **Draw a Map:** Making a map with
landmarks and scale — G4 C2

4:22 **Eagle Express: Tulsa—2:**
Importance of knowing proper scale

2:32 **Appliance Pull—1:** Measuring
perimeter — C2 B1 G6 G4

2:04 **Fortune Teller:** Trick based on
inverse operations — D2 B1

1:35 **Appliance Pull—2:** Measuring
inside and outside perimeter

10:59 **Mathnet: Mystery of the Maltese Pigeon—2** — F4

SHOW NUMBER 128 Major emphasis: Probability

2:37 **Suds: Raffle Ticket—1:**
Probability of 1/1000 — F1 A3 A2

1:15 **Person on the Street:**
Dodecahedron — G6

:20 **Dance of the Geo Shapes:**
Dodecahedron — G6 G1

2:12 **Suds: Raffle Ticket—2:** Using
percentage to divide winnings — A3 F4 B1

2:18 **Grempo d and Blotmo—Sponge
Candy:** Probability of 1/4 — F1 A3

1:10 **Suds: Raffle Ticket—3:** Changing
probability — A3

6:25 **Tony and the Togas:** Roman
numerals — A2

2:04 **Blackstone—Dime, Penny, Nickel:**
Trick based on odd and even numbers — B3 B1

8:19 **Mathnet: Mystery of the Maltese Pigeon—3**

SHOW NUMBER 129 Minor emphasis: Percent

3:25 **Perfect Squares:** Graphic
suggestions of square numbers — B2 B1

1:27 **Oops! Subtraction 300—163:**
Borrowing mistake in subtraction — A2 B1

6:20 **Matinee Movie—Cartablanca:**
Rounding up weights — B4 B1

2:25 **Percents:** Equivalent
fractions/decimals/percents — A5 A3 A4

1:13 **Mathman:** Percentages less
than 1/2 — A5 D1

3:51 **In Search of the Giant Squid:**
Scale on a submarine map — C1 G4

7:05 **Mathnet: Mystery of the Maltese Pigeon—4**

SHOW NUMBER 130

5:18 **Phoneymooners—Juggling the
Books:** Rearranging piles to find
the average — F2 B1

:54 **Grocery Packing—1:**
Noncomputational algorithm — D2

1:58 **You Can Count on It:**
Mathematics in the world — C1

Grocery Packing—2

Grocery Packing—3

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1:10 **Trout on Your Head:** Horizontal
bar graph — F6 A5

1:05 **Grocery Packing—4**

4:11 **But Who's Adding?:** Select
addends and give sums — B1 D1

9:27 **Mathnet: Mystery of the Maltese
Pigeon—5**

WEEK SEVEN

SHOW NUMBER 131 Major emphasis: Place Value

2:25 **Mathematics R Us:** Place value
holder — A2 D1

5:01 **Battle of the Bulge Caterers:
Bonbons—1:** Place value to
thousands place — A2

2:18 **Mistakes:** Learning from mistakes

5:23 **Battle of the Bulge Caterers:
Bonbons—2**

:35 **Pos vs. Neg Jousts—The Wall:**
Adding positive and negative
numbers — A6 B1

1:34 **Dropped Coin:** Subtraction
problem — B1

6:14 **Zero Pacs:** Multiplying by 10s — A2 B1

6:47 **Mathnet: Problem of the Trojan
Hamburger—1** — F4

SHOW NUMBER 132 Major emphasis: Metric Measurement

2:56 **Eagle Express: Bemidji—1:** Using
a map scale to find distance — C2 G4 B1

1:07 **Feet Into Meters:** Converting feet
into meters — C1

3:43 **Eagle Express: Bemidji—2:**
Triangular route between cities

3:20 **Metric Electric Lover:**
Metric/standard system units — C1

4:33 **But Who's Adding?:** Select
addends and give sums — B1 D1

10:55 **Mathnet: Problem of the Trojan
Hamburger—2** — C2 B1 C3

SHOW NUMBER 133 Minor emphasis: Tessellations; Fibanacci
Sequences

2:08 **Phoner:** Fibonacci sequence — B3 D2

2:33 **Blackstone—Lightning
Calculator:** Number trick based
on Fibonacci Sequence — B3 B1

1:17 **Mathman:** Percentages more
than 1/2 — A5 D1

6:13 **King's Stooges:** Arranging tables
of 4 for 20 people — C2 G6

1:04 **Person on the Street:**
Tessellations — G3

3:15 **Tessellations:** Tessellations on
the beach — G3 G6

1:33 **Tessellation:** Tessellation with
sneakers/TVs — G3 D1

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9:01 **Mathnet: Problem of the Trojan Hamburger—3** — B1 C1 C3

SHOW NUMBER 134 Major emphasis: Percent

3:22 **Stephan's Stereo:** Equivalent fractions/decimals/percents — A5 A4 A3

5:47 **Welcome Back Blotter:** Illustrations of percent — A5 A4 A3

2:47 **Eight Percent of My Love:** Percentages and a pie chart — A5 F6.

5:43 **But Who's Counting?:** Largest 5-digit number — A2 D1 F4

:32 **Side By Side:** Using your head to estimate — B4 B1

8:02 **Mathnet: Problem of the Trojan Hamburger—4**

SHOW NUMBER 135 Minor emphasis: Rates and Ratios

1:14 **Don't Ratio Without It:** Ratios — B5

2:15 **Don't Be Nosey:** Ratios — B5 A3

3:05 **Blackstone—1089:** Algorithm always giving the answer 1089 — D2 G2 B1

2:27 **Problem Song:** Rate problem peeling apples — B5 A3 B1

3:50 **Coatrack:** Logic problem pouring liquid — C1 C2

:31 **Double Star Polygon:** 5-point star and pentagon — G6

12:08 **Mathnet: Problem of the Trojan Hamburger—5**

WEEK EIGHT

SHOW NUMBER 136 Major emphasis: Fractions

2:27 **Harry's Hamburger Haven:** Equivalent fractions/decimals/percents — A4 A5 A3

2:24 **Action on the Fraction Bar:** Fraction vocabulary — A3 A4 A5

6:18 **But Who's Multiplying?:** Select factors and give products — B1 B2 D1 F4

:17 **Mixed Numbers:** Graphic depiction of mixed numbers — A3 D1

3:43 **Dinner by the Dozen:** Using fractions to divide popsicles — A3 B5 B1

2:57 **Kubrick's Rube:** Computer program to suggest infinity — D1 D2

:30 **Snowflake:** Suggestion of a fractal — G2 G6

8:05 **Mathnet: Problem of the Missing Monkey—1** — C3 D1

SHOW NUMBER 137

6:46 **HBC Programming:** Bar graph — F6 F5 A3 F4

:58 **Man at Desk (Head Calculator):** Mental math — B1 D2

3:33 **X...It's the Sign of the Times:** Multiplication symbol — B1

:05 **Blackstone—21 Card Trick:** Card manipulations and counting — A1

1:15 **Mathman:** Factors of 60 — B2

:20 **Quadrilaterals:** Different quadrilaterals — G6

9:40 **Mathnet: Problem of the Missing Monkey—2** — G4 C3 B1 E1

SHOW NUMBER 138 Major emphasis: Parity

4:29 **Odd Numbers Strike:** Attributes of odd numbers — B3 D1

:34 **Odd/Even Bricks:** Patterns based on odd and even numbers — B3

2:36 **Math Rap:** Mathematics in the world

5:17 **But Who's Counting?:** Largest 5-digit number — A2 D1 F4

:50 **Soda Shoppe:** Computing a tip and rounding up — A5 A4 B4

4:55 **Phoneymooners—In the Doghouse:** Odd and even numbers — B3 B1

8:18 **Mathnet: Problem of the Missing Monkey—3** — G4 B5

SHOW NUMBER 139 Major emphasis: Working Backwards (Problem Solving)

2:42 **So-Fari, So-Goodi-1:** Working backwards to solve a problem — D2 B1

:54 **Person on the Street:** Googol — A1

:22 **Googol:** The number one googol — A1 B1

1:43 **So-Fari, So-Goodi-2**

:53 **Googol:** Discussing the number one googol — A1 B1

3:15 **So-Fari, So-Goodi-3**

3:05 **So-Fari, So-Goodi-4**

2:01 **Bureau of Missing Numbers:** Attributes of 10 — B2 B1

3:16 **Burger Pattern:** Triangular number pattern — D2 D1 B1

8:17 **Mathnet: Problem of the Missing Monkey—4**

SHOW NUMBER 140 Major emphasis: Probability

5:01 **Let's Do a Deal—1:** Probability — F1 A3

4:20 **Ghost of a Chance:** Probabilities in several situations — F1 F3

4:10 **Let's Do a Deal—2**

2:16 **Blackstone—Card and Number:** Algorithm always giving answer of 18 — D2 B1 B3

10:01 **Mathnet: Problem of the Missing Monkey—5**

WEEK NINE

SHOW NUMBER 141 Major emphasis: Angles

4:10 **Moderately Frightening Stories:** Computer program that runs forever — D1 B2

1:09 **Mathman:** Multiples of 5 — B2

5:40 **Battle of the Bulge Caterers—Trays:** Arranging sandwiches on a tray — C2 C4

2:47 **Forestry I:** Collecting data — F5 B4

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2:23 **Angle Dance:** Body movements illustrate angles · G6

3:00 **Playing the Angle:** Angles and arcs in basketball · G6 F4 C2 A3

:19 **Pong Game:** Billiard geometry · G2 G6

6:27 **Mathnet: Case of the Missing Baseball—1** · G6 G4

SHOW NUMBER 142 Major emphasis: Data Processing

2:08 **Pollster—1:** Nonrepresentative sample · F4 A5 F5 F6

3:26 **Forestry II:** Statistical sampling · C3 C2 F5 C1

2:05 **Pollster—2**

3:17 **...ckstone—Coin Mindreading:** Coin trick based on 9s · B1

1:39 **Pollster—3:** Representative samples

:42 **Hundred Squares Table:** Number patterns of multiples · B2 D2

3:50 **Neighborhood Superspy:** Alphanumeric code · D2 D1

3:14 **Top Secret No Peeking:** Parentheses in arithmetic problem · B1

5:23 **Mathnet: Case of the Missing Baseball—2** · G4

SHOW NUMBER 143 Major emphasis: Geometric Objects

3:20 **How to Build a Bridge—1:** Unstable line segment struts · G6

:16 **Juxtaposing the Angles of a Triangle:** Angles and degrees in triangles · G6

:58 **How to Build a Bridge—2:** Unstable rectangle

2:02 **Triangle Song:** Triangle shapes in the world · G6

:52 **How to Build a Bridge—3:** Stable right triangle supports

3:09 **Forestry III:** Trigonometry · C3 C2 G6 F5

3:26 **Mathematics R Us:** The cube · G1 G6

1:43 **Baloney:** Making a list of possible combinations · E1 F6

:31 **Bridge Montage:** Triangles in bridges · G6

5:48 **But Who's Counting?:** Smallest 5-digit number · A2 D1 F4

6:17 **Mathnet: Case of the Missing Baseball—3** · F4 A9

SHOW NUMBER 144 Major emphasis: Spatial Measurement

2:20 **Cabot & Marshmallow—Wooden Candy Bars:** Different dimensions —same volume · C2 C1

3:47 **Forestry IV:** Approximating volume · C2 C1 C3

1:51 **Oops! Decimals/Multiplication 4.3 x 2.6:** Wrong decimal point placement · A4 B1

Queen's Bed: Nonstandard units · C1 C2 D1

Mathman: Multiples of 6 · B2

2:58 **Countin' Out the Rhythm:** Counting beats in a musical measure · D2 B1

3:21 **But Who's Adding?:** Select addends and give sums · B1 D1

7:42 **Mathnet: Case of the Missing Baseball—4** · B4 G4 C3 B5

SHOW NUMBER 145 Major emphasis: Additivity

5:19 **Phoneymooners—At the Lodge:** Venn diagrams and additivity · F6 C4

3:06 **Forestry V:** Linear programming · C3 C2 G6 C4

1:11 **Oops! Ruler:** Mistake in lining up a ruler · C2

3:31 **Cosmic Carpets:** Measuring the same area twice · C4 C2 G4 G6

2:32 **Square Song:** Geometric properties of squares · G6

2:58 **Blackstone—Faceup, Facedown:** Logical card trick · B3

:24 **Pos vs. Neg Jousts—Taking a Break:** Adding positive and negative numbers · A6 B1

6:41 **Mathnet: Case of the Missing Baseball—5** · G4 G6

━━━ WEEK TEN ━━━

SHOW NUMBER 146 Major emphasis: Square Numbers

3:01 **Phoner:** Squaring 2-digit number ending in 5 · D2 B1

6:05 **Broadway:** Square number patterns · B2 D2 G6 B1

2:05 **Bureau of Missing Numbers:** Attributes of 36 · B2 B1 A4

:55 **Square Dance:** Square number arrays · D2 B2 G6 G2

3:25 **Perfect Squares:** Graphic suggestions of square numbers · B2 B1

1:27 **The Map:** Estimating time/distance using map/scale · G4 C3 B1

9:51 **Mathnet: Problem of the Passing Parade—1** · B4 B1 B5 G4

SHOW NUMBER 147 Major emphasis: Rounding

2:28 **Mathematics R Us:** Rounding · B4 D1 A4

:25 **Stick Squares I:** Dividing a square into square units · G6

3:02 **Round It Off:** Rounding numbers · B4

2:40 **Artist's License:** Doubling dimensions quadruples area · C2 D2

1:10 **Area (6 x 8):** Area of a rectangle · C2

1:20 **Five-Nineteen Blues:** When to round numbers · B4

6:26 **But Who's Counting?:** Largest sum of 2- and 3-digit numbers · A2 D1 F4

9:07 **Mathnet: Problem of the Passing Parade—2** · C3 G6 G4

SHOW NUMBER 148 Minor emphasis: Multiplication

1:27 **Mathman:** Factors of 24 · B2

5:37 **But Who's Multiplying?:** Select factors and give products · B1 B2 D1 F4

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1:13 **Oaps! Multiplicatian 603 x 7:** Mistake multiplying with zera — B1

2:07 **Birthday Party:** 56 people at 7 tables — B1

2:30 **Jenny Didn't Call:** Mathematical pattern af behavior — D2

2:39 **Blackstane—Magic Sacial Security Number:** Cyclic permutatians — D2 B1

:32 **Number Pattern:** Cyclic number — D2

10:06 **Mathnet: Prablem of the Passing Parade—3** — C2

SHOW NUMBER 149 Major emphasis: Functians

3:48 **Mathematics R Us:** Functian machine — D2

1:21 **Mathman:** Multiples af 3 — B2

1:00 **Dain' Nathin I:** Multiplying/dividing by 1 — D2 B1

6:41 **Celebrity Kitchen:** Functian machine — D2 B1 A4 A3

1:06 **Dain' Nathin II:** Adding/subtracting zera — D2 B1

1:56 **Cabat & Marshmallaw—Sq. Pegs in Rd. Hales:** Ratatianal symmetry — G2

2:34 **Nines:** Sang/digits af multiples af 9 add up to 9 — B2 D2 B1

:23 **Ratational Symmetry:** Rotatianal symmetry af a star — G2

7:21 **Mathnet: Problem of the Passing Parade—4**

SHOW NUMBER 150

4:21 **I Love Lupy: Packing Licarice—1:** One-dimensianal packing — C2 B1 B2

:31 **Pas vs. Neg Jausts—Straight Ahead:** Adding positive and negative numbers — A6 B1

4:39 **I Love Lupy: Packing Licarice—2**

4:32 **Sugar Ray Sketch:** Weighing a dag — C2 B1

2:56 **Think Abaut the Prablem:** Problem-salving heuristics — D1

9:01 **Mathnet: Problem of the Passing Parade—3** — D2 F4

—————— W E E K E L E V E N ——————

SHOW NUMBER 151 Minar emphasis: Pentaminaes

7:1_ **But Wha's Caunting?:** Largest difference 2- and 3-digit numbers — A2 D1 F4

:57 **Person an the Street:** Pentamina — G6

2:27 **Joke in the Bax:** Open-tap baxes fram pentaminaes — G6 G1

1:33 **Pentaminoes:** 12 passible arrangements af a pentamino — G2 G6

_6 **Really Grass Profit:** Pay bills befare calculating profit — B1

2:05 **Perpendicular Lines:** Examples in the warld — G6

8:35 **Mathnet: Trial af George Frankly—1**

SHOW NUMBER 152

4:29 **Mike Merv Shaw:** Angles and parabola af faotball flight — G6 F6

2:16 **Average American:** Statistical averages — F2

2:55 **Blackstane—The Eliminatian Game:** Card game invalving lagic — B3

:58 **Mathman:** Even numbers — B3

3:30 **Life Raft:** Zera divided by nan-zera number is zera — B1

:40 **Multiply by Zero:** Multiplying by zera — B1 A1

2:40 **Rappin' Judge:** Raund-trip rate problem — B5 C2 B1

8:52 **Mathnet: Trial af George Frankly—2** — B4 B5 C2

SHOW NUMBER 153 Majar emphasis: Place Value

7:56 **Willy Gluttan Bank Rabber:** Dividing by regrauping numbers — A2 B1 A1

1:58 **Yau Can Caunt on It:** Mathematics in the warld — C1

4:35 **But Wha's Mutliplying?:** Select factors and give praducts — B1 B2 D1 F

:25 **Tetrahedran:** Tetrahedran shape — G1 G6

2:14 **Zera Pacs:** Multiplying by 10s — A2 B1

9:24 **Mathnet: Trial af George Frankly—3** — F4 A2

SHOW NUMBER 154 Minar emphasis: Palindrames

3:56 **Baba's Dilemma:** Lagic prablem using geametry — G6 C2

1:22 **Person an the Street:** Palindrame — A2

2:53 **It's a Palindrame:** Attributes af a palindrame — A2

:35 **Palindrome:** Generating palindrames — A2 D2 B1

:47 **Graaning Wall:** Mathematical riddles

3:08 **Blackstane—The Magic Spells:** Trick based an lagic and caunting — D2 B2

:30 **Pas vs. Neg Jausts—The Abyss:** Adding positive and negative numbers — A6 B1

13:26 **Mathnet: Trial af George Frankly—4** — B1

SHOW NUMBER 155 Majar emphasis: Quadrilaterals

5:49 **King far a Day:** Dividing a trapezaid — G6

1:15 **Mathman:** Multiples af 4 — B2

1:09 **Persan on the Street:** Quadrilaterals — G6

2:55 **An Interesting Game af Faotball:** Irregularly shaped quadrilaterals — C2 C3 G6 G4

:20 **Quadrilaterals:** Quadrilateral shapes — G6

2:40 **The Fractian Rap:** Defining fractians — A3 B1

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9:30 Mathnet: Trial of George Frankly—5 — B5

——WEEK TWELVE——

SHOW NUMBER 156

4:55 Spade Parade: Fishy Anchovy—1: Chart used to solve logic problem — F6

2:39 More Than One Way: Ways to solve problems

2:42 Spade Parade: Fishy Anchovy—2 — B2

1:12 Mathman: Factors of 8 — B2

4:12 Gypsy Rose Amicable: Amicable numbers — B2 B1

:41 Stick SquaresIII: Dividing a square into square units — G6

3:05 Blackstone—Cups: Logic problem of parity and observation — B3

6:35 Mathnet: Problem of the Dirty Money—1

SHOW NUMBER 157 Major emphasis: Scale

3:23 Scales on the Brain—1: Change in scale — G4 B5 A3

2:14 Draw a Map: Making a map with landmarks and scale — G4 C2

1:22 Scales on the Brain—2: Handshake ratio of 1 to 500

5:33 But Who's Multiplying?: Select factors and give products — B1 B2 D1 F4

4:03 Gingerman Sketch: Dividing a bill — B1 F2

:50 Soda Shoppe: Computing a tip and rounding up — A5 A4 B4

9:24 Mathnet: Problem of the Dirty Money—2 — A9 A3 G4 B5

SHOW NUMBER 158 Major emphasis: Data Processing

2:06 Callous: The Survey—1: Collecting and organizing data — F5 F6 A5 F4

1:10 Data Headache I: Bar graph — F6

3:57 Callous: The Survey—2

1:32 Data Headache II: Pie chart — F6

2:57 Callous: The Survey—3

1:13 Mathman: Percentages less than ½ — A5 D1

1:50 Smokestacks Go Boom: Thirds — A3

1:09 Counting the Elephants: Broken line graph — F5 F6

2:58 Graph of Love: Broken line graph — F6 D1

1:10 Data Headache III: Line graph — F6

6:02 Mathnet: Problem of the Dirty Money—3

SHOW NUMBER 159

5:54 The Duelists: Taxi geometry — G4 C1 G6

2:04 Phoner—Consecutive Odd Numbers: Add to get square number — B3 B2 B1

8 Shape Up: Geometric shapes and vocabulary — G6

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6:52 But Who's Counting?: Largest sum of 2 3-digit numbers — A2 D1 F4

1:35 Pop Up Book: Dimensionality — G1

7:56 Mathnet: Problem of the Dirty Money—4

SHOW NUMBER 160 Minor emphasis: Large Numbers

:24 Pos. vs. Neg Jousts—Taking a Break: Adding positive and negative numbers — A6 B1

2:05 Less Than Zero: Negative numbers — A6 D1

5:04 Million Dollar Giveaway: $1,000,000 for 20,000 people — A1 C3 B1 C1

:54 Person on the Street: Gaagol — A1

:53 Googol: Discussing the number gaagol — A1 B1

2:48 Blackstone—M .e the Clip: Trick using symmetry — G2

:39 Groaning Wall: Mathematical riddles

4:23 Set Up (Mandrell Concert): Mathematics in setting up a concert — D1

8:41 Mathnet: Problem of the Dirty Money—5 — A3

——WEEK THIRTEEN——

SHOW NUMBER 161 Minor emphasis: Permutations

4:20 Photograph All About It: Possible orders of 2, 3 4, and 5 things — E1 B1

3:26 Change Your Point of View: Problem-solving heuristic — D2

1:49 Multi-Gloves: Different combinations of 5 colors — E1

:16 Concentric Circles — G6

4:39 But Who's Adding?: Select addends and give sums — B1 D1

:27 Number Pattern: $9 \times 1 + 2 = 11$, and so on — D2 B1

1:19 Mathman: Decimals less than .5 — A4 D1

10:18 Mathnet: Mystery of the Maltese Pigeon—1 — B1 D1 G4

SHOW NUMBER 162 Minor emphasis: Rates

5:57 Superguy—Flying Down to Freezo: Functions; converting money units — B5 D2 B1

:60 John Moschita—Robin Hood: Living graph — F5 F6 B5 D2

2:27 Problem Song: Rate problem peeling apples — B5 A3 B1

5:32 But Who's Counting?: Largest sum of 2- and 3-digit numbers — A2 D1 F4

10:59 Mathnet: Mystery of the Maltese Pigeon—2 — F4

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SHOW NUMBER 163 Major emphasis: Probability

1:41	**Cabot & Marshmallow: Probability—1:** Probability of 1	F1 D1
2:50	**Grempod and Blotmo—Alien Visit:** Changing probabilities	F1 A3 D1
1:12	**Mathman:** Odd numbers	B3
2:19	**Cabot & Marshmallow: Probability—2:** Probability of zero	F1
4:20	**Ghost of a Chance:** Probabilities in several situations	F1 F3
4:50	**Tuesday Noon Football:** Probabilities of ½	F1 A3
1:11	**Tessellation Animation—Quilt:** Tessellations on a quilt	G3 G6
8:19	**Mathnet: Mystery of the Maltese Pigeon—3**	

SHOW NUMBER 164 Major emphasis: Functions Coding

4:35	**Spade Parade: Missing Michael Angelo—1:** Logic problem involving code	F4 F5 F6
3:25	**Mathematics R Us—1:** Wordsworth table	D2 B1
6:35	**Spade Parade: Missing Michael Angelo—2**	
:13	**Mathematics R Us—2**	
:20	**Dance of the Geo Shapes:** Triangular prism	G6 G1
3:50	**Neighborhood Superspy:** Alpha-numeric code	D2 D1
:20	**Dance of the Geo Shapes:** Hexahedron	G6 G1
7:05	**Mathnet: Mystery of the Maltese Pigeon—4**	

SHOW NUMBER 165 Major emphasis: Infinity, Parity

2:57	**Kubrick's Rube:** Computer program to suggest infinity	D1 D2
3:18	**Infinity (Song):** Graphic suggestions of infinity	D1 B1
:41	**Infinity (Infinite Regress):** Dynamic suggestion of infinite regress	D1 G2
:35	**Odd and Even Hands:** Odd and even numbers	B3
4:14	**Odd Pair:** Adding odd and even numbers	B3 B1
1:11	**Moebius Trip:** Demonstrating one-sided Moebius strip	G6 G7
:49	**Moebius Trip:** One-sided car trip	G6 G7
2:54	**Blackstone—Heads or Tails:** Coin trick involving parity	B3
9:27	**Mathnet: Mystery of the Maltese Pigeon—5**	

—WEEK FOURTEEN—

SHOW NUMBER 166 Major emphasis: Multiples and Factors

:??	**Hundred Square:** Common multiples of 8 and 12	B2 D2
5:08	**Multiple Pizzas:** Lowest common multiple 8 and 12	B2 A3
:12	**Multiples of 8 and 12:** Multiples of 8 and 12 on a 100 grid	B2 D2
3:33	**X...It's the Sign of the Times:** Multiplication symbol	B1
:30	**Factor Tree:** Prime factors of 300	B2 B1
5:33	**Factor Tree:** Prime factors of different numbers	B2 B1
3:46	**But Who's Multiplying?:** Select factors and give products	B1 B2 D1 F4
:57	**Mathman:** Multiples of 6	B2
6:47	**Mathnet: Problem of the Trojan Hamburger—1**	F4

SHOW NUMBER 167 Minor emphasis: Tessellations

5:14	**Mathwoman and the Boy Number—1:** One-dimensional packing with boards	C2 B1 B2
:21	**Number Pattern—1:** Multiples of 3 and 37	B2 D2
1:04	**Person on the Street:** Tessellations	G3
3:15	**Tessellations:** Tessellations on the beach	G3 G6
3:19	**Mathwoman and the Boy Number—2**	
:21	**Number Pattern—2**	D2
2:02	**Blackstone—Mental Speller:** Trick based on counting letters	D2
10:55	**Mathnet: Problem of the Trojan Hamburger—2**	C2 B1 C3

SHOW NUMBER 168 Major emphasis: Fractions

3:54	**Mathematics R Us:** Fraction reducing machine	A3 D1
1:24	**Mathman:** Fractions equivalent to ⅓	A3
2:45	**Sloppy Kitchen Commercial:** Fractions equivalent to ⅕	A3
:42	**Stick Squares II:** Dividing a square into square units	G6
2:24	**Action at the Fraction Bar:** Fraction vocabulary	A3 A4 A5
4:11	**But Who's Adding?:** Select addends and give sums	B1 D1
:32	**Overlapping Squares:** Squares in a 4 x 4 array	C4 G6
1:35	**Cabot & Marshmallow—What Day Is It?:** Fractional parts of a week	A3 B1
9:01	**Mathnet: Problem of the Trojan Hamburger—3**	B1 C1 C3

SHOW NUMBER 169 Major emphasis: Area and Perimeter

2:23	**Angle Dance:** Body movements illustrate angles	G6
4:40	**How Does Your Garden Grow?:** Area, perimeter, and scale	C2 G4
3:16	**Burger Pattern:** Triangular number pattern	D2 D1 B1
7:06	**McMath:** Finding largest area of a rectangle	C2 G6 B1
:58	**Mathman:** Even numbers	B3
8:02	**Mathnet: Problem of the Trojan Hamburger—4**	

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SHOW NUMBER 170 Minor emphasis: Percents

3:56	**Spade Parade: Foul Ball–1:** Logic problem	B3 B2
2:25	**Percents:** Equivalent fractions/decimals/percents	A5 A3 A4
4:40	**Spade Parade: Foul Ball–2**	
2:27	**Harry's Hamburger Haven:** Equivalent fractions/decimals/percents	A4 A5 A3
12:08	**Mathnet: Problem of the Trajan Hamburger–5**	

WEEK FIFTEEN

SHOW NUMBER 171 Minor emphasis: Metric Measurement

1:11	**Oops! Ruler:** Mistake in lining up a ruler	C2
3:17	**Mathematics R Us:** Tape measure for perimeter	C2 C1 G6
3:20	**Metric Electric Lover:** Metric/standard system vocabulary	C1
1:03	**Symmetry Patterns:** Repeating symmetrical pattern	G2 G6
4:27	**Counting the House:** Counting the same section twice	C4 B1
4:33	**But Who's Adding?:** Select addends and give sums	B1 D1
8:35	**Mathnet: Trial of George Frankly–1**	

SHOW NUMBER 172

1:12	**Mathman:** Factors of 18	B2
5:37	**Harry & Elma:** Efficient counting by grouping	C2 B1
2:56	**Think About the Problem:** Problem-solving heuristics	D1
2:34	**Bert and Ernie–Dog:** Cost of raising a dog	B4 B2
:33	**Pos vs. Neg Jousts–2 on 1:** Adding positive and negative numbers	A6 B1
3:03	**Blackstone–Miraskill–Candies:** Trick based on even numbers	B3 A2
1:42	**Plant a Spoon–1:** 3 seeds give 2 spoons the same color	D2
8:52	**Mathnet: Trial of George Frankly–2**	B4 B5 C2

SHOW NUMBER 173 Major emphasis: Logical Thinking

5:20	**Spade Parade: Des Moines Duck –1:** Chart used to solve logic problem	F6
3:49	**Spade Parade: Des Moines Duck–2**	
1:09	**The Sale:** Finding percent from a discount	A5 B1 A3
2:47	**Eight Percent of My Love:** Percentages and a pie chart	A5 F6
3:10	**Sinbad and the 20 Coins:** Logic problem with different solutions	B3

9:24	**Mathnet: Trial of George Frankly–3**	F4 A2

SHOW NUMBER 174

3:57	**Very Nice:** Logic problem dividing up pails of milk	A3 B1
:24	**Groaning Wall:** Mathematical riddles	
:23	**Perpendicular Lines**	G6
2:05	**Perpendicular Lines:** Examples in the world	G6
:47	**Groaning Wall**	
2:25	**Cat, Bird, Kibble–1:** Classical logic problem	E3
:10	**John Moschita–Peter Piper:** Living graph of rate of speed	F5 F6 B5 D2
1:42	**Cat, Bird, Kibble–2**	
13:26	**Mathnet: Trial of George Frankly–4**	B1

SHOW NUMBER 175

2:30	**Hold It Nobody Eat–1:** Fractions of a pie	A3
1:20	**Five-Nineteen Blues:** When to round numbers	B4
1:05	**Hold It Nobody Eat–2**	
1:34	**Dropped Coin:** Subtraction problem	B1
:40	**Hold It Nobody Eat–3**	
:20	**Number Pattern:** Sum of consecutive odd numbers	D2 B2
4:05	**Arthur Benjamin–Squaring II:** Shortcuts for squaring numbers	B1 A1
2:58	**Countin' Out the Rhythm:** Counting beats in a musical measure	D2 B1
2:13	**Sale!:** Rearranging digits to get lowest sum	A2 B1
9:30	**Mathnet: Trial of George Frankly–5**	B5

SEASON II

WEEK ONE

SHOW NUMBER 201

6:43	**Square One Squares:** Game of mathematical misconceptions	B5 C2 F6 G2 G4
5:39	**Dirk Niblick: Fool Most of the People–1:** Discount isn't as advertised	A5
3:14	**One Billion Is Big:** Relative sizes of million and billion	A1 A2
2:35	**Dirk Niblick: Fool Most of the People–2**	
:21	**Number Pattern 37:** A simple number pattern	D2
8:44	**Mathnet: Case of the Willing Parrot–1**	C2 D2 G4

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SHOW NUMBER 202 Minor emphasis: Estimation

1:01	**Dirklet:** Estimation	B4
3:51	**Estimation:** Song about the usefulness of estimation	C3
7:43	**Close Call:** Estimation game	C1 C3
:35	**Multiply by Zero:** Product of any number and zero is zero	B1 A1
:26	**Spot the Quadrilaterals:** Identifying quadrilaterals among polygons	G6
1:39	**Mathman:** Polygons that are rectangles	G6
12:06	**Mathnet: Case of the Willing Parrot—2**	A5 D2 F1 F4 G6

SHOW NUMBER 203

3:18	**Blackstone—Crossed Out Numbers:** Trick based on numbers in a 4 x 4 array	D2
6:02	**Piece of the Pie:** Game of data representation	A5 B1 D1 F6
3:41	**Combo Jombo:** Combinatorics	B1 E1
1:18	**Mathman:** Square numbers	B2
12:13	**Mathnet: Case of the Willing Parrot—3**	B3 G6

SHOW NUMBER 204

5:39	**Triple Play:** Geometric strategy game	B1 G6
4:34	**Dirk Niblick—Illegal Lawyer—1:** Error in adding fractions	A3
2:23	**Phoner—The Answer Is 1:** Algorithm that always gives the result 1	B1 D2
2:20	**Dirk Niblick: Illegal Lawyer—2**	
1:15	**Groaning Wall:** Mathematical riddles	
11:03	**Mathnet: Case of the Willing Parrot—4**	B3

SHOW NUMBER 205 Major emphasis: Modular Arithmetic

1:45	**Mathman:** Multiplying by 5 and adding 2	B2 B3
4:40	**Blackstone—5-Envelope Spelling:** Trick based on remainders	D2
1:22	**Calvin Klein Boy:** Defining combinatorics	E1
3:31	**Time Keeper:** Song about clock arithmetic	B3
1:32	**Data Headache II:** Using a pie chart	F6
11:58	**Mathnet: Case of the Willing Parrot—5**	B1 B3 D2

WEEK TWO

SHOW NUMBER 206

5:31	**Dirk Niblick: To Heck and Back—1:** Distance, rate, and time	C2 C3
:37	**Mathman:** Fractions greater than 1	A3

2:20	**Dirk Niblick: To Heck and Back—2**	
6:54	**Close Call:** Estimation game	A5 C1 C2
:15	**Mixed Numbers ⁴⁄₃:** Graphic depiction of mixed numbers	A3 D1
3:42	**Prime Numbers:** Song about prime numbers	B2 B3
:23	**Prime Numbers:** Prime numbers on a 100 grid	B2
:41	**Square One Puzzler:** How many rectangles are in the diagram?	G6
5:43	**Mathnet: Case of the Great Car Robbery—1**	A5 B4 F5 F6

SHOW NUMBER 207

3:45	**Blackstone—Magic Safari:** Trick based upon counting	D2
8:07	**Square One Squares:** Game of mathematical misconceptions	A2 C4 D1 G2 G6
:41	**Stick Squares III:** Dividing a square into square units	G6
1:09	**Mathman:** Multiples of 5	B2
2:36	**Me and My Shadow:** Comparing 2 and 3 dimensions	G1 C2
10:39	**Mathnet: Case of the Great Car Robbery—2**	A5 B4 F2 F5 F6

SHOW NUMBER 208

5:48	**Triple Play:** Geometric strategy game	B1 G6
1:17	**Dirklet—Use Graphs:** Problem-solving heuristic	
1:37	**OOPS! ½ + ⅓ = ⅖:** Common mistake in adding fractions	B1 A3
4:21	**Common-Multiple Man:** Common multiples of 12, 16, and 24	B2
1:33	**Mathman:** Polygons that are pentagons	G6
2:56	**Archimedes:** Inventions and discoveries of Archimedes	
9:39	**Mathnet: Case of the Great Car Robbery—3**	B5 F5 F6

SHOW NUMBER 209

4:58	**Dirk Niblick: The Lint Trap—1:** Miscalculation of proper wages	B3
1:58	**You Can Count on It:** Mathematics in the world	C1
2:48	**Dirk Niblick: The Lint Trap—2**	
:26	**Spot the Hexagons:** Identifying hexagons among polygons	G6
5:27	**Piece of the Pie:** Game of data representation	A5 B1 D1 F6
1:21	**Cabot & Marshmallow—Round to Confound:** Inappropriate rounding	B4 B1
10:31	**Mathnet: Case of the Great Car Robbery—4**	B1 B4 B5 F6

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SHOW NUMBER 210 Minor emphasis: Numerical Patterns

2:12 **Phoner—The Answer Is 6:**
Algorithm that always gives the
result 6 — B1 D2

1:46 **Dirklet—Look for a Pattern:**
Problem-solving heuristic — D2

3:10 **Blackstone—Liar and Truthteller:**
Logic is used to determine who
has coin

1:43 **Baloney:** Making a list of possible
combinations — E1 F6

1:29 **Mathman:**
Solutions to 19−C<5 — B1 D1 D4

15:24 **Mathnet: Case of the Great Car
Robbery—5** — B4 B5 F2 F5 F6

WEEK THREE

SHOW NUMBER 211

7:02 **Square One Squares:** Game of
mathematical misconceptions

6:07 **Dirk Niblick: Do Not Fold,
Spindle—1:** 3 60-minute tapes vs.
2 90-minute tapes — B5

2:04 **LessThan Zero:** Negative integers — A6 D1

2:45 **Dirk Niblick: Do Not Fold,
Spindle—2**

9:33 **Mathnet—Case of the Deceptive
Data—1** — A3 B4 F1

SHOW NUMBER 212

:53 **Dirk Niblick: Go West Young
Math· 1:** Redistribution of land is
necessary — C2 D2

1:59 **Bureau of Missing Numbers·**
Attributes of 14 — B2 B1

:10 **Dirk Niblick: Go West Young
Math—2**

:26 **Mathman:** ⅜ + ⅝ = ! — A3

15:33 **Mathnet: Case of the Deceptive
Data—2** — A5 B4 F1 F5 F6

SHOW NUMBER 213

:47 **Dirklet:** Equilateral Triangles — G6

2:23 **Angle Dance:** Body movements
illustrate angles — G6

4:20 **Triple Play:** Geometric strategy
game — B1 G6

1:25 **Mathman:** Polygons that are
parallelograms — G6

:58 **Man at Desk (Head Calculator):**
Mental arithmetic — B1 B2

17:20 **Mathnet: Case of the Deceptive
Data—3** — F1 F2 F5 F6

SHOW NUMBER 214

7:00 **Close Call:** Estimation game — A5 C1 C3

2:00 **Blackstone—Number Affinity:**
Blackstone demonstrates a number trick — B1 D2

2:23 **Phoner—The Answer Is 3:**
Algorithm that always gives the
answer 3 — D2 B1

14:10 **Mathnet—Case of the Deceptive
Data—4** — C3 F5 F6

SHOW NUMBER 215

1:25 **Mathman:** Polygons that are quadrilaterals — G6

2:55 **Think About the Problem:**
Problem-solving heuristics — D1

5:19 **Piece of the Pie:** Game of data
representation — A5 B1 D1 F6

14:48 **Mathnet—Case of the Deceptive
Data—5** — A5 B4

WEEK FOUR

SHOW NUMBER 216 Minor emphasis: Numerical Patterns

2:51 **Blackstone—Magic Dice:** Sum of
opposite faces of a die is 7 — D2

1:19 **Dirklet—Order of Multiplication:**
Multiplying whole numbers in any
order — B1

:52 **Square One Squares:** Game of
mathematical misconceptions — A3 D1 F1 F3 G6

:19 **Number Pattern:** Square
numbers — D2 B2

3:25 **Perfect Squares:** Graphic
suggestions of square numbers — B2 B1

12:30 **Mathnet—View from the Rear
Terrace—1** — B4 B5 F5 F6

SHOW NUMBER 217

6:06 **Dirk Niblick: Mall or Nothing at
Mall—1:** Biased survey leads to
problems — A5 F5

6:42 **Close Call:** Estimation game — C1 C3

:21 **Number Pattern 37:** A simple
number pattern — D2

2:38 **Dirk Niblick: Mall or Nothing at
Mall—2**

:41 **Palindrome:** Create palindromes — A2 B1 D2

11:09 **Mathnet—View from the Rear
Terrace—2** — A5 B4 F2 F3 F6

SHOW NUMBER 218 Minor emphasis: Numerical Functions

5:36 **Dirk Niblick—Itty Bitty
Business—1:** Misplaced decimal
points cause problems — A4 A5

2:57 **Kubrick's Rube:** Computer
program to suggest infinity — D1 D2

:35 **Mathman:** ⅓ + ⅔ = 1 — A3

2:59 **Dirk Niblick: Itty Bitty
Business—2**

2:01 **Perpendicular Lines:** Examples of
perpendicular lines — G6

2:03 **Phoner—The Answer Is 5:**
Algorithm that always gives the
result 5 — B1 D2

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1:42 **OOPS! 34 x 12:** Multiplication algorithm mistake — B1

9:32 **Mathnet: View from the Rear Terrace—3** — A5 B4 F5 F6

SHOW NUMBER 219

6:09 **Piece of the Pie:** Game of data representation — A5 B1 D1 F6

2:46 **Blackstone—13 Turns:** Trick based upon parity of turned die — B3

:34 **Pos vs. Neg Jousts—The Wall:** Adding positive and negative numbers — A6 B1

16:58 **Mathnet: View from the Rear Terrace—4** — A5 B1 F2

SHOW NUMBER 220

2:40 **Rappin' Judge:** Round-trip rate problem — B5 C2 B1

4:41 **Triple Play:** Geometric strategy game — B1 G6

18:17 **Mathnet: View from the Rear Terrace—5**

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SHOW NUMBER 221

6:25 **Tony and the Togas:** Roman numerals — A2

4:34 **Dirk Niblick: Illegal Lawyer—1:** Error in adding fractions — A3

1:23 **The Map:** Estimating time/distance using map/scale — G4 C3 B1

2:20 **Dirk Niblick: Illegal Lawyer—2**

2:45 **Spade Parade: In Search of Yucca Puck—1:** Logic problem sorting truth from lies — E3

:14 **Sum of the Angles of a Triangle:** Juxtaposing the angles of a triangle — G6

2:32 **Spade Parade: In Search of Yucca Puck—2**

1:13 **Mathman:** Decimals greater than ½ — A4 D1

5:46 **Mathnet: Case of the Missing Air—1** — C3

SHOW NUMBER 222 Major emphasis: Arithmetic of 9s

8:31 **Close Call:** Estimation game — C1 C2 C3

4:31 **Amazing Story of 9s—1:** Digits of multiples of 9 add up to 9 — B2 D2 B1 A1

:18 **Multiples of 9:** Multiples of 9 on a 100 grid — B2

1:03 **Amazing Story of 9s—2:** Digits of multiples of 9 add to 9

1:37 **Dirklet—Divisible by 9:** Divisibility test for nine — B1

:42 **Amazing Story of 9s—3**

:28 **Double Star Polygon:** Symmetry — G6

2:34 **Nines:** Song/digits of multiples of 9 add up to 9 — B2 D2 B1

6:35 **Mathnet: Case of the Missing Air—2** — C3 F5

SHOW NUMBER 223

3:22 **Blackstone—Dice and Cards:** Trick based on the roll of the dice — D2

:21 **Pos vs. Neg Jousts—Paratroopers:** Adding positive and negative numbers — A6 B1

2:00 **Triangle Song:** Triangle shapes in the world — G6

6:33 **Triple Play:** Geometric strategy game — B1 G6

:52 **Person on the Street— Hypotenuse:** Define "hypotenuse" — G6

13:46 **Mathnet: Case of the Missing Air—3** — D1 F1 F4 F5 F6

SHOW NUMBER 224 Minor emphasis: Percents

7:00 **Piece of the Pie:** Game of data representation — A5 B1 D1 F6

5:39 **Dirk Niblick: Fool Most of the People—1:** Discount isn't as advertised — A5

:28 **Mathman:** 45% + 55% = 100% — A5

2:35 **Dirk Niblick: Fool Most of the People—2**

2:47 **Eight Percent of My Love:** Percentages a pie chart — A5 F6

:18 **Parallel/Not Para l:** Parallel vs. nonparallel — G6

8:30 **Mathnet: Case of the Missing Air—4** — G4

SHOW NUMBER 225

9:29 **Square One Squares:** Game of mathematical misconceptions — B5 F4 F6 G2 G6

3:15 **Blackstone—Quarter Parity:** Coin trick based on parity — B3

1:45 **Mathman:** Solutions to 3 + X > 10 — A4 B1 D1 D4

:46 **Multiples of 8 and 12:** Multiples of 8 and 12 on a 100 grid — B2

:49 **Soda Shoppe:** Computing a tip and rounding off — A5 A4 B4

8:40 **Mathnet: Case of the Missing Air—5** — F6

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SHOW NUMBER 226

1:18 **Dirklet—Divisible by 5:** Divisibility test for 5 — B1

3:13 **Blackstone—Turning the Die:** Trick based on pattern of turned die — B3 D2

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2:25 **Ratings War:** Double bar graph — F6 F5

6:10 **Piece of the Pie:** Game of data representation — A5 B1 D1 F6

2:11 **Draw a Map:** Making a map with landmarks and scale — G4 G4 C2

11:47 **Mathnet: Case of the Map with a Gap—1** — A4 B4 E3 G2 G5

SHOW NUMBER 227

3:51 **Estimation:** Song about the usefulness of estimation — C3

6:24 **Square One Squares:** Game of mathematical misconceptions

2:18 **Grempod and Blotmo—Sponge Candy:** Probability of ¼ — F1 A3

2:27 **Harry's Hamburger Haven:** Equivalent fractions/decimals/percents — A4 A5 A3

1:45 **Dirklet—Number Trick:** Simple trick with whole numbers — A2

:25 **Spot the Pentagons:** Identify pentagons among polygons — G6

10:04 **Mathnet: Case of the Map with a Gap—2**

SHOW NUMBER 228 Minor emphasis: Triangles

1:09 **Dirklet: Paper and Pencil—1**

2:50 **Phoner—The Answer Is 2:** Algorithm that always gives the result 2 — B1 D2

3:05 **Blackstone:** Algorithm always giving the answer 1089 — D2 G2 B1

5:24 **Triple Play:** Geometric strategy game — B1 G6

3:02 **Average American:** Statistical averages — F2

12:17 **Mathnet: Case of the Map with a Gap—3** — B5 C1 C2 G4 G6

SHOW NUMBER 229

8:14 **Close Call:** Estimation game — A5 C1 C2

1:25 **Mathman:** Polygons that are hexagons — G6

5:31 **Dirk Niblick: To Heck and Back—1:** Distance, rate, and time — C2 C3

1:18 **Five-Nineteen Blues:** When to round numbers — B4

2:20 **Dirk Niblick: To Heck and Back—2** — G2

8:08 **Mathnet: Case of the Map with a Gap—4**

SHOW NUMBER 230 Minor emphasis: Numeration

3:31 **Time Keeper:** Song about clock arithmetic — B3

4:58 **Dirk Niblick: The Lint Trap—1:** Miscalculation of proper wages — B3

:31 **Rotational Symmetry** — G2

:36 **Mathman:** Polygons with a line of symmetry — G2

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2:48 **Dirk Niblick: The Lint Trap—2**

:25 **Decimals/Percents/Fractions—25%:** Equivalence: decimal, fraction, percent — A5 A3 A4

3:22 **Diet Lite Wet:** Equivalent fractions/decimals/percents — A3 A5 A4

:58 **Square One Puzzler—Calendar:** What day is 20 days from Wednesday? — B3

7:58 **Mathnet—Case of the Map with a Gap—5** — C1 C2 G4 G6

WEEK SEVEN

SHOW NUMBER 231

7:31 **Piece of the Pie:** Game of data representation — A5 B1 D1 F6

6:07 **Dirk Niblick: Do Not Fold, Spindle—1:** 3 60-minute tapes vs. 2 90-minute tapes — B5

:20 **Area:** Determine area of rectangular figure — C1 C2

2:45 **Dirk Niblick: Do Not Fold, Spindle—2**

1:43 **Mathman:** Solutions to $T + 40 < 75$ — A4 B1 D1 D4

8:44 **Mathnet: Case of the Willing Parrot—1** — C2 D2 G4

SHOW NUMBER 232

3:41 **Combo Jombo:** Combinatorics — B1 E1

1:33 **Dirklet—Make a Drawing:** Problem-solving heuristic

1:10 **Data Headache I:** Using a bar chart — F6

5:27 **Square One Squares:** Game of mathematical misconceptions

:24 **Polyhedrons—1:** Illustrating a tetrahedron — G6 G1 G2

2:04 **Blackstone—Dime, Penny, Nickel:** Trick based on odd and even numbers — B3 B1

:41 **Infinity (Infinite Regress):** Dynamic suggestion of infinite regress — D1 G2

12:06 **Mathnet: Case of the Willing Parrot—2** — A5 D2 F1 F4 G6

SHOW NUMBER 233 Minor emphasis: Fibonacci Sequence

1:01 **Dirklet: Close Call Promo/Estimation** — B4

4:20 **Ghost of a Chance:** Probability in several situations — F1 F3

5:42 **Close Call:** Estimation game — A5 C1 C2 C3

1:32 **Mathman:** Solutions to $20 > A + 5$ — A4 B1 D1 D4

:28 **Polyhedrons—2:** Illustrating a cube, a hexahedron — G6 G1 G2

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2:08 **Phoner—Fibonacci Sequence:**
Fibonacci sequence trick B3 D2

12:13 **Mathnet: Case of the Willing Parrot—2** B3 G6

SHOW NUMBER 234

5:53 **Dirk Niblick: Go West Young Math—1:** Redistribution of land is necessary C2 D2

1:13 **Tessellation Animation—Tile:** Tessellation leads to a tile design G3 G6

3:10 **Dirk Niblick: Go West Young Math—2**

:27 **Mathman:** Extra Short

:25 **Stick Squares I:** Divide a square into square units G6

4:32 **Sugar Ray Sketch:** Weighing a dog C2 B1

:42 **Stick Squares II:** Divide a square into square units G6

11:03 **Mathnet: Case of the Willing Parrot—4** B3

SHOW NUMBER 235

3:14 **One Billion Is Big:** Relative sizes of million and billion A1 A2

:47 **Dirklet: Triple Play Promo/Triangles** G6

:19 **Pong Game:** Billiard geometry G2 G6

6:15 **Triple Play:** Geometric strategy game B1 G6

1:39 **Mathman—Square Numbers:** Square numbers B2

:48 **Square One Puzzler—Salary:** Which is more, .5 or .25? A3 A4 D1

1:07 **The Sale:** Finding percent from a discount A5 B1 A3

11:58 **Mathnet: Case of the Willing Parrot—2** B1 B3 D2

2:00 **Closing**

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SHOW NUMBER 236

1:29 **Mathman:** Solutions to 19−C< 5 B1 D1 D4

6:37 **Triple Play—Playoff:** Geometric strategy game B1 G6

6:06 **Dirk Niblick: Mall or Nothing at Mall—1:** Biased survey leads to problems A5 F5

3:03 **Blackstone—Miraskill—Candies:** Trick based on even numbers B3 A2

2:38 **Dirk Niblick: Mall or Nothing at Mall—2**

1:08 **Person on the Street—Combinatorics:** Define combinations E

:30 **Pos vs. Neg Jousts—The Abyss:** Adding positive and negative numbers A6 B1

5:43 **Mathnet: Case of the Great Car Robbery—1** A5 B4 F5 F6

SHOW NUMBER 237

3:42 **Prime Numbers:** Song about prime numbers B2 B3

7:05 **Close Call:** Estimation game C1

1:46 **Dirklet—Look for a Pattern:** Problem-solving heuristic D2

1:30 **Mathman:** Solutions to 7 + P < 7 A6 B1 D1 D4

2:25 **Percents:** Equivalent fractions/decimals/percents A5 A3 A4

10:39 **Mathnet: Case of the Great Car Robbery—2** A5 B4 F2 F5 F6

SHOW NUMBER 238

7:36 **Square One Squares:** Game of mathematical misconceptions

5:36 **Dirk Niblick: Itty Bitty Business—1:** Misplaced decimal points cause problems A4 A5

1:30 **OOPS! 804 − 236:** Borrowing mistake in subtraction B1 A2

2:59 **Dirk Niblick: Itty Bitty Business—2**

9:39 **Mathnet: Case of the Great Car Robbery—3** B5 F5 F6

SHOW NUMBER 239 Major emphasis: Data Presentation

3:10 **Ice Cream Store—Calories:** Bar chart and percents A5 A3 D1 F6

3:12 **Tessellations:** Tessellations on the beach G3 G6

1:40 **Dirklet—Divisible by 3:** Divisibility test for 3 B1

5:48 **Piece of the Pie:** Game of data representation A5 B1 D1 F6

:13 **Mixed Numbers ½:** Graphic depiction of mixed numbers A3 D1

1:10 **Data Headache III:** Using a broken line graph F6

1:17 **Mathman:** Percentages more than ½ A5 D1

10:31 **Mathnet: Case of the Great Car Robbery—4** B1 B4 B5 F6

SHOW NUMBER 240

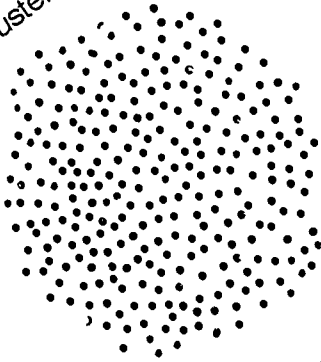1:31 **Dirklet: Compare Fractions (⅓, ¼)** A3 D1

4:40 **Blackstone—5-Envelope Spelling:** Tricks based on remainders D2

2:56 **Archimedes:** Inventions and discoveries of Archimedes

1:37 **Mathman:** Fractions greater than 1 A3

15:24 **Mathnet: Case of the Great Car Robbery—5** B4 B5 F2 F5 F6

2:00 **Closing**

31

IF there are 58 dots in this cluster...
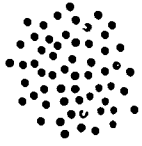
about how many dots are in this cluster?

A. ESTIMATE: _____

IF this squiggle is 4.5 cm long...

about how long is this spiral?

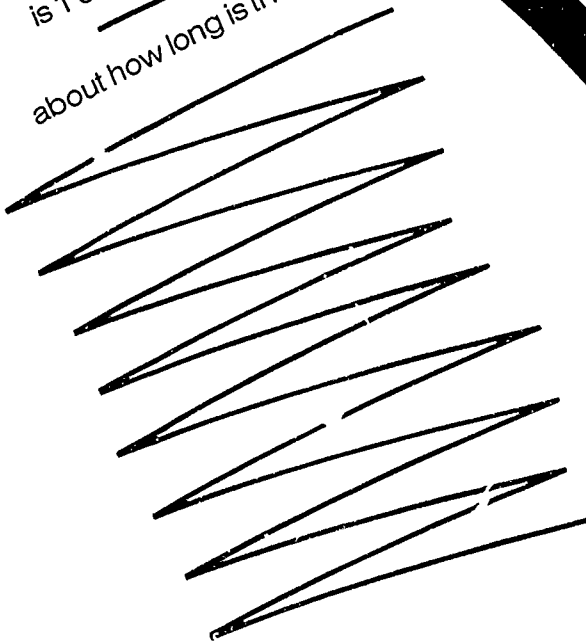**B. ESTIMATE:** _____

CLOSE CALL

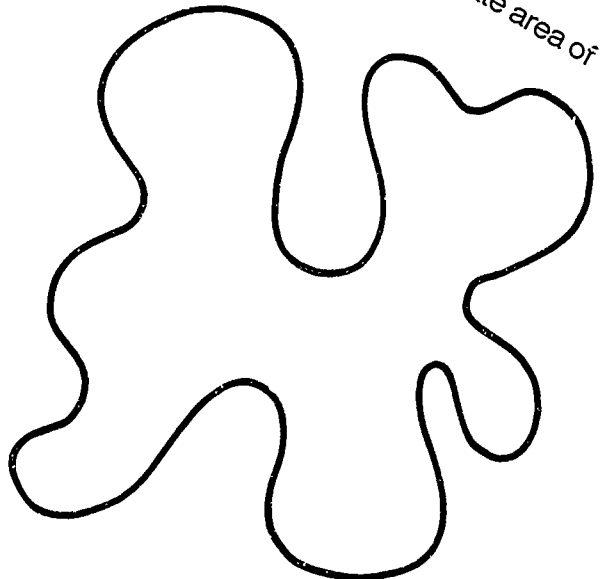**IF** this line segment is 1 cm long...

about how long is this?

ESTIMATE: _____

IF the area of this small blob is 2.7 sq. cm...

what is the approximate area of this blob?

D. ESTIMATE: _____

32

THE PHONER

IN BRIEF:

Did you know that you can go through a sequence of mathematical operations that will give you the same result every time, regardless of what number you start with? No, we're not playing games with you. "The Phoner" does exactly that. "Phoner" segments can help students understand how such sequences work.

RULES:

How does the Phoner work? Mysteriously. He never identifies himself. He simply calls a cast member and dictates a set of directions: Pick a number; add five; double it; subtract four; divide by two; subtract the original number. The answer is always three!

And that's only one of the Phoner's tricks. In junctions, there are lots of possibilities. There's a sequence that will always yield an answer of two; there's another sequence for which the answer is always six. Make up your own Phoner routines. Can you make up one where the answer is always $\frac{1}{2}$? Who knows where the possibilities end? Only one thing is certain—the Phoner is always right.

STEP-BY-STEP ACTIVITY:

What you need: copies of the activity page.

What to do: 1. Watch a few episodes of "The Phoner" with your class. The episode in shows 101 and 214 is particularly suitable for the activity which follows.

2. Test the Phoner's routine several times with the whole class. Have individual students suggest different starting numbers and do these computations together:

> Pick a number
> Add 5
> Multiply by 2
> Subtract 4
> Divide by 2
> Subtract the original number.

If your students are really ambitious, have them start with a fraction, a decimal, or even a negative number. The activity will convince them that the answer is always 3.

3. Distribute copies of the activity page and have the class work on Phoner #1. How are the rules for this routine different from those of the original one you tried? And how is the answer different?

4. Students should each pick their own number to add in the second step of Phoner #2. Have each student complete the chart, and then compare results as a class. How are the answers related to the numbers each student chose to add?

5. Have the class pick new numbers and complete Phoner #3. Notice that in the fourth step students are asked to subtract 6 instead of 4. How are the answers *now* related to the numbers each student chose to add?

6. In Phoner #4 students should pick the numbers for both step 2 and step 4. Use a chart like the one below to keep track of the results as a class. What do you notice?

Example

	Original Phoner	Phoner #1	Student #1	Student #2
Step 2	5	7		
Step 4	4	4		
Answer is always	3	5		

Follow-up: Make up a Phoner routine in which the answer is always 10. Make up two others in which the answer is always 10. Make up a Phoner in which the answer is always -2. Make up a Phoner in which the answer is always _.

NAME:_____

DATE:_____

THE P H O N E R

1

PICK A NUMBER	4				
ADD 7		15			
DOUBLE IT			16		
SUBTRACT 4				14	
DIVIDE BY 2					11
SUBTRACT THE ORIGINAL NUMBER					

ABC 2

PICK A NUMBER	2				
ADD ☐					
DOUBLE IT					
SUBTRACT 4					
DIVIDE BY 2					
SUBTRACT THE ORIGINAL NUMBER					

DEF 3

PICK A NUMBER	4				
ADD ☐					
DOUBLE IT					
SUBTRACT 6					
DIVIDE BY 2					
SUBTRACT THE ORIGINAL NUMBER					

GHI 4

PICK A NUMBER	3				
ADD ☐					
DOUBLE IT					
SUBTRACT △					
DIVIDE BY 2					
SUBTRACT THE ORIGINAL NUMBER					
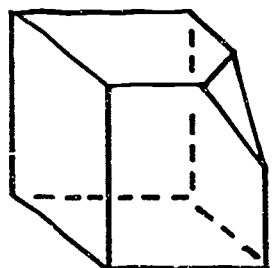
SQUARE ONE
SQUARES

SOLID A   SOLID B

1 ___   2 ___   3 ___

4 ___   5 ___   6 ___

7 ___   8 ___   9 ___

36
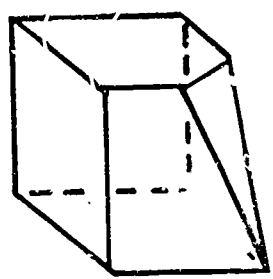
want to really challenge your class, try this
a "Square One Squares." It's called "Square
hallenge," and here's how it works.

v are some of the questions from "Square One Squares"
e One Challe..   ..along with the panelists' answers. Here
ss.

ves, before you give them the panelists' answers. Encour-
help you to pinpoint the so..   s of some of their mathemat-
also provides the opportunity to show that sometimes a

lass into groups of three or four and help each group come
.ure One Challenge" question. By changing some of the
g is they ...oose.

Host: Benny's House of Junk Food is offering this great deal: a jumbo box of popcorn and an all-night piece of gum for only fifty cents total. One of these items costs ten cents more than the other. How much could the popcorn cost by itself?

Truth teller #1: I think thirty cents, since thirty minus twenty is ten.

**Truth teller #2:** I think twenty cents—twenty plus thirty is fifty.

Explanation: The popcorn could cost either twenty cents or thirty cents. As long as the difference between the cost of the popcorn and the cost of the gum is ten cents, it doesn't matter which costs more.

Variant: A radio and a clock together cost $100. One costs $3 more than the other one. How much could each cost?

3.

4.

Host: This three-by-three-by-three cube is built out of blocks. The cube is painted orange on the outside. How many of the blocks have orange paint on them?
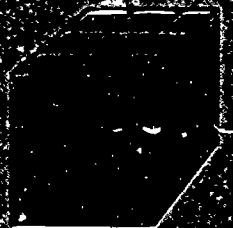
Bluffer: The cube is three blocks by three blocks by three blocks—that's twenty-seven blocks.

Truth teller: I say twenty-six.

Explanation: Not all the blocks have paint on them—the one in the center doesn't. That leaves twenty-six.

Variant: If you started with a 10 x 10 x 10 cube and painted the outside, how many blocks would be left unpainted?

SQUARE ONE SQUARES QUESTIONS

Host: I have here two pickle pies of exactly the same size. If I cut one pie into fifths and the other pie into sixths, which pie would have larger slices?

Bluffer: The pie cut into sixths would have larger slices—six is a larger number than five.

Truth teller: The pie cut into fifths would have larger slices. One-sixth is less than one fifth.

Explanation: One-sixth is indeed less than one fifth. Because the pie cut into sixths has more slices, each slice must be smaller. (From show 227.)

Variant: What if the pies were cut into sixths and twelfths? One-hundredths and one-thousandths? What if they were pepper pies or pizza pies?

Host: Look at figures A and B. Does B have a greater area than A?

A.

B.

Bluffer: Figure B has the greater area.

Truth teller: I think their areas are the same.

Explanation: The areas are the same. There's a simple way to check this—just imagine swinging the top portion of figure B down so that it makes a figure of the same height as figure A. As you'll see, the areas of the two figures are equal. (From show 201.)

Variant: What if the figures were these? Which has the greater area?

Host: I tossed a fair coin ten times in a row and it came up heads each time. If I flip it again, which is more likely to come up, heads or tails?

Bluffer: Tails is more likely. You've had too many heads in a row.

Truth teller: Neither. Heads is as likely as tails.

Explanation: Heads is as likely as tails. With a fair coin, the probability of tossing tails is one-half on any flip. (From show 227.)

Variant: If I roll a die, and on the first five rolls, I get 1, 2, 3, 4, and 5 (in that order), what am I likely to get on the sixth roll?

Host: I have to go to the dentist sixty days from now. If today is a Monday, what day of the week will it be sixty days from now?

Bluffer: Sixty days is exactly two months, so in sixty days it will be a Monday again.

Truth teller: Every seventh day is a Monday. Sixty days from Monday is a Friday.

Explanation: There are seven days in a week, so every seventh day is a Monday. Seven times eight is fifty-six—the fifty-sixth day will be a Monday. Count ahead four days to the sixtieth day—it's Friday. (From show 238.)

Variant: If today is Sunday, how many days away is the first Sunday that's more than 500 days from today?

Host: How many squares are in this grid?
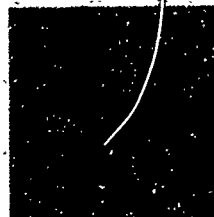
Bluffer: Nine.

Truth teller: Fourteen.

Explanation: There are nine one-by-one squares, four two-by-two squares, and one big three-by-three square. That makes a total of fourteen. (From show 207.)

Variant: How many *rectangles* are in the grid? How many squares are there in a 10 x 10 square grid?

CURRICULUM GOALS

SQUARE ONE TV has three goals. For your convenience,
GOAL III, which covers mathematical content areas, is written in
outline form. Wherever you see a notation like "D3" or "F1" in
the Program Listing, the reference is to this outline.

GOAL I. To promote positive attitudes toward and enthusiasm for mathematics by showing:

A. Mathematics is a powerful and widely applicable tool useful to solve problems, to illustrate concepts, and to increase efficiency.
B. Mathematics is beautiful and aesthetically pleasing
C. Mathematics can be understood, used, and even invented by nonspecialists.

GOAL II. To encourage the use and application of problem-solving processes by modeling:

A. **Problem Formulation**
   1. Recognize and state a problem.
   2. Assess the value of solving a problem.
   3. Assess the possibility of solving a problem.
B. **Problem Treatment**
   1. Recall information.
   2. Estimate or approximate.
   3. Measure, gather data, or check resources.
   4. Calculate or manipulate (mentally or physically).
   5. Consider probabilities.
   6. Use trial-and-error or guess-and-check.
C. **Problem-Solving Heuristics**
   1. Represent problem, scale model, drawing, map, pictures, diagram, gadget; table, chart; graph; use object, act out.
   2. Transform problem: reword, clarify, simplify, find subgoals, subproblems, work backwards.
   3. Look for patterns; missing information (pertinent or extraneous).
   4. Reapproach problem: change point of view, reevaluate assumptions; generate new hypotheses.
D. **Problem Follow-up**
   1. Discuss reasonableness of results and precision of results.
   2. Look for alternative solutions.
   3. Look for alternative ways to solve.
   4. Look for or extend to, related problems.

GOAL III. To present sound mathematical content in an interesting, accessible, and meaningful manner by exploring:

A. **Numbers and Counting**
   1. Whole numbers.
   2. Numeration, role and meaning of digits in whole numbers (place value), Roman numerals, palindromes, other bases.
   3. Rational numbers, interpretations of fractions as numbers, ratios, parts of a whole or of a set.
   4. Decimal notation, role and meaning of digits in decimal numeration.
   5. Percents: uses; link to decimals and fractions.
   6. Negative numbers: uses; relation to subtraction.

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B. **Arithmetic of Rational Numbers**
1. Basic operations: addition, subtraction, division, multiplication, exponentiation; when and how to use operations.
2. Structure: primes, factors, and multiples.
3. Number theory: modular arithmetic (including parity); Diophantine equations, Fibonacci sequence; Pascal's triangle.
4. Approximation, rounding, bounds, approximate calculation, interpolation and extrapolation; estimation.
5. Ratios, use of ratios, rates, and proportions, relation to division; golden section.

C. **Measurement**
1. Units, systems (English, metric, nonstandard); importance of standard units.
2. Spatial: length, area, volume, perimeter, and surface area.
3. Approximate nature: exact versus approximate, i.e., counting versus measuring; calculation with approximations; margin of error; propagation of error; estimation.
4. Additivity.

D. **Numerical Functions and Relations**
1. Relations: order, inequalities, subset relations, additivity, infinite sets.
2. Functions: linear, quadratic, exponential; rules, patterns.
3. Equations, solution techniques (e.g., manipulation, guess-and-test), missing addend and factor, relation to construction of numbers.
4. Formulas, interpretation and evaluation, algebra as generalized arithmetic.

E. **Combinatories and Counting Techniques**
1. Multiplication principle and decomposition.
2. Pigeonhole principle.
3. Systematic enumeration of cases.

F. **Statistics and Probability**
1. Basic quantification: counting, representation by rational numbers.
2. Derived measures: average, median, range.
3. Concepts, independence, correlation, "Law of Averages."
4. Prediction: relation to probability.
5. Data processing: collection and analysis.
6. Data presentation, graphs, charts, tables, construction and interpretation.

G. **Geometry**
1. Dimensionality: one, two, three, and four dimensions.
2. Rigid transformations: transformations in two and three dimensions, rotations, reflections, and translations; symmetry.
3. Tessellations, covering the plane and bounded regions, kaleidoscopes; role of symmetry; other surfaces.
4. Maps and models in scale: application of ratios.
5. Perspective, rudiments of drawing in perspective, representation of three-dimensional objects in two dimensions.
6. Geometrical objects, recognition, relations among, constructions; patterns.
7. Topological mappings and properties: invariants.

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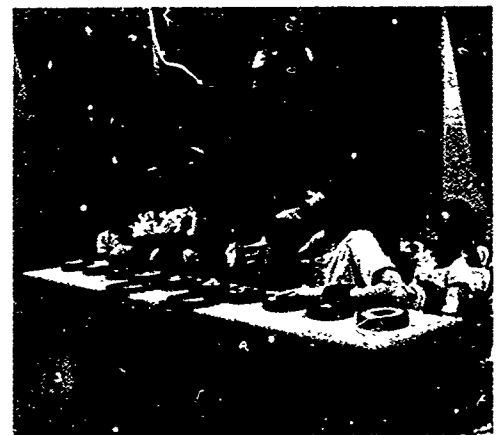
re containing the product 18 is
ssible three-in-a-rows, but there are
e three-in-a-rows which contain the
uare containing 18 seems like a better
ause it gives you more potential

near the center of the game board are
-in-a-rows than squares near the
squares near the center of the board
ed better places to start.

9	4	5	6
9	10	12	14
18	20	21	24
28	30	32	35
42	45	48	49
63	64	72	81

ED RING	BLUE RING	PRODUCT
5	4	20
	4	

en Red has 12 pos ble ways to
and Blue has only 4.

ED RING	BLUE RING	PRODUCT
		20
	8	20

en   ll possible ways to
and   6.

IF RED PLAYS	RED RING	BLUE RING	PRODUCT
	5	4	20
AND BLUE PLAYS		2	10

…Then Red has 10 possible ways to win, and Blue has 7.

"Triple Play"

Step 2: It is to your advantage to claim positions that are vertices of many equilateral triangles. In this case, 10 is the vertex of 13 triangles, while 24 is the vertex of only six, and 54 is the vertex of only four.

Step 3:
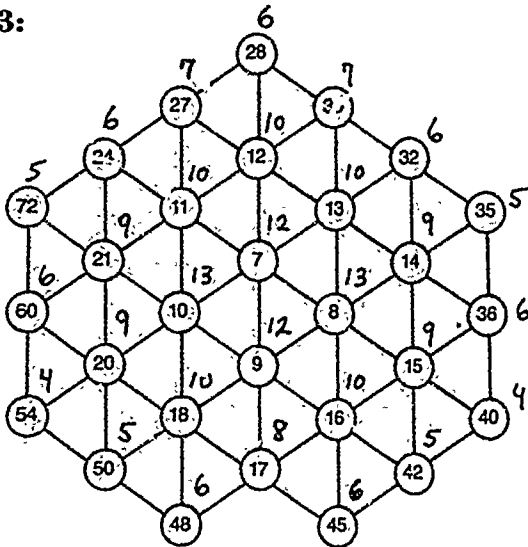
Step 4: The numbers of triangles down the middle line are all even because the middle line is an axis of symmetry. For example, if 7 is the vertex of a triangle to the left of the middle line, it is also the vertex of a corresponding triangle to the right of the middle line.

Follow-up 1: The best starting positions on the board are pr   ably 10 and 8. Each is a vertex of 13 triangles.

b: If you get 10 and 1 it is better to multiply because 10 is a vertex of 13 triangles while 11 is only a vertex of 10. If your opponent rolls 7 and 1 and claims 8, which is a vertex of 13 triangles, he doesn't block any of the 13 which have 10 as a vertex. If he multiplies and claims 7, then he'll have 10 potential equilateral triangles, and will have reduced your   potential triangles to 11.

If your opponent rolls 3 and 8:

• 24 is the vertex of six triangles and doesn't block any of the 13 triangles with 10 as a vertex

• 11 is the vertex of 10 triangles and blocks two of the 13 triangles with 10 as a vertex

If your opponent rolls 9 and 4:

• 36 is the vertex of six triangles and doesn't block any of the 13 triangles with 10 as a vertex

• 13 is the vertex of 10 triangles and blocks two of the 13 triangles that have 10 as a vertex

Follow-up 2: The total number of triangles on the game board is 76.

"Close Call"

Step 2:
A. There are approximately 275 dots in the larger cluster.
B. The spiral is approximately 75 cm long.
C. The curve is approximately 90 cm long.
D. The larger blob is approximately 30 sq. cm in area.
(Students' answers may vary.)

"The Phoner"

Step 3: In the second step you add 7 instead of 5; and the answer is always 5 instead of 3.

PICK A NUMBER	4	8	1	2	6
ADD 7	11	15	8	9	13
DOUBLE IT	22	30	16	18	26
SUBTRACT 4	18	26	12	14	22
DIVIDE BY 2	9	13	6	7	11
SUBTRACT THE ORIGINAL NUMBER	5	5	5	5	5

Step 4: The answer should always be 2 less than whatever number the student chose to add in step 2.

Step 5: Now the answer should always be 3 less than whatever number the student chose to add in step 2.

"Square One Squares"

Net 1. A	Net 2. X	Net 3. X	Net 4. B
Net 5. B	Net 6. A	Net 7. X	Net 8. B
Net 9. B			

END

U.S. Dept. of Education

Office of Educational
Research and Improvement (OERI)

ERIC

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