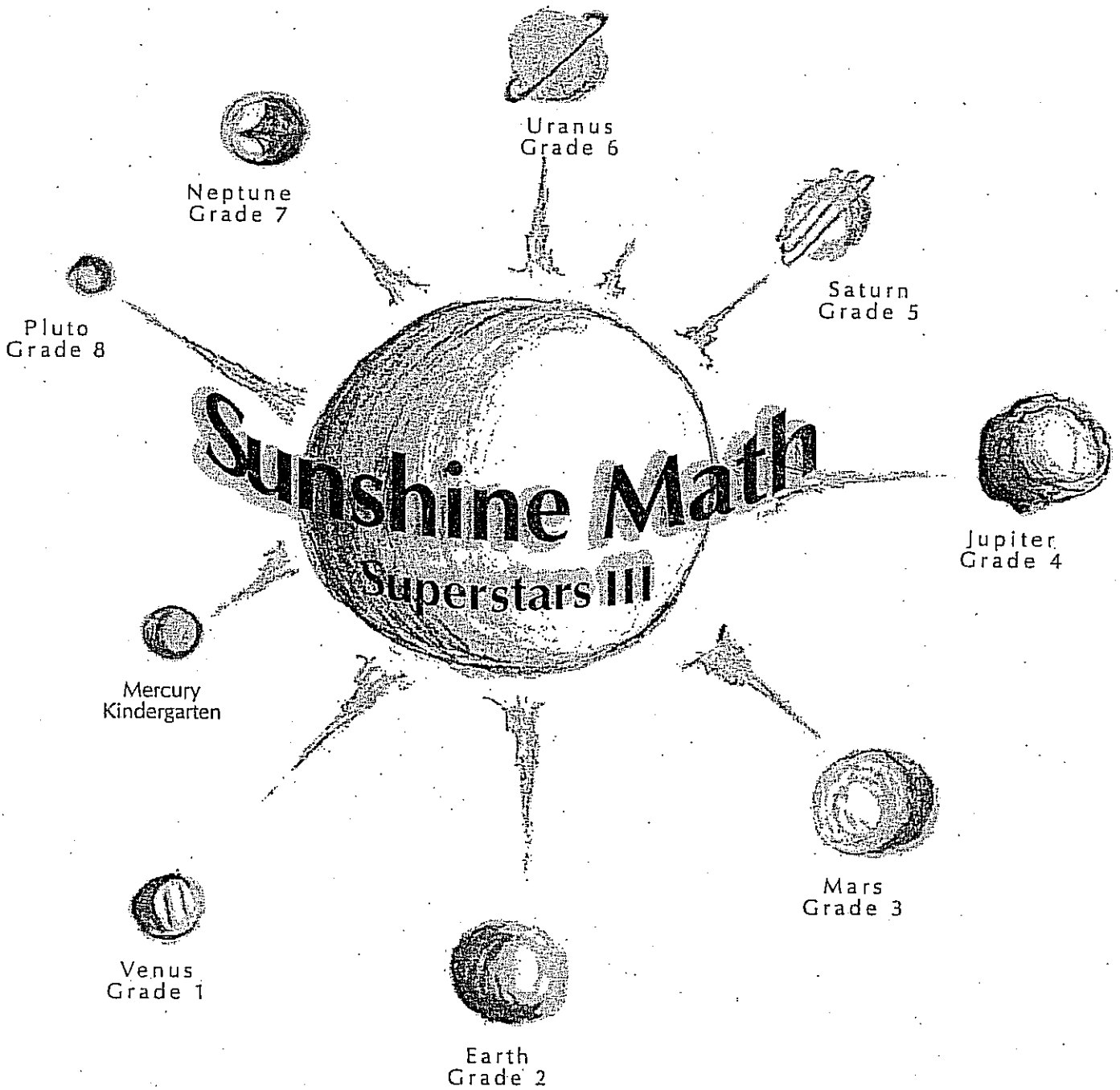

Uranus
Grade 6

Acknowledgments

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The following Florida educators were primarily responsible for developing, field testing, and publishing *Sunshine Math*:

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Revisions were made to *Sunshine Math* by Sandy Berger, Frankie Mack and Linda Fisher with input from Andy Reeves and from volunteers and district staff in Broward, Duval, and Volusia school districts.

Additional copies of *Sunshine Math* may be purchased at cost from the Panhandle Area Educational Consortium (PAEC), 753 West Boulevard, Chipley, Florida 32428, or by contacting the PAEC Distribution Center:

PHONE: (850) 638-6131,
SUNCOM: 769-6131,
TOLL-FREE: (877) 873-7232
FAX (850) 638-6336

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

WELCOME TO *SUNSHINE MATH!* We are happy that you want to try some new and different kinds of math problems! As you read the *SUNSHINE* problems, you may find yourself *? PUZZLED?.* Your teacher will be helping you each week with some of the hardest problems. Also, your parents may read the problems to you and offer hints for solving them.

If you would like to begin earnings ***STARS** for solving math problems, sign your name below.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

(Your name)_____I am ready to begin the *SUNSHINE MATH* Program. I promise to do my own thinking on each problem.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Dear Parents,

We welcome your child and you to *SUNSHINE MATH,* a program designed to enhance your child's journey through mathematics. By expressing an interest in more challenging problem solving, your child has taken the first step toward becoming an independent learner who is able to address many types of problems.

Your child will receive a worksheet each Monday which will be discussed on Friday and collected the following Monday. Each problem is ranked according to its level of difficulty. The more stars you see beside a problem, the higher the level of difficulty, and the more stars your child can earn for solving it.

Each Friday, your child will attend a "help session" to discuss the most challenging problems of the week. Any problem solved prior to the help session will be given double stars, or double credit. After the session, your child may rework problems before the sheets are collected on Monday.

Your role in *SUNSHINE MATH* is to encourage and facilitate problem solving. During the week, allow time for your child to think about each problem. You may need to read the problem to your child, explaining any new words encountered. Feel free to suggest a strategy for solving the problem, offer "counters" or manipulatives, or listen as your child shares her or his thinking, but please **DO NOT GIVE THE ANSWERS.** In order for this program to be effective, the thinking must be done by the students.

It is normal for a child NOT to be able to complete every problem on a worksheet. The process of reading, understanding and approaching the problems is a valuable step in solving many types of problems. Remind your child that she or he is not expected to know the answers to every problem.

Thank you for allowing your child the chance to embark on this mathematical adventure. Your signature gives permission for your child to begin.

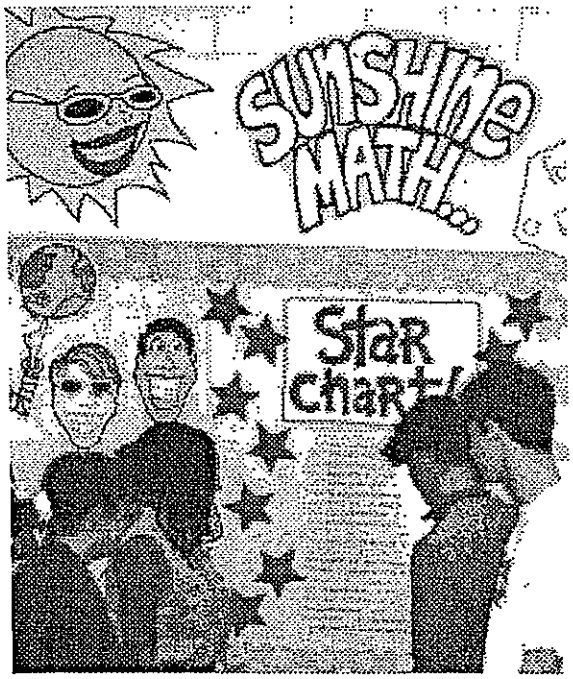
_____

(parent's signature)

Preface

Sunshine Math and its predecessor programs, *Superstars* and *Superstars II,* dwell on the positive aspects of students, parents, teachers, and administrators working together. This program assumes that children, even young children, are capable of and interested in learning; that teachers want to help them learn to think for themselves; that administrators see their jobs as clearing the path so that quality education is delivered effectively in their schools; and that parents care about their child's learning and are willing to work with the school system toward that goal. Each of these four groups has a vital role to play in implementing *Sunshine Math.*

The program's initiators believed that elementary students are capable of much more than we normally ask of them, and the subsequent success of *Superstars* indicates that many children are on the path to becoming independent learners. A number of children in *any* classroom are bright, energetic, and willing to accept extra challenges.



The basic purpose of the *Superstars* program is to provide the extra challenge that self-motivated students need in mathematics, and to do so in a structured, long-term program that does not impinge on the normal classroom routine or the time of the teacher. The system is not meant to replace any aspect of the school curriculum -- it is offered as a peripheral opportunity to students who identify with challenges and who want to be rewarded for their extra effort. Participation in the program is always optional -- only those students who voluntarily choose to participate will, in the long run, benefit from this program. Any student, regardless of prior academic performance, should be encouraged to participate as long their interest is maintained.

The predecessor programs for *Sunshine Math* - the Florida Department of Education's *Superstars II* and *Superstars*-- have demonstrated that this concept can be extremely successful. What is required are several dedicated adults who devote a few hours each week to operate the system effectively in the school; an administrator who provides highly visible support; teachers who welcome a supplementary experience for their students to engage in higher-order thinking; and a typical classroom of students. If all of those ingredients are present, *Sunshine Math* will become an integral part of the school fabric.

ORGANIZATION OF THESE MATERIALS

Section I **Description of the *Sunshine Math* Program**

1. General Information
2. Information/ checklist for principals
3. Information/checklist for assisting adults
4. Information for teachers
5. Letter to participating students and their parents

Section II **Student worksheets for *Sunshine Math***

Section III **Commentary for student worksheets for *Sunshine Math***

Sunshine Math General Information

Sunshine Math is a K-8 program designed as an enrichment opportunity for self-directed learners in mathematics. The levels of the program are named after the planets of our solar system:

Kindergarten	Mercury	Fifth Grade	Saturn
First Grade	Venus	Sixth Grade	Uranus
Second Grade	Earth	Seventh Grade	Neptune
Third Grade	Mars	Eighth Grade	Pluto
Fourth Grade	Jupiter		

Students of all ability levels choose on their own to participate in *Sunshine Math.* The visual reinforcement of seeing their names displayed in a prominent place in the school, with a string of stars indicating their success, is the reward a student receives for the extra work. In many cases, the school decides to enhance the basic reward system by awarding certificates or other forms of recognition for achieving certain levels of success in *Sunshine Math.*

Sunshine Math can function in a school in a number of different ways. The "tried and true" way is for assisting adults (volunteers, aides, etc.) to manage the program for the entire school, with support provided by school administrators and classroom teachers. This system has been modified at the school level, with varying degrees of success, over the years. The basic model for running *Sunshine Math* is discussed below, with variations described on the next page.

The Basic Model

The basic model for *Sunshine Math* is for a school to establish a weekly cycle early in the fall, according to these guidelines:

> On Monday of each week, student worksheets are distributed by the assisting adults to those in the program. Students have until Friday to complete the problems, working entirely on their own. On Friday, the classroom teacher hosts a brief problem-solving session for the students in the program. The more difficult problems on the worksheet for that week are discussed, with students describing their thinking about how to approach and solve the problems. They do not give their answers for the problems, only their strategies.
>
> Students get double-credit for problems they complete prior to the problem-solving session, and regular credit for those they complete successfully over the weekend. On Monday, all papers are handed in, checked by the assisting adult, and stars are posted for problems successfully worked. This completes the cycle for the preceding week, allows for the new worksheets to be passed out, and the cycle begins again.

Sunshine Math is not for every child -- it's only for those who are self-motivated and who are not easily frustrated by challenging situations. This does not diminish the value of the program, but rather makes us realize that there are children of all ability and socio-economic levels who are self-directed learners and who need challenges beyond those of the regular school day. These children will shine in *Sunshine Math.*

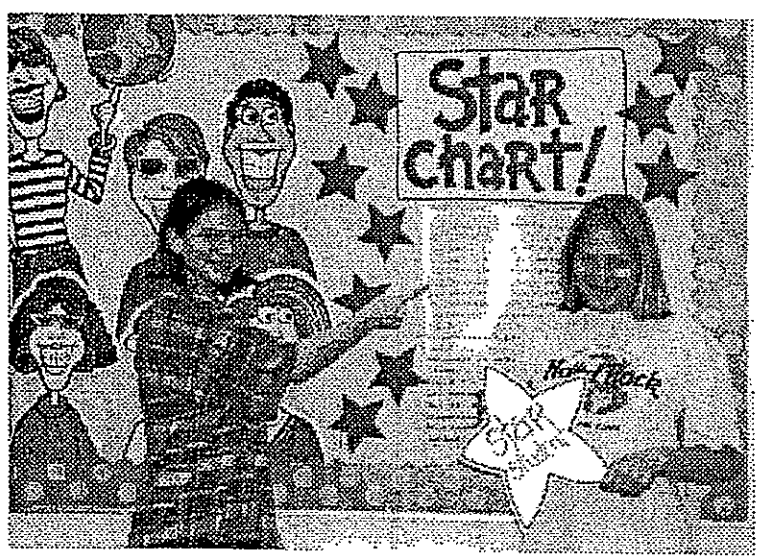
Variations of the Basic Model

The first variation that has been used successfully retains the weekly cycle and assisting adult role as in the basic model. However, the teacher involves the entire class in the problem-solving discussions. For example, the teacher might pick the four hardest problems on the worksheet for that week, and do a "parallel problem" with the entire class to open the mathematics class on Tuesday through Friday. Using this variation, all students are exposed to the problem-solving strategies, but only those who are in *Sunshine Math* exhibit that they have learned the material by completing the worksheet over the weekend.

A second variation is for the assisting adults to run the entire program, including the problem-solving session for students. This method has been used in situations in which some teachers in a school lacked commitment to the program, and thus it was being implemented inconsistently. In such cases, the assisting adults must have a progressive view of what constitutes problem solving in elementary mathematics. They must also be given extra assistance from the principal to ensure students are released from class and that the process works smoothly in general.

Yet another variation is for a parent to run *Sunshine Math* at home, for their own child. The basic rules are the same -- a child gets the worksheet once a week and time to work the problems alone. The parent has a pre-established night to listen to the way the child thought about each problem, interjecting her or his own methods only when the child seems stuck. The reward system is basically the same -- stars on a chart -- but is usually enhanced by doing something special for the child, such as a trip to the movies or to the skating rink, when the child reaches certain levels of success. If this method is adopted, the parent must be sure not to try to "teach the child." *Sunshine Math* is a program designed to stimulate discussion of problem-solving strategies; it is not a program designed for adults to "teach children how to think."

Other variations abound. The basic model on the previous page is the approach that reaches more children in a consistent fashion than any of the other methods. However, individual schools, teachers, or parents are encouraged to get some version started, even if it's not one of the above. Some sunshine is better than none at all!



Sunshine Math: Information for Principals

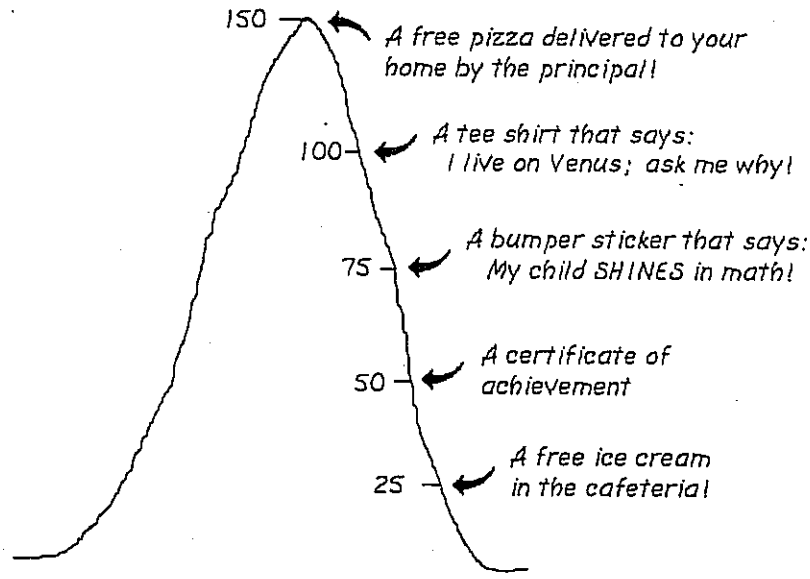
Sunshine Math is a K-8 enrichment package for mathematics, designed to be managed by volunteer assisting adults with coordinated support from the classroom teacher and school administrators. The purpose of the program is to give self-motivated students of all ability levels a chance to extend themselves beyond the normal mathematics curriculum. The complete set of materials comes in nine packages, one for each K-8 grade. The grade levels are named for the planets in the solar system, in order starting from the sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto.

Your support is vital if this program is to succeed. As the school administrator, you need to stay in close touch with *Sunshine Math*. A "checklist for success" follows:

- ❑ Become familiar with the philosophy and component parts of the program.
- ❑ Introduce *Sunshine Math* to the faculty early in the school year. Ensure that each teacher understands the philosophy of the program and has a copy of the student worksheets and commentary for that grade level.
- ❑ Speak to parents at your school's first "open house" of the year, explaining the purpose of *Sunshine Math* and the long-term value of children working independently on the worksheets.
- ❑ Recruit several assisting adults (PTA members, aides, senior citizens, business partners, churches, and so on) who are enthusiastic, dependable people to manage the program. Early in the year, meet with these assisting adults to plan such details as:
  - ✔ A prominent place and format for the STAR CHART.
  - ✔ A designated time each Monday and Friday for the assisting adult to be in the school to receive and distribute papers from students, and post stars.
  - ✔ A system for the activity sheets to be duplicated each week.
  - ✔ A plan for extra incentives for accumulating stars. ("World records" to be kept from year-to-year; a celebration day planned for the end of school; students earning prizes for attaining certain levels of success -- see the reverse side of this page for examples.)
  - ✔ A schedule for when the program will begin, and whether or not there should be a "start over" point at some time in the school year. Review a school calendar, and use only weeks that have at least four school days in them. If there isn't time in the school year to cover all the activity sheets under these conditions, decide which sheets to eliminate or when to "double up."
  - ✔ If possible provide volunteers with a *Sunshine Math* cap, name tag, tee-shirt, or other identifying feature.
- ❑ Monitor the program every two weeks to clear up any unforeseen problems. Administrators need to be highly visible for *Sunshine Math* to succeed.

Sunshine Math is an optional program for students. It should be available to any student who wants to participate, regardless of prior success in mathematics. A large number of students will usually begin the program, but a majority of them will lose interest. However, a significant number of students will continue their interest over the life of the program. This is normal and simply means that *Sunshine Math* is successfully addressing the needs of the self-directed learner.

Visual reminders help children see that mathematics is challenging and rewarding. Some ideas are presented below, merely to start your creative juices flowing:

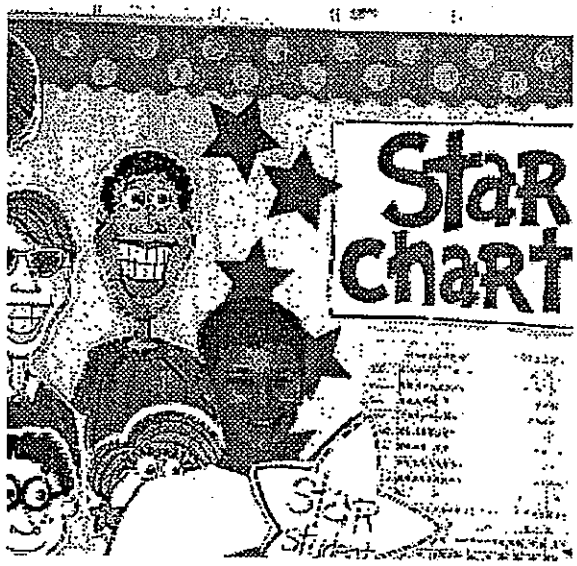


Climb the Mountain this Year!!!

Join the Sunshine Math Club

Sunshine Math: Information for Assisting Adults

Sunshine Math is designed to give assisting adults a well-defined role to play in the school's mathematics program. The success of *Sunshine Math* depends on a team effort among teachers, administrators, parents, and you. Reliability and punctuality are important -- students will rapidly come to depend upon you to be there as scheduled, to check their papers and post their stars, and to listen to alternate ways in which they may have interpreted a problem to arrive at a unique answer. If possible, wear an outfit that fits with the *Sunshine Math* logo; students will quickly begin to identify you as an important person in their school.



Sunshine Math works on a weekly cycle. Each Monday, you collect the worksheets from the previous week and distribute new worksheets to the participating students, all from your *Sunshine Math* area of the school. Allow students to see the answers to the problems, and discuss any for which they arrived at a different answer, giving them credit if their interpretation and reasoning are sound. You then check the worksheets from the previous week, and post the stars earned on the STAR CHART.

Participating students have from Monday until Friday to work the problems entirely on their own -- the only help they can receive during that time is for someone to read the problems to them. On Friday, the teacher hosts a problem-solving session in the classroom, having students describe their approaches to the more difficult problems. Students who have already worked the problems discussed, prior to the problem-solving session, can earn double stars -- you can identify these by looking for the teacher's initials beside certain problems. The students will have the weekend to complete any problems they want to -- for successfully completing these problems, they earn the indicated number of stars.

Be creative when designing a star chart. The basic method of posting stars individually is a good way to begin, but eventually you will want a color-coded system, or perhaps posting only one star each week, with a number in its center. Personalize the chart and the entire *Sunshine Math* center with pictures of students, "smiling faces," and so on. Occasionally bring in a reward for each child -- perhaps a cookie or a hand stamp in the shape of a star -- just for turning in their worksheet. Be creative and enjoy your role -- you are helping enthusiastic students develop higher-level thinking skills!

Checklist for assisting adults:

❑ Plan with the principal the following:

- ✔ A prominent place and format for the STAR CHART.
- ✔ The time and place for you to take up and check papers, and distribute new worksheets.
- ✔ The system for duplicating worksheets each week, ensuring legible copies.
- ✔ Any extra incentives ("world records," stickers, coupons, pencils, tee shirts, etc.) that will be part of the system for rewarding levels of achievement in *Sunshine Math*.

❑ Make the *Sunshine Math* center a happy place. Use bright colors, smiles, and cheerful words. Show confidence, friendliness, and encouragement to students.

❑ Collect the letters which are sent home prior to the first worksheet and signed by each student and parent . If in the future you have evidence that the work turned in does not represent the thinking of the student, discuss the situation with the classroom teacher. These situations are best handled individually in a firm, consistent manner.

❑ Check the worksheets from the previous week consistently. If you give partial credit for a problem with several parts, do so in a fair way that can be explained to students. Do not award partial credit for problems with only one answer.

❑ Have answer sheets available and encourage students to look at the answers when they hand in their worksheets. Allow them to explain their thinking if they arrived at a different answer. Award them full credit if they show a unique interpretation of the problem, and logical reasoning in obtaining an answer.

❑ Leave extra worksheets with the classroom teacher for participating students who were absent on Monday. Accept a late-arriving worksheet only if the student was absent on Monday. If a students' name is missing, or on the wrong place on a worksheet, check the paper but award the stars to "no name" on the STAR CHART. Adhering strictly to these rules will rapidly teach responsibility to the students, and keep your work load manageable.

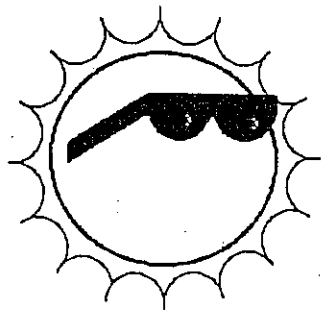
❑ Keep all returned worksheets. As the same worksheets are used year-after-year, and many participating students have siblings who will later be in *Sunshine Math*, it is important that the students not be allowed to keep their worksheets.

❑ On weeks when *Sunshine Math* will not be available, post a sign such as "No star problems this week, but please come back after the vacation for more!"

Sunshine Math: Information for Teachers

Sunshine Math is a program designed to complement your regular classroom mathematics curriculum. It offers a peripheral opportunity for students to practice mathematics skills appropriate for their grade level and, at the same time, to participate in problem-solving experiences. It offers a challenge to those students who are self-directed learners by giving them something worthwhile to do outside of class.

Your involvement is strictly as a teacher. *Sunshine Math* will remain special to students if it's managed by someone outside the classroom, and if the teacher is viewed as a facilitator in the system, rather than as the authority figure. Your primary role is to monitor the system in your own classroom and host a brief problem-solving session for *Sunshine Math* students on Friday of each week. You will also need to release the participating students from your class at a set time on Monday to turn in their worksheet and obtain a new one. You might make yourself a special pin like that shown to the right, to wear on Monday and Friday to remind students that those days are special.



Each student worksheet has an accompanying commentary page. This sheet provides hints on parallel problems which you might use in the Friday problem-solving session. It is important that students participate actively in this session, and that you solicit from them their unique approaches to the problem discussed. Only after students present their ideas should you provide guidance on the problems, and then only when necessary. Even though there is a comment provided for each problem, you will have to decide which 3 or 4 problems you will cover during this brief session. Concentrate on those whose solution requires a strategy. The problem-solving session should last no more than 15 minutes.

Do not be disappointed if a large number of your students begin *Sunshine Math*, but many drop out after a few weeks. This is normal; problem solving requires a great deal of effort, and only certain students are ready for this challenge. On the other hand, you will also note that certain students *do* chose to stay in *Sunshine Math* week after week, even though they aren't as successful as other students at earning stars. Their participation should be encouraged, as they are certainly learning from the experience. Under no circumstances should *Sunshine Math* be reserved for only the advanced students in your class.

As a purely practical consideration, students are not allowed to discuss the problems with other students or their parents prior to the Friday "cooperative group" problem-solving session. This allows the "think time" necessary for students to develop into independent thinkers; it also prevents students from earning stars for work that is basically someone else's, which is the surest way to disrupt the entire *Sunshine Math* program. As the teacher, you must monitor this in your classroom and ensure that students abide by the established rule.

It is important that you understand and support the overall philosophy of *Sunshine Math.* Do not worry if students encounter problems for which they have not been prepared in class -- such is the nature of true problem solving. Do not provide remedial instruction to ensure that students master certain types of problems -- they will meet these same problem types repeatedly in the program, and likely will learn them on their own and from listening to other students at the problem-solving session. You should enjoy what the students *can* do, and not worry about what they can't do. You should also read over the general information about the program, to see how your role fits into the entire system.

Here are some hints that you might find useful in your support role for Sunshine Math:

- ✔ Allow your students to leave the classroom at the designated time on Monday to turn in their worksheets and pick up a new one.

- ✔ Read each week's worksheet yourself, and feel free to structure classroom activities that parallel those on the *Sunshine Math* worksheet.

- ✔ During the school week, students should be allowed to work on their *Sunshine Math* problems during their spare time, but the only help they can receive is for someone to read the problems to them. Give the students one warning if you observe them discussing the worksheets, and take away their papers for the next violation. If it happens another time, dismiss them from *Sunshine Math* for a month.

- ✔ At the problem-solving session on Friday, remember these points:

  - ➞ Students come to this session with their worksheets, but without pencils.

  - ➞ The session must be brief -- 15 minutes at most. Discuss only the 3 or 4 most difficult problems on the worksheet.

  - ➞ Help students summarize their own approaches to the problems, in a non-judgmental fashion. Offer your own approach last, and only when it's different from the student strategies. Do not allow answers to be given to the problems.

  - ➞ End the session by encouraging students to complete the problems over the weekend. Put your initials beside any problem discussed in class which a student has already completed successfully. The assisting adult will award double stars for these.

- ✔ Remember that part of the *Sunshine Math* philosophy is that students learn responsibility by following the rules of the system, if participation is important to them. *Sunshine Math* becomes very important to certain students, so they will adhere to rules about where their names goes on each paper, no credit if they forget their paper on Monday, no talking about the problems prior to the problem-solving session, etc., if *you* enforce the rules.

- ✔ Enjoy *Sunshine Math*. Students will impress you with their ability to think, and their creative ways to solve problems that appear to be above their level.

Here's a song for your students -- to the tune of "When you wish upon a star":

When you get your SUPERSTARS .....
It won't matter who you are ....
Try a few ....
See what you can do ....
.... and ....
Success will come to you!!!

Sandy Parker, Lake Weir Middle School, Ocala, FL

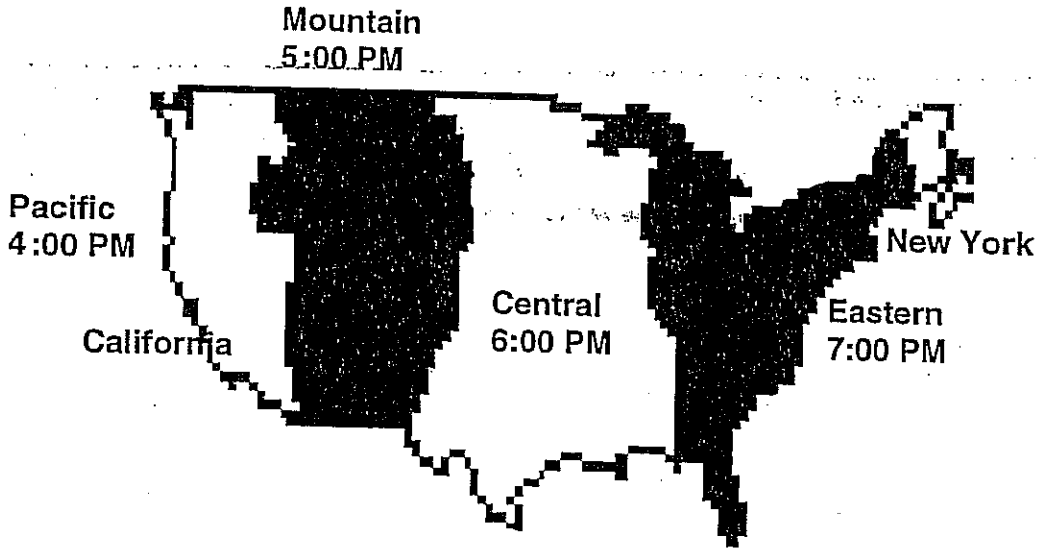

WORKSHEETS

SUNSHINE MATH - 6
Uranus, I

Name: _____

(This shows my own thinking.)

★★ 1. The map below shows the four time zones in the United States. Use the map to help you answer the following questions.



a. If it is 11:00 A.M. in California, what time is it in New York?

Answer: ____

b. If you left San Francisco, California, at 10:30 P.M. on a six hour flight to Miami, what time would it be in Miami when you landed?

Answer: _____

★ 2. Rusty can cut a log into 3 pieces in 20 minutes. At that rate, how long will it take him to cut another such log into 6 pieces?

Answer:_____

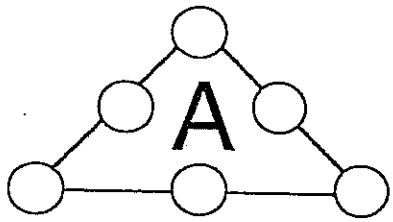
★★★ 3. Find three prime numbers, all less than 30, whose product is 1955.

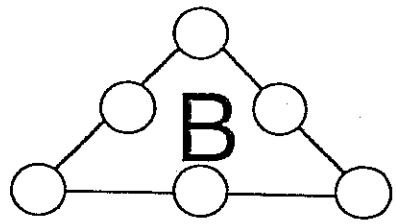
Answer:_____, _____, and _____

★★ 4. One way to write 99 using four nines is $(9 \times 9) + (9 + 9)$; another way is $99 \div (9 \div 9)$. Write 100 using four nines.

Answer:_____

★★ 5. Put the numbers 1, 2, 3, 4, 5, and 6 in the circles below so that the sum "along a line" is 11 in figure A, and 12 in figure B.



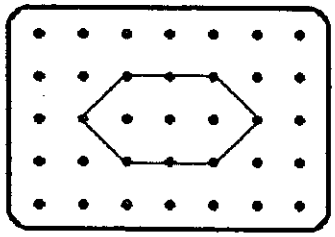


★★★★ 6. A train that is 1 mile long starts through a tunnel that is also 1 mile long. The train is traveling 15 miles per hour. How long does it take for the train to get completely out of the tunnel?

Answer: _____

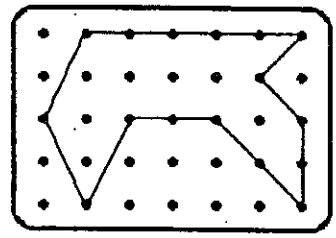
★★★ 7. Find the area of each polygon.

a.



Answer: _____square units

b.



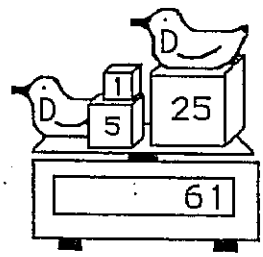
Answer: _____square units

★★ 8. An equation for the situation to the right is:

$2D + 25 + 5 + 1 = 61.$

Solve the equation by finding how much one duck weighs.

Answer: $D =$ _____

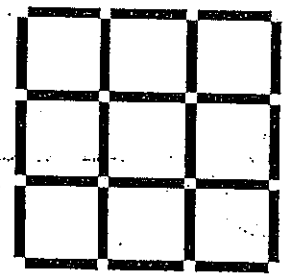


SUNSHINE MATH - 6
Uranus, II

Name: _____

(This shows my own thinking.)

★★★ 1. Make an ✗ on each of four toothpicks you could remove so that exactly 7 squares, all the same size, would be left.



★★ 2. Joe keeps all his socks in one drawer. He has 7 blue socks and 9 brown socks. If he reaches in the drawer without looking, what is the least number of socks he can take out to be sure of getting a pair of the same color?

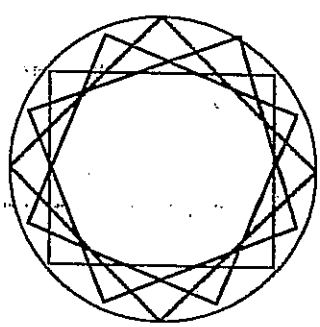
Answer: _____ socks

★★★ 3. The total price of a dictionary and an almanac is $32. The total price of 2 dictionaries and 3 almanacs is $86. What is the price of each book?

Answer: The cost of a dictionary is ____. The cost of an almanac is ____.

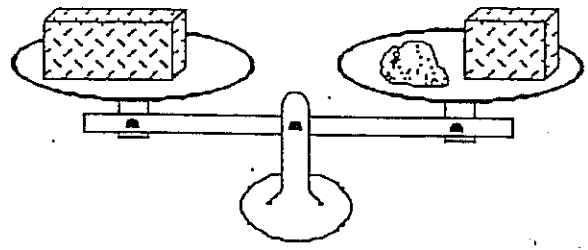
★ 4. How many squares are there in the circle?

Answer: _____ squares



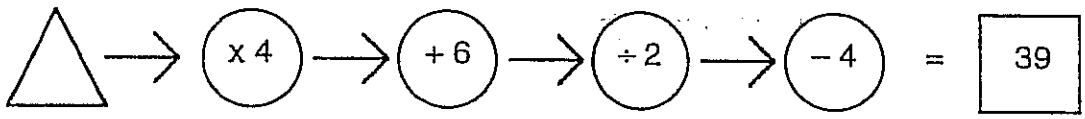
★★ 5. 5 years, 21 days, 4 hours, 32 minutes, 17 seconds
- 2 years, 93 days, 7 hours, 47 minutes, 24 seconds

★★★ 6. If a brick weighs exactly as much as a 9-pound rock plus half of another brick, what does a brick and a half weigh?



Answer: _____ pounds

★★ 7. Write a number in the △ that will give the answer 39.



★ 8. How many of the 28 students in Andy's class are boys, if $\frac{4}{7}$ are girls?

Answer: _____ boys

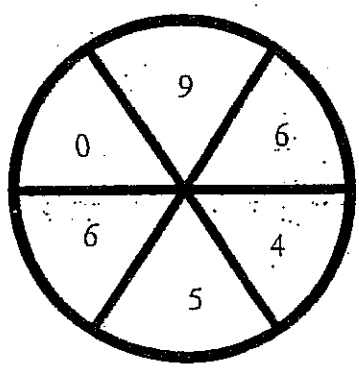
★★★★ 9. If you made a spinner out of the circle below for a game you invented, what is the probability that the arrow would land on:

a. zero? _____

b. an odd number? _____

c. a number greater than 9? _____

d. either an odd number or 0? _____



SUNSHINE MATH - 6
Uranus, III

Name: _____

(This shows my own thinking.)

★ 1. The Adrians were going to grandmother's house for Thanksgiving. They traveled 283 miles in 6 hours. Did they average more or less than 50 miles per hour?

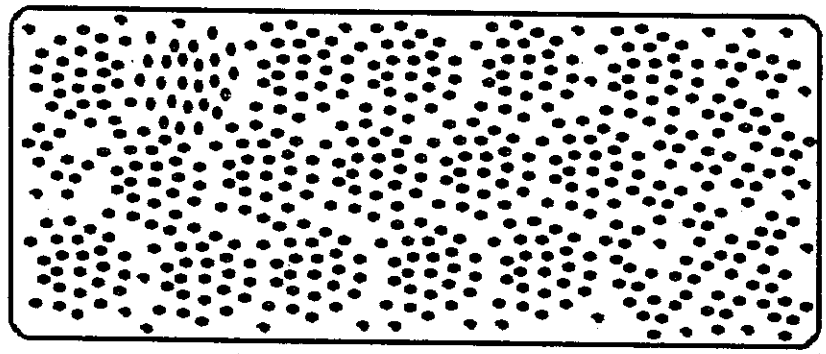
Answer: _____

★★★★ 2. Martha bought a $60 skirt at 40% off and a $40 blouse at 20% off. What percent discount did she receive on the total purchase?

Answer: _____

★ 3. Count the dots.

Answer: _____ dots



★★★ 4. When 3 times a certain number n is added to 6, the sum is 20 more than the original number. What is the number n?

Answer: n = _____

★★ 5. On February 19, the temperature in Orlando was 78° Fahrenheit. In Fairbanks, Alaska, the temperature was -49° F. What was the difference in these temperature readings?

Answer: _____ ° F

★★★ 6. Mrs. Gonzales has three children whose names are Javier, Juan, and Rosa. Their mean age is 11. Their median age is 10. Rosa is 15 years old. What is the age of the youngest child?

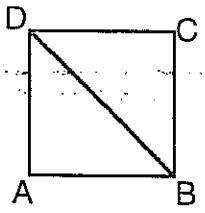
Answer: _____

★★★ 7. These values were used to find the total score for the figures in the examples below:

Triangle = 3 points
Quadrilateral = 4 points
Pentagon = 5 points
Hexagon = 6 points

Examples:

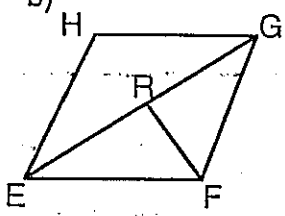
a)



2 triangles
1 quadrilateral

Score = 10

b)

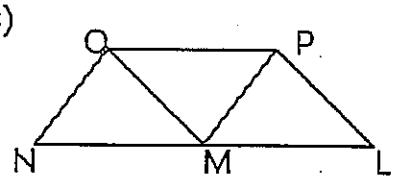


4 triangles
1 quadrilateral
2 pentagons

Score = 26 Total Score = 36

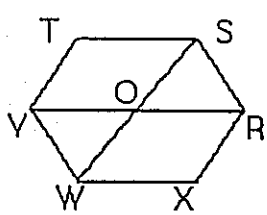
Now you do these. Find the total score for figures c and d. Add the scores for c and d and give the total score.

c)



Score _____

d)



Score _____ Total Score: _____

★ 8. Write what goes in the ☐ if $a = 4$.

$$3 + a + 7 - 5 + 10 + a - a = \square$$

★★★ 9. If two prime numbers differ by 2, they are called TWIN PRIMES. List all the twin primes less than 50.

Answer: 3 & 5.

SUNSHINE MATH - 6
Uranus, IV

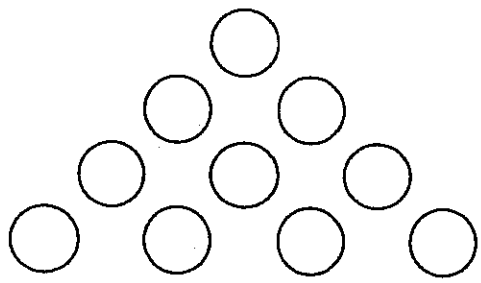
Name: _____

(This shows my own thinking.)

★ 1. In one 7-day week, how often does a clock show 3 o'clock?

Answer:_____

★★★ 2. Here is a triangle made of discs. Move only 3 discs and turn the triangle upside down. Draw arrows to show how you would move them. Practice with pennies if it will help you.



★★ 3. A furniture shop makes only tables and stools. Each table has four legs and each stool has three legs. The legs for both the tables and stools are the same. How many tables and how many stools can be made from 32 legs if some of each are made?

Answer: _____ tables and _____ stools

★ 4. If a regular octahedron has a surface area of 48 square inches, what is the surface area of each face?

Answer:_____

★★ 5. The thousands digit of a 4-digit number is 4 greater than the hundreds digit. The tens digit is 2 times the thousands digit. The ones digit is one-half the thousands digit. What is the number?

Answer: _____

★★ 6. If you put a million sheets of 30-cm long paper end-to-end, how many kilometers long would the paper be from beginning to end?

Answer: _____

★★★★ 7. Amy, Betty, David and Ed have last names of Gonzales, Jackson, Keller, and Perez, though not in that order. They recently participated in a 1500-meter race and they all finished the race in a different position. From the clues below match the first and last names and determine in what order they finished the race.

a) Jackson said she would have finished higher if she had not slipped at the start of the race.
b) Ed finished ahead of Perez, but behind Betty.
c) Amy finished directly behind Gonzales.
d) Neither David nor Ed finished third.

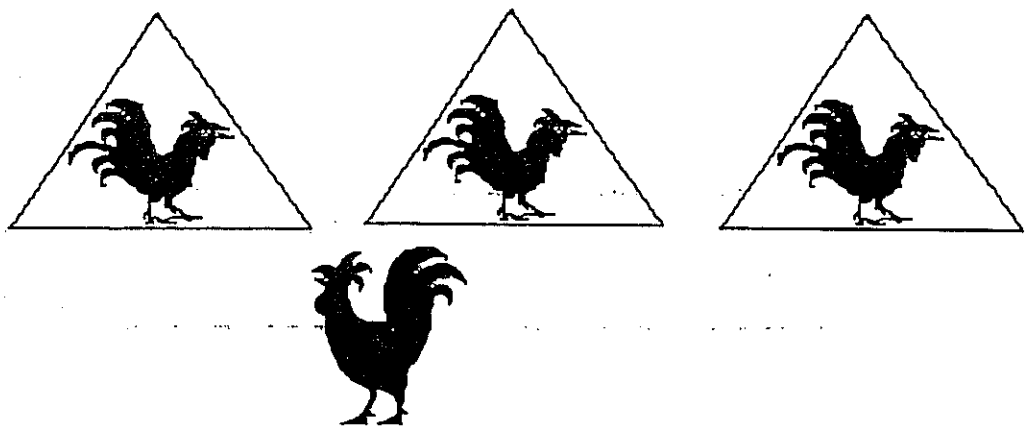
Answer: Amy _____finished ____; Betty_____finished ____;

David _____finished _____; Ed_____ finished ____.

★★ 8. The newspaper used rounded off numbers to report that about 70,000 people attended the University of Florida vs. Florida State University football game last year. What is the greatest number of people that could have attended that game?

Answer: _____

★★★ 9. A farmer has three roosters. She keeps them in three pens like the ones shown below. She sold a cow and bought another rooster, but did not have enough money to build another pen. How can she rearrange the three pens she has to make a fourth pen? All the pens should be the same size and shape. Draw a picture below to show your solution.



SUNSHINE MATH - 6
Uranus, V

Name: _____

(This shows my own thinking.)

★★★★ 1. Assign values to each letter so that the message becomes a meaningful addition example. Write your answer as an addition example beside the one below.

```
  CROSS
+ ROADS
 DANGER
```

Answer:

★★★★ 2. Every hour, on the hour, a train leaves Tallahassee for Jacksonville, while another train leaves Jacksonville for Tallahassee. The trip between the two cities takes exactly two hours. How many of the trains going in the opposite direction will a Tallahassee train to Jacksonville meet?

Answer: _____ trains

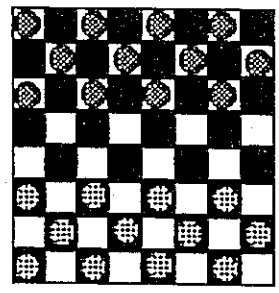
★★ 3. James purchased 3 hamburgers, 1 hot dog, 4 orders of French fries, and 4 soft drinks. The sales tax is 6%. How much change will he get from his $20?

•	MENU		•
Hamburger	95 ¢	Milk	65 ¢
Hot dog	85 ¢	Soft drink	79 ¢
Grilled cheese	75 ¢	Milk shake	99 ¢
French fries	89 ¢	Ice cream	69 ¢

Answer: _____ as change

★★ 4. At the beginning of a game of checkers, what percent of the squares are not covered by checker pieces?

Answer: _____ %

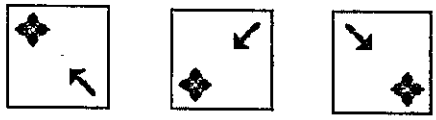


★ 5. On his way to school, Skip counted 17 trees on the right side of the street. On the way home he counted 17 trees on the left side of the street. How many different trees did he count in all?

Answer: _____ trees

★★ 6. Look at this figure:

What is the correct order for these three figures to show the one above being turned 90°, another 90° and another 90°, all in the clockwise direction?



a b c

Answer: The order is ____, ____, and ____.

★★ 7. Pluto is about 5,900,000,000 kilometers from the sun. Scientists use a shortcut for recording large numbers called *scientific notation*. Write the distance from Pluto to the sun using this shortcut.

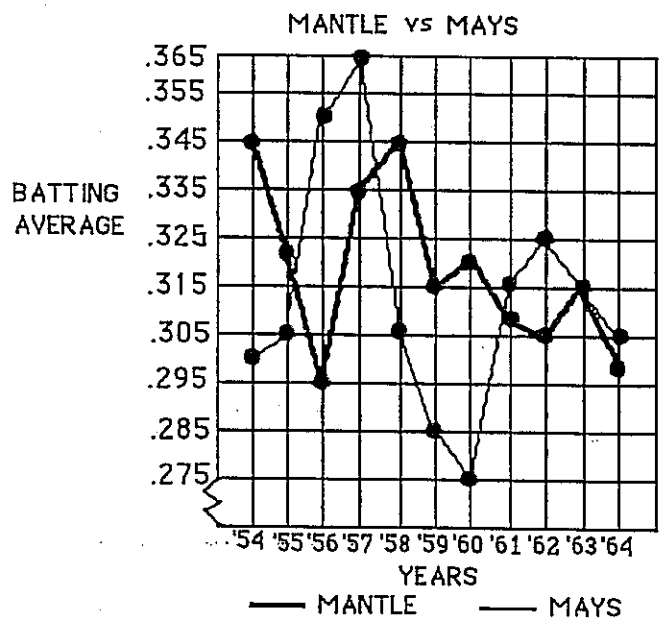
Answer: _____ km

★★★ 8. Two of the great baseball players of this century are Willie Mays and Mickey Mantle. The graph below shows their end of year batting averages over the years from 1954 to 1964.

a. In which year did they both have the same average?
_____

b. In which year did they both average more than 1 hit in every 3 at bats? _____

c. Which hitter had the smallest range between his best year and his worst year, batting-wise? _____



SUNSHINE MATH - 6
Uranus, VI

Name: _____

(This shows my own thinking.)

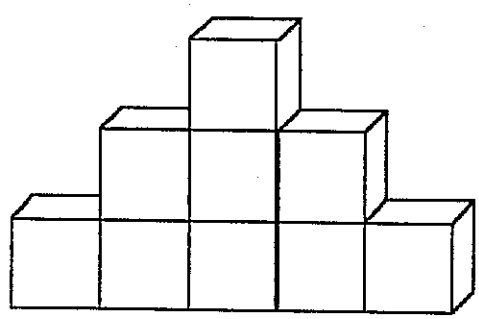
★★ 1. The world record for limbo dancing under a flaming bar is $6\frac{1}{8}$ inches. The record for roller skating under a limbo bar is $5\frac{1}{4}$ inches. How much lower is the record on roller skates, than without roller skates?

Answer: _____ inches

★★ 2. Fill in the squares using non-zero digits. Also, place the decimal point correctly in the answer.

$$\begin{array}{r} .2\,5 \\ \times\ 3.\square \\ \hline 1\ 7\ \square \\ \square\ 5\ 0 \\ \hline \square\ 2\ 5 \end{array}$$

★★★ 3. The edge of each of the cubes in the picture below has a measure of 1 inch. What is the total surface area of the figure, including the bottom?



Answer: _____ square inches

★★ 4. If the moon takes an average of $27\frac{1}{3}$ days to revolve around the Earth, which is the closest estimate for the number of hours it will take? Circle your answer.

a) 400 hours b) 650 hours c) 1025 hours d) 900 hours

★★ 5. Find the number of letters in America's first President's last name. Multiply it by the number of letters that differ between the last names of America's second President and sixth President. What is your answer?

Answer: _____

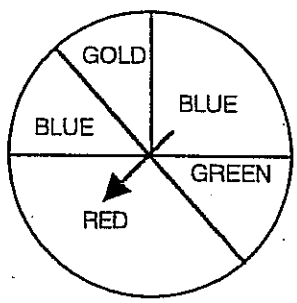
★ 6. Scientists predict that by the year 2080, the Earth and its manned space stations will be inhabited by 4,327,650,189,012 people. Round this number to the nearest billion.

Answer: _____

★★ 7. Solve the following problem using Roman numerals. Be sure to give you answer as a Roman numeral.

$$(XL \div X) + XVI - XIX = \_\_\_\_\_$$

★★★★ 8. The picture below represents a spinner. Find the probability of hitting each of the following colors. Give your answers as lowest term fractions.



a) red: _____ b) blue: _____ c) gold or green: _____ d) orange:_____

★★ 9. A sandwich shop sells hamburgers and hot dogs. They offer French fries, chips and pretzels as side orders. They also have soda, milk or juice to drink. How many different combinations of a sandwich, a side order, and a drink are possible from their menu?

Answer: _____ combinations

★★ 10. There are 24 students in Mrs. Perimeter's class. If $87\frac{1}{2}\%$ of them passed their mathematics test, how many students did not pass?

Answer: _____ students did not pass

SUNSHINE MATH - 6
Uranus, VII

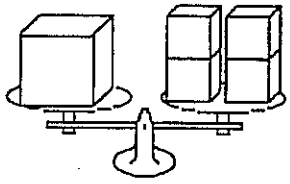
Name: _____

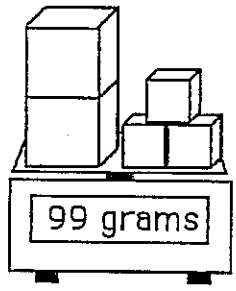
(This shows my own thinking.)

★★ 1. A winning basketball team earned 336 points in the first 4 games last season. One-eighth of their points were made on 3-point shots. How many 3-point baskets had they made after four games?

Answer: _____ baskets

★★★ 2. Each large block below weighs the same amount. Each small block weighs the same amount. From looking at the pictures, find the weight of both the small and large blocks.





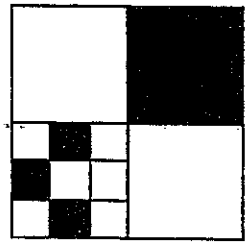
Answer: A small block weighs _____ grams.

A large block weighs _____ grams.

★★★ 3. What is the probability that you will roll a sum of 7 on one roll of a standard pair of dice?

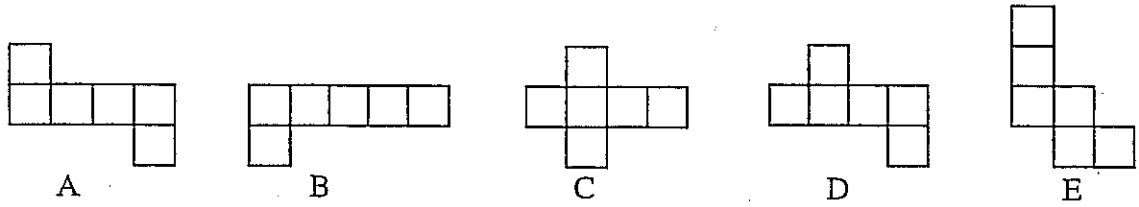
Answer: _____

★★ 4. In lowest terms, what fraction of the large square is shaded?



Answer: _____

★★ 5. Circle the shapes below that can be folded to form a closed box with no overlapping sides.

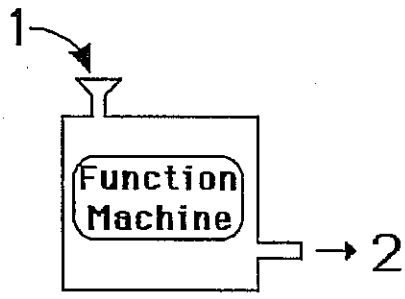


★ 6. Alfonso took a 40-question test. How many can he miss and still make an 85%?

Answer:_____ questions can be missed.

★★★ 7. A function machine is set up so that when an ***input number*** is dropped into the machine, a predictable ***output number*** comes out. When 1 is dropped in, for example, 2 comes out. Study the pattern of input and output numbers in the chart below, and fill in the missing numbers.

INPUT	OUTPUT
1	2
2	5
3	10
4	17
5	
6	
7	



★★★ 8. a. For the function machine in problem 7, what number was the ***input*** number for the ***output*** number 101? _____

b. If the input number is called *n*, what would the *output* number be?____

★ 9. Beth, Michael, Gale, Maria, and Dot are all different ages. Gale is older than Beth and younger than Michael. Maria is older than Michael. Dot is older than Beth and younger than Gale. List the names of the 5 people from the oldest to the youngest.

Answer:_____

SUNSHINE MATH - 6
Uranus, VIII

Name: _____

(This shows my own thinking.)

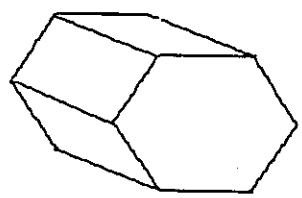
★ 1. What fraction is equivalent to $\frac{4}{5}$ and has a denominator that is 4 more than its numerator?

Answer:_____

★★★★ 2. A man weighing 80 kg. and his two children, each weighing 40 kg., want to cross a river. Each can row the boat they must use. The boat can carry only 80 kg. What is the least number of crossings that can be made to get from one side of the river to the other? (A crossing means going from one side of the river to the other side -- not a round trip.)

Answer: _____ crossings

★★★ 3. A hexagonal prism looks like the picture to the right. What is the total number of:



a. *faces* on the shape? ____

b. *edges* on the shape? ____

c. *vertices* on the shape? ____

★★★ 4. Sarah's age is three times Anthony's age. Four years from now, Sarah will be twice as old as Anthony. How old is Sarah now?

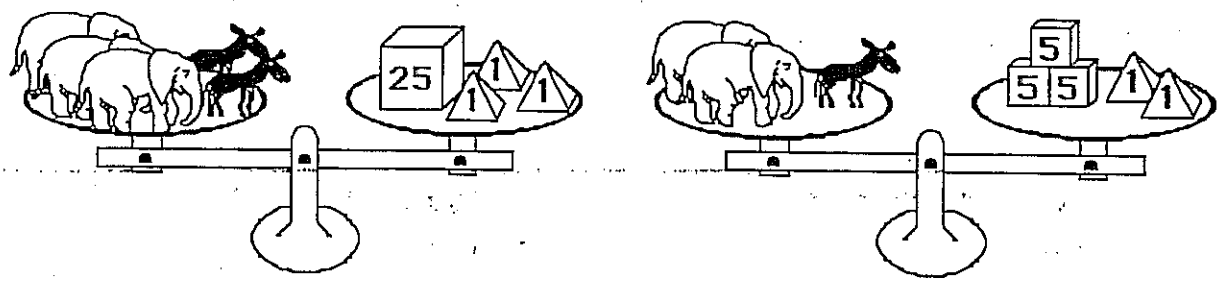
Answer: _____

★★★ 5. Diane counted 28 geese and horses on the farm. Altogether, there were 78 legs on all of the animals. How many were geese?

Answer:_____ geese

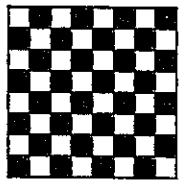
★ 6. In the space below, show how to combine six 1's so that their sum is 123.

★★ 7. Maria likes to weigh her toy animals. She found that the animals below balanced the gram weights in her science kit. Three elephants and 2 donkeys balanced 28 grams; two elephants and 1 donkey balanced 17 grams. Maria says she can now tell how much both animals weigh. Are you as clever as Maria?



Answer: An elephant is _____ grams; a donkey is ___ grams.

★★★★ 8. A checkerboard is made from a number of small squares. Four of the small squares can be grouped so that a larger square is formed. Nine of the small squares can be grouped so that even a larger square is formed. This process can be continued, up to all 64 small squares making one huge squares. How many squares altogether can be formed on a checkerboard?



Answer: _____ squares

★★★ 9. Thomas works for his dad. He was given the choice of:
(a) working for 25 days at $15.00 per day, or
(b) working for 25 days and doubling his wages every day, beginning with 1¢ the first day, 2¢ the second day, 4¢ the third day, 8¢ the fourth day, etc.

Which choice, (a) or (b), will give Thomas the greater pay and how much more pay than the other choice?

Answer: Choice ____ will give him $_____more.

SUNSHINE MATH - 6
Uranus, IX

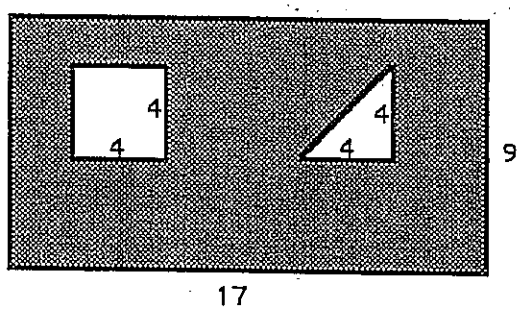
Name: _____

(This shows my own thinking.)

★ 1. Look at the pattern. Fill in the next two numbers.

1, 1, 2, 3, 5, 8, 13, _____, _____

★★★★ 2. The 17-inch-by-9-inch piece of cardboard below has two holes that were cut from it. What is the area, in square inches, of the remaining cardboard?



Answer: _____square units

★★ 3. Susan challenged a friend with this problem:

Multiply the square root of 49 by 10 and subtract 50.
Then multiply that number by 7.
Now find 1/5 of the product.

What is the answer to Susan's problem? _____

★★★ 4. Here's a number trick:

Chose a number from 1 to 9.
Double it.
Add 5.
Multiply your result by 5.
Subtract 25.
Remove the ones digit.
Viola! You have your original number back.

Does this number trick always work? Answer: _____ (yes or no)

★★★ 5. A high school track record that remained unbroken for over thirty years is Jim Ryun's 1965 mile run of 3 minutes, 58.3 seconds. Essentially he ran 1 mile in 4 minutes. What was his average speed, to the nearest whole number, in miles per hour?

Answer: _____ miles per hour

★★ 6. If Andy's average pulse rate is 72 beats per minute, about how many times will his heart beat in a day? Give your answer rounded to the nearest thousand beats.

Answer: _____ beats

★★★ 7. Jim's Sport Shop sells four pairs of roller blades for every three skateboards. Last week he sold sixteen pairs of roller blades. How many more pairs of roller blades did Jim sell than skateboards?

Answer: _____

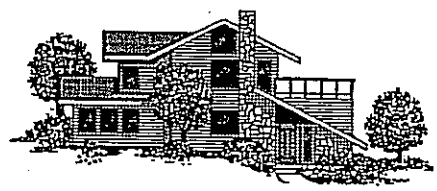
★★ 8. Tamika took five math tests. Her teacher reported she had an average score of 91, but had lost one of Tamika's tests. The four the teacher had showed scores of 86, 92, 88, and 96. What was her score on the lost test?

Answer: _____

★★ 9. A real estate broker sold a house for $120,000. Her commission was 8% of the selling price.

a. How much money did she earn in commission?

Answer: _____



b. If she had to pay 28% of her commission in income tax, how much did she have left to spend?

Answer: _____

SUNSHINE MATH - 6
Uranus, X

Name: _____

(This shows my own thinking.)

★ 1. Multiply 37 by 3. Now multiply 37 by 6. What would you have to multiply 37 by to get all fives?

Answer: _____

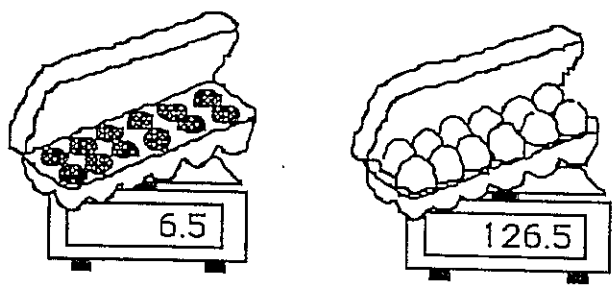
★★★★ 2. Solve each problem.

a. A 12-pak of colas cost $4.48, including tax of $0.28. How much would each cola cost, without tax? _____

b. Maria put 5 pups in a cage to send them on an airplane. The total weight was 90 pounds. The cage by itself was 25 pounds. On average, how much did each pup weigh? _____

c. Garth gets to watch 15 hours of TV each week. There are only 5 hour- long shows he watches each week. How many half-hour shows can he watch? _____

d. The scale shows grams. How much does one egg weigh?
_____ grams



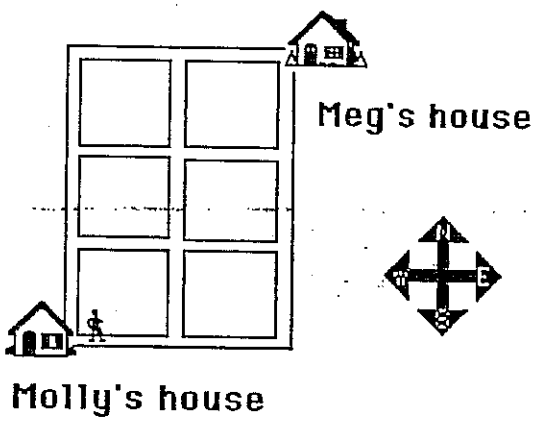
★★★ 3. Place the numbers 1 to 16 in the grid so that each row, column and diagonal will have a sum of 34. Some numbers have been placed for you.

		3	
	11	10	
9			12
		15	1

★★ 4. If a 27 in^3 jar of peanut butter holds 16 ounces, how much peanut butter is in a jar that is 67.5 in^3 in volume?

Answer: _____ ounces

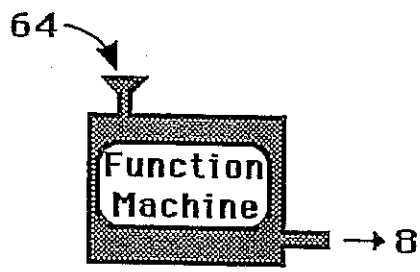
★★★ 5. Molly and Meg are good friends who like to visit each other often. The map below shows the location of the two girls' houses. Molly decided to find all the different ways to get to Meg's house from hers. She can move only in the direction of east and north. How many different routes are there for Meg to use?



Answer: _____ routes

★★ 6. The function machine below shows what happens to a number dropped in the input place. Fill in the two missing output numbers, when 49 and 81 are dropped in.

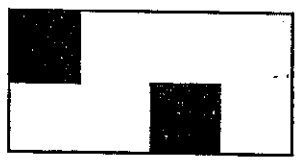
INPUT	OUTPUT
64	8
36	6
4	2
100	10
49	
81	



★★★ 7. In sixteen more minutes it will be as many minutes before 3 P.M. as it was after 2 P.M. ten minutes ago. What time is it?

Answer: _____

★ 8. Estimate the percent of the figure that is shaded.



Answer: _____

SUNSHINE MATH - 6
Uranus, XI

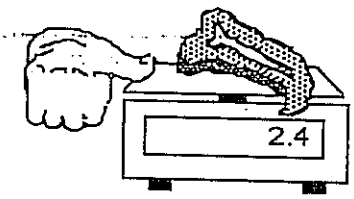
Name: _____

(This shows my own thinking.)

★★★★ 1. Harry the Hog is a disgrace to butchers everywhere! He's known for keeping his thumb on the scale for a little extra weight and therefore money. The T-bone sells for $2.99 a pound, but Harry's thumb has added 0.3 lb. to the scale.

a. What will you pay for the steak if you don't notice his thumb? _____

b. What will you pay for the steak if you make him remove his thumb? _____



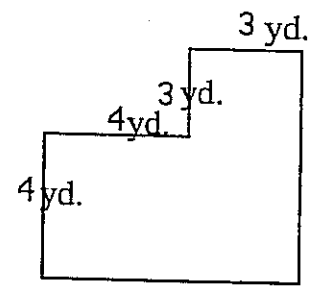
★★ 2. A notebook costs $1 more than a pencil. Together they cost $1.50. How much does each item cost?

Answer: a) The notebook costs _____.

b) The pencil costs _____.

★★★ 3. One of the classrooms at the middle school is shaped like the picture to the right. What is the area of the entire room?

Answer: _____



★ 4. Arrange the fractions $\frac{2}{3}$, $\frac{1}{2}$, $\frac{5}{6}$, $\frac{7}{12}$, and $\frac{3}{4}$ in order from smallest to largest.

Answer: _____ _____ _____ _____ _____

★★ 5. Johnny had a raise in pay that moved him from \$4.00 an hour to \$4.60 an hour. What was his percentage of increase in pay for one hour?

Answer: The percentage raise was _____% per hour.

★★★★ 6. In the array below, the middle entry in each *odd* row is the square of the row number itself. So in the third row, the middle entry is nine, and $3 \times 3 = 9$.

a) What is the middle entry of the 23rd row going to be?

Answer: _____

			1					→ row 1
		3		5				→ row 2
	7		9		11			→ row 3
13		15		17		19		→ row 4
21	23		25		27		29	→ row 5

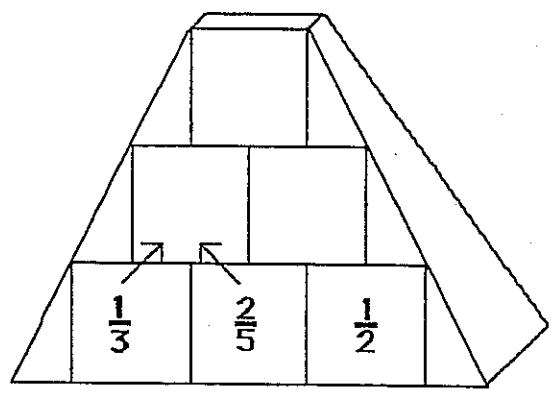
b) What will be the sum of the numbers in the 10th row?

Answer: _____

★ 7. A digit in the fifth place to the left of the decimal point has what place value?

Answer: _____

★★ 8. Complete the pyramid by adding adjacent fractions and placing the sum above the two numbers being added. Put your answers in lowest terms in the three squares.



★★ 9. To make four servings of cream of wheat, you bring to a boil 4 cups of water, and then mix in $\frac{2}{3}$ of a cup of cream of wheat. But a family of three doesn't want to make four servings.

a. How much water would be required for three servings of cream of wheat? _____

b. How much cream of wheat would be required for a serving of three? _____

SUNSHINE MATH - 6
Uranus, XII

Name: _____

(This shows my own thinking.)

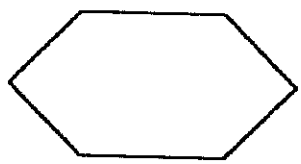
★★ 1. Goldbach, a Russian mathematician, conjectured that every even counting number greater than 2 can be written as the sum of two different prime numbers. For example, $10 = 3 + 7$.

Write each of these as a sum of two different primes:

a) 26 = _____ b) 82 = _____

★ 2. How many diagonals does a hexagon have?

Answer: _____



★★ 3. Mrs. Searcy's class is entering a riddle writing contest sponsored by *MATH WIZZ* magazine. Leila wrote this riddle:

Find 3 integers whose product is -36 and whose sum is 5.

What is the answer to Leila's riddle?

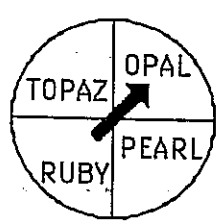
Answer: _____

★★ 4. Compute the following: $24 + 33 + 40$

Answer: _____

★★★ 5. Mark had to hit the same area of the spinner twice in a row to win his girlfriend a bracelet at the fair. What are his chances of hitting the same area two times in only two spins?

Answer: _____

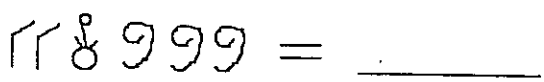


★ 6. Circle the greatest decimal number below.

2.05 2.5 2.005

★★ 7. Use the Egyptian Symbol Chart below to write the Egyptian numeral as a decimal numeral.

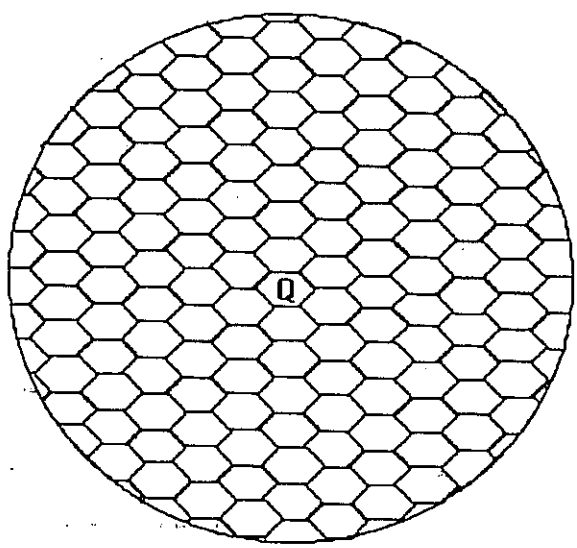
Egyptian Symbol		Decimal Numeral
	(stroke)	1
	(ox yoke)	10
	(coil of rope)	100
	(lotus plant)	1000
	(bent finger)	10,000
	(tadpole)	100,000
	(astonished man)	1,000,000

 = _____

★★★ 8. How can you make change for a dollar using exactly 50 coins and only the coins listed below?

_____ dimes _____ nickels _____ pennies

★★★★ 9. The picture shows a peek at a honeycomb. The queen's nest is shown in the center.



a. How many nests touch the queen's nest?

_____

b. How many nests touch a nest that touches the queen's nest? _____

c. The two sets of nests above could be called neighborhoods 1 and 2. How many nests in neighborhood 3? _____

Neighborhood 4? _____

Neighborhood 5? _____

d. What is an expression for the number of nests in Neighborhood n? _____

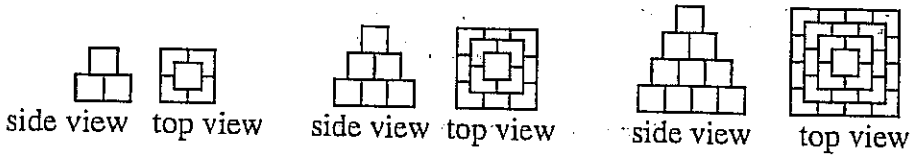
SUNSHINE MATH - 6
Uranus, XIII

Name: _____

(This shows my own thinking.)

★★★★ 1. Below you can see the side view and top view of three buildings in a pattern of buildings made from sugar cubes. Study the pattern until you can visualize how Building 5 would look.

Building 2 | Building 3 | Building 4



a. Draw the side view and top view of building 5 below.

side view top view

b. How many cubes would it take to make Building 5? _____

c. How many cubes would it take to make Building 10 in the pattern? _____

★★ 2. A friend tells you she made 96, 83, and 87 on the past three math tests. What must she make on the next test to attain an average of 90?

Answer: _____

★★ 3. Compute:

a) $3.7 + 4.78 + 9\frac{3}{5} - 4.09 + 6 =$ _____

b) $\frac{5}{12} + \frac{7}{8} - \frac{2}{3} + 1\frac{1}{2} - 2\frac{3}{24} =$ _____

★ 4. A patch of water lilies doubles itself in size each day. From the time the first leaf appeared to the time when the pond was completely covered took 40 days. How long did it take for the pond to be half covered in lily pads?

Answer: _____

★★ 5. Look at the graph below. The point (5, 12) has a circle around it, and the point (12, 12) has a box around it. The first number in parenthesis shows how far horizontally to go to find the point, and the second number shows how far vertically to go to find the point. Follow these directions exactly and you should have a word spelled out. Make your lines very heavy, or use a different color, so the lines will stand out against the grid.

Put a big dot at (3, 3).

Connect (16, 7) to (16, 3).

Connect (14, 7) to (14, 3).

Connect (16, 5) to (14, 5).

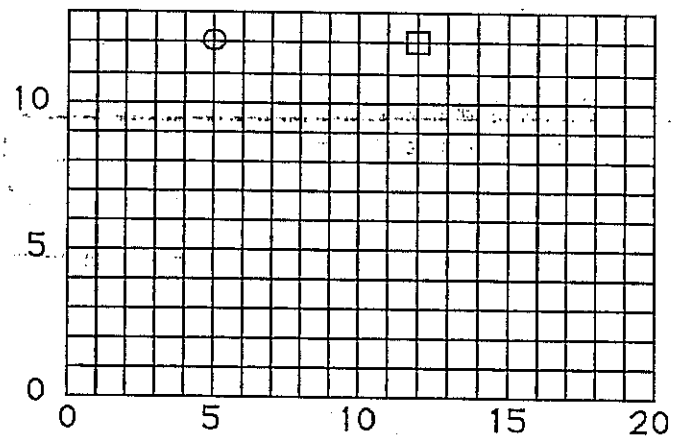
Connect (7, 3) to (7, 7)to(5, 7)to(5, 5)to(7, 5).

Connect (3, 7) to (3, 4).

Connect (8, 3) to (10, 3) to (10, 7).

Connect (11, 7) to (13, 7) to (13, 3) to (11, 3).

Connect (12, 5) to (13, 5).



★★ 6. Bob and Alex live in Pensacola, and they want to visit their aunt who lives in Miami. On the way, they want to stop and visit their cousins in Jacksonville. They need to calculate the distance they will travel from Pensacola to Miami, stopping in Jacksonville. On a map, the scale of miles shows that 1 cm represents 50 miles. Pensacola to Jacksonville is 7 cm, and Jacksonville to Miami is 6.5 cm. How many miles will they travel?

Answer: _____ miles

★★★★ 7. Name a ten-digit number such that:

The first digit on the left tells how many *zeros* are in the number.
The second digit from the left tells how many *ones* are in the number.
The third digit from the left tells how many *twos* are in the number.
The fourth digit from the left tells how many *threes* are in the number.
The fifth digit from the left tells how many *fours* are in the number.
The sixth digit from the left tells how many *fives* are in the number.
The seventh digit from the left tells how many *sixes* are in the number.
The eighth digit from the left tells how many *sevens* are in the number.
The ninth digit from the left tells how many *eights* are in the number.
The tenth digit from the left tells how many *nines* are in the number.

Answer: _____

SUNSHINE MATH - 6
Uranus, XIV

Name: _____

(This shows my own thinking.)

★★★ 1. Carla sold lemonade at the school fair. She had only two sizes of cups: 5 oz. and 8 oz. Her friend Josie wanted to buy exactly 2 oz. How did Carla measure out 2 oz. of lemonade?

For the correct answer, arrange these steps in proper order by writing lst, 2nd, 3rd, 4th, or 5th in the blanks beside the statements.

_____ Pour its contents into the 8 oz. cup.

_____ 2 oz. will remain in the 5 oz. cup.

_____ Fill the 5 oz. cup.

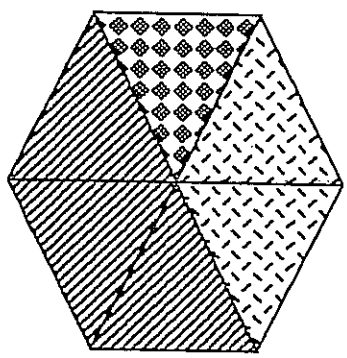
_____ Pour its contents into the 8 oz. cup until the large cup is filled.

_____ Re-fill the 5 oz. cup.

★★ 2. Alison needs to add a liquid vitamin to her horse Bobo's food. The directions on the bottle say to add 7 mL per 25 pounds of the animal body weight. If Bobo weighs 750 pounds, how much vitamin supplement should she add?

Answer: _____ mL

★★★ 3. Rounded to the nearest whole percent, what percent of the hexagon is each of the lettered parts?



A 

B 

C 

Answer: A = _____

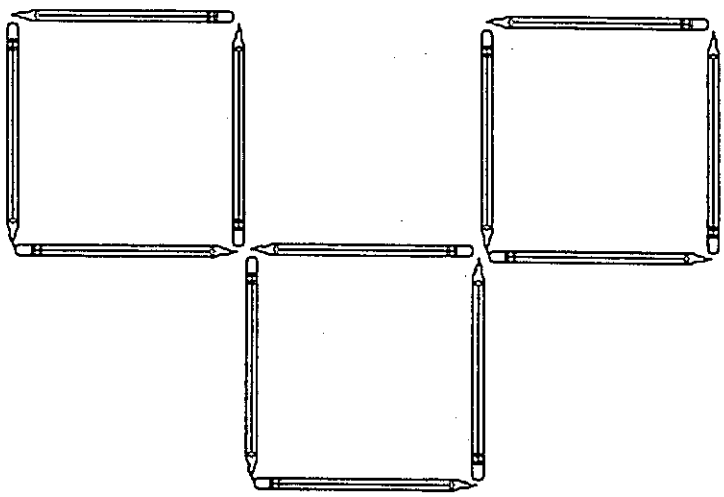
B = _____

C = _____

★★ 4. Eight girls are sitting at a table. Five are wearing sweaters, three are wearing coats, and two are wearing both sweaters and coats. How many girls are not wearing a coat or a sweater?

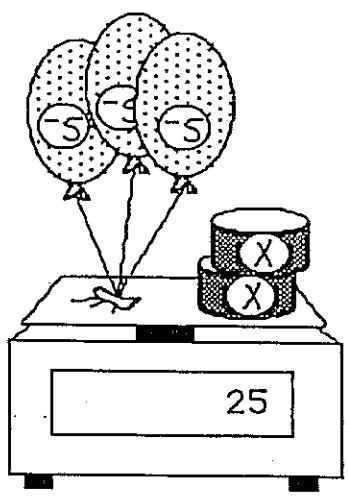
Answer: _____

★★★ 5. Three squares have been made from 12 pencils below. Show how to move only three of the pencils, and make four squares this same size.



★★★★ 6. The scale below shows three helium balloons attached to a scale, with two cans of unknown weight x. The helium balloons pull *up* on the scale, and so have a negative weight which has previously been measured as -5 because each one exactly balances a 5 gram weight. The cans push *down* on the scale and so have a positive unknown weight. Use your ingenuity to find the weight of one can.

Answer: $x =$ _____ grams



★★ 7. One gum ball costs 2 cents. The gum balls come in six different colors. What is the most money you would need to spend to ensure you get 3 gum balls of the same color?

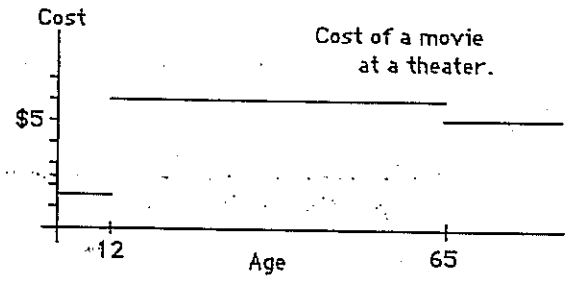
Answer: $_____

SUNSHINE MATH - 6
Uranus, XV

Name: _____

(This shows my own thinking.)

★★★ 1. Answer these questions about the graph.



a. How much does it cost for a 5-year old to go to a movie? _____

b. How much does it cost a 15-year old to go to a movie? _____

c. How much does it cost a senior citizen to go to a movie? _____

d. How much would it cost a father in his 40's and his 8-year old twins to go to a movie? _____

★★ 2. Karen has 20 coins worth $1.35. The coins are all nickels and dimes. How many of each coin does she have?

Answer: _____ nickels

_____ dimes

★★★ 3. Five campers agreed to "share the lookout" one night. They divided the time between bedtime (9:00 PM) and sunrise (5:30 AM) into five equal time intervals. Give the resulting times below.

1st watch: 9:00 PM until _____ 4th watch: _____until _____

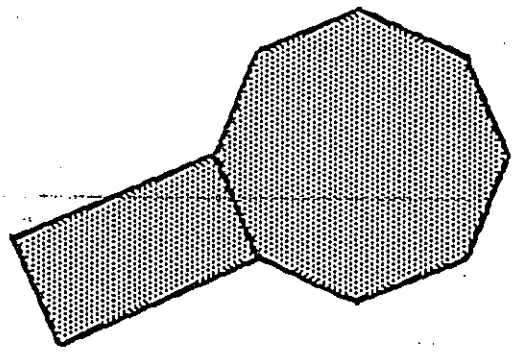
2nd watch: _____until _____ 5th watch: _____until _____

3rd watch: _____until _____

★ 4. The students at Harry's school are going to take a field trip. There are 487 students and 45 can ride on each bus. How many buses are needed for the field trip? Circle your answer.

a) 12 buses b) 10 buses c) 11 buses

★★★★ 5. A rectangle and a regular octagon share a common side. If the length of the rectangle is twice its width and the perimeter is 36 cm, what is the perimeter of the octagon?



Answer: _____ cm

★★ 6. Marcus has 3 red marbles, 9 white marbles, and 4 green marbles. He wants to divide all the marbles evenly into two jars, but he only wants two colors in each jar. How can they be divided?

Answer: _____

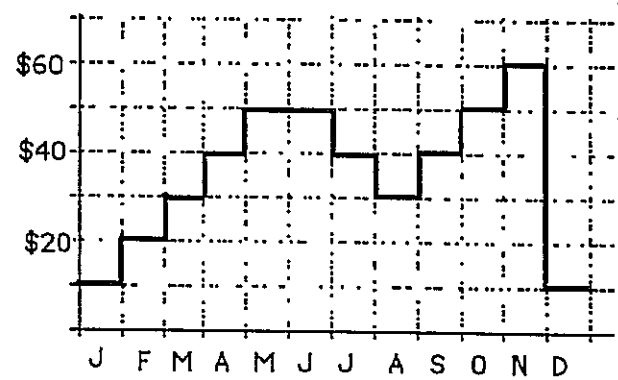
★★★ 7. The graph shows the balance in Jeremy's savings account for 1995.

a. What happened to Jeremy's account during the spring months?

answer: _____

b. When did the savings drop by $10 at the end of the month?

answer: _____ and _____



c. Between what two months did the biggest change occur? _____ and _____

★★ 8. Larry's ice cream shop has chocolate macadamia nut ice cream, rocky road ice cream, and strawberry cheesecake ice cream. They also have sugar cones and waffle cones. How many different double-dip ice cream cone combinations (using two different flavors of ice cream) can they make from these selections? The order of the ice cream does not matter, for example, chocolate macadamia on top of strawberry is the same as strawberry on top of chocolate macadamia.

Answer: _____

SUNSHINE MATH - 6
Uranus, XVI

Name: _____

(This shows my own thinking.)

★ 1. The number described by these clues can be found in the grid below. Circle the number.

a) It is greater than $588 \div 3$.
b) It is odd.
c) It has a ones digit and tens digit whose sum is 6.

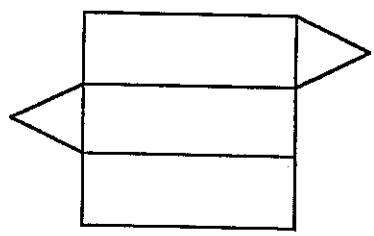
144	324	214
304	233	323
151	342	123

★★★ 2. Mrs. Circle has a class of 30 students. For every three girls in the class there are 2 boys. How many boys are in the class?

Answer: _____ boys

★★ 3. The picture shows a pattern for making a polyhedron. If you could cut this out and fold it up, what is the name of the polyhedron you would make?

Answer: _____

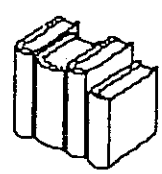


★★ 4. The cheerleaders are making lapel ribbons to sell at the Friday night football game. Each lapel ribbon requires 1/4 yard of ribbon. They have 60 yards of ribbon with which to make new lapel ribbons. In addition, they have 10 ribbons left from last week's game that they did not sell. All together, how many ribbons will they have to sell at this Friday's game?

Answer: _____

★★ 5. In how many different ways can 4 books be arranged on a shelf?

Answer: _____ ways



★ 6. Examine this set of numbers to see what they have in common. Then write the next 3 numbers in the set.

2, 3, 5, 7, 11, 13, 17, _____, _____, _____, ...

★★★ 7. Dorothy, Jake, Vicky, Otis, and Nick wore red, blue, yellow, purple, and green jackets. They collected spiders, marbles, hammers, fish, and watches. No two people wore the same color or had the same collection. Use these clues to match the people to the color of their jackets and their collections.

a) The boy in the green jacket collects spiders.
b) A girl who collects marbles has a yellow jacket.
c) Nick's favorite color is red and he always knows what time it is.
d) Jake's mother is always picking up rocks and putting them in fish bowls.
e) Dorothy collects hammers and hates the color blue.

NAME	JACKET	COLLECTION
DOROTHY		
JAKE		
VICKY		
OTIS		
NICK		

★★ 8. The letters S, T, and U have been left out of the sequence of letters below. Write each in its correct place above or below the line.

A EF HI KLMN VWXYZ
BCD G J OPQR

★★★★ 9. You have three bottles -- a 10-liter, a 4-liter and a 3-liter. All of the bottles are unmarked and there is no other supply of water available. The 10-liter bottle is full. You want to divide the water in such a way as to have one liter of water in the 3-liter bottle, four liters in the 4-liter bottle and five liters in the 10-liter bottle. You can do this by pouring the water from one bottle to another. What is the fewest number of pourings that will achieve this division of the water?

Answer: _____ pourings

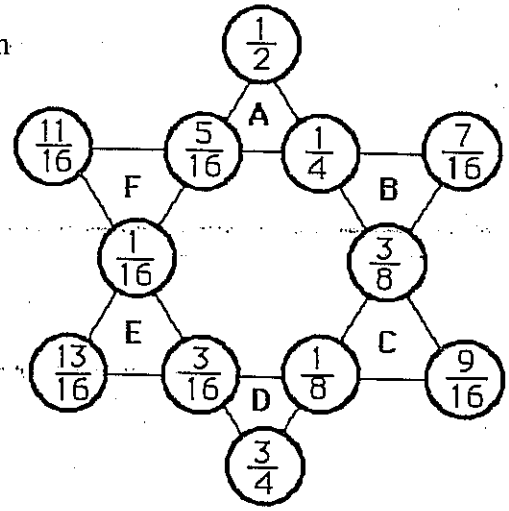
SUNSHINE MATH - 6
Uranus, XVII

Name: _____

(This shows my own thinking.)

★ 1. The star at the right is a "magic star." All fractions in each straight line have the same sum. What is the magic sum?

Answer: _____



★ 2. Add the fractions at the corners of the two large triangles. First, add the fractions $\frac{1}{2} + \frac{13}{16} + \frac{9}{16}$. Next, add $\frac{11}{16} + \frac{7}{16} + \frac{3}{4}$. What is the magic sum?

Answer: _____

★ 3. Finally, add the fractions at the corners of small triangle A: $\frac{1}{2} + \frac{5}{16} + \frac{1}{4}$. Then add the fractions at the corners of each of the triangles marked B, C, D, E, and F. What is the sum of each small triangle?

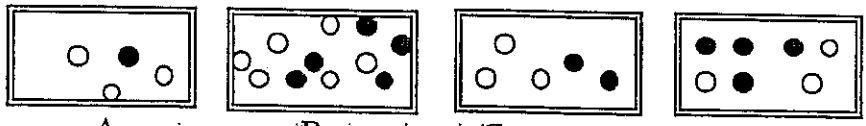
Answer: _____

★★★★ 4. Replace the letters a - j with the digits 0 - 9 to make each of these equations true. You may use each digit only one time.

a) $a \div 2 + 5 = 8$ b) $6\ (b - 8) = 6$ c) $8 \div (c + 4) = d$
d) $6 + e \times f = 30$ e) $2\ (g - h) = 10$ f) $3\,i + j = 15$

a = ___; b = ___; c = ___; d = ___; e = ___; f = ___; g = ___; h = ___; i = ___; j = ___

★★★ 5. Rhonda went to a party where they were drawing marbles out of a box for prizes. The player wins if she draws out a black marble on the first draw. Circle the box below that would give Rhonda the best chance of winning.

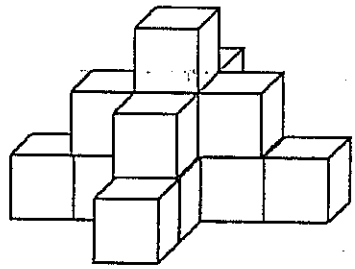


★ 6. Mrs. Walker bought a board 30 inches long for a class project. She needs to cut it into 1-inch pieces so that each student in her class will have a piece. How many cuts are required?

Answer: _____ cuts

★ 7. Joaquin made the figure below by stacking up centimeter cubes. The figure looks this same way when viewed from the back side. What is the volume of the figure?

Answer: ____ cubic centimeters



★ 8. Fill in the blanks in the numbers below with the largest digit possible to make each statement true.

a) 4, __ 2 3 is divisible by 3.

b) 2 __, 9 3 6 is divisible by 9.

★★★ 9. The "unit fractions" are those whose numerator is 1, such as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$ and so on. Find three different unit fractions whose sum is a whole number.

Answer: _____

★ 10. Jessie's total score after 3 games of bowling was 456. If she scored 132 in the fourth and final game, what was her average score per game?

Answer: _____

SUNSHINE MATH - 6
Uranus, XVIII

Name: _____

(This shows my own thinking.)

★★ 1. Hickory, dickory, dock
The mouse ran up the clock.
The clock struck four
The mouse ran down.
Hickory, dickory, dock.

If the clock strikes only on the hour, how many times will the clock strike before it strikes only four times again?

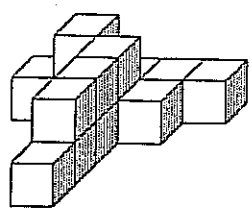
Answer: _____

★ 2. What is the prime factorization of the number 30?

Answer: _____

★★ 3. How many blocks are in the picture if each block sits on another and there are no hidden spaces?

Answer: _____ blocks



★★ 4. Dan is painting letters on the side of a model truck. The letters on the real truck are 40 inches high. The model is $\frac{1}{20}$ the size of the truck. How high should Dan make the letters on the model?

Answer: _____

★★ 5. According to the *Guinness Book of World Records*, Michel Lotito is the world champion eater of metal and glass. Since 1966, he has eaten 10 bicycles, 7 TV sets, a Cessna airplane, and a metal coffin, among other things.

His doctors say he can eat up to 2 pounds of metal a day. At this rate, how long would it take him to eat a small car, which weighs about 1 ton?

Answer: _____ years and _____ days

★★★ 6. Draw the 100th figure for the pattern below:

Answer: _____

★★ 7. Write the number of things in a dozen. Multiply it by the number of inches in a foot. Multiply that by the number of months in a calendar year. Multiply that by the number of items in the set of numbers on a clock. Write your answer below.

Answer: _____

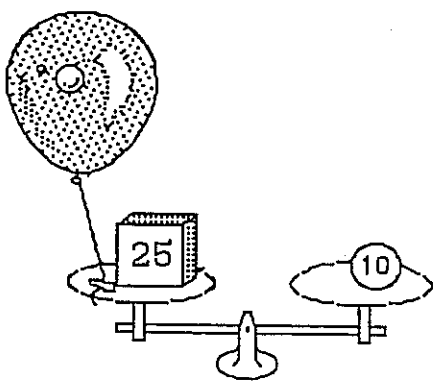
★★ 8. One day Jimmy's teacher gave the class the correct answers to their math examples but she failed to put in the decimal points. Help Jimmy decide where to place the decimals by rounding off the numbers involved, and estimating. Place the decimal points in the proper place.

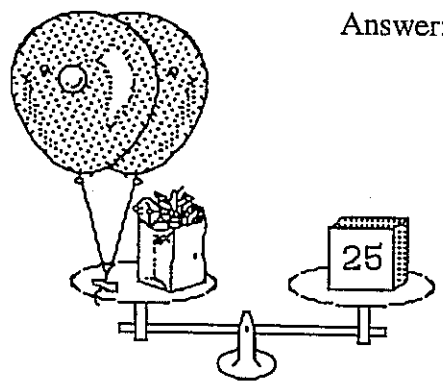
a) 7.436 x 3.89 = 2 8 9 2 6 0 4

b) 3.773 ÷ 0.98 = 3 8 5

★★★★ 9. Sheila bought a couple of identical helium balloons at the mall. She was testing out their "pull power" with her science kit, and found that one balloon and a 25-gram weight exactly balanced a 10-gram weight. Then she tested a bag of groceries, and found that the two balloons and bag of groceries exactly balanced the same 25-gram weight. Sheila said "Aha -- I know how much the groceries weigh." How much *do* the groceries weigh?

Answer: _____ grams





★★ 10. What would the next set of letters in this pattern be?

AN, bo, DQ, gt, _____, ...

SUNSHINE MATH - 6
Uranus, XIX

Name: _____

(This shows my own thinking.)

★ 1. A football player ran from his own 38-yard line to the other team's 40 yard line. How long was his run?

Answer: _____ yards

★★ 2. Ryan can walk to school in $\frac{6}{15}$ of an hour. When he rides his bike, he can get there in 8 minutes. Can Ryan get to school quicker by walking or by riding his bike? How many times faster?

Answer: a) Ryan can get to school faster by _____.

b) _____ times faster.

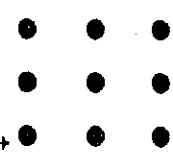
★★★★ 3. Look at the equations to the right: A, B, C, and D are whole numbers.

$A \times B = 24$
$A + B = 14$
$C \times D = 48$
$A \times D = 192$
$B \times C = 6$

What number is A? ____ What number is B? ____

What number is C? ____ What number is D? ____

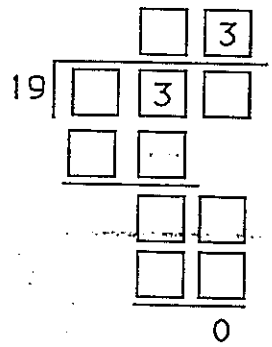
★★★ 4. Start as shown. Draw only 4 straight lines to connect all 9 dots. Do not lift your pencil until all the dots are covered.



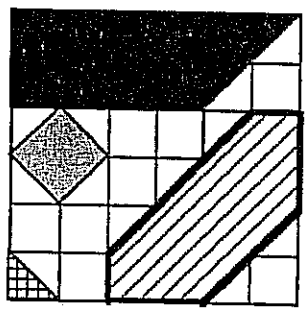
★★★ 5. Maria and Sarah are cutting strips of fabric for streamers to use in the P.E. show. Each strip needs to be $2\frac{1}{4}$ inches wide. How many strips can they cut from 6 feet of fabric if they cut from selvage to selvage?

Answer: _____ strips can be cut.

★★ 6. Write the missing digits in the problem:



★★★★ 7. Assume the area of the big square is 36 cm^2. Name the areas of the parts described.

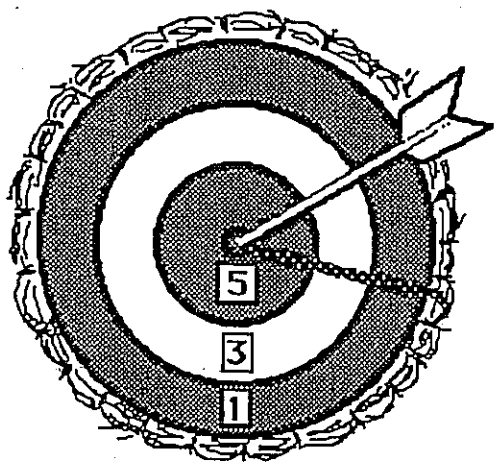


Black region: _____ cm^2
Dotted region: _____ cm^2
Striped region: _____ cm^2
Crossed region: _____ cm^2

★★ 8. If you shot 3 arrows at this target and all 3 arrows hit the bull's eye, you would score 15 points.

If exactly 3 arrows hit this target, how many different total scores are possible?

Answer: _____



SUNSHINE MATH - 6
Uranus, XX

Name: _____

(This shows my own thinking.)

★★ 1. I am a four-digit number.
All of my digits are *odd* numbers.
Each of my digits is different.
My *thousands* digit is the smallest counting number.
My *tens* digit is less than my units or hundreds digit.
The sum of my first and last digits is the same as the sum of my two middle digits.

What number am I?

☐☐☐☐

★★★ 2. Karen's company needed to reduce its expenses. Her salary was cut by 10%. Later, her company decided to give her a raise. By what percent must her salary then be raised to bring it back to the original amount?

Answer :_____ percent

★ 3. What math symbol can be placed between the 2 and the 3 in "23" to make a number greater than 2 but less than 3?

Answer: _____

★★ 4. A spaceship launched from Earth was in orbit for $29\frac{1}{2}$ days. What is the closest estimate for the number of hours it was in orbit? Ring your answer.

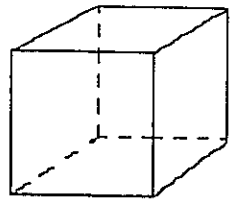
a) 700 hours b) 750 hours c) 650 hours

★ 5. The sixth grade math club gave this problem to its members to solve:

$$\boxed{13.6} \div \boxed{2.7} - \boxed{4.8} \times \boxed{1.7} \div \boxed{0.11} \rightarrow \boxed{}$$

Solve the problem for them by writing the correct answer in the box. But don't forget "My Dear Aunt Sally" or you'll miss it!

★★ 6. Number each of the eight corners on the cube from 1 to 8 so that the sum of any four numbers at the corners of each face is 18.



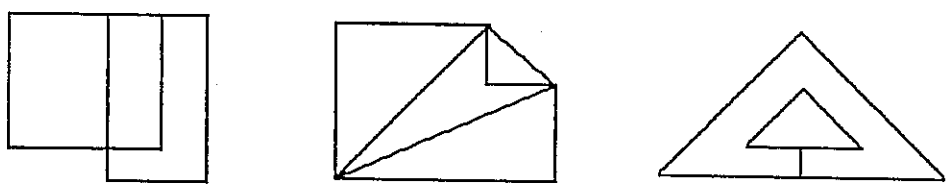
★★★ 7. The telephone company has 16 computer-controlled switching systems. Each system handles 650,000 calls *an hour*. The systems work with 98% accuracy. How many calls would not be accurately answered in *a day*?

Answer: _____ calls

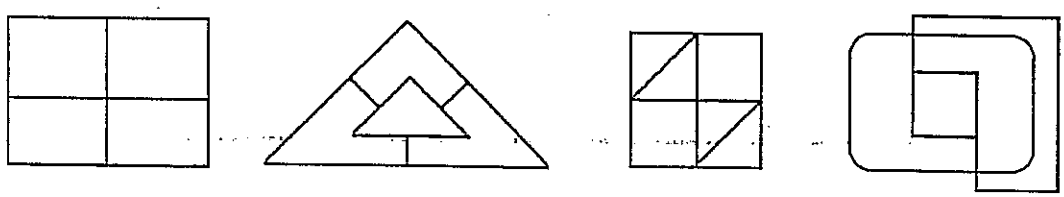
★★ 8. There are two ways you can make change for a dollar bill using exactly 50 coins. How many of each coin would you use for each way? Write your answers in the chart below.

	pennies	nickels	dimes	quarters	half dollars
first way:					
second way:					

★★★ 9. The designs below are called *one-drawable*. This means you can draw them with one continuous line without lifting your pencil or retracing a line, if you start in the right place.



Which of the designs below are *one-drawable*? Circle your answers.



SUNSHINE MATH - 6
Uranus, XXI

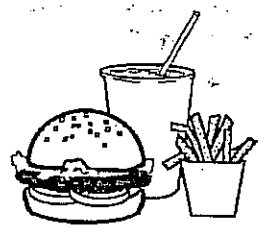
Name: _____

(This shows my own thinking.)

★★★ 1. How much change will you get back from a $5 bill if you order a cheeseburger platter? Sales tax is 5%, and is always rounded up to the next penny if necessary.

Answer_____

Hamburger	$2.00	fries	.89¢
Cheeseburger	$2.15	cola	.99¢
Tuna melt	$2.45	shake	$1.39
Platter (includes sandwich, fries and cola): add $1.45 to sandwich price			



★ 2. Iris looked at the sign above, asked for a cola, and gave the clerk a penny and told him to "keep the change." Why was she justified for doing this, mathematically speaking?

Answer: _____

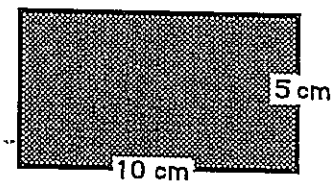
★★ 3. Josie's hobby is learning everything about the Presidents of the United States. Her friend Jacque loves math. Jacque posed the following situation to Josie: Find the number of letters in the last name of the third President of the United States. Add the total number of letters in the last name of the President elected in 1976. Now find the prime factors of this number. What is the correct answer?

Answer: _____

★★★ 4. The softball team won 70% of its games and won 4 more than it lost. How many games did the team lose?

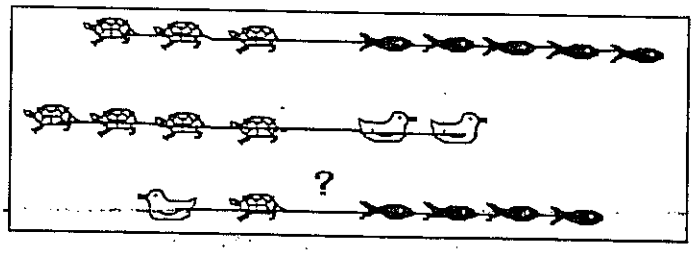
Answer: _____ games

★★ 5. What happens to the *area* of the piece of cardboard to the right if its length and width are both doubled? Circle the best answer.



a. The area doubles.
b. The area stays the same.
c. The area gets smaller.
d. The area is 4 times as great.

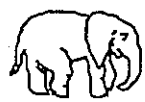
★★ 6. Dirk trained his water babies to have tug of war contests. He found that 3 turtles could tug the same as 5 goldfish, and 4 turtles could tug the same as 2 baby ducks. Which team would win between a baby duck and a turtle matched against 4 goldfish? Circle the winners below.



★★★ 7. In a gymnastics competition, five judges award scores on a 10-point scale for each event. The high and low scores are discarded before an average score is determined. The judges' scores for Terri's vault at a recent competition were 8.3, 9.0, 8.8, 7.5 and 8.4. What was Terri's score for the vault?

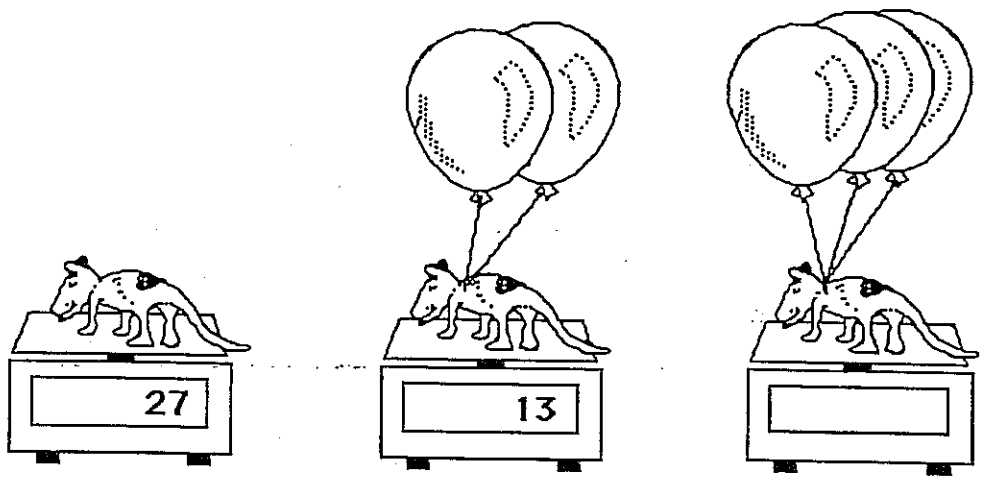
Answer: _____

★★★★ 8. Hannah kept track of the new baby elephant at the zoo. At one month the baby weighed 2 kg. At 2 months, he weighed 5 kg. At 3 months, he weighed 14 kg, and at 4 months he weighed 41 kg. Hannah noticed a pattern – what was her prediction for his weight at 7 months?



Answer: _____ kg

★★ 9. Andy weighed his dog, then attached two identical helium balloons to his collar and weighed him again. If he attached a third identical balloon to the dog, what would the scale read? Write the correct answer in the scale.



SUNSHINE MATH - 6
Uranus, XXII

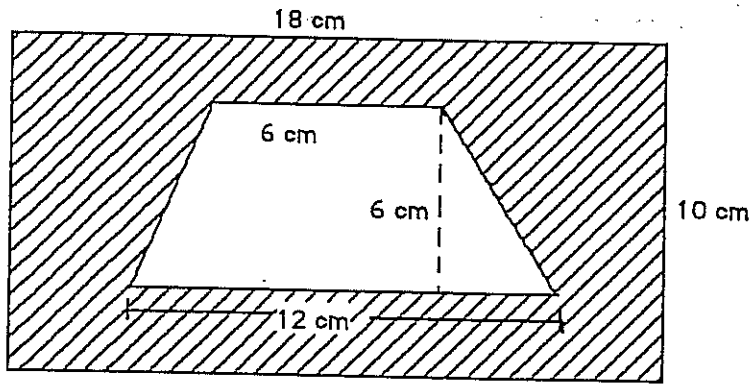
Name: _____

(This shows my own thinking.)

★ 1. What is the difference between the sum of twice 50 and twice 7, and twice 57?

Answer: _____

★★★ 2. It costs \$1 per cm^2 to add gold plating to a surface. What will it cost to gold plate the shaded region below, which is a rectangle with a hole cut in it?



Answer: \$ _____

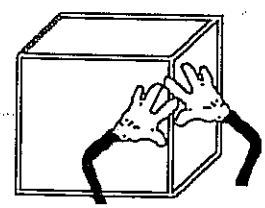
★ 3. A friend tells you that she is thinking of two 2-digit numbers and gives you the following clues. Find the numbers your friend is thinking of.

a. The numbers have the same digits, only reversed in position,
b. The sum of the digits is 8 in each number, and
c. The difference between the two numbers is 36.

Answer: _____ and _____

★★★ 4. A cube has a volume of 64 cubic inches. If you had to attach "string ribbon" to all of the edges of this cube, how many inches of ribbon would you need?

Answer: _____



★ 5. Try adding these numbers mentally. Look for numbers that go together naturally to give 100, and add them first.

$$45 + 25 + 15 + 55 + 75 =$$

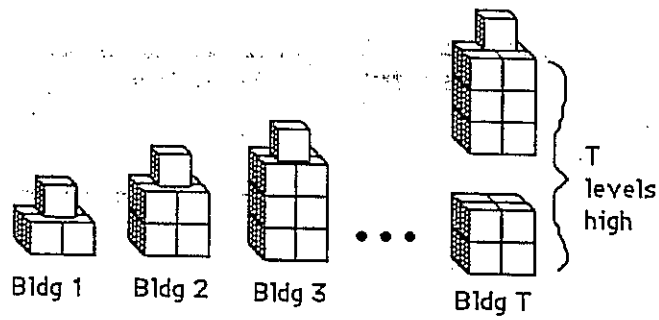
Answer: _____

★★★ 6. Consider the pattern of buildings below, made from blocks

a. How many blocks would the 4th building require? _____

b. How many blocks would the 5th building require? _____

c. How many blocks would the 25th building require? _____

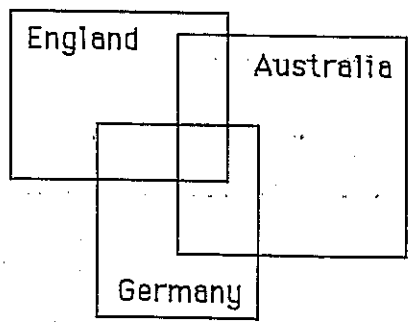


★ 7. How many blocks would it take to make building T in the pattern above, where T can be any whole number?

Answer: To make building T, I need this many blocks: _____

★★★ 8. In the *Stamps are Beautiful* stamp collecting club, 21 members have stamps from England, 19 members have stamps from Germany, and 11 members have stamps from Australia. Some of these same members have stamps from more than one country. Six have stamps from England and Germany, 4 have stamps from Germany and Australia, and 2 have stamps from England and Australia. No member has stamps from all three countries. How many members are in the *Stamps are Beautiful* stamp club? (HINT: Use the Venn diagram below.)

Answer: _____



SUNSHINE MATH - 6
Uranus, XXIII

Name: _____

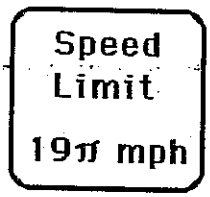
(This shows my own thinking.)

★★★ 1. You've heard of π, and so has the mathematician who designed this new speed limit sign. To the nearest whole number, what is the speed limit here? Circle the best choice below.

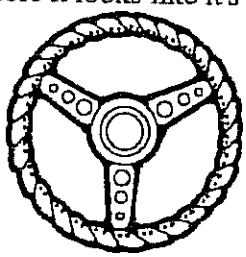
a. 25 mph b. 40 mph

c. 55 mph d. 60 mph

e. 65 mph f. 75 mph



★★ 2. A steering wheel is shown below. How many degrees clockwise would you have to rotate this steering wheel before it looks like it's in its original position?



Answer: _____ degrees

★★★ 3. Try this number trick on several friends. What is the answer they always get, if they do it correctly?

Answer: _____

Number Trick:

Take the number of brothers and sisters you have.
Double this number.
Add 4.
Multiply by 5.
Add one.
Subtract 10 times the number of brothers and sisters.

What is your answer?

★★★ 4. If you started counting on April fool's day at 8:00 AM, and counted 1 number a second, non-stop, 24 hours a day, on what day would you get to 1 million?

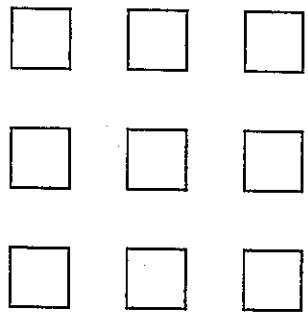
Answer: _____

★★ 5. Wayne wrote the months of the year on twelve identical cards and put them in a bag. He told his younger brother to pull one out without looking. If the brother drew out his birthday month, Wayne would do his chores for that month for his present. If his brother pulled out a summer month, Wayne promised to take him along whenever he went to the pool, as his present.

a. What is the brother's chance of drawing out his birthday month? ____

b. What is his chance of drawing out a summer month of June, July, or August? ____

★★★ 6. Arrange the digits 1 through 9 in the boxes below so that each row across and each column down has the same total.



★★ 7. There's only one thing wrong with the problem to the right. What is incorrect?

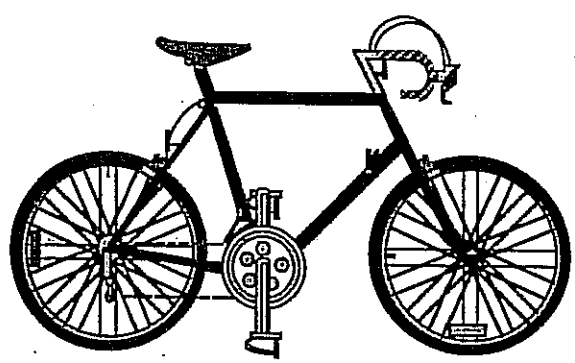
Answer: _____

_____

```
  3.71
 x4.05
  405
 2835
+1215
 1502.55
```

★★★ 8. Mario wanted to get a tune up for his bike before an upcoming road trip with his scout troop. The bike shop charges 25¢ to check and tighten each spoke, $5.00 to tighten and oil the chain, $8.00 to adjust the gears, and $1.50 to inflate the tires properly. How much would this tune up cost him?

Answer: _____



SUNSHINE MATH - 6
Uranus, XXIV

Name: _____

(This shows my own thinking.)

★★★ 1. Solve each problem below. The data comes from the *Guinness Book of World Records.* Round your answers to the nearest whole number.

a. The longest distance travelled by a go-kart in a 24-hour race is 1,018 miles. What was its average speed in miles per hour?

Answer: _____

b. The longest distance travelled by a truck riding on 2 side wheels is 2,864 miles. How far did the other two wheels travel on the trip?

Answer: _____

c. The fastest long-distance drive *backwards* in a car went 501 miles in 17.6 hours. What was the average speed for the car?

Answer: _____

★★★ 2. Tamara forgot to buy candles for her older brother's birthday cake, so she used the ones she had left from a previous birthday. She told him "Two candles stand for 6 years." How old was her older brother?

Answer: _____

★★★★ 3. Try this number trick on three people, except for the final step of telling their age and amount of change. Write down the answers each person gives you, together with their age and the amount of pocket change they have. Then decide how you can say how old they are, and how much change they have, ***just from looking at the final answer they give you.***

Age and Pocket Change

by Dr. Wonderful

Step 1. Take your age (years).

Step 2. Double it, then add 5.

Step 3. Multiply by 50.

Step 4. Subtract the number of days in 1 year.

Step 5. Add your pocket change (e.g., 49¢)

Step 6. Add 115. What's your answer?

Aha: You are ___ years old and have ___¢ in your pocket.

Answer: When I hear their final answer, _____ tells me how old they are, and _____ tells me their change.

★★ 4. Find 40% of $(13.5 - 2.08 + 8\frac{58}{100})$:

Answer: _____

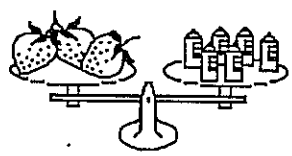
★★★ 5. If you can read this message, then perhaps you are clever enough to solve this problem:

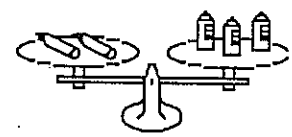
If 5 boys and 5 girls were at a party and had to dance, how many different dances must be scheduled so that each boy danced with each girl?

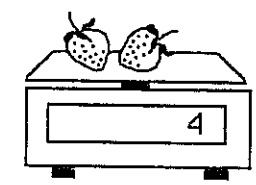
Answer: _____

★★ 6. Find the weight of a pencil. The scale is set to measure grams.

Answer: ____ grams

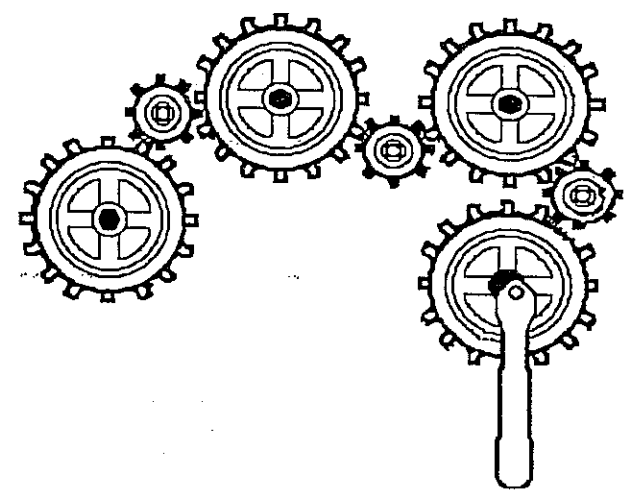






★ 7. The collection of gears below has seven gears in all. If you turn the one with the handle in a clockwise direction, in which direction will the seventh gear turn?

Answer: _____



SUNSHINE MATH - 6
Uranus, XXV

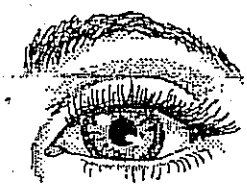
Name: _____

(This shows my own thinking.)

★★ 1. A person your age is usually awake about fourteen hours each day. Your eye blinks about 25 times a minute when you're awake.

a. About how many times each day do your eyes blink?

Answer: _____ times



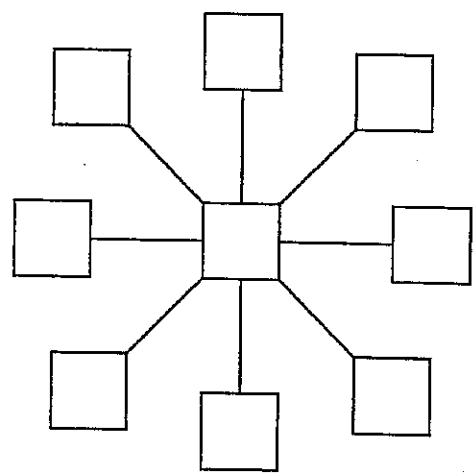
b. About how many times per year do your eyes blink?

Answer: _____ times

★★ 2. Sue and Sally were building their own bowling alley. There would be 15 lanes, each needing ten pins. However, due to damage, they needed to keep on hand 20% more pins than were in use at any given time. How many pins did they need to purchase?

Answer: _____ pins

★★★ 3. Put the numbers 10 through 18 in the diagram below in such a way that the sum of the three numbers along any line totals 42.



★★★ 4. A *perfect number* is one that is the sum of its proper divisors. Six is a *perfect number* because $6 = 1 + 2 + 3$. In the set of whole numbers, six is the first *perfect number*. What is the second *perfect number*? (Hint: It is less than 30.)

Answer: _____

★ 5. Rebecca bought 3 new cassette tapes on sale. She went into the music store with $27 and came out with $6. What was the average cost for the tapes?

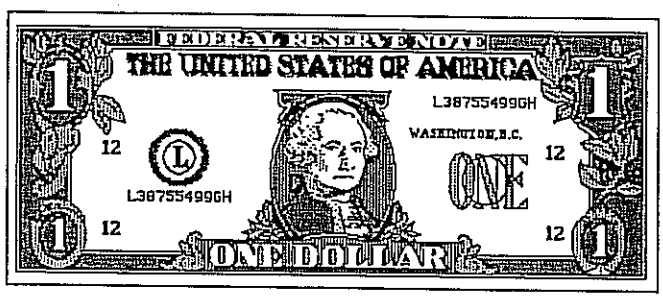
Answer: _____

★★★★ 6. Sam keeps track of several stocks on the stock market. He watched one stock for five consecutive days and recorded the activity. On Monday morning, his favorite stock opened at $12\frac{1}{2}$ and gained $\frac{3}{4}$ points that day. On Tuesday there was a gain of $1\frac{3}{4}$ points. Wednesday the stock lost $5\frac{1}{2}$ points. On Thursday there was a change of $+2\frac{5}{8}$ points. On Friday afternoon the stock closed at $14\frac{1}{4}$. What was the change for Friday over Thursday's standing?

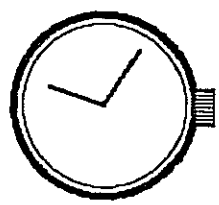
Answer: _____

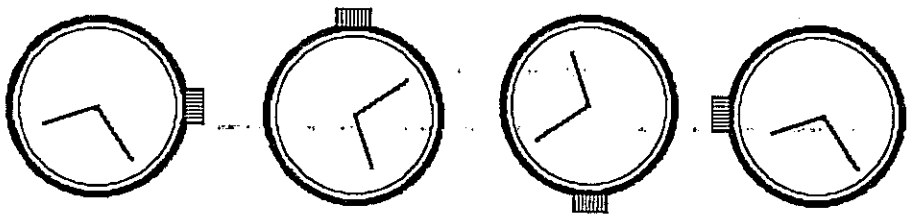
★ 7. How many times does a symbol or word name for the number *one* appear on the dollar bill below?

Answer: _____ times



★ 8. Consider the watch face to the right. Turn it 180°, then flip it over to the left. Circle the figure below that shows what it would look like.





SUNSHINE MATH - 6
Uranus, XXVI

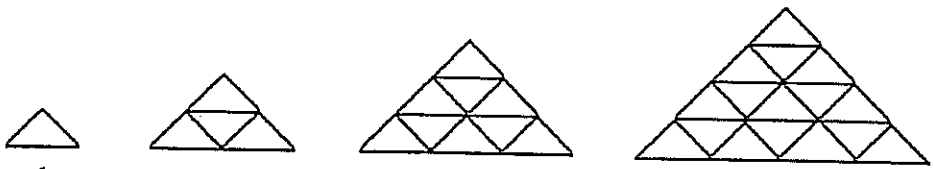
Name: _____

(This shows my own thinking.)

★★ 1. For every new car made, 5 tires and 2 headlights must be made also. If the car manufacturer purchased 400 tires for its new cars one week, how many headlights did they need to purchase for those cars?

Answer: _____ headlights

★★★ 2. The drawing below shows triangles made from toothpicks, in a pattern. Figure 1 requires 3 toothpicks; figure 2 requires 9.



a. How many toothpicks would be required for the 5th figure? _____

b. How many toothpicks would be required for the 6th figure? _____

c. How many toothpicks would be required for the 10th figure? _____

★ 3. Ashley is reading her favorite novel a second time and has read $\frac{2}{5}$ of it. The book is 495 pages long. How many more pages does she have to read to finish the book?

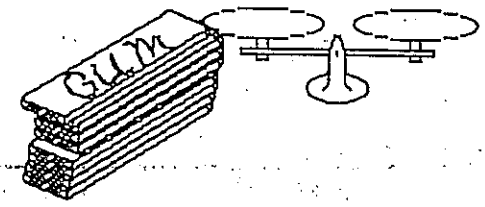
Answer: _____ pages

★★ 4. Daniel is using masking tape to hang pictures around the classroom. Each picture uses 1 ft. 2 in. of tape. How many pictures can he hang if he has a 20-foot roll of tape?

Answer: _____ pictures

★★★★ 5. Your teacher caught you chewing gum and took away the rest of the pack—9 sticks. He removed the wrapping from one stick, replaced the gum with a piece of cardboard the same size and shape but which weighed less. He then re-wrapped it. Now the lighter-weight stick looks and feels like the rest.

You can avoid going to the principal. You must tell him how to find the fake piece by using the balance scale only two times. Explain your reasoning, or go ahead on down the hall.



Answer: *Attach a sheet of paper with your explanation, that starts like this:*

For the first weighing, I would:

For the second weighing, I would:

★ 6. A deep-sea fishing boat is tied to a dock in the harbor. Over its side hangs a rope ladder with its bottom rung almost touching the water. Rungs of the ladder are 1 foot apart. The tide begins rising at the rate of 8 inches per hour. At the end of six hours, how many rungs will be covered by water?

Answer: _____

★★ 7. A traffic court judge imposed a fine for speeding. The fine was $80, plus $1.75 for every mile per hour the speed limit was exceeded. What was the fine the judge imposed for traveling 57 mph in a 45 mph zone?

Answer: _____

★ 8. A square garden has five fence posts on each side. How many fence posts are there around the garden?

Answer: _____

★★★ 9. If you and four of your friends can stand on a square yard of carpet, how many of you can stand in a classroom that is 27 feet by 36 feet?

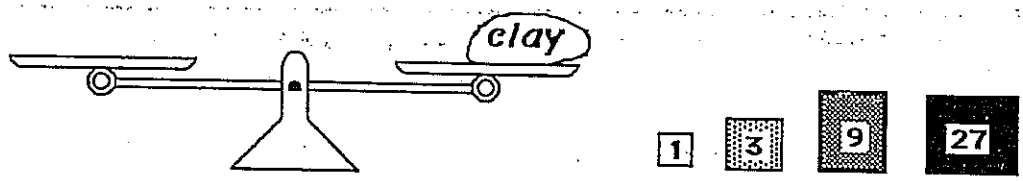
Answer: _____people

SUNSHINE MATH - 6
Uranus, XXVII

Name: _____

(This shows my own thinking.)

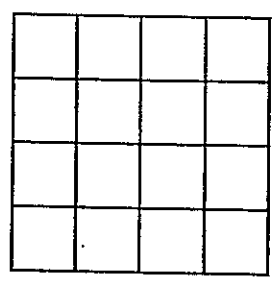
★★★★ 1. Mark claims the lump of clay weighs 25 grams, but only has a 1-gram, a 3-gram, a 9-gram, and a 27-gram weight to use for the balance scale. Show where he can place the weights to prove the clay weighs 25 grams.



★★ 2. If your math scores were 76, 76, 83, 85, and 90, which statistic would give you the best final grade -- the *mean*, the *median*, the *mode*, or the *range* of these scores?

Answer: _____

★★★ 3. How can you arrange 4 pennies, 4 nickels, 4 dimes, and 4 quarters in this grid so that each row, each column, and each diagonal contain exactly one of each type of coin? Write P, N, D, or Q in each square to show your solution.



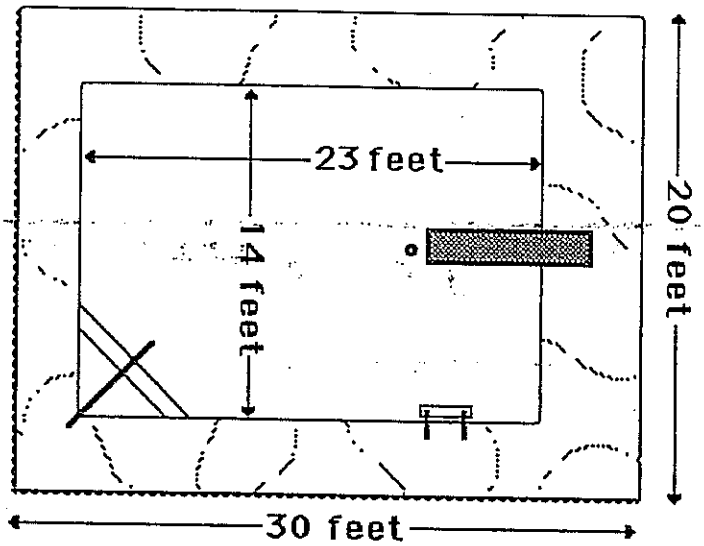
★★ 4. Diana and Felicia want to can 12 quarts of tomatoes from their family's garden. They already have 7 quart jars and 6 pint jars. If only quart and pint jars are available, what is the fewest number of jars they can buy to have enough?

Answer: _____ jars

★ 5. What is the probability of being born in a month with more than 30 days?

Answer: _____

★★★★ 6. The diagram below shows a new swimming pool at the city park. The pool contractor wants to border the pool with ceramic tiles that are 6" squares. If each tile costs $2.75, what is the total cost of the tiles?



Answer: _____

★★ 7. Timothy received three $20 bills for his birthday. He wants to buy a tennis racquet for $29.95 and two cans of tennis balls for $2.49 each. He also wants to buy a new tennis shirt for $14.95. About how much money should he have left, if his mom agrees to pay the tax? Circle the correct answer.

a) $10 b) $5 c) $15

★★ 8. Tim earned some extra money and bought some new CDs. 50% were rock, 25% were country-western, and the rest were classical. He bought 3 classical CDs. How many CDs did he buy?

Answer: _____

★ 9. Cleopatra was 39 years old when she died in 30 BC. In what year was she born?

Answer: _____