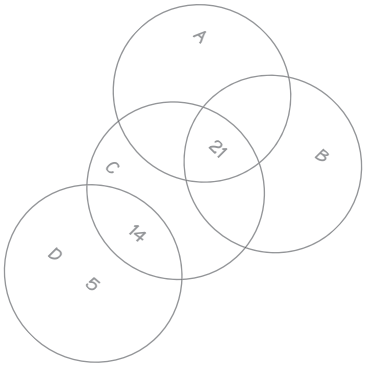
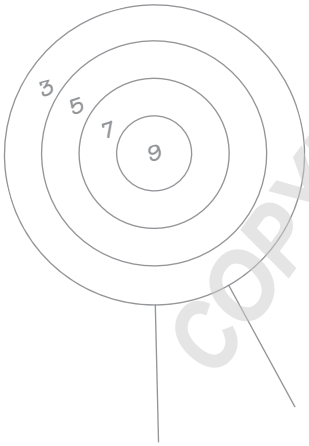
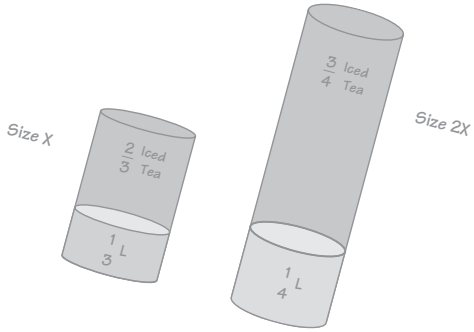


Part I

NUMBERS and OPERATIONS

BASE + BALL GAMES





Whole Numbers

1. Below is a partial Magic Square using the numbers 1–16. The rows, columns, and diagonals must each total the same sum. Place the final four numbers in the appropriate squares.

16	9	2	7
6	?	?	13
11	?	?	4
1	8	15	10

2. Try your luck at these three analogy puzzles. An analogy compares two things to two others. Here is an example:

$$9 : 10 : : 81 : ?$$

This is read as "9 is to 10 as 81 is to . . ." and the answer is 100.

$$9^2 = 81$$

$$10^2 = 100$$

Now find the missing numbers or words in the following analogies:

a. 11 : 121 : : 20 : ?

b. 3 : 27 : : 4 : ?

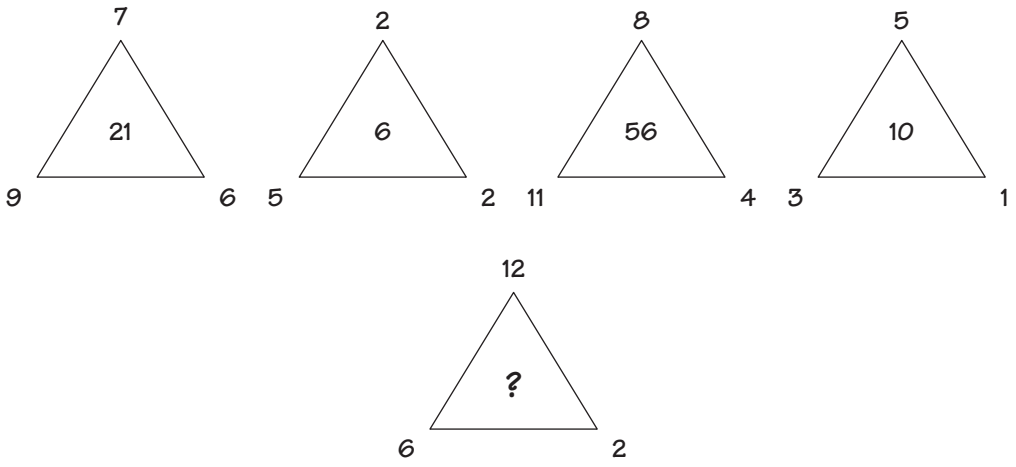
c. Hexagon : 6 sides : : ? : 7 sides (Possible answers: Nonogon, Sevegon, Hedagon, Heptagon)

3. What is the missing number in the sequence below?

13 57 91 11 31 51 ?

HINT
Don't be afraid to move these numbers around and look at it from another perspective.

4. The numbers in the center of the pyramids are related to the numbers at each corner. What is the missing number in the middle of the last pyramid?



5. Alphametics are puzzles where each letter stands for a different digit. Here are two alphametics. No word can begin with a zero. We've started you out with some of the letters.

a.
```
  BASE
+ BALL
------
 GAMES
```
Let E = 3
B = 7
A = 4

b.
```
  MAD
   AS
+   A
------
 BULL
```
Let D = 3
L = 7
A = 8

6. Tom walks half a distance at 4 mph and runs back the other half at 12 mph. What is his average speed for the entire trip?

7. If 32 people were to enter a statewide singles tennis tournament, how many matches would be played, including the championship?

8. Below is a sequence where the difference between each successive pair of numbers is 6. What is the 500th number in this sequence?

5 11 17 23 29 35 41 . . .

> **HINT**
> Make a chart to help you figure out the pattern, then apply the pattern to the 500th number.

9. The seven sets of numbers below all have a certain logic that is the same in all seven numbers. See if you can determine the relationship and come up with the final digit of the last number.

a. 1 3 8 2 1

b. 5 1 3 4 2

c. 6 0 0 2 7

d. 9 2 0 4 0

e. 2 5 1 1 6

f. 4 4 4 0 3

g. 7 0 3 1 ?

10. In a laboratory, two sub-atomic particles are being crashed into each other as part of an experiment. Particle #1 is moving directly toward particle #2 at 15 mers a second. Particle #2 is moving directly toward particle #1 at a speed of 25 mers a second. The particles are 1,000 mers apart when they begin moving. What will be the distance between them 1 second before they crash?

> **HINT**
> Don't be concerned about the term "mers." It's a fictitious distance.

Just for Fun: Frame Game

11. Find the hidden word or phrase.

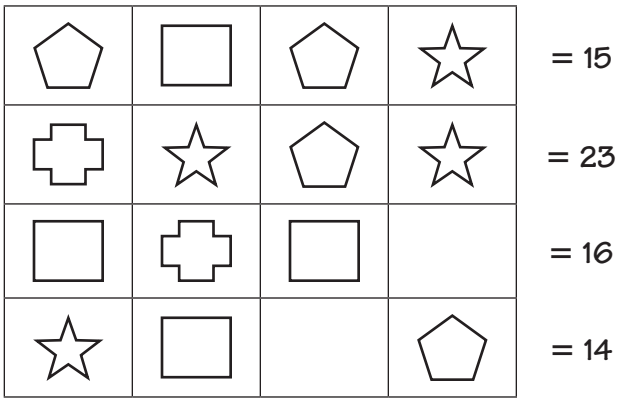
12. If one can of dog food feeds eight pups or six dogs, then eight cans of the same dog food will feed 40 puppies and how many dogs? Be careful with the puzzle. It is asking for puppies *and* dogs, not puppies *or* dogs.

13. Inserting the numbers 4, 3, and 9 once and only once, and any of the four operations (+, −, ×, ÷) in the grid below, see if you can total the numbers represented in each row and column.

4	×	3	−	9	+	8	11
+	■	+	■		■		
8		9	+	3		4	71
+	■		■	+	■	−	
9				8		3	41
×	■		■		■		
	+	8	+	4			47
39		31		38		38	

HINT
Remember the correct order of operations.

14. The grid below has symbols that contain a whole number value less than 10. Each symbol has its own value. The numbers you see at the end of each row and column are the sums of the figures' values for that row or column. Can you find out the value of each symbol?



15. The numbers in the box go together in a certain way. See if you can determine the pattern and come up with the two missing numbers.

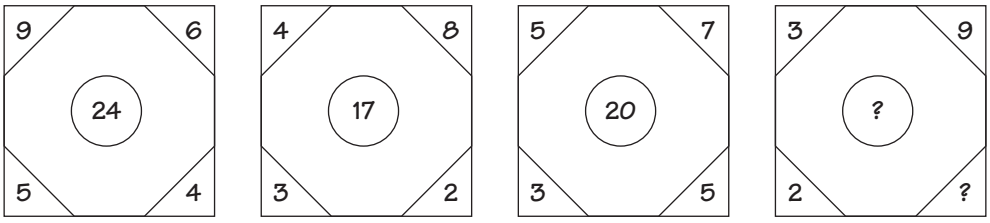
7	42	6
6	30	5
4	12	3
5	?	?

HINT
There are two different relationships to work out here.

16. What number comes first in the sequence below?

? 1 5 4 8 7 11 10 14 13 17

17. The boxes below have a certain logic that enables you to predict what the two missing numbers are. Can you find them?



18. What is the missing number?

5 25 125 ____ 3,125 15,625

19. One of the numbers below does not belong with the others for a simple, straightforward reason. Which is the odd one out?

13,754

14,933

16,283

16,637

16,175

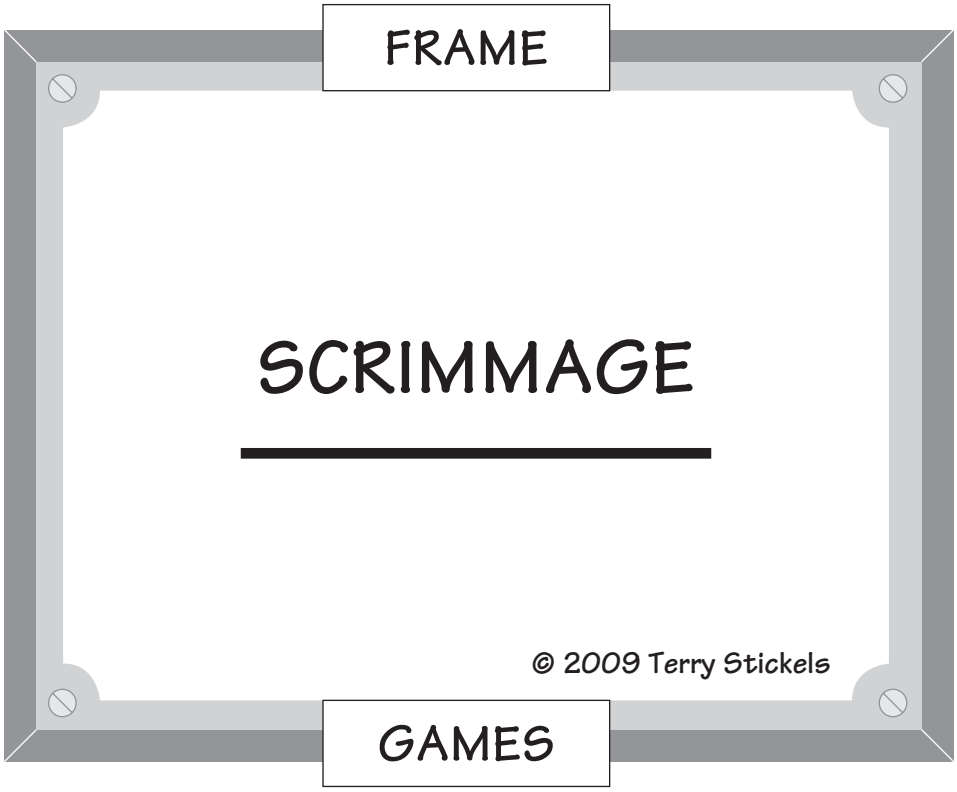
18,911

HINT
It does not have to do with the numbers' factors or prime numbers.

20. How many zeros does a thousand thousand million have?

Just for Fun: Frame Game

21. Find the hidden word or phrase.



22. On the planet Leptron, there are two types of people—Crizellas and Frizellas. Crizellas have 4 heads and Frizellas have 11 heads. Both sets of people all look identical.

When I last visited them, my friend Arzella said, "I see 53 heads in the Trizella swimming pool, so I know exactly how many Crizellas and Frizellas are in the pool."

Now, can you tell me how many of each are in the swimming pool?

23. Our number system is called $Base_{10}$ because we start to repeat the sequencing of numbers after the number 9. It is possible to have any number system, even systems based on fractions.

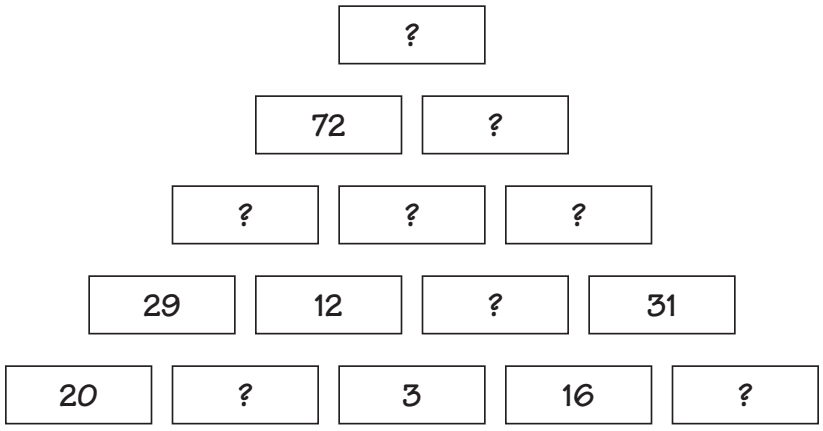
Here is what the first nine numbers in $Base_9$ look like:

1 2 3 4 5 6 7 8 10

The number 9 in $Base_{10}$ becomes the number 10 in $Base_9$. How would you write the number 22 in $Base_{10}$ in the $Base_9$ system?

24. If you write down all the numbers from 1 to 100, how many total single digits will you have written down? Include both 1 and 100.

25. Below is a number pyramid where the numbers are arranged in a logical fashion so you can replace each question mark with a correct whole number. Determine what that logic is and find each missing number.



26. Larry and Jane went to play Bingo for a fundraising event. The two got very excited as the night progressed, particularly when Larry announced that he had a BINGO! Below are three statements that he made to Jane. Two of the statements are true and one is false. Can you determine which of his statements was false and where his BINGO was?

B	I	N	G	O
8	16	32	60	72
12	20	34	53	69
13	30	Free	48	64
7	27	44	48	61
2	19	39	51	74

NOTE

To play Bingo, you are given a card with random whole numbers between 1 and 75 printed in a grid of 25 boxes. Each number has a vertical row assignment: B, I, N, G, or O.

The first player to complete a Bingo wins. A Bingo is any horizontal, diagonal, or vertical row in which all of the numbers have been called.

For example, if Larry's Bingo is in the I-row, that means the numbers I-16, I-20, I-30, I-27, and I-19 were called.

Larry said:

a. "My BINGO has all even numbers."

b. "My BINGO has two numbers evenly divisible by 5."

c. "All of the numbers in my BINGO are evenly divisible by 4."

27. A little while after Larry's BINGO, Jane got her own BINGO. Her face flushed with excitement, she yelled out "BINGO!" With a smirk, she turned to Larry and said:

a. "My BINGO has all prime numbers."

b. "The numbers in my BINGO add up to 138."

c. "My BINGO is a vertical line."

d. "My BINGO uses the FREE space."

B	I	N	G	O
2	22	32	50	61
14	30	35	47	64
7	25	Free	52	72
5	19	37	59	70
11	27	45	48	75

One statement was false; the rest were true. Where was Jane's BINGO?

28. Each series below follows its own logical rules. Can you determine the next in each series?

a. 6 (10) 20 10 14 (7) ? 18

b. 8 13 14 19 20 25 26 ? ? 37 38

c. 12 16 8 12 6 10 5 ?

d. 27 54 18 36 12 24 8 ?

e. 3 6 12 15 18 36 72 75 150 ?

29. Can you find the number that's described by the poem?

The number you seek is more than 50
But stay under 100 to be more thrifty

A powerful number these digits are called
A product of square and cube, so scrawled

The square is from a simple three
You're partly given for free

The number to cube is even and close
A prime number too, so now it's exposed

So take square and cube worked out
Make the product and don't you pout!

If you've listened to what I've said
You know the answer to what you've read.

30. The average of three numbers is 40. All three are whole positive numbers and are different from each other.

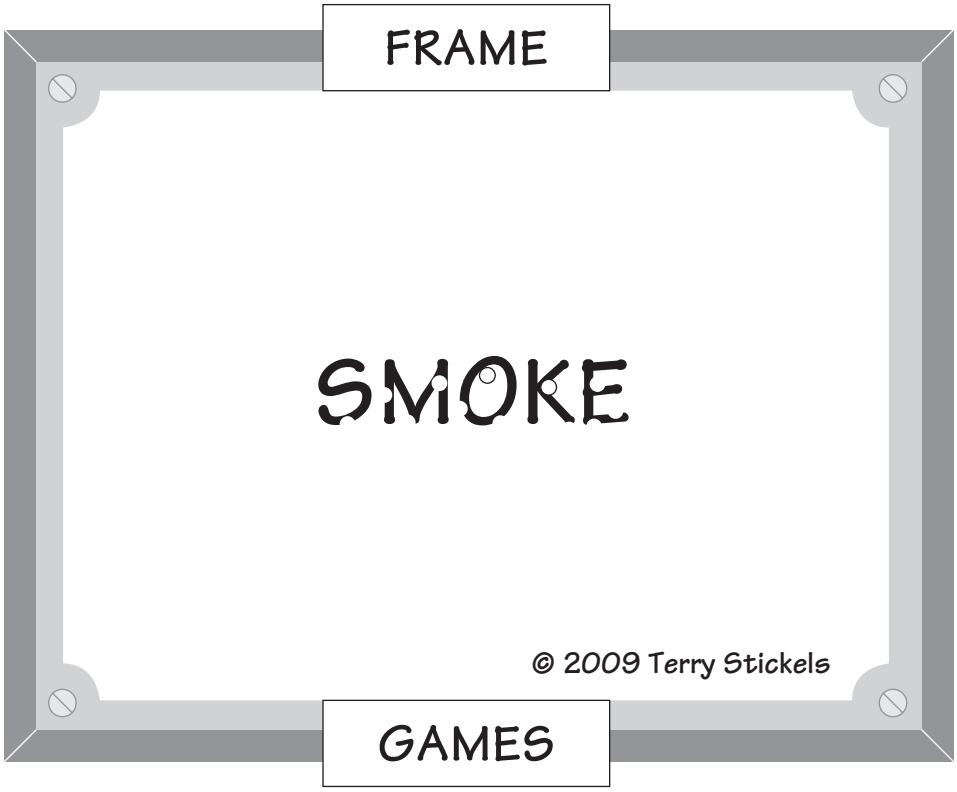
If the lowest is 19, what could be the highest possible number of the remaining two numbers?

31. What comes next in this sequence:

A1 B2 D4 G7 K11 P16 ??

Just for Fun: Frame Game

32. Find the hidden word or phrase.



33. Casey is making a numbered wheel for a game he and his friends are going to play. His friend Maggie comes by and says, "I see the number 10 is opposite 25 and the number 1 is opposite 16. Did you know there is a simple way to tell how many objects are on an evenly spaced circle if there is an even number?"

Casey said he thought he knew. Can you help him out? How many numbers are in the circle Casey is making?

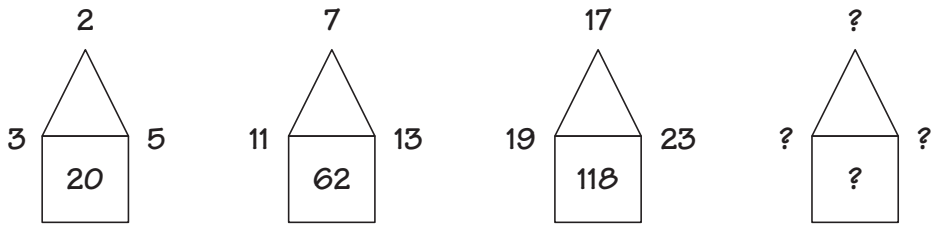
34. One of these numbers doesn't belong with the rest. Which one?

252 333 81

9 240

27

35. What are the missing numbers?



36. A survey showed that of 100 high school students, 50 of them took biology, 20 took chemistry, and 12 took both. How many of the 100 students took neither biology nor chemistry?

37. Richey bought a pack of gum and received 80 cents back in change. The clerk gave him all nickels and dimes. Richey's friend Ben said, "There are seven possible ways you could receive 80 cents in dimes, nickels or a combination of both."

Ben's sister said, "You're wrong, but the correct answer is an odd number."

How many ways are there, and what are they?

38. Nino and Adrianna were trying to remember their cousin's phone number in Dallas. "I know it is 972 area code," said Nino. Adrianna continued ". . . and I know the next two numbers are 36, but I don't know the third number after 6."

"I also know that the last four numbers begin with 48. But I don't know the last two numbers of that group," Nino said, scratching his head.

"Let's see. We have 972–36?–48??, right?" asked Adrianna.

"That's right," said Nino. "I wonder how many possibilities there are for all the combinations of phone numbers we would have to dial to get the right number?"

Adrianna said, "I think there's an easy way to find out if we just think about it logically."

Can you come up with the number of possibilities the phone number might be? Remember—you have to consider "00" as a number, too.

39. Which number comes next in the following sequence?

24, 68, 101, 214, 161, 820, ?

a. 1,000

b. 1,002

c. 222

d. 14

40. If two typists can type two pages in 4 minutes, how many typists will it take to type 10 pages in 20 minutes?

a. 2

b. 4

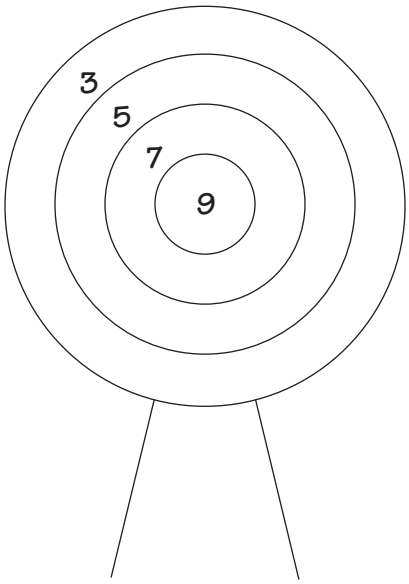
c. 8

d. 16

e. 20

41. In a bass fishing tournament, 200 bass were caught in 5 days. The total fish caught on each day was 8 more than the day before. How many fish were caught on the first day?

42. Below is a target that indicates the scores the arrows can make.



Six of the scores below are possible total scores if you shoot four arrows. Two scores are not. Which two scores are impossible?

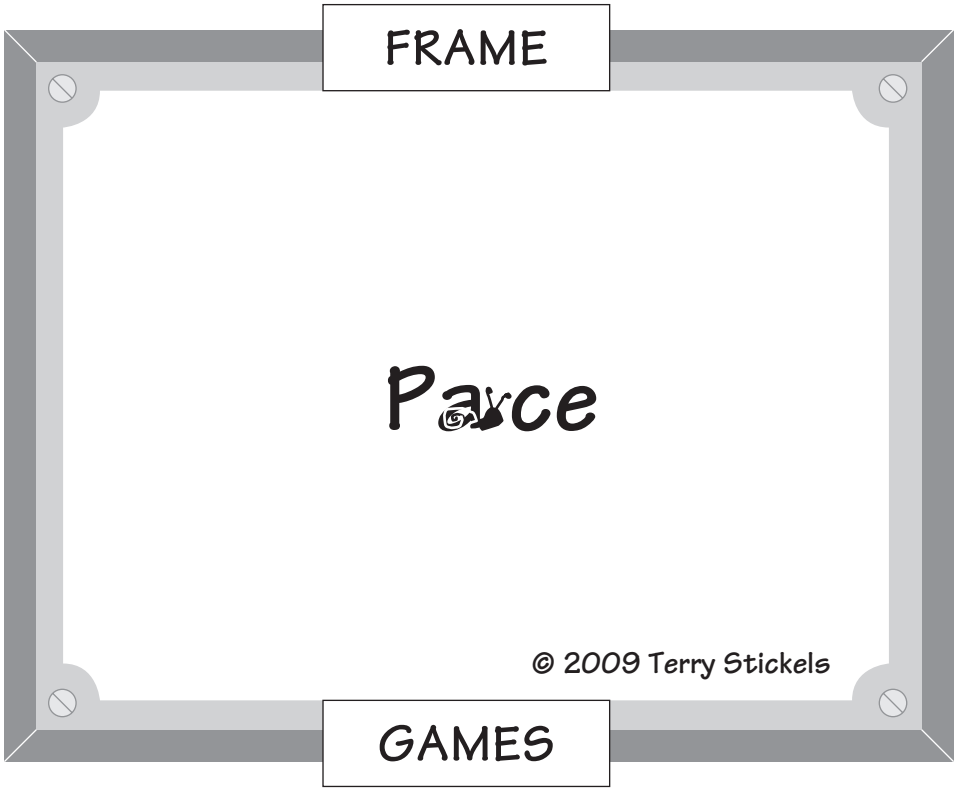
Scores:	24	22
	34	32
	30	21
	33	26

43. Two numbers with no zeros in their make-up can be multiplied to create 10,000. They are 625 and 16. Is it possible to have two numbers multiplied together with no zeros that equal 100,000? 1,000,000?

HINT
Use smaller examples like 100 and 1,000. It's also OK to use a calculator.

Just for Fun: Frame Game

44. Find the hidden word or phrase.



45. Here are three puzzles that are easier to solve than they first appear, if you know the right path to their solutions.

a. What is the remainder when 10^{93} is divided by 9?

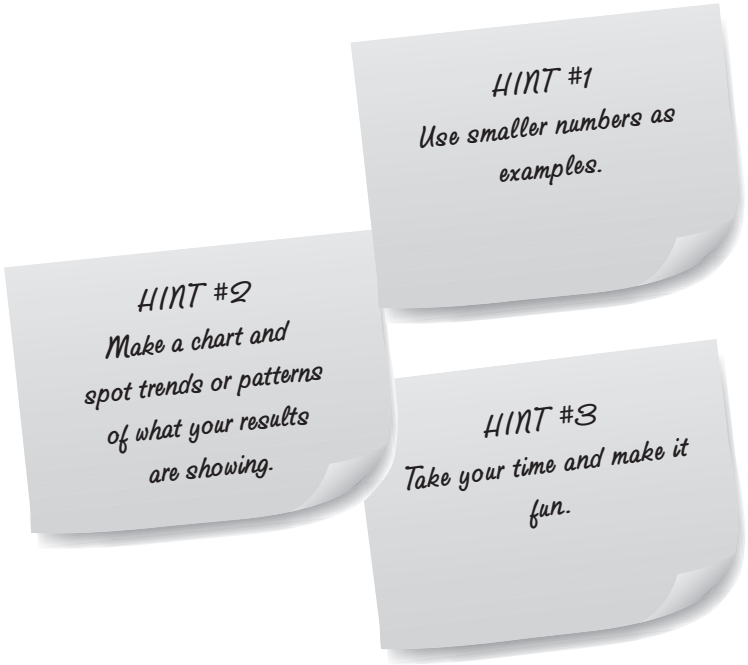
b. What is the remainder when 4^{69} is divided by 10?

c. Two of the numbers below are divisible by 9 with no remainder. There is a quick way to find out which two if you know some simple rules of divisibility. Which two?

111,111 222,222 333,333

444,444 555,555 666,666

777,777 888,888



46. What is the next number in the sequence below?

142,857

285,714

428,571

571,428

7 14,285

???,???

a. 785,241

b. 587,421

c. 875,421

d. 857,142

47. The average of four positive integers less than 10 is 8.

a. No number can be less than _____.

b. What different combinations of the four integers will give you an average of 8?

HINT

How do you know for certain that four numbers will average 8?

48. How many 40's must be added together to get a sum equal to 40^4?

a. 1,000

b. 1,000,000

c. 64,000

d. 64,000,000

49. Here is an example of pairing numbers.

A	1	2	3	4	5	6	...	13	20	60
	↓	↓	↓	↓	↓	↓		↓	↓	↓
B	3	6	9	12	15	18	...	39	60	180

In this example, Row B is three times each respective number in Row A. Now find the missing numbers in the number pairing puzzles below.

①

A	2	4	6	8	10	12	...	18	30	100
	↓	↓	↓	↓	↓	↓		↓	↓	↓
B	5	9	13	17	21	25	...	?	?	?

②

A	1	2	3	4	5	6	...	10	15	30
	↓	↓	↓	↓	↓	↓		↓	↓	↓
B	1	4	9	16	25	36	...	?	?	?

③

A	2	3	6	7	10	11	14	...	22	30	34
	↓	↓	↓	↓	↓	↓	↓		↓	↓	↓
B	1	2	3	4	5	6	7	...	?	?	?

50. The numbers 10, 12, 14, 16, and 18 comprise a set of five consecutive even numbers.

Suppose the sum of five consecutive numbers is 640. What are the five numbers?

HINT #1
What might be a logical beginning point to find the numbers?

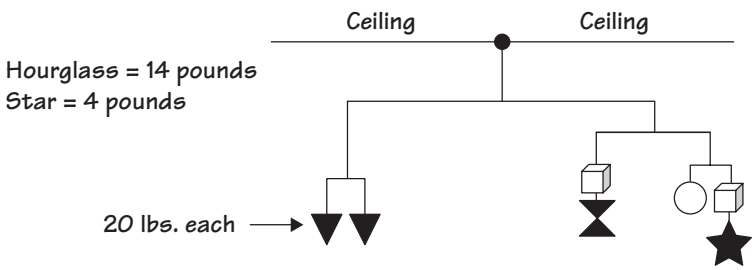
HINT #2
Because there is an odd number of consecutive numbers, what could the middle number be?

51. Here's a follow-up to the last puzzle. What if I ask you to list the six consecutive numbers that total 630? It's an even number of consecutive numbers, so you'll have to make a slight adjustment in your logic, but it's not difficult. Why do you think I chose 630 instead of 640?

HINT
Whole numbers only!

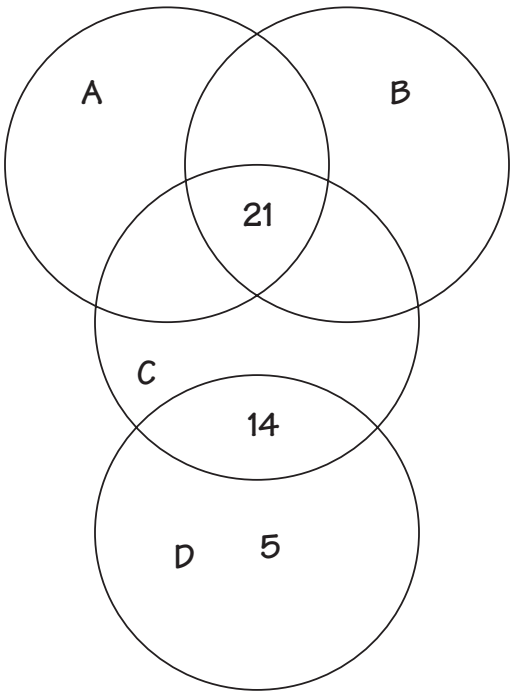
52. The mobile below is perfectly balanced. The two upside-down triangles each weighs 20 pounds. If the hourglass weighs 14 pounds and the star weighs 4 pounds, what is the weight of each box and the circle?

HINT
The side with the hourglass has to also balance the side with the circle and star.



53. A Fazooto and a Pazooto together cost 50 cents. A Pazooto and a Razooto together cost 60 cents. A Razooto and a Fazooto together cost 70 cents. How much does each Pazooto cost?

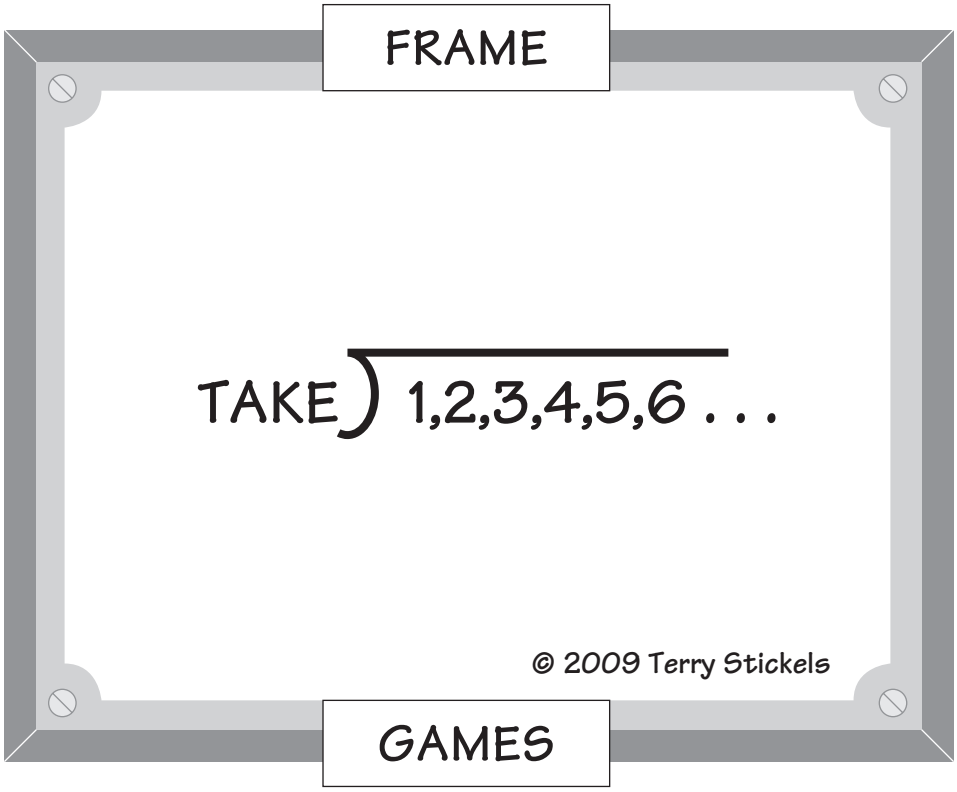
54. Each one of the four circles below (A, B, C, D) has a value somewhere between 1 and 9 (including 1 and 9). No two circles have the same value. The number 21 is the sum of the values of circles A, B, and C. The number 14 is the sum of the values of C and D.



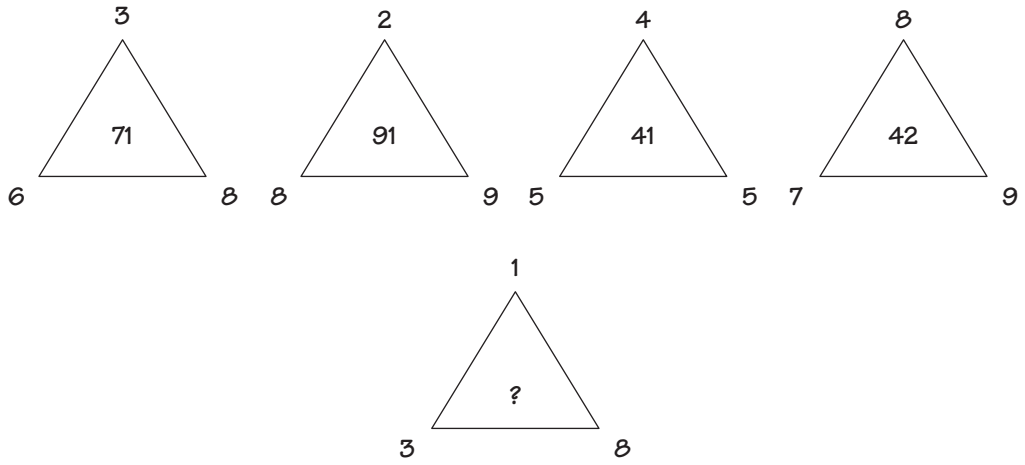
What are the values of circles A and B?

Just for Fun: Frame Game

55. Find the hidden word or phrase.



56. What is the missing number?



57. The grid below follows a certain logic in each row that is the same for all rows. What is the missing number?

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

58. I saw this curious sign in a clothing store:

MEN'S SUITS: $240	IF YOU CAN DETERMINE HOW WE ARRIVED AT THE PRICES FOR EACH ITEM AND DETERMINE WHAT THE PRICE OF OUR SHOES SHOULD BE, WE WILL GIVE YOU 40% OFF ON THE FIRST FOUR ITEMS AND A PAIR OF SHOES FOR FREE!
OVERCOATS: $200	
SWEATERS: $200	
CUFFLINKS: $280	
SHOES: $? ?	

Could you take advantage of this opportunity?

59. What number multiplied by itself is the product of 36×196?

60. There is an old puzzle about a student who takes a 10-question test. She receives 5 points for each correct answer and has 2 points taken away for each incorrect answer. She answers all 10 problems and receives a score of 29. The puzzle then asks how many questions she answered correctly. The problem is that these puzzles give the answer but no explanation. Will you give it a try?

HINT
Make a chart of all possible scores.

61. The numbers 1–16 are to be placed in a magic square so that each of the rows, columns, and diagonals has the same sum. What is x?

_____	_____	3	16
_____	15	x	5
14	_____	8	11
7	12	13	_____

HINT #1
Look at other rows, columns, and diagonals to see what numbers are left to use.

HINT #2
Once you find x, you'll find the others easily.

62. Suppose all the counting numbers are arranged in columns as shown below:

A	B	C	D	E	F	G	H
1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	--	--	--	--	--	--

Under what column will 1,000 appear?

63. The numbers below are grouped using a certain logic that is the same for all six rows.

309 – 64 – 42

741 – 82 – 15

282 – 37 – 06

552 – 19 – 33

183 – 55 – 24

624 – 28 – ?

Which of the numbers below could be the missing number?

a. 53

b. 34

c. 51

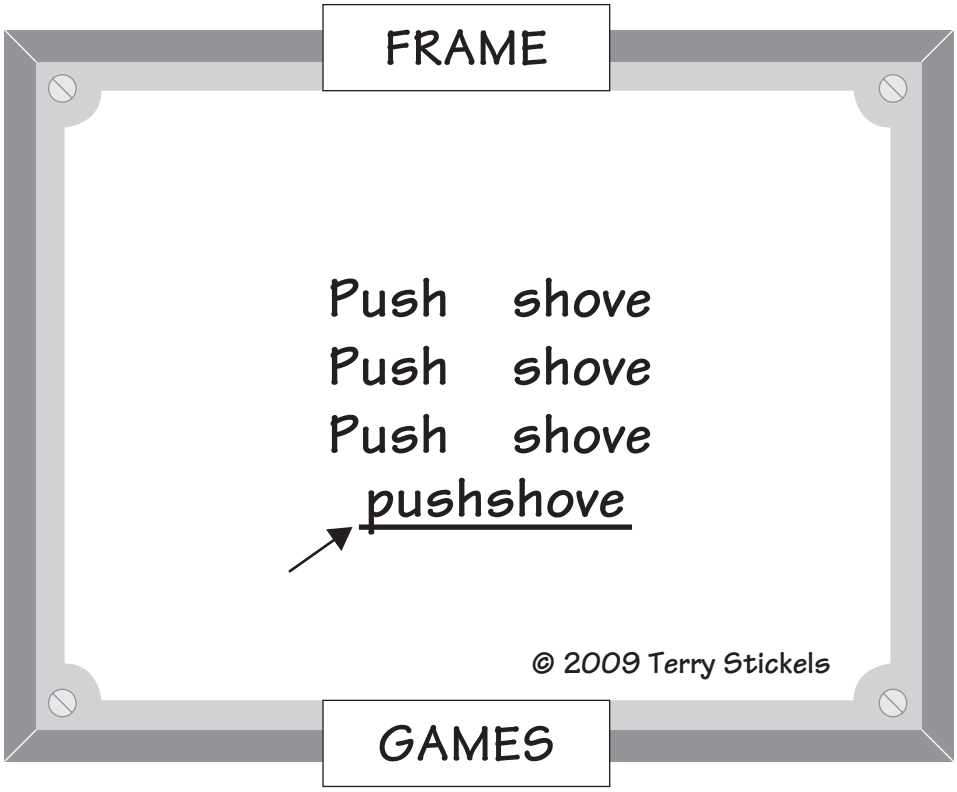
d. 61

64. A pet lizard doubled in length each year until it reached its maximum length over the course of 12 years. How many years did it take for the lizard to reach half its maximum length?

65. My young brother's age today is 2 times what it will be 2 years from now minus 2 times what his age was 2 years ago. Is he less or more than 10 years old? Can you find his exact age now?

Just for Fun: Frame Game

66. Find the hidden word or phrase.



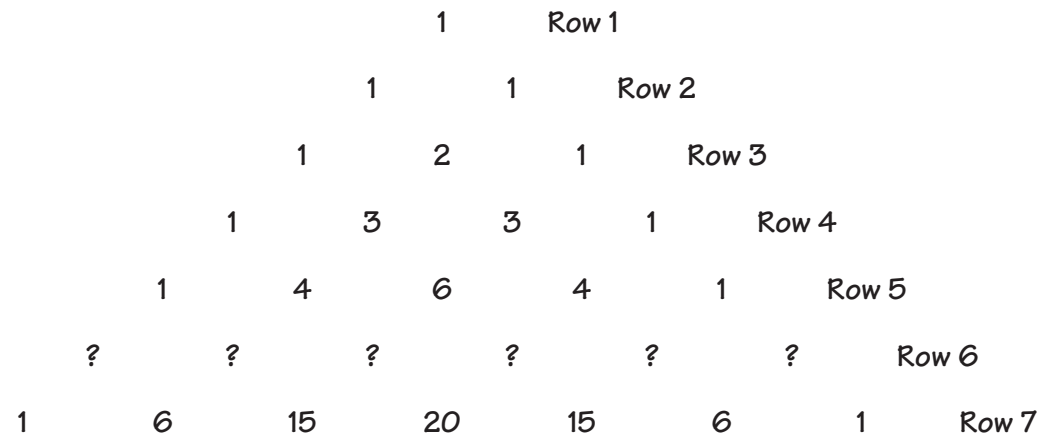
67. Quick now, if you write down all the numbers from 400 to 500, how many times will you write the digit 4?

68. Tom and Trey were playing a ball toss game. The two values in the ring were 5 points and 8 points. Trey said, "I wonder what's the highest score that *can't* be made using any combination of 5 and 8."

Tom replied, "I don't think it could be very high because I know you can make every number from 40 and higher using different combinations of 5's and 8's."

What is the highest number that *can't* be formed using only 5's and 8's?

69. What is the sum of the numbers in the sixth row, and what are the middle two numbers in that row?



70. If you saw an arithmetic sequence with the consecutive numbers listed below . . .

. . . 20, 24, 28, 32, 36, 40, 44, 48 . . .

. . . which of the following terms would be a possible number in the sequence?

a. 393

b. 838

c. 262

d. 756

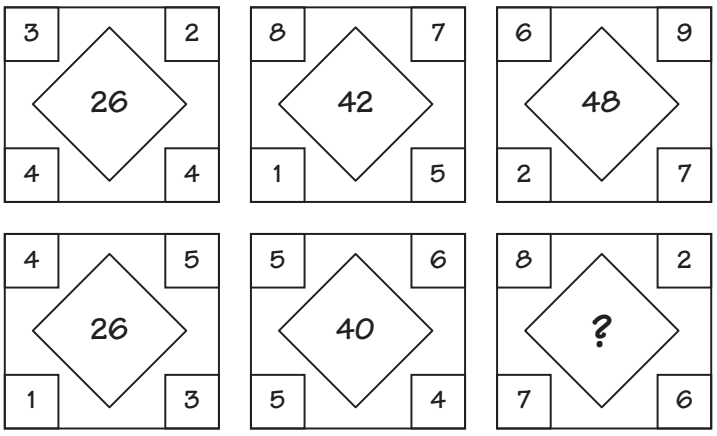
71. The numbers in columns X and Y have been manipulated in a logical way to create the numbers in the Results column. The results are determined horizontally.

X	Y	Results
4	3	5
8	6	34
2	9	7
6	1	−1
10	5	35
9	7	?

What is the result in the last row?

72. Brad had three new tires for his bike and decided to rotate them for equal use. He rotated them every 3,000 miles. How many miles did each tire have after 24,000 miles?

73. A certain logic has been used to determine the middle number in each diamond. What is the missing number?



74. How many numbers are in this sequence if all the missing numbers indicated by ". . ." are included?

0, 3, 6, 9, 12, 15, 18, 21, 24, . . . 900?

HINT
Make a chart of the position of the numbers.

75. Using the numbers 0, −1, −4, −5, −7, −8, and −9, can you fill in the remaining seven boxes so each row, column, and diagonal has the same total?

		1
−3		

Rational Numbers

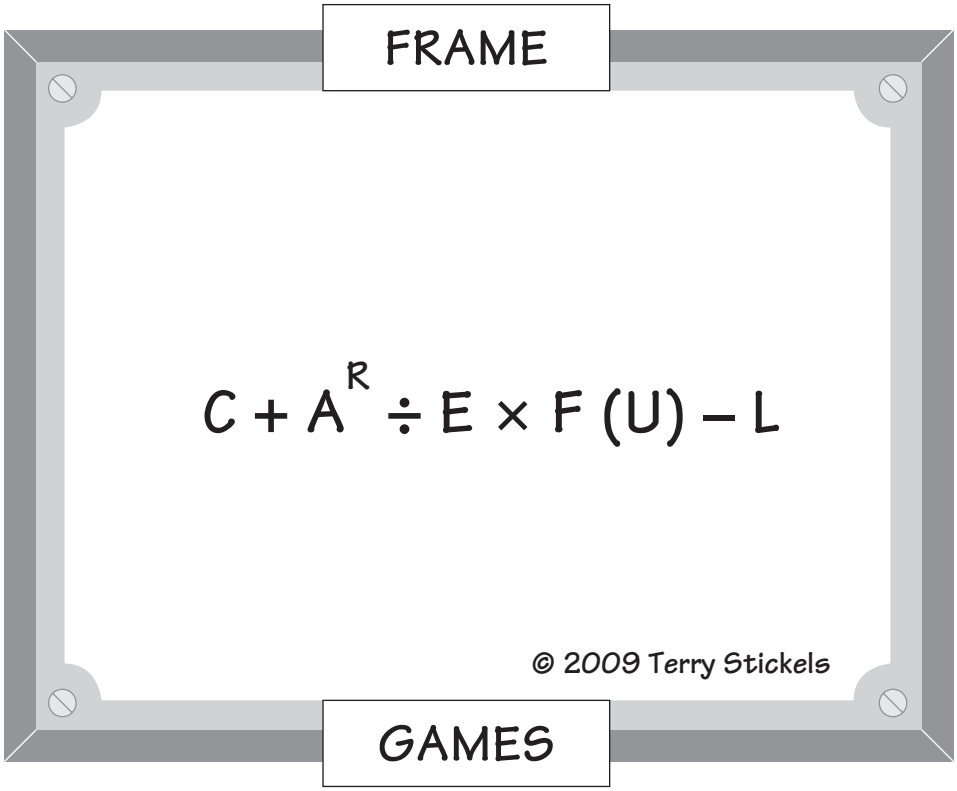
76. 100 students are majoring in math, business, or both. 72% of the students are business majors, and 58% are math majors. How many students are majoring in both?

77. Match the prefixes on the left with their respective meanings on the right. These are prefixes you will find in mathematics and sciences.

a.	deci-	1,000,000 or 10^6
b.	centi-	10^9
c.	giga-	10^{-12}
d.	hecto-	$\frac{1}{10}$ or 10^{-1}
e.	kilo-	$\frac{1}{1,000}$ or 10^{-3}
f.	mega-	100 or 10^2
g.	milli-	1,000 or 10^3
h.	pico-	$\frac{1}{100}$ or 10^{-2}

Just for Fun: Frame Game

78. Find the hidden word or phrase.



79. Can you create the number 2 by using four 4's? As an example, you can make 17 out of four 4's like this: $(4 \times 4) + \frac{4}{4} = 16 + 1 = 17$.

You can use any math symbols you choose for this puzzle.

80. A mother fills up her gas tank and realizes she had used only $\frac{5}{7}$ of the gas before she pulled into the service station. She remarked to her daughter that they had traveled 360 miles on $\frac{5}{7}$ of a tank—and then said, "I wonder how far we could drive at the same rate we're driving now with a full tank of gas?" Her daughter took about 10 seconds, then gave her the correct answer. Can you come up with the right answer?

81. An old puzzle asks you to use the numbers 1 through 9 to equal 100.

Example:

$$123 - 45 - 67 + 89 = 100$$

OR

$$1.234 + 98.765 = 100$$

Can you find one or two more possibilities?

82. It is possible to create all the numbers from 1 to 100 using just four 4's—and, of course, a combination of math symbols and operations. Try your luck at creating 42.

HINT
Use .4 somewhere in your answer.

83. What is the relationship between:

$$\text{A} \quad \frac{1}{10\sqrt{10}} \quad \text{and} \quad \text{B} \quad \frac{\sqrt{10}}{\sqrt{10^4}}$$

a. A is larger.

b. B is larger.

c. They are equal.

84. What is the value of $\frac{10^{11}+10^{10}}{10^{10}}$?

a. 10

b. 10^{21}

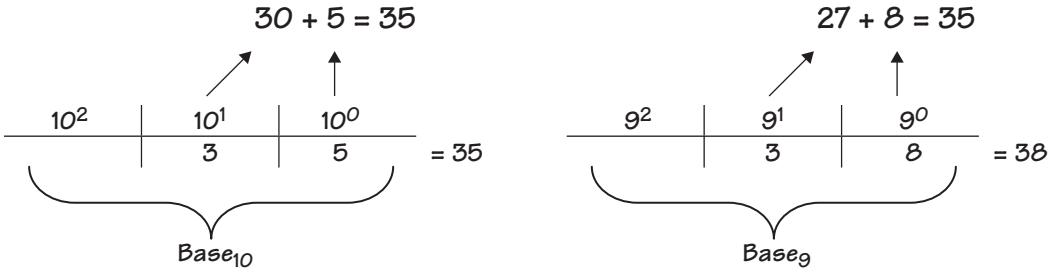
c. 11

d. 2^5

85. Puzzles with different number bases are fun because there are different options for new numbers. Here's an example:

What is the number 35 in Base_9?

Here's one way to approach this puzzle:



Try these:

a. Convert 113 in Base_{10} to Base_7.

b. Convert 262 in Base_{10} to Base_5.

c. Convert 534 in Base_6 to Base_4.

86. See how quickly you can come up with the answers to these analogies.

Example:

Black : White : : Night : ? Answer: Day.

a. $270° : \frac{3}{4} : : 300° : ?$

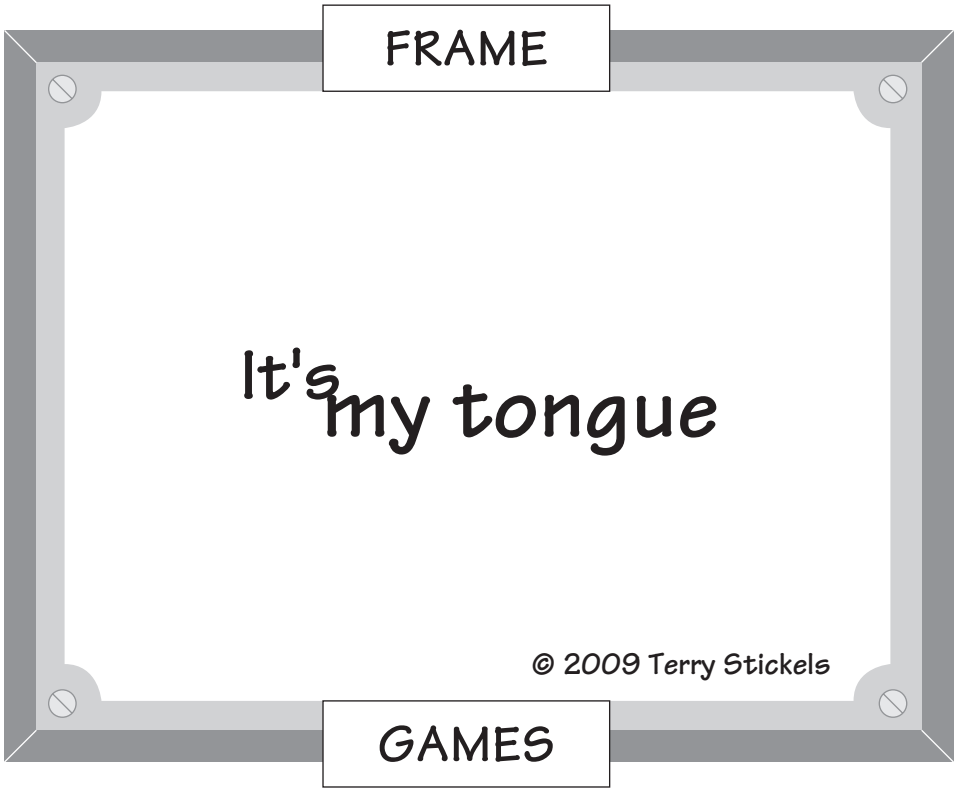
b. Hexagon : Triangle : : ? : Square

c. 3 : 9 : 81 : : 5 : 25 : ?

87. If 1 dollar in Konklo currency is equal to 4.28466 Ponplos, then 1 Ponplo equals ___ Konklos.

Just for Fun: Frame Game

88. Find the hidden word or phrase.



89. Which one of the following has the largest value?

a. .0001

b. $\frac{1}{1000}$

c. $(-.100)^2$

d. $\frac{1}{10^4}$

e. $\frac{1}{10} \div .1$

90. What arithmetic symbol can be placed between 6 and 7 to make a number greater than 6 but less than 7?

91. Almors increased by 20% equals Brons. Brons decreased by 50% equal Choops. What percent of Almors is Choops?

92. Maria saw that 7 pencils would cost her 30¢ more than 5 pencils would. What is the price of 8 pencils?

93. What letter comes $\frac{2}{5}$ of the way between A and J?

94. What is 1 percent of 2 percent of 12 times $\frac{2}{3}$?

1 percent = .01

2 percent = .02 $\quad .01 \times .02 \times 12 \times .666 = \underline{?}$

$\frac{2}{3} = .666\ldots$

HINT
It might help to set this puzzle up by listing what you know.

95. Using the numbers 0, 1, 2, 3, 4, and 9 once and only once, make two numbers with decimals whose difference is between 52 and 53. There may be more than one answer.

96. Without using a calculator, decide which of the following has the largest quotient.

a. $\frac{27}{.04}$

b. $\frac{.27}{.40}$

c. $\frac{2.7}{.04}$

d. $\frac{27}{40.0}$

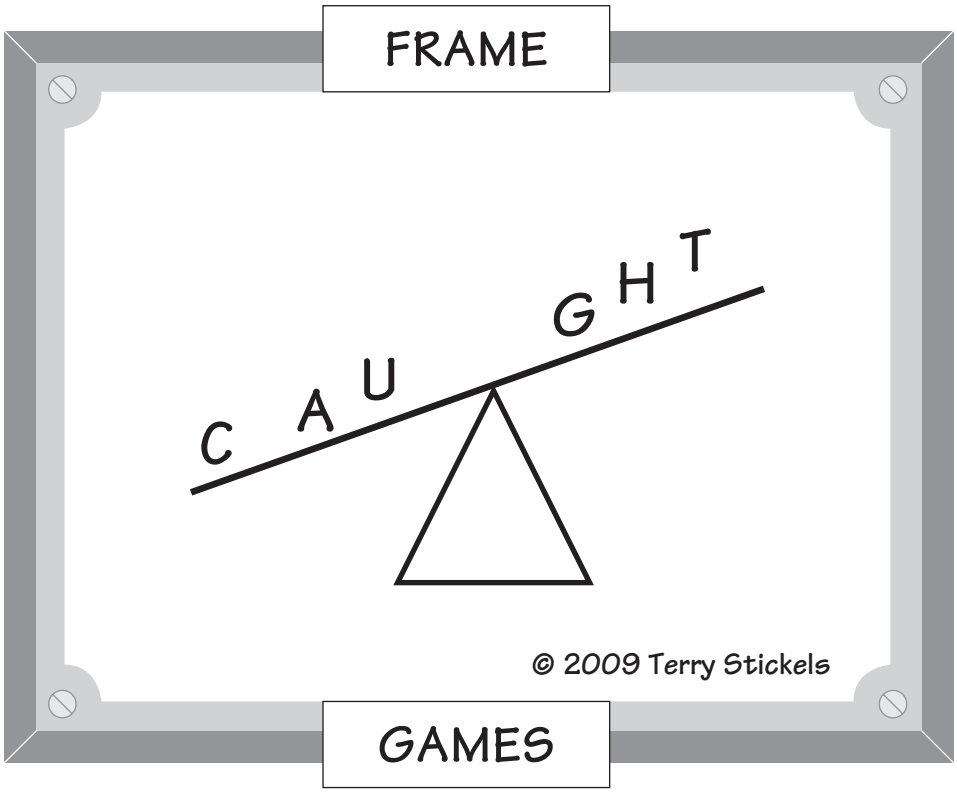
e. $\frac{27}{.004}$

97. 300 percent more than 60 is _____.

98. A particle floats with $\frac{5}{7}$ of its weight above the surface. What is the ratio of the particle's submerged weight to its exposed weight?

Just for Fun: Frame Game

99. Find the hidden word or phrase.



100. In Mike's last baseball game, he threw 33 strikes and 11 balls. What percentage of Mike's pitches were strikes? Of the 44 total pitches, how many strikes would Mike have had to throw to reach 85%?

101. Millie's sister told her she could win a chocolate malt if she could solve the following puzzle in 30 or fewer seconds. Can you?

What is $\frac{1}{3} \div \frac{13}{11} \div \frac{4}{7}$?

a. Close to $\frac{1}{2}$

b. Close to 17

c. Close to 10

d. Close to $\frac{1}{11}$

102. Using the numbers 3, 4, 5, and 6 once and only once, what two fractions can you write where .8 will lie between them?

103. Let's see how well you know the rules of exponents.

a. $? = \sqrt{\sqrt{\sqrt{256}}}$

b. $\left(\left(X^{½}\right)^{½}\right)^{½} = ?$

104. What is the next number in the sequence below?

$$\frac{1}{3} \quad \frac{1}{2} \quad \frac{1}{5} \quad \frac{1}{4} \quad \frac{1}{7} \quad \frac{1}{8} \quad \frac{1}{9} \quad \frac{1}{16} \quad \frac{1}{11} \quad \frac{1}{32} \quad \frac{?}{\text{—}}$$

105. Sam works in the stock room at Widget Factory. This morning he got an order for gidgets and gadgets, but he can't fill the order because it has a problem. Due to some networking problems with the company's servers, the order is missing some key information. Somehow a bunch of the numbers got turned into Xs, and he can't quite figure out what the order is for. Can you help him figure out what the missing numbers are?

Ship To:	Mary Ellsbeth 16 Forest Drive Townsville, Alaska 02671	DATE:	January 3, 2010
Quantity	Description	Unit Price	Total Price
2	Brite-Lite Gadget	$ XX.XX	$ 32.50
X	Useful Gidget	$ 7.30	$ X.XX
2	Gadget Attack! Game	$ 12.95	$ XX.XX
X	Gidget Packs	$ 4.85	$ 14.55
		Sub-Total	$ XX.XX
		Shipping:	$ 8.00
		Total Order:	$ 88.25
		Total Due:	Paid in Full

106. 7 numbers have an average of 6. 6 numbers have an average of 7. 3 numbers have an average of 42. What is the average of all 16 numbers?

a. $12\frac{1}{2}$

b. $40\frac{1}{3}$

c. $13\frac{1}{8}$

d. 18

107. What is 30% of $\frac{25}{17}$ divided by $\frac{3}{4}$ times $\frac{1}{2}$?

108.

A third of a third
Won't make you a nerd.

A half of a half
Might get you a laugh.

A fifth of a fifth
Will dispel the myth.

That math can't be fun.

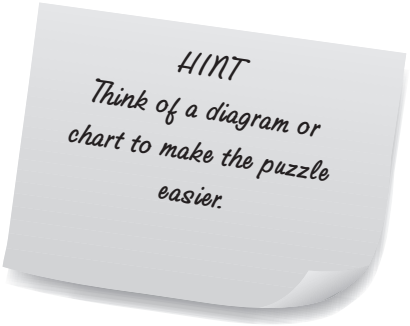
So no more rhymes
No more tease

Just add these all up
If you please.

Tell me the sum
If you'd be so kind.

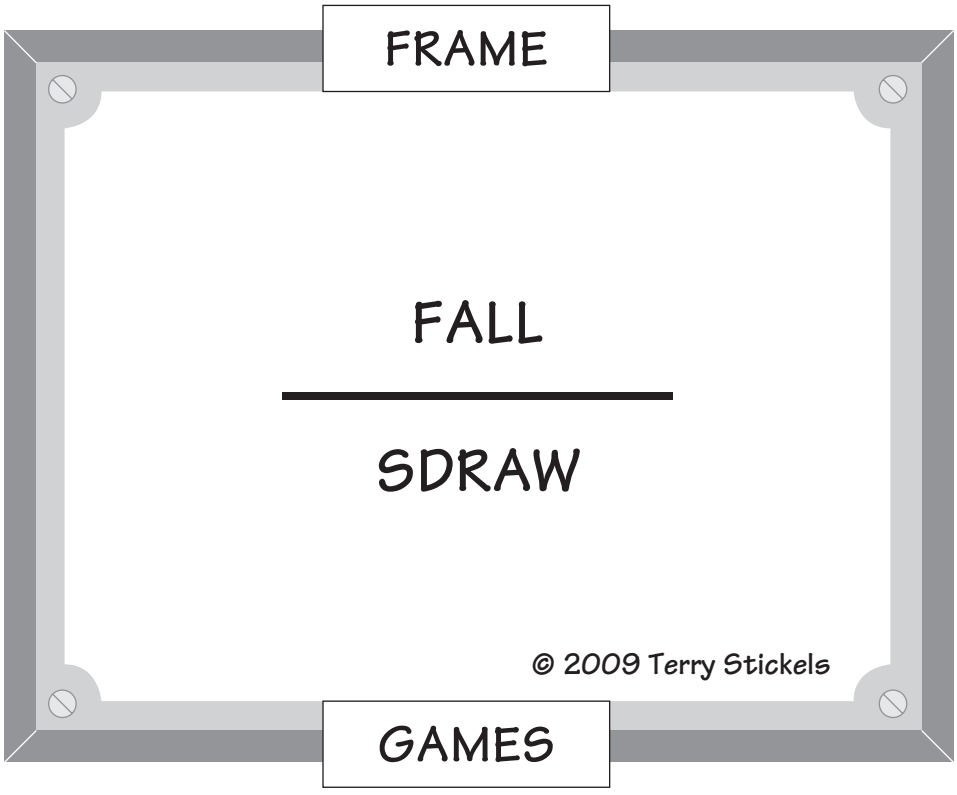
It will ease my tension
And soothe my mind.

109. Suppose today is Tuesday. What day of the week will it be 200 days from now?



Just for Fun: Frame Game

110. Find the hidden word or phrase.



111. If $\frac{1}{2}$ of a zeeko is 60% of a teeko, then a zeeko divided by a teeko is:

a. 30

b. 1

c. $\frac{5}{6}$

d. 1.2

112. One of the following fractions is less than $\frac{1}{9}$. Which one?

a. $\frac{31}{200}$

b. $\frac{19}{211}$

c. $\frac{17}{150}$

d. $\frac{113}{983}$

113. If the Celtics win 40% of their games in the first third of their season, what percent of the remaining games would they have to win so they can finish the season with an even record (50% wins)?

114. A increased by 30% = B

B decreased by 40% = C

C increased by 20% = D

What percent of B is D?

115. In each pair shown below in items a, b, and c, which of the two is larger, or are they the same? (No calculators please!)

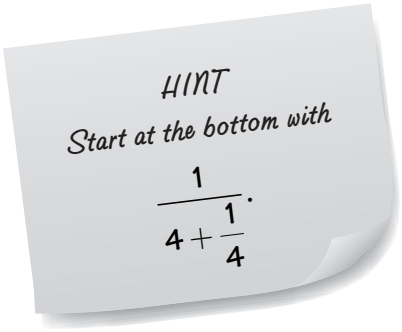
a. 5^{10} or 10^5

b. $\dfrac{\dfrac{1}{\sqrt{.1}}}{\sqrt{.01}}$ or $\dfrac{\dfrac{1}{\sqrt{.01}}}{\sqrt{.1}}$

c. 3^{12} or 9^6

116. Can you express this fraction in lowest terms?

$$\cfrac{1}{4+\cfrac{1}{4+\cfrac{1}{4+\cfrac{1}{4}}}}$$



Here are some choices:

a. $\dfrac{1}{5}$

b. $\dfrac{24}{101}$

c. $\dfrac{27}{102}$

d. $\dfrac{1}{3}$

117. Three friends form a company and agree to share the profits based on the proportion of the amount invested. For example, if two people formed a partnership and one invested $2,000 and the other invested $1,000, the first partner would be paid double the profits of the second partner.

The three partners invested $3,000, $4,000, and $5,000. In the first year, the company made a profit of $60,000. How much did each partner receive, based on the original investment?

118. One of the following fractions does not fit the pattern set by the others. Which is the odd one out, and what should the correct fraction be?

$$\frac{1}{2} \quad \frac{1}{3} \quad \frac{1}{4} \quad \frac{1}{6} \quad \frac{1}{9} \quad \frac{1}{12} \quad \frac{1}{19} \quad \frac{1}{36}$$

119. A group of math students were making copies of some documents when the copy machine broke. They fixed the machine but noticed that the 50% and the 10% buttons for reproducing copies were permanently disabled. They were left with these choices for document size:

5% 125% 200%

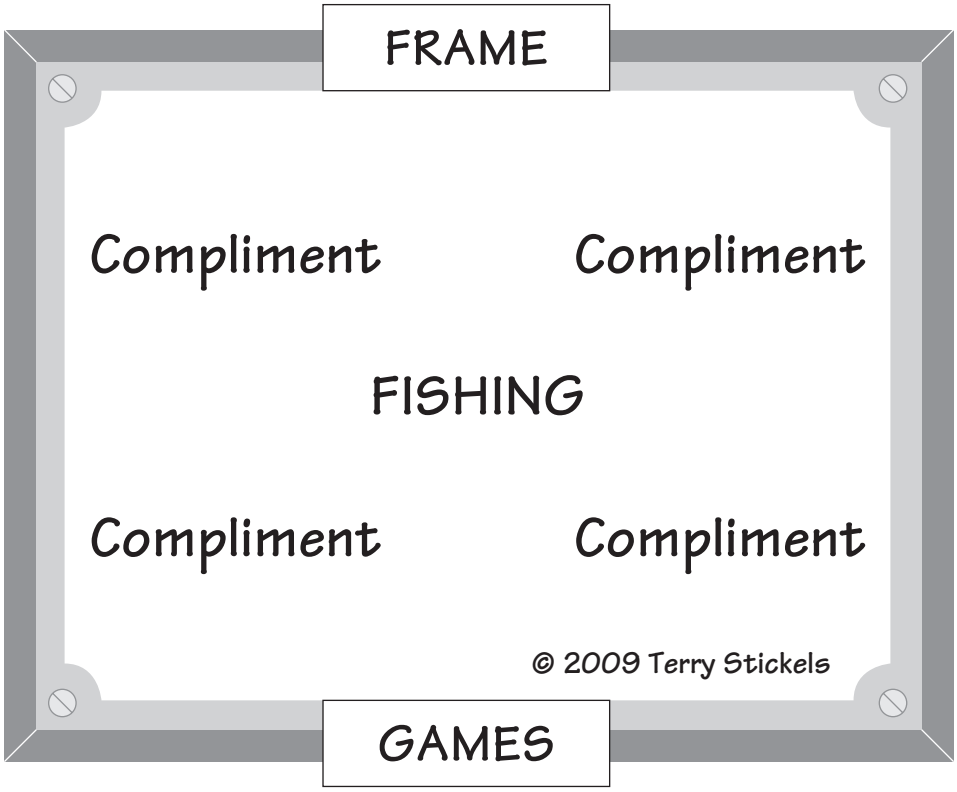
They had to make a 50% document by using combinations of the remaining three percentage buttons. Can you help them make a copy at 50% in five steps, using at least three different buttons at least once?

120. What is the answer to the following puzzle . . . in fractional form?

$$\frac{1}{4\frac{3}{7}} + \frac{1}{3\frac{11}{13}} + \frac{1}{\frac{5}{9}} = \underline{\quad ? \quad}$$

Just for Fun: Frame Game

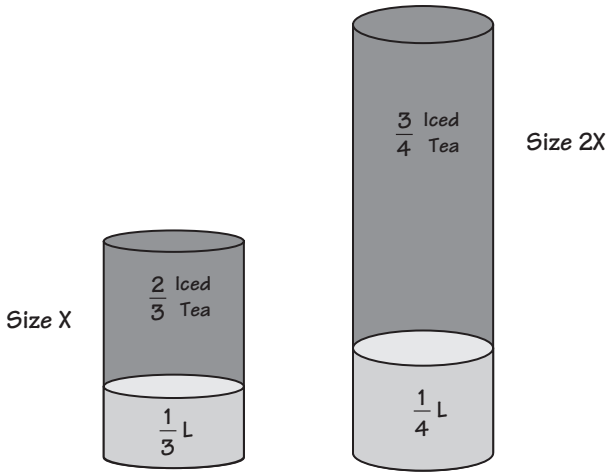
121. Find the hidden word or phrase.



122. Simi was helping his mother prepare drinks for dinner. He was measuring lemonade and placing it into two different-sized containers.

He filled the first container $\frac{1}{3}$ full of lemonade and another container twice the size $\frac{1}{4}$ full of lemonade. He then filled each container with iced tea and emptied the contents of both into a large pitcher. Lemonade and iced tea make a great-tasting summertime drink called an "Arnold Palmer."

Simi's mom then said, "You're pretty good in math, so tell me what part of the new mixture is lemonade and what part is iced tea?" Can you help Simi find the answer?



123. Penny conducted a recent poll in her hometown. She found that 80% of all the people in her city really liked chocolate. She also found that 12% of the town's residents were under the age of 15.

Her brother asked her, "If you were to pick anyone at random, what are the chances that person didn't like chocolate and was older than 15?"

124. $\dfrac{50\% \times 200\% \times 100\%}{25\%} = \underline{\quad ? \quad}$

125. How many numbers between 1 and 100 can divide into 109 and have a remainder of 5? List those numbers. Is there an easy way to find them?

126. Using three different coins—nickels, dimes, and quarters—it is possible to use 20 total coins and reach $2.00. Here's one way:

2 quarters = $ .50

12 dimes = $ 1.20

6 nickels = $ .30

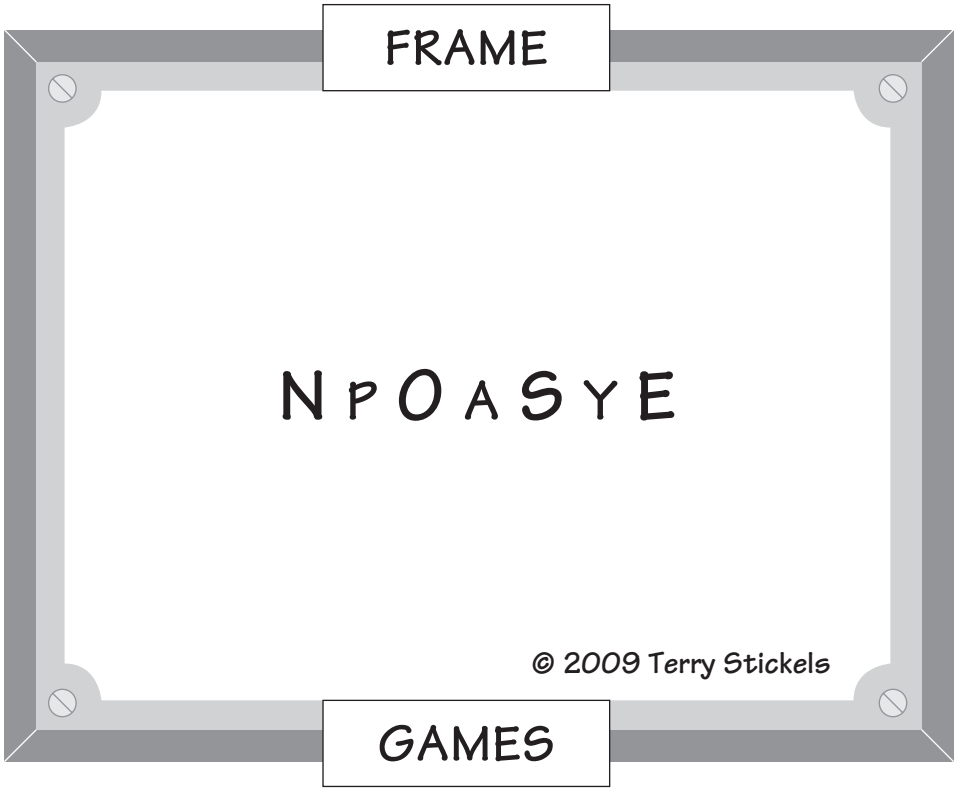
20 coins = $ 2.00

Can you find at least one other way to accomplish this?

127. Mimi and Suzanne wanted to buy an ice cream cone, but they realized that they were both short of having enough money. And when they put their money together, they still didn't have enough money for one cone. Mimi was 53 cents short, and Suzanne was 48 cents short. What is the least the ice cream cone could cost?

Just for Fun: Frame Game

128. Find the hidden word or phrase.



129. There were 100 men and women at a baseball card show:

59 were men.

72 were football and baseball card collectors.

81 lived in the city.

89 were right-handed.

Only 3 of the men were left-handed. What fraction or percentage of the women were lefties?

130. If the ratio of A to B is 3:4 and the ratio of B to C is 5:6, what is the ratio of A:C? You can express this in a fraction.

131. Simplify:

a. $\dfrac{6 + 8 \times 9 - 14}{\sqrt{16}} = ?$

b. $\dfrac{1}{2}$ of $\dfrac{1}{3}$ of 20% of 40% of $.8 = ?$

c. $\dfrac{120 + 60 \times 40 \times \dfrac{1}{2}}{\dfrac{1}{4}} = ?$

132. A swimming pool is 100 ft. by 50 ft. and has an average depth of 6 ft. By the end of an average summer day, the water level drops an average of 1 ft.

How many cubic feet of water are lost each day?

133. Four-fifths of a math class is made up of female students. What is the ratio of male students to female students?

134. What is the percentage of all integers that contain at least one 4?

135. A drain can empty $\frac{5}{8}$ of a sink in one minute and the faucet can fill $\frac{3}{4}$ of the sink in one minute. If the faucet is on and the drain is open, how long will it be before the sink is full?

136. A young boy was asked to measure off and mark 6 ft. exactly on a sidewalk. All he had was a piece of rope and a shed that measured 5 ft. by 7 ft. Can you think of a way he might be able to accomplish this?

137. Jane bought a $40 pair of jeans and received a 20% discount, and then bought a $30 shirt and received a 40% discount when she checked out. What is the single percent discount for the total purchase?

Just for Fun: Frame Game

138. Find the hidden word or phrase.