Sunshine Math Superstars III

Neptune
Grade 7

Uranus
Grade 6

Saturn
Grade 5

Pluto
Grade 8

Jupiter
Grade 4

Mercury
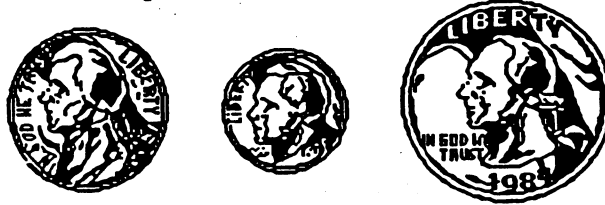Kindergarten

Mars
Grade 3

Venus
Grade 1

Earth
Grade 2

Pluto
Grade 8

WORKSHEETS

SUNSHINE MATH - 8
Pluto, I

(This shows my own thinking.)

★   1. Remove the dime from the center position without touching it. Describe how to do it.

Answer:_____

★★   2. There are six digits in a sequence -- two 4's, two 5's, and two 6's. There is one digit between the two 4's; there are two digits between the two 5's; and there are three digits between the two 6's. Write this sequence of numbers.

Answer:_____

★★★   3. While at the park, I saw boys and dogs. Counting heads, I got 32. Counting legs, I got 104. How many boys and dogs were there?

Answer: _____ boys and _____ dogs

★   4. Each one of a group of students bought one item at a flea market. All of the items sold for the same price. There was no tax. The total paid by the students was $2.03. If each item cost more than $.10, how many students were in the group.
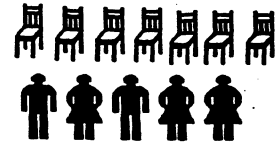
Answer: _____ students

★★   5. Mr. Barnes is a lumberjack. Using his power saw, he can cut a log into 5 pieces in 6 minutes. How long would it take him to cut the log into 7 pieces?

Answer:_____minutes

★★★★ 6. Five people are going to be seated in a row of seven chairs.
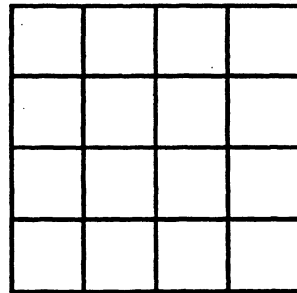How many different ways can they be seated?

Answer: _____ ways

★ 7. Add one line to make this statement true: $1 + 1 + 1 = 110$

★★★ 8. Put the following numbers into the grid so that no single digit appears more than once in any row, column, or main diagonal.
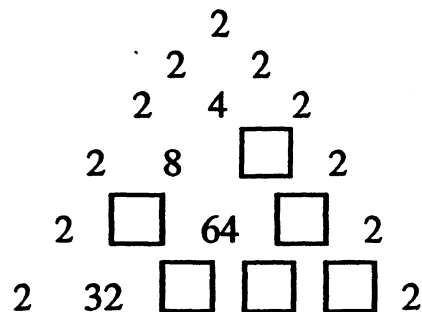
10, 12, 13, 21, 34, 38, 40, 47, 50, 53, 57, 64, 65, 78, 89, 98

★★★ 9. Fill in the missing number:

2, 8, 27, 85, 260, _____, 2365

★★★★ 10. The numbers in the triangle follow a certain pattern. Figure out the pattern and calculate the numbers that would replace the boxes. Write them inside each box.

```
                2
             2     2
          2     4     2
       2     8    □    2
    2    □    64    □    2
 2    32    □    □    □    2
```

16

SUNSHINE MATH - 8
Pluto, II

Name: _____

(This shows my own thinking.)

★★ 1. A sidewalk was built to connect each house below to every other house. How many sidewalks were built?
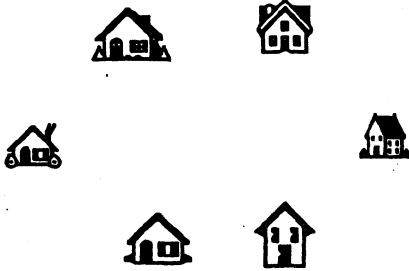
Answer:_____sidewalks

★ 2. These numbers reflect the variation from normal depth of the water level of Lake Okeechobee for five Mondays. Find the average of these five depths.

19.53   8.72   31.27   −2.71   −22.13

Answer:_____

★★★ 3. On a purchase of a pair of athletic shoes, you are offered a 15% discount and a 10% discount to be taken in either order. Which do you ask for first to get the lowest price?

Answer:_____

★★ 4. A basketball player is $6\frac{3}{4}$ feet tall. How tall is he in inches?

Answer: _____ inches tall

★ 5. I want to buy a pair of jeans that cost about $32.00, shoes that cost about $39.00, and a vest that costs about $16.00. On top of that, there is a 6% tax. To the nearest $20 bill, how much money should I bring?

Answer: _____

★★★★ 6. If I take 9 hours to complete a project and you can complete it in $4\frac{1}{2}$ hours, how long would it take us to complete the project together?

Answer:_____hours

★ 7. If January 1st is on a Friday, what day of the week is February 23rd of that same year?

Answer:_____

★★★★ 8. Before the age of technology, the library was overflowing with books. Then during one decade, each book was stored on microfiche. This new storage space was equal to the cube root of the old space. In the next decade, the microfiche were converted to diskettes. This new storage space was equal to the square root of the previous space. Finally, in this decade, each tape has been changed over to a compact disc. The current space is 23 percent of the previous space. If the current space is equal to 3 books, how many books were in the old library?

Answer:_____books

★★ 9. What geometric solid is this, when the shape is cut out and the lines become the edges of the 3-dimensional shape?

Answer: It's a _____.
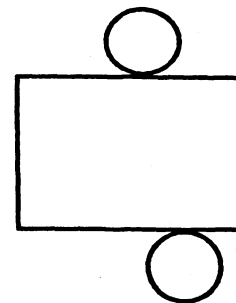
★★★ 10. A lizard is at the bottom of a well 27 meters deep. He climbs 5 meters every day, but falls back 3 meters every night. How many days does he take to reach the top?

Answer:_____days

18

SUNSHINE MATH - 8
Pluto, III

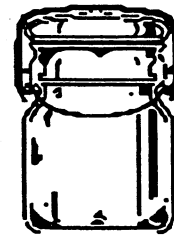★★ 1. If $A \triangle B = A^2 + 2AB + B^2$, evaluate $4 \triangle 5$.

Answer: _____

★ 2. Express 2.7 as a common fraction.

Answer: _____

★★ 3. In a factory, a machine can fill 180 jars in 15 minutes. How many jars can be filled in 100 minutes?

Answer: _____ jars

★★ 4. What is the mode of this list of 16 numbers?   Answer: _____

2 4 7 8 2 10 7 2 5 3 6 8 5 1 0 1

★ 5. If I dig a hole 4 meters square and 2 meters deep, how much dirt is in the hole?

Answer: _____ cubic meters

★★ 6. Sherry was playing a card game with her friends. She needed to draw a diamond greater than 10 to win the game. If she draws from a full standard deck of cards, what is the probability of her winning?
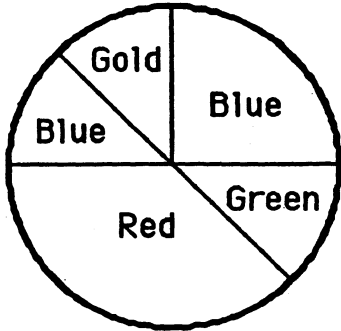
Answer: _____

★★★ 7. Replace R, M, and S with numerals to make a true equation.

$$\begin{array}{r} R\,R\,M \\ +\quad S\,M \\ \hline S\,M\,M\,M \end{array}$$

Answer: R = ___, M = ___, S = ___

★★★★ 8. Study the dart board below. Find the probability of hitting each color when a dart is thrown. Write the answer as a fraction in lowest terms.

Answer:

Gold _____

Green _____

Red _____

Blue _____

Blue or Gold _____

Orange _____

★★★★ 9. There are fewer than 6 *dozen* Blow Pops in my bag. If I count them by 2's, there is 1 left over. If I count them by 3's, there are 2 left over. There are 3 left over if I count by 4's. Four are left if I count by 5's. How many Blow Pops are in my bag?

Answer:_____blow pops

★★★ 10. A bat ate 208 bugs in 4 days. Each day she ate 20 more than the previous day. How many bugs did she eat each day ?

Answer: day 1: ____bugs; day 2: _____bugs; day 3: ____bugs; day 4: _____bugs

SUNSHINE MATH - 8
Pluto, IV

Name: _____

(This shows my own thinking.)

★ 1. Move one of the three popsicle sticks to make a true equation. Use arrows to show which one you move and how you move it.

$$\mathbf{I} \ominus \mathbf{III} \equiv \mathbf{II}$$

★★★★ 2. You can make up for being late to Mr. Reeves' class if you are well prepared upon arriving. His formula for how many minutes of detention you must serve is $m = 30 - 5x$. This formula allows 5 minutes off the 30-minute punishment for each question you answer correctly in class.

a. What does x stand for in the formula? _____

b. What does m stand for in the formula? _____

c. If you are tardy but answer 2 questions correctly in class, how long is your detention? _____ minutes

d. If you are tardy, how many questions must you answer in class so that you have no detention to serve? _____ questions

★★★ 3. Farmer Henson needs to fence in a small area to make a horse pen. The pen needs to be about 900 ft^2 in area for the horse to be comfortable for a short time. To the nearest foot, how much fencing will he need if the pen is circular in shape? Use 3.14 for π.

Answer: _____ feet of fencing

★★★★ 4. A diver is working 10 feet below the surface of the water. The gap between the water and the deck of his support barge is $\frac{1}{8}$ of the total length of air hose, and $\frac{2}{3}$ of the total length remains on the reel. What is his maximum working depth without a change of equipment?

Answer: _____ feet

21

★ 5. There are twelve $0.29 stamps in a dozen stamps. How many $0.32 stamps are in a dozen?

Answer: _____ stamps

★ 6. At a pharmacy, Mrs. Dull paid $2.35 for a toothbrush, $ 1.30 for a comb and $4.99 for shampoo. The sales tax is 6%. Find the change she should receive from a ten-dollar bill.

Answer: _____

★★★ 7. Georgia solved a problem in her math homework that gave her an answer of $0.\overline{425}$ but the problem asks for the answer to be a common fraction. What would that fraction be?
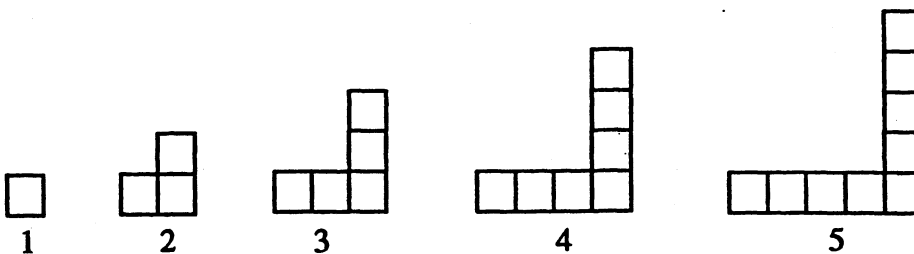
Answer: _____

★★ 8. How much larger is 3^4 than 4^3?

Answer: _____

★★★★ 9. Study the relationship between the figure number, its *area*, and its *perimeter*. Then answer the questions below the figures.

Figure Number	1	2	3	4	5	6	....	33
area	1	3	5	7	9	11	....	65
perimeter	4	8	12	16	20	24	....	132

1   2   3   4   5

a. What is the area for figure 100? _____ What is its perimeter? _____

b. What is an algebraic expression for the area of figure number n? _____

c. What is an algebraic expression for the perimeter of figure number n? _____

SUNSHINE MATH - 8
Pluto, V

★★ 1. Show how to make a sum of exactly 100 by using only 15, 21, 24, 27, or 31. Any or all may be used more than once.

Answer: _____

★★ 2. Replace A, B, and C with numbers so that:

$$A \times A = B$$
$$B - A = C$$
$$A + A = C$$

Answer: ___ X ___ = ___

___ - ___ = ___

___ + ___ = ___

★★★ 3. From the manufacturer, we know the ratio of yellow M&M's to orange M&M's made is 4 to 7. If 56 orange M&M's are in a large package, about how many yellow M&M's would be in the package?
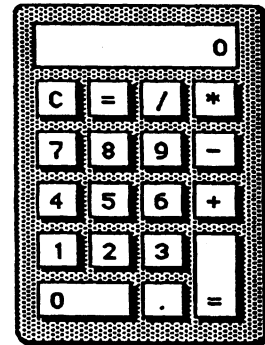
Answer: _____ yellow M&M's

★★ 4. Use a calculator to find the answer to:

(13450 + 0.36) - (6 x 2141.06).

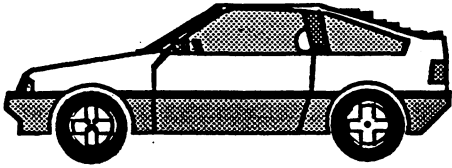Then turn the calculator upside down to find an animal.

Answer: The animal is a _____.

★★★ 5. If $x + y = 12$ and $x - y = 8$, find the product of x and y.

Answer: _____

★★   6.   Lori and Tim bought a new car at an "end of the year closeout sale" for "dealer cost plus 8%." If they paid $18,036, what was the dealer's cost?

Answer: $_____

★★★   7.   Jason worked 6 days. The first day he was paid $200. Each day thereafter he was paid $\frac{1}{2}$ of what he made the day before. What was his total wage ?

Answer: $_____

★★   8.   How many diagonals are in a regular decagon?
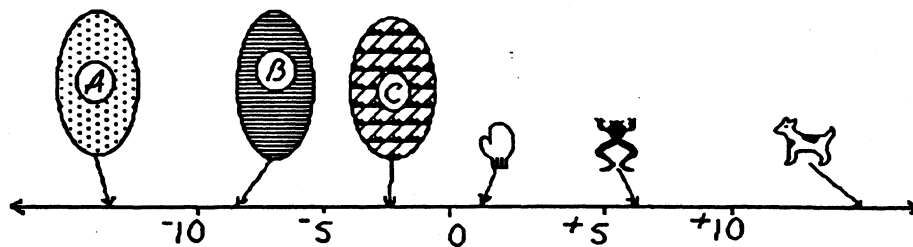
Answer: _____diagonals

★   9.   What common word can be spelled out by the letters on a compass?

Answer: _____

★★★ 10.   Approximately what number is represented by each object below:

Answer: A is ___; B is ___; C is ___; mitt is ___; frog is ___; dog is ___

24

Name: _____

(This shows my own thinking.)

★★★★ 1. On a digital clock showing hours and minutes, how many different readings between 11:00 a.m. and 5:00 p.m. contain at least two 2's?

Answer: _____

★ 2. A clever woman sat beneath a grape vine watching her husband pick grapes. She noticed that the number of grapes in his basket doubled every minute, and that it was precisely filled at 1:00 p.m. At what time was his basket half full?

Answer: _____

★★★ 3. Bev, Debbie and Jen are friends. Debbie, who always tells the truth, says the youngest woman is her cousin. Bev, who always lies, says she is older than Debbie but younger than Jen. The ages of the women are 40, 36, and 23. Give each woman's age.

Answer: Bev _____   Debbie _____   Jen _____

★★★★ 4. The faces on a regular decahedral die -- one with ten faces instead of six -- are numbered one through ten. What is the probability of rolling three 8's in succession?

Answer: _____

★★★ 5. If $a \diamondsuit b = \dfrac{1}{b} - \dfrac{1}{a}$, express $8 \diamondsuit 3$ as a common fraction.

Answer: _____

25

★★   6.   Farmer Benson has a rectangular pig pen. The lengths of the pen's sides are 26 m by 18 m. If the length of each side of the pig pen is tripled, what will happen to the area of the pig pen? Circle the best answer below.

     a. The area will also triple.   b. The area will be 9 times as much as before.

     c. The area won't change.   d. The area will double.

★   7.   Stamps are $0.32. Janice has $7.00. How many stamps can she buy?

       Answer: _____ stamps

★★   8.   For every 5 serves Gabrielle makes, Tammy makes 3. At practice one day, Tammy made 75 serves. How many serves did Gabrielle make?

       Answer: _____ serves

★★★★   9.   Ginger watched the man from the carnival ride a very tall bicycle. She wondered about riding it from Mudville to Peoria, a distance of 266 miles. The diameter of the wheels was 83 inches. The pedals were geared so that one complete turn caused the wheel to rotate 8.4 times. If Ginger turns the pedals once every 5 seconds, and can maintain that rate, about how long would it take to make the trip?

       Answer: _____ hours

★★★   10.   The story of a skydiver has been jumbled up. Place each letter on a correct position on the horizontal axis of the graph, to show when that event was occuring.
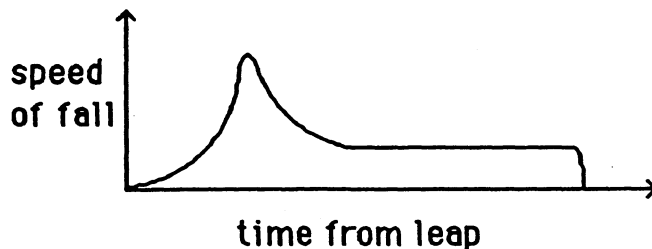
A. She opened the parachute.
B. She hit the ground.
C. She leaped from the plane.
D. She floated gently down.
E. She was in "free fall" after jumping.

speed
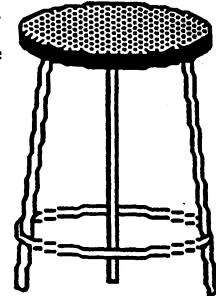of fall

time from leap

26

★★★   1.   Mrs. Graham's science laboratory has some stools with 3 legs and some chairs with 4 legs. If there is a total of 158 legs on the stools and chairs, and 42 total seats in the room, how many stools and chairs are in Mrs. Graham's science lab?

Answer: _____ stools and _____ chairs

★★   2.   Sheila's volleyball team has lost 11 games. The team has won 5 more than they have lost. What is their winning percentage?

Answer: _____ percent

★★   3.   Julio was driving from his home to Tampa. The last road sign he saw said it was 177 miles to Tampa. Julio has driven 51 miles since he saw the last road sign. He is now half way to Tampa. How far is it from Julio's home to Tampa?

TAMPA
177 mi.

Answer: _____ miles

★★   4.   J, K, and L are circles. Circle J has a 32 inch diameter. The radius of circle J equals the diameter of circle K. The radius of circle K equals the diameter of circle L. How long is the radius of circle L?

J   K   L
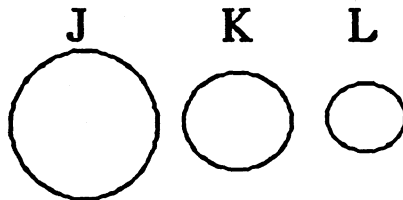
Answer: _____ inches

★★★   5.   Molly collects baseball cards. For every card that has a pitcher on it, 12 do not. If Molly has a total of 403 baseball cards, how many of them are of players that are not pitchers?

Answer: _____ cards

★ 6. There are 9 rows of student desks in Elizabeth's math class. Each row has the same number of desks. If 15 students just fit into the first 3 rows with no empty seats, how many student desks are there in Elizabeth's math class ?

Answer: _____desks

★★★★ 7. Jack wanted to win the big bicycle race, so he trained hard for a week -- 7 days. Each day he rode 3 miles farther than he had the day before. If he rode a total of 126 miles, how far did he ride on the last day of the week?
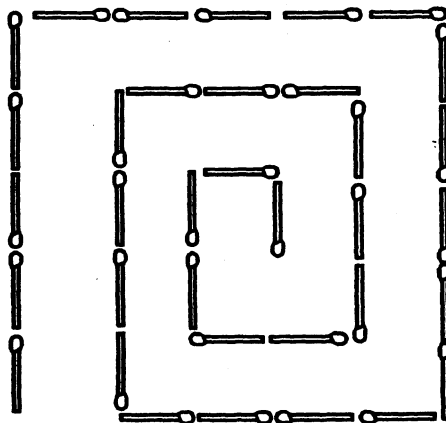
Answer: _____ miles
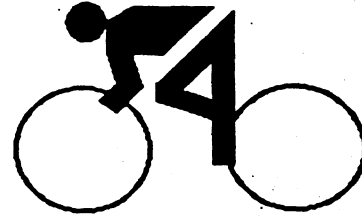
★★★ 8. Sue usually makes 6 free throws out of 10 trys. What is the probability she will make her next two free throws?

Answer: _____

★★★ 9. Thirty five matchsticks are placed so that they make a spiral that goes counterclockwise. Show how to shift four matchsticks to make the spiral go clockwise. Draw arrows to show how the four matches are moved.

SUNSHINE MATH - 8
Pluto, VIII

★★★ 1. The faces on a regular die are numbered 1 through 6. What is the probability of rolling three four's in succession? Give your answer as a common fraction.

Answer: _____

★★ 2. Two girls each had a different number of bracelets. Joyce said, " If you give me 8, I'll have as many as you." Leslie replied, " If you give me 8, I'll have twice as many as you." How many did each have?

Answer: Joyce has_____ bracelets.

Leslie has_____ bracelets.

★★ 3. How many different 3-digit numbers can you write using the numbers shown below only one time?

$$2 \quad 4 \quad 7 \quad 9$$

Answer: _____ numbers

★★★ 4. Karch gave $\frac{1}{2}$ of his stamp collection to AJ. Then he gave $\frac{3}{4}$ of the remaining stamps to Ricci. If he ended up with 12 stamps, how many did he have when he started?

Answer: _____ stamps

★★★★ 5. The Hi-N-Dry Volleyball Company has exclusive rights to make a waterproof volleyball for games at the beach. The company controls the shipment of its balls with a special code. Last week's shipment consisted of 20 cartons -- the first five cartons are numbered in this way: 04343, 08686, 13029, 17372, and 21715. The last 2 cartons shipped were 82517 and 86860. The company is in a panic because every carton that began and ended with an even digit has been lost. How many cartons have been lost and what are the carton numbers?

Answer: a. _____ cartons were lost.

b. The lost numbers were: _____

★   6. You have yarn that is 8 yards long. If it takes you 1 second to make each cut, how long will it take you to cut the yarn into 1 foot pieces ?

Answer : _____ seconds

★   7. The results from a recent survey show that the the most popular magazines among men are *Sports Illustrated, GQ,* and *Consumer Reports.* Of the men surveyed, 13 subscribe to *GQ* only, 28 to *Sports Illustrated* only, and 19 to *Consumer Reports* only. The survey shows that, of the men who take two magazines only, 17 take both *GQ* and *Sports Illustrated,* 21 take both *Sports Illustrated* and *Consumer Reports,* and 13 take both *GQ* and *Consumer Reports.* Fourteen men subscribe to all 3 magazines. How many men were surveyed?

Answer: _____men

★   8. Figure A changes to B as C changes to:

A   B   C |1   2   3   4
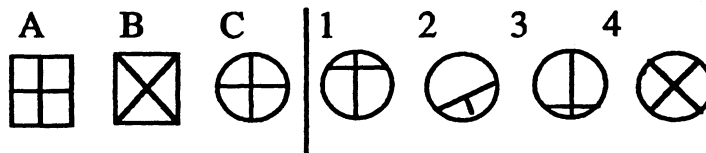
Answer: _____

★★   9. Mentally find the product of 2 x 48 x 50. When you turn in your paper, you will have a problem like this to do in your head.

Answer to later problem: _____

★★★ 10. Find the area of a soccer field outside the center circle if the field is 100 m by 50 m and the diameter of the center circle is 15 m.

Answer: _____ m^2

★★ 11. Write an equation for this situation, using *h* for the cost of 1 hot dog. Solve the equation.

An 8-pack of hot dogs and a jar of mayonnaise costs $2.42. The mayonnaise is $1.30. What is the cost of each hot dog?

Answer: An equation is: _____. The solution is: *h =* _____

SUNSHINE MATH - 8
## Pluto, IX

Name: _____

(This shows my own thinking.)

★ 1. What is the smallest number of Blow Pops, and of which color, would you have to add to a bowl full of pops containing 8 cherry and 8 sour apple so that the ratio of cherry to sour apple changes to 1 to 2?

Answer: _____

★★★★ 2. Use number sense to match each graph with the number of people at each location. Put the letter of each location in one of the four center circles.

Locations:
A. motel   B. football stadium   C. movie theater   D. shopping mall
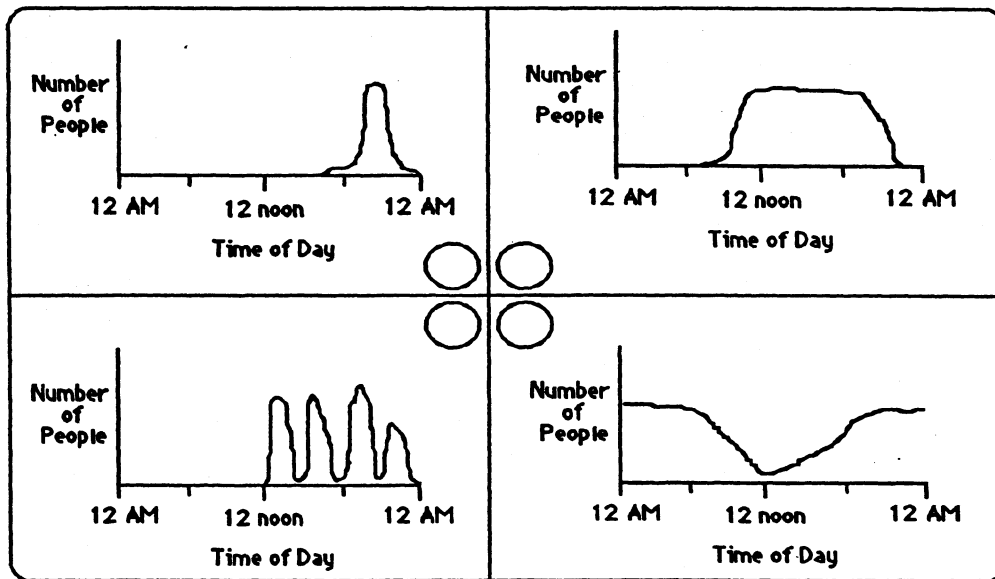
★★★ 3. Your Aunt Ada sent you a $25 gift certificate for Camelot Music. You spot 2 C.D.'s you would like to have. One costs $16.90 and the other is on special for $13.10. What percent of the total cost will you have to pay with your own money?

Answer: _____%

★★★ 4. The Easter Bunny Academy just graduated 10 new Bunnies, complete with costumes, to work the local malls. As they prepare to leave for their duties at the mall, each bunny shakes hands with each of the other bunnies. How many handshakes will there be?

Answer: _____ handshakes

★★★ 5. Finish these number patterns out to the tenth position, and find the sum:

        a. ⁻1 - ⁻2 - 3 - ⁻4 - 5 - ⁻6 - ... - ⁻10 = _____

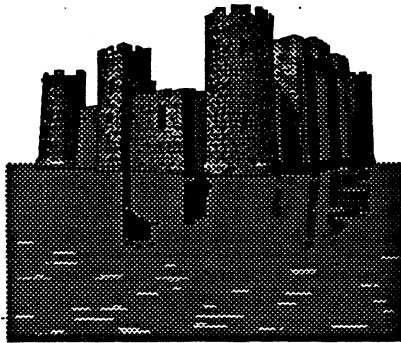   b. - ⁻100 + ⁻90 - ⁻80 + ⁻70 - ⁻60 + ... - ⁻10 = _____

        c. 2 - ⁻4 + 6 - ⁻8 + 10 - ⁻12 + ... - ⁻20 = _____

★ 6. Given $m = 43$ and $n = 27$, evaluate $15m + 12n - 2m$.

        Answer: _____

★★★ 7. While building a medieval castle it cost Sir Bedemere 36 guilders to hire 5 artists and 3 stone masons, or 28 guilders for 3 artists and 5 stone masons. What is the cost of each one?

        Answer: An artist costs _____

        A mason costs _____

★★★ 8. Kent needed to purchase a new step ladder. The ladder he wanted cost $42.95 but Kent noticed that it was on sale for 25% off. The sales tax in his county is 6%. What will be the total cost of Kent's ladder?

        Answer: $_____

★★ 9. What is the square root of the cube root of 729?

        Answer: _____

★★★ 10. On a number line, what is the coordinate of a point $\frac{1}{3}$ the distance from ⁻5 to 13.

        Answer: _____

SUNSHINE MATH - 8
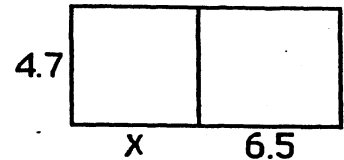## Pluto, X

Name: _____

(This shows my own thinking.)

★ 1. June finishes her math homework 90% of the time. If she has homework for each school day for four full school weeks, how many days will she turn in her homework?

Answer: _____ days in four weeks

★★ 2. Write an expression for the area of the rectangle. Evaluate the expression for $x = 10$.

Answer: An expression is: _____

If $x = 10$, the area is: _____

4.7

X   6.5

★★★★ 3. Lu works as a waitress from 4:00 until 7:30 some days after school. She gets paid $3.75 an hour plus her tips. Last week Lu worked Monday, Tuesday, and Friday. If she received $18.75 in tips last week, how much did Lu earn for the week total?
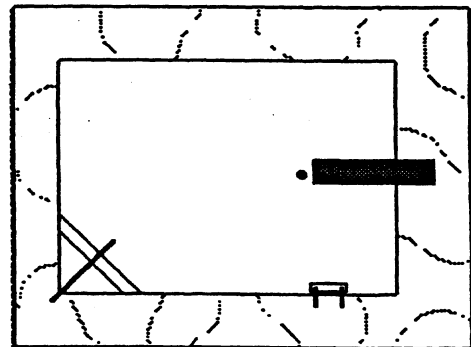
Answer: $_____

★★ 4. Katie broke open her piggy bank and found 3 quarters, 3 nickels, some dimes and a lot of pennies. She counted and found she has $3.60 in change. She also found that she has just enough pennies to wrap a $0.50 roll. How many dimes did Katie have in her bank?

Answer: _____ dimes

★★★ 5. David put 155 feet of plastic edging around the outside edge of the concrete surrounding Mrs. Rhum's pool to keep grass out of the water when he mows her yard. The concrete is 17.5 feet wide. How long is the concrete?

Answer: _____ feet long

33

★★ 6. Jean said there were 1634 students in River Ridge Middle School. Mr. Brown said that there were 72 more girls than boys. How many girls attend River Ridge Middle School?

Answer: _____ girls

★★ 7. With the clock showing 3:30 remaining in the game, Bruno's football team had the ball on their own 35 yard line. In the next 8 plays, they averaged 5 yards a play and 25 seconds per play. On what yard line did they begin the 9th play, and how much time was left?

Answer: _____ yard line with _____ left
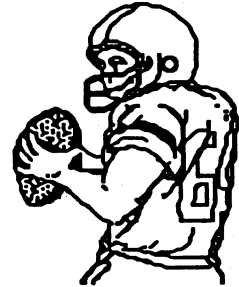
★★★ 8. Julie bought some stamps. She paid $6.00 for every 12 stamps she bought. Later, Julie was offered $6.00 for every 8 of them. She sold them all and made a profit of $12. How many stamps did Julie buy and sell?

Answer: _____ stamps bought and sold

★ 9. The Guinness Book of World Records says that a dentist from Rome, Italy kept all the teeth he extracted from 1868 until 1904. They were later counted, and totaled 2,000,744. If they dentist worked every day of the year, about how many teeth did he pull per day, to the nearest ten teeth?

Answer: _____

★★ 10. Maureen is training for a 3-mile race. Her goal is to finish in 18 minutes. On a training run, she looks at her watch and sees that she is passing the 2-mile mark when her elapsed time reads 11 minutes, 45 seconds. Should she slow down, or run faster, to finish at the 18-minute mark?

Answer: She should _____.

SUNSHINE MATH - 8
Pluto, XI

Name: _____

(This shows my own thinking.)

★ 1. Jill, Joe and Tanya each got different grades in math class. None of them earned less than a C. Jill's grade was better than Tanya's. Joe did not do as well as Tanya. What grade did each student receive?

Answer: Jill _____
Joe _____
Tanya _____

★★★★ 2. Jane's aquarium contains goldfish, turtles, and snails. There are 16 legs, 10 shells, and 36 eyes in the aquarium. How many creatures of each type are there in the aquarium? (Hint : Snails have one shell and one leg.)
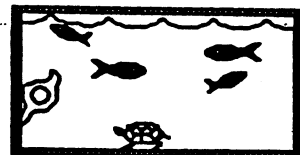
Answer: _____ goldfish, _____ turtles and _____ snails

★★★ 3. You have boxes that will hold 1 candy bar, 3 candy bars, 9 candy bars, and 27 candy bars. If each box must be packed full, what is the fewest number of boxes you need to hold 377 candy bars?

Answer: _____ boxes

★★ 4. E.J. went to the mall. She picked out some blue jean shorts for $24.59, an Esher T-shirt for $17.50, and some sandals for $11.99. How much tax must she pay for all the items if the sales tax is 6%?
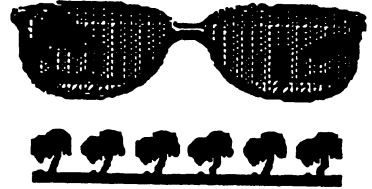
Answer: _____

★ 5. E.J. asks her Mom for the money to pay for the clothes, shoes and the taxes on them. To the nearest $5, how much money should she ask her Mom for to cover all her purchases?

Answer: $_____

★ 6. In Miami, it rained 71 out of the 92 days of the summer. Given this information only, what is the probability that it rained on July 4th?

Answer: _____

★★ 7. The ratio of boys to girls in our math class is 5 to 7. If there are 6 more girls than boys in our class, how many students total are there in our math class?

Answer: _____ students

★★★ 8. Richard and Fidel took a trip together. While they traveled, each of them recorded the money he spent for expenses. When they arrived home, they agreed to share the expense equally. Which one owes the other, and how much money does he owe?
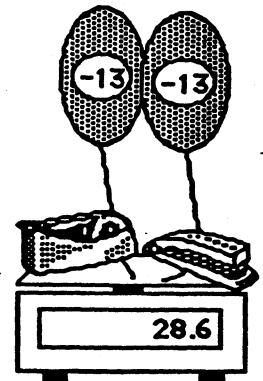
Richard spent:

Gas $73.42
Room $67.24

Fidel spent:

Tickets $41.76
Food $102.50

Answer: _____ owes $_____ to _____.

★★ 9. A helium balloon floats *up*, and so has negative weight. Each balloon shown to the right exactly balances 13 grams, and so has weight ⁻13 grams. If the balloons were removed from the scale but the tape dispenser and stapler left on, what would the scale read in grams?
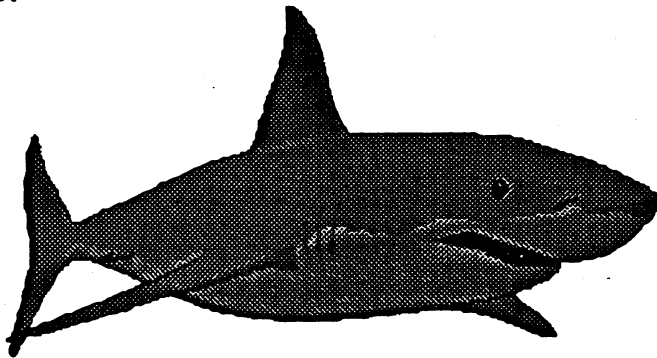
Answer: _____

36

SUNSHINE MATH - 8
Pluto, XII

(This shows my own thinking.)

★★ 1. Caitlin's shadow is 10 feet long at the same time that the shadow of a nearby statue is 24 feet. If Caitlin is 5 feet tall, how tall is the statue?

Answer: _____ feet

★★★★ 2. The computerized range-finder on the undersea filmmaker's camera told her that a grouper started 60 fin strokes ahead of a bull shark. The bull shark made two strokes to every three made by the grouper, but the shark's stroke covered as much distance as the grouper covered in seven strokes. How many strokes did the shark take before it swallowed the grouper?

Answer: _____ strokes

★★★ 3. If a golf ball weighs 40 grams and half a golf ball, what does a golf ball and a half weigh?

Answer: _____ grams
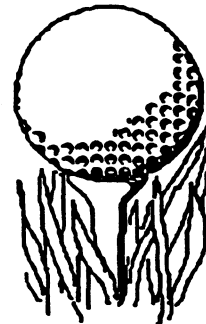
★ 4. There are 3 pencils, 4 pens, and 2 markers in Jill's purse, all identical to the touch. What is the probability she will pull out a pencil if she reaches in without looking?

Answer: _____

★★★ 5. Craig wants to paint his room royal purple. The length of his room is 15 feet and the width is 10 feet. The walls are 9 feet tall. If one wall has a window that is 3 feet by 2 feet and another has a door that is 3 feet by 8 feet, how many square feet will he be covering with paint?

Answer: _____ square feet

★★ 6. Spike Nashbar is shipping volleyball nets to Italy. The nets are 32 feet wide and 3 feet high. The Italians use the metric system -- how long and how high are the nets in meters?　　　　(Hint: 1 in. = 2.54 cm)

Answer: _____ meters wide and _____ meters wide

★★★ 7. To motivate Reba to work her physics problems correctly, her dad said he'd pay her a quarter for each correct answer and fine her a dime for each incorrect answer. If she received $3.80 after doing 25 problems, how many problems did Reba answer correctly?
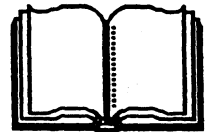
Answer: _____ answered correctly

★ 8. A robot arm can attach 300 bolts in 6 minutes. If there are 50 bolts on each item, how many items are completed in an hour?

Answer: _____ items

★★ 9. Consider the last two page numbers of a book.

a. Is their sum an even number, or an odd number? _____

b. Is their product an even number, or an odd number? _____

★ 10. If a doctor prescribed 36 pills and directed you to take them every 4 hours, how many days would they last?

Answer: _____ days

★ 1. Pizza Heaven offered to donate pepperoni pizza to
        give out at the school pep rally. If 1000 students are
        expected at the pep rally, and each pizza is cut into 8
        slices, how many pizzas will Pizza Heaven have to
        deliver for each student to get 1 piece?

        Answer: _____

★ 2. When does four come after five, other than when it's written in numerals like 54 or 574?

        Answer: _____

★★★ 3. The new manager for Dillards was hired with a beginning monthly salary x and told she
          would be given a 10% raise to $3000 a month, within 6 months. What was her beginning
          salary x?

          Answer: $x = \$$_____

★★★ 4. Warrick and Ricardo are reading the same 230-page
          mystery novel. Ricardo had a speed-reading course
          last summer and so reads 5 pages for every 2 that
          Warrick reads. Warrick has read 28 pages -- how
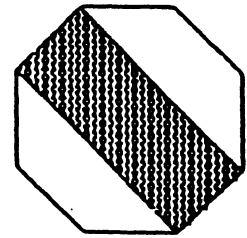   many pages does Ricardo have left to read?

          Answer: _____ pages

★★★★ 5. Michael Jordan is flying from Chicago to Nagasaki, Japan. A non-stop flight takes 17
            hours and 20 minutes. On this flight, the plane makes a stop in Sacramento for 2 hours
            and 15 minutes and another in Honolulu for 1 hour and 40 minutes. Michael left Chicago
            at 3:45 p.m. on Thursday. What day and time did he land in Nagasaki, Chicago time?

            Answer: _____

★★★★ 6. A regular octagon is shown to the right. What is the area of the shaded part, as a fraction of the whole octagon?

Answer: _____

★★ 7. Nelson Construction built a drainage ditch that was 800 feet long, 6 feet wide, and $5\frac{1}{2}$ feet deep. If a truck can carry 2000 cubic feet of dirt, about how many truck loads were needed to carry all the dirt away?

Answer: _____ truckloads

★★ 8. Practice doing problems like those below mentally. When you turn in your paper, you will have a chance to do such a problem in your head.

a. $(3 \times 48 + 3 \times 2) + (25 \times 7 \times 4)$ b. $(5 + 25 \times 7) \times (55 + 45)$

c. $[(330 \div 10) \times 3] + (250 \times 2)$ d. $(0.50 \times 12 + 4) + (1 + 18 + 1)$

Answer to the problem when I turn in my paper: _____
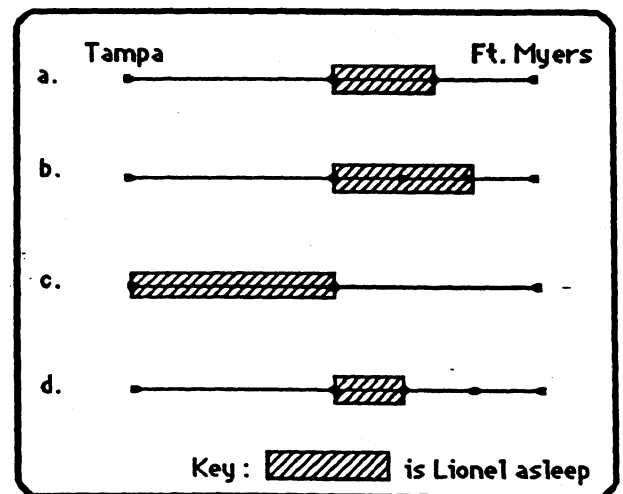
★★ 9. Select the best drawing to illustrate this situation, and find the numerical answer using the drawing.

Lionel fell asleep at the half-way point while riding in a car from Tampa to Ft. Myers. When he awoke, he still had to travel half as far as he traveled while sleeping. If the trip was 200 miles long, for about how many miles was Lionel asleep?

Answer:

The best sketch is _____.
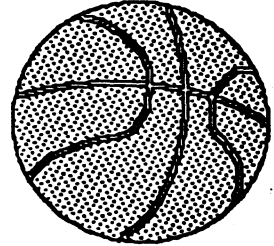
He was asleep about _____ miles.

Key: ▨▨▨ is Lionel asleep
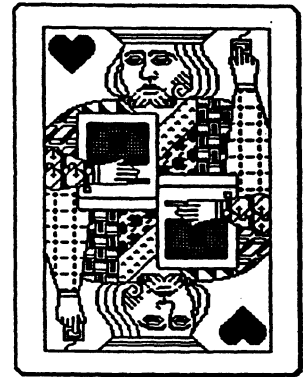
40

Name: _____

(This shows my own thinking.)

★ 1. You want to make a basketball hoop from a metal bar. You can shape the bar without cutting off any part of it. How long would the bar have to be in order to have a hoop with a 20 inch diameter?
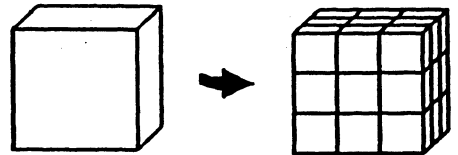
Answer: _____ inches

★★★ 2. John is showing his friends a card trick. He first draws a king, does not put it back in the deck, and then draws a second king, supposedly at random. What is the probability of drawing two kings in a row with a regular, well-shuffled deck of cards?

Answer: _____

★★★★ 3. A 3-foot cube of Styrofoam is painted purple all over as a prop for a school play. For ease of storage, the big cube is then cut into 27 smaller, 1-foot cubes. How many of the small cubes have paint on exactly 3 faces? On exactly 2 faces? On exactly 1 face? How many of the smaller cubes will be unpainted?

Answer: ___ cubes have 3 faces painted
          ___ cubes have 2 faces painted
          ___ cubes have 1 face painted
          ___ cubes are unpainted

★ 4. The scale on a map of Florida is 1 inch to 40 miles. If the distance between Citrus Springs and Homassassa Springs is $7\frac{1}{2}$ inches on the map, what is the distance in miles?

Answer: _____ miles

41

★★★★ 5. Mrs. Nielsen is rewarding her math students for all doing well on a test. She passes out 50 pieces of candy, one-by-one, and starts over in the same order after every student gets one piece. Each student takes a piece of candy, in turn, until the plate is empty. Sherwood gets the first piece and he also gets the next-to-last piece. How many students could be in the class for this to be possible, if the minimum class size in the school is 20 students?

Answer: There could be either ___ or ___ students in the class.

★★ 6. A certain number x is greater than 1 but less than 10. When you divide 45, 192, and 353 by x, you get the same remainder. What is the number x?
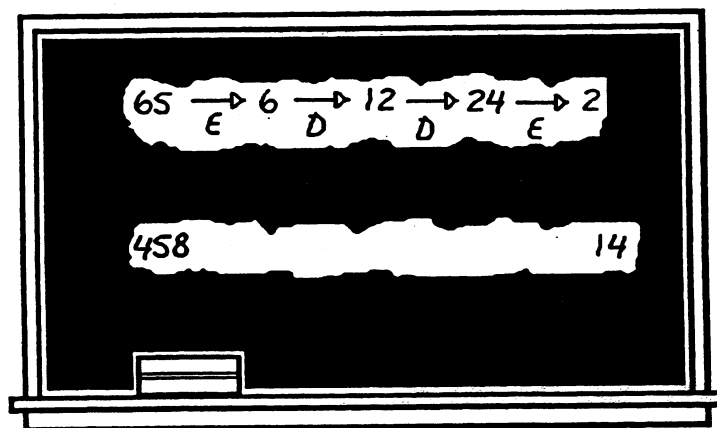
Answer: $x = $ _____

★★ 7. The River Ridge Middle School gymnasium holds 4000 people. The gym was sold out for every home basketball game. If there were 4 times as many single admission tickets sold as season tickets, how many season tickets were sold?

Answer: _____ season tickets

★ 8. Express 53 as the sum of four or less perfect squares.

Answer: _____

★★★ 9. A math game to play when you've got time to spare is to pick any two numbers, and combine the two rules: 1. Erase the last digit, and 2. Double the number, to change one number into the other. The example on the chalkboard shows that E, D, D, and E is one combination that can change 65 into 2. Find a combination of these rules to change 458 into 14.

$$65 \xrightarrow{E} 6 \xrightarrow{D} 12 \xrightarrow{D} 24 \xrightarrow{E} 2$$
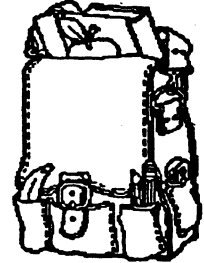
458   14

Answer: One combination is: _____

Name: _____

(This shows my own thinking.)

★★★★   1. Six bookbags are randomly distributed to the six people who own them. What is the probability that all the people receive the correct bookbag?

Answer: _____

★★   2. A waitress served $800 worth of dinners at IHOP. She received $95 in tips. How much less, in tips, did she receive than if she had received her expected rate of 15% of the cost of the meals?

Answer: $_____

★★   3. Jaime wants to know what grade to expect in science. Her chapter test scores for the quarter were 86, 97, 94, 73, and 88.

a. What is Jaime's chapter test average?
Answer: _____

b. If the final exam counts as two chapter tests, what must Jaime make on the final to average 90%, which is an "A" in this course.
Answer: _____

★★★★   4. The U.S. Census taker stopped by the Busselbaum's home to survey their household. In trying to determine the number of children the Busselbaums have, the census taker received this information:

* *each daughter has the same number of brothers as she has sisters, and*

* *each of the boys has twice as many sisters as brothers.*

How many children do the Busselbaums have?

Answer: _____ children
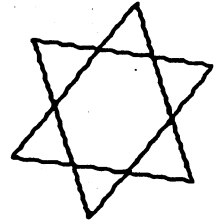
★★ 5. Complete the next two terms in the pattern :

$$1, 2, 9, 64, 625, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}$$

★ 6. Evaluate $6a + 5b - \dfrac{c2}{3a}$ when $a = 4$, $b = 12$, and $c = 9$.

Answer: _____

★★★★ 7. A six-pointed regular star is formed by two interlocking equilateral triangles. What is the ratio of the area of the entire star to the area of one of the interlocking equilateral triangles?

Answer: _____

★★★ 8. Mr. Hudson has a box that is 18 cm wide by 36 cm long by 10 cm high. He also has some dice that are 3 cm by 3 cm by 3cm that he wants to store in this box. How many dice can he fit in the box, if he has to put the lid on securely?

Answer: _____ dice

★★★★ 9. Two joggers were crossing a railroad bridge when they suddenly heard the sound of an approaching train. They were smart enough to run for safety -- but each one ran in the opposite direction! Happily, each jogger reached his respective end of the bridge just in time to avoid the train.

If they were 2/5 of the way across the bridge when they heard the train, and the train was going 50 miles per hour, and they both ran at the same speed, how fast did those two guys run?

Answer: _____ miles per hour

44

★★★★ 1. During her summer vacation, Jenny decided to visit some of her relatives: her cousin, her grandparents, her uncle, her nephew, and her brother, who all live in different cities. The five cities they live in are Orlando, Lake City, St. Augustine, Tampa, and Miami. Jenny used five different types of transportation: car, plane, bus, train, and motorcycle.–
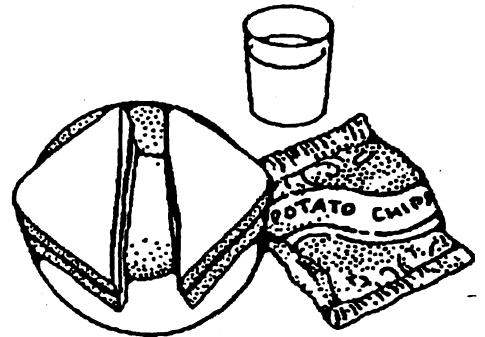   * She arrived by plane and bus at the two cities which are not on the coast.
   * Her uncle and her cousin live on the east coast.
   * Her nephew met her plane when she arrived.
   * She did not arrive at her uncle's city by car and her uncle does not live in Miami.
   * She did not go by bus to Orlando or to visit her grandparents.
   * She did not go to her cousin's city by train.
   * She arrived at her grandparents by car.

Who lives where and how did Jenny arrive?

Answer :   She arrived by _____ to visit her _____ who lives in _____

   She arrived by _____ to visit her _____ who lives in _____

   She arrived by _____ to visit her _____ who lives in _____

   She arrived by _____ to visit her _____ who lives in _____

   She arrived by _____ to visit her _____ who lives in _____

★★ 2. A sandwich costs $1.12, the chips cost half of what the sandwich cost, and the milk costs one quarter of the price of the sandwich. How much does the whole meal cost?

Answer : $ _____

★★★ 3. A machinist converts a metric part to 0.443 inch. The parts only come in fractional sizes given to the nearest 64th of an inch. What is the closest fractional size?
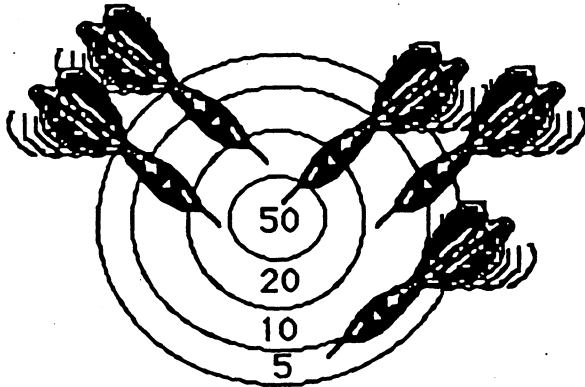
Answer : _____ of an inch

★★ 4. To double check their estimate of the cost of a job, Jack's Painting Company applies the rule of thumb that materials should constitute 20% of the total cost. If the estimate of a job comes to $1011.00, about how much should the materials cost ?

Answer: _____

★★ 5. Robin threw 5 darts, hitting the target and scoring points on each throw. In the picture below he scored 105 points. How many different ways could he get a total score of 120 points?

50
20
10
5

Answer : _____ways

★★ 6. Ms. Fletcher gives her classes a mathematics spelling quiz every Monday, a problem quiz every other Monday, and a mathematics history quiz every third Monday. Ace Jones is in Ms. Fletcher's class, and he received a grade of 100% on all three quizzes today. How many weeks will it be before he again has to take all three quizzes in one day?

Answer: _____weeks

★ 7. Jack is showing Martha a card trick. He has 6 index cards, each one with a letter -- A, B, C, D, E, or F -- typed on it. Every card Jack draws has a letter that is the first letter that is the first letter of the name of a month. What is the probability of Jack drawing three such cards in a row, replacing the card after each draw, without a trick up his sleeve?
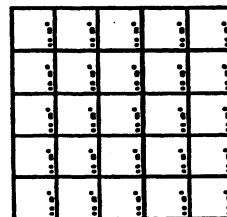
Answer : _____

Name: _____

(This shows my own thinking.)

★★★ 1. Name two consecutive prime numbers whose product is 667.

Answer : _____

★★★★ 2. The town library is being refurbished. The design calls for covering a large square floor, 21 feet on each side, with white, teal, and peach tiles. Each tile is 1 foot square. The tile in the center of the floor is to be white, and surrounded by a border of 8 teal tiles. The teal border is to be surrounded by a border of 16 peach tiles. The next border is white, then teal, then peach, and so on.

How many tiles of each color will be used in the floor? At a cost of $2.25 per tile, about how much -- to the nearest $100 -- will these tiles cost if you have to buy 10% more than the number to be used, to account for breakage?

Answer: _____ white tiles; _____ teal tiles; _____ peach tiles

Estimated cost of the tiles: _____

★ 3. You are a subway driver. At the first stop 3 people get on and 2 get off. At the next stop 5 people get on. At the third stop, 4 get off and 3 get on. At the next stop 3 get off and 2 get on. What is the driver's name?

Answer : _____

★★ 4. 300 students attend the Sweetheart Dance on Valentine's Day. The ratio of boys to girls is 6 to 4. If 30 boys and 20 girls leave, what is the new ratio of boys to girls who are still at the dance?

Answer: _____

★ 5. Evaluate $6y^2 - 3x + 5z$ when $x = -2$, $y = 4$, and $z = 10$.

Answer : _____

47

★★ 6. Jocelyn works in a bakery that serves gourmet muffins in different flavors. In one bakery case there are 15 blueberry, 28 apple cinnamon, 22 banana nut, and 35 blackberry muffins. A customer comes in and asks for any type of muffin that *doesn't* have nuts in it. If Jocelyn reaches into the case without looking, what is the probability she will pull out such a muffin -- one without nuts -- on her first try?

Answer : _____

★★★ 7. Dylan has a Hardy Nickerson poster he wants to frame. The poster is $2\frac{1}{2}$ feet by 4 feet. If he wants a matted border that is 2 inches wide, what size frame, in inches, will he need?
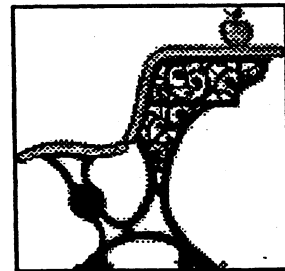
Answer : _____ in. by _____ in..

★★ 8. Wanda's average of her first five test scores was 88. Wanda can only find her first four tests now -- those scores were 80, 92, 85, and 97. What did Wanda make on the fifth test?

Answer : _____

★★★★ 9. A magazine has p consecutive pages torn out. Suppose L is the last numbered page before the torn out section and R is the first numbered page after the missing section.

a. Is p always an even number, or an odd number? _____

b. Is L always an even number, or an odd number? _____

c. Is R always an even number, or an odd number? _____

d. Write an equation for p in terms of L and R. _____

★★ 10. How many different ways can 48 identical desks be placed in rows if all rows have the same number of desks, each desk is in exactly one row, and no row has more than 20 desks or less than 3 desks ? (Hint: 8 rows with 6 desks is different from 6 rows with 8 desks.)
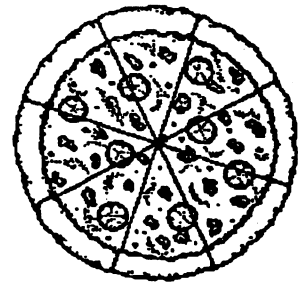
Answer: _____ ways

SUNSHINE MATH - 8
Pluto, XVIII

★★★★ 1. Use four 4's, grouping symbols (if needed), and any of the four operations to make all the numbers from 0 through 4.

Answers :   0 = _____   1 = _____

2 = _____   3 = _____

4 = _____

★ 2. José is very hungry after doing his mathematics homework. He agrees to pay for $\frac{2}{3}$ of a pizza that he and Charlie ordered. The pizza cost $9.42. How much should José pay ?

Answer: _____

★★★★ 3. Marina works as a teller for the city bank. On a slow day she thought up the following problem:

Using pennies, nickels, and dimes, how many ways can you make change for a quarter?
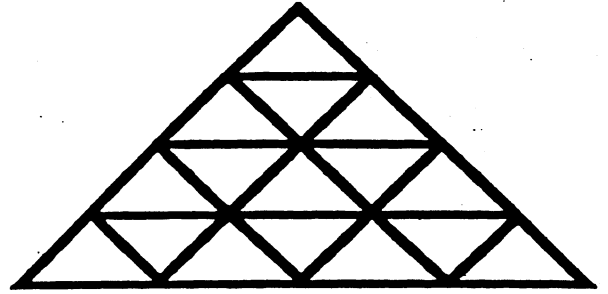
Help Marina find the answer.

Answer: _____ ways

★★ 4. An engineer was working on a design for the electrical system in a new building and obtained a value of 728.57 meters for the length of some wiring. Round this to the nearest:

a) tens
b) units
c) tenth

Answers :   a)_____
            b)_____
            c)_____

49

★ 5. How many triangles in all?

Answer: _____ total triangles

★★ 6. Write $0.\overline{4}$ (or 0.44444....) as a fraction in lowest terms.

Answer : _____

★★ 7. All other factors being equal, a basketball team should win a game if its players are taller than the opposing team. The heights of Cobb Middle School's starting five are: 5'5"; 5'9"; 5'9"; 6'2" and 6'1". The heights of the starting five for Terraset Middle School are: 5'6"; 5'7"; 5'11"; 6'1", and 6'1". Which team should win because it has the tallest average height?

Answer : _____

★ 8. With Easter approaching, the church needed to buy eggs for the big Easter Egg hunt. The secretary ordered *six dozen dozen* instead of what she was asked to order, *a half dozen dozen.* Did she order the right amount, or too many, or too few eggs?

Answer: _____

★★ 9. A middle school that presently has 600 students has been growing at the rate of 23 students per year for the last decade, and this growth rate should continue for another decade. The student population (P) of the school Y years from now is given by this equation:

$$P = 600 + 23Y$$

a. How many students will the school have in 6 years? _____

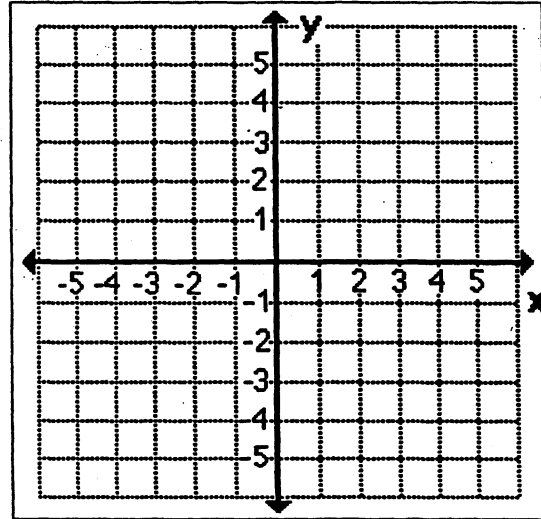b. How many students did the school have 5 years ago? _____

★ 1. Is 1,000,000 minutes closer to 1 year, 2 years, or 3 years?

Answer : _____ years

★★★★ 2. Plot these points on the grid and connect them *in order*. You would get a familiar picture, except one of the points is a little off. Which point is wrong, and what should it be? (The picture should be symmetrical about the y-axis.)

(-3, 0) › (-2, -2) › (-2, -4) ›
(0, -2) › (2, -4) › (1, -1) ›
(3, 0) › (1, 0) › (0, 3) ›
(-1, 0) › (-3, 0)

Answer: The point _____ is incorrect. It should be the point _____.

★★★ 3. Chad, Missy, Luke and Mary measured their heights. Their heights, not necessarily in order, were 5'3", 5'7", 5'11", and 5'9". Use the following clues to determine who was 5'9". Missy was taller than Mary, but not the tallest. Luke was taller than Missy, but not as tall as Chad.
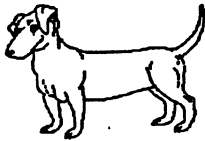
Answer : _____ is 5'9"

★ 4. What geometric term describes a sunburned man? _____

★★★ 5. The highest "stunt dives" ever recorded into an air bag are 360 feet for the male record height, and 180 feet for the female height record. Use $v = 5\sqrt{d}$ to find out approximately how fast each of these divers was traveling when they hit the air bag. (d is distance of the fall in feet, and v is velocity in miles per hour)

Answer: The male was going _____ mph; the female was going _____ mph

51

★★★ 6. Jessica wants to add a liquid vitamin to her two dogs' food. The veterinarian told her to add 3 mL per 6 pounds of the dog's body weight. How much will she need if Koko weighs 28 lbs.? How much will she need for Big Dog, who weighs 110 lbs.?
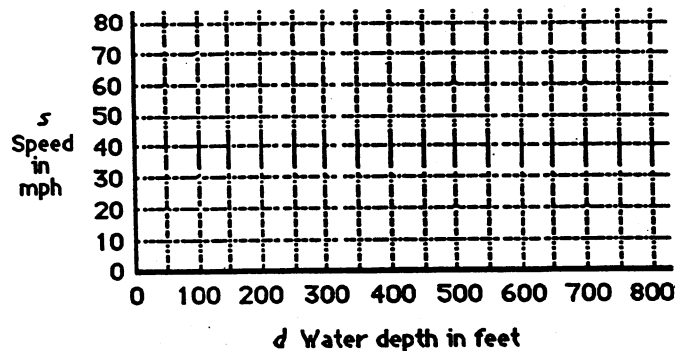
Answer: Koko: _____ mL

Big Dog: _____ mL

★★★★ 7. Mr. Bonti is replacing the square tiles in his bathroom. Each new tile is 3 inches longer and 3 inches wider than an old tile. Each new tile covers 39 square inches more than an old tile.

a. How big were the old square tiles?
b. If the area of the room is 5120 square inches, how many new tiles will he need?

Answer: a. ___ in. by ___ in.   b. _____ tiles

★★ 8. Tidal waves can travel very fast. Their speed is related to the depth of the water by this function: $s = 2\sqrt{d}$, where speed (s) is in mph and the water depth (d) is in feet.

a. Make and graph ordered pairs (d, s) for each of the multiples of 100 shown on the horizontal axis of the graph.

b. Connect the points with a curve.

s
Speed in mph

80
70
60
50
40
30
20
10
0

0 100 200 300 400 500 600 700 800

d Water depth in feet

★ 9. What is the probability of drawing a card from those pictured where the letter is the first letter of a day of the week?

| N | O | P | R | S | T |

Answer: _____

52

SUNSHINE MATH - 8
Pluto, XX

(This shows my own thinking.)

★★★★ 1. Use four 4's, grouping symbols (if needed), and any of the four operations to make all numbers 6 through 9.

Answers :   6 = _____   7 = _____

8 = _____   9 = _____

★★★ 2. Carlos has the 'slow to go' hiccups. The good news is that they are going away. The bad news is that they are still there. When they started, he hiccuped after 1 minute had elapsed, then again after 2 minutes, again after 4 minutes, next after 8 minutes and so on. How many total hiccups did he hiccup in the month of April if they began 12 midnight, April 1st?

Answer : _____ hiccups

★★ 3. Julie, Drew, Alex, and LuAnn are great friends. They want their pictures taken in a group -- one row of four -- but they can't decide who should sit where. How many different arrangements do they have to choose from?

Answer: _____ arrangements

★★ 4. Jackie is a cross country runner. She is in a slump this spring and has won only 6 out of 20 races. How many races must she now win in a row to raise her record to 50%? to 75%?

Answer :   _____races for 50%
                _____races for 75%

★★ 5. There are 26 members on the baseball team. Of these, 11 can pitch, 6 can play first base, and 5 can do both. How many players can *neither* pitch nor play first base?

Answer: _____ players

53

★★★ 6. To determine how much of an adult medicine to give a child in an emergency, doctors sometimes use **Young's Rule:**
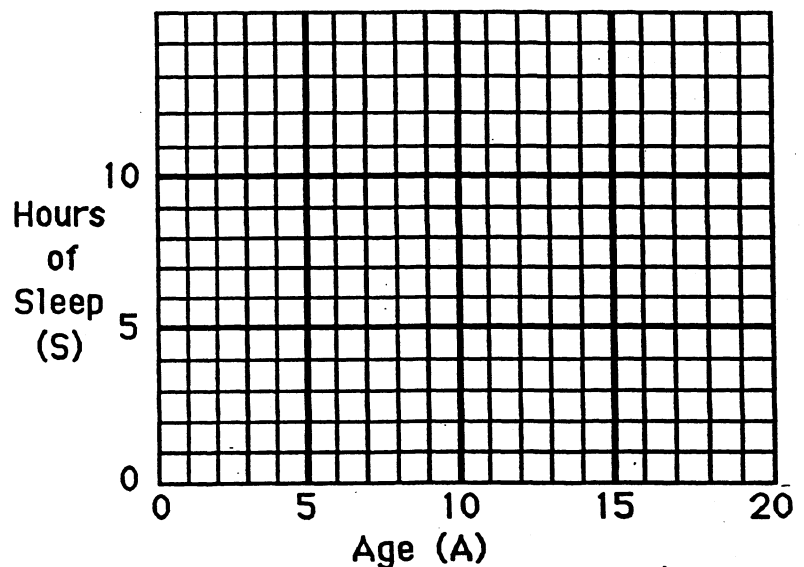
$$C = \frac{y}{y + 12} \times a$$

where C is the child dosage, y is the child's age in years, and a is the adult dose. Answer these questions about this formula:

a. An adult dosage of medicine X is 200 mg. How much should a 10-year old child take?

b. An adult dosage of medicine Y is 150 mg. How much should a 12-year old take?

c. Mr. Wynn had to reverse the formula above -- all he had at home was some Children's Bayer Asperin. His 5-year old daughter takes 3 such asperins for a headache -- how many should the 30-year old Mr. Wynn take, to have the same effect?

Answers: a. _____   b. _____   c. _____

★★★★ 7. $S = (32 - A) \div 2$ is used by doctors to say how many hours of sleep a person needs each day, up to age 18. A represents age, and S is the hours of sleep needed. Fill in the chart for the benchmark ages below, and graph the ordered pairs (A, S). Connect your points with a line so that you can predict the sleep needed without the formula. Circle the point on the graph that says how much sleep you should get each night.

A	S
2	
5	
10	
14	
17	

Hours of Sleep (S) vs. Age (A)

SUNSHINE MATH - 8
Pluto, XXI

Name: _____

(This shows my own thinking.)

★★ 1. Your silverware drawer has 12 forks, 8 knives, and 15 spoons. If you reach into the drawer without looking, how many pieces of silverware do you need to take out to be certain you have 2 matching pieces (2 forks or 2 knives or 2 spoons)?
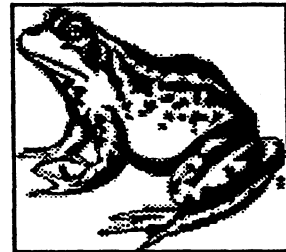
Answer : _____ pieces

★★ 2. Jimmy and Harry started a "running backwards race" at opposite ends of the gym. After 6 seconds they passed each other at the center of the gym. If they lost no time in turning and kept the same speed, how long after starting would they pass each other again?

Answer : _____ seconds

★ 3. The longest frog leap on record was by Ex Lax at the 1975 Calavaras County Jumping Frog Jubilee. It measured 17 feet, 7 inches. How much longer is this than the human record for the standing long jump -- a mere 12 feet, $2\frac{1}{4}$ inches?

Answer: _____ longer

★★★★ 4. Every year on my birthday, an unusual phenomenon occurs which I note will no longer apply as of the year 2000. In fact, it will not recur until the year 2100, on the first of February. Identify this phenomenon, and you will know my birthday. What is the month and day of my birthday?

Answer: _____

★★★ 5. Thirty-two people went to see the U.S. play World Cup soccer in Orlando. Four people rode to the game in each car and 8 people rode the bus. On the way home, 3 people rode in each car and the rest rode the bus. How many people rode the bus on the way home?

Answer : _____ people

★ 6. A raft has a weight limit of 500 lbs. Ron weighs 178 lbs., Katie weighs 132 lbs., Jethro weighs 195 lbs., and Amie weighs 118 lbs. Who stayed on shore if the heaviest possible crew, without exceeding the weight limit, took the raft out on the lake?

Answer : _____ stayed.

★ 7. There are 215 people in a theater watching Batman Forever. The usher polls each viewer as they leave the theater and 195 people said they "really liked" the film. To the nearest whole percent, what percent of the viewers did not "really like" the film?

Answer : _____

★★★ 8. Rolanda wanted to recover her storage chest with some floral paper. It's shaped like a rectangular solid. The volume of the box is 9 cubic feet. Its length is 3 feet and its width is 2 feet. How many square inches of wallpaper will Rolanda need to cover the sides if she doesn't cover the bottom ?

Answer : _____ sq. inches

★ 9. Zydeco has $30 and is shopping for her boyfriend's birthday. She sees several things she would like to buy: a C.D. for $15.95, a book for $4.90, a pair of shorts for $12.98 and a poster for $2.35. Which three items does she have enough money to purchase?
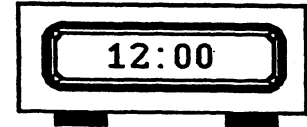
Answer : _____

56

★★ 1. On a digital clock showing hours and minutes, how many different readings between noon and 6 P.M. contain at least two 4's?
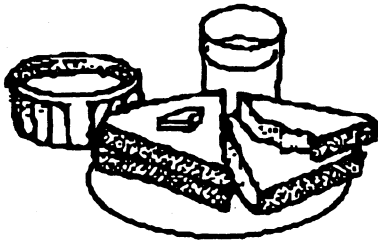
12:00

Answer: _____ readings

★★★ 2. A person who wins a $1 million lottery usually gets the money spread out in equal increments over 20 years. Also, the government takes 28% off the top, for taxes. If you won such a lottery, how much could you expect to get each year, after taxes for each of the 20 years?

Answer: _____

★★ 3. A school year is usually 180 days long. If you bought your lunch from the cafeteria every school day during your whole K-12 years, and the average cost was $1.35 per meal, how much would you spend for school lunches? Assume you never missed a day.

Answer: $ _____

★★★★ 4. Light travels at the "speed limit" for the universe -- 186,000 miles per second.

a. The sun is 93,000,000 miles from earth. How long does it take for light to get from the sun, to earth?   Answer: _____ minutes

b. Scientists use the term *light year* to describe distances in the universe. The nearest star to earth is $4\frac{1}{2}$ light years away. In miles, about how far away is the nearest star?

Answer: _____ miles

★★★ 5. For coin-collectors, coins are graded on a scale of from 1 to 70 with a score of 70 being perfect. Bob has a coin graded 56. Percentage-wise, how far is it from being perfect?

Answer: _____ %

★★ 6. One coin collector found a coin dated 232 B.C. What can you say about such a coin?

Answer: _____

★★★★ 7. A popular formula for a person's arm strength S is:

$$S = (d + p)\left(\frac{w}{10} + h - 60\right), \text{ where:}$$

| d is dips on a parallel bar	p is pull ups
w is weight in pounds	h is height in inches

Compute S for these students. Place them in order from strongest to weakest.

a. Dorrie: 5 dips, 7 pull ups, 140 pounds, 66 inches tall.

b. Reynaldo: 6 dips, 4 pull ups, 130 pounds, 70 inches tall.

c. Rocky: 2 dips, 3 pull ups, 120 pounds, 64 inches tall.

d. Evelyn: 6 dips, 8 pull ups, 110 pounds, 62 inches tall.

Answer:
From strongest to weakest, they are: _____ , _____ , _____ , _____

★★★★ 8. To the right is a rectangle. The picture below it shows that 1 vertical line produces 3 rectangles, the original plus two smaller ones. The picture below that shows that 2 vertical lines will produce 6 rectangles. Continue with this pattern by drawing a few more such rectangles.

a. How many rectangles do you get with 3 vertical lines? _____

b. How many rectangles do you get with 4 vertical lines? _____

c. How many rectangles do you get with 5 vertical lines? _____

d. How many rectangles do you get with 100 vertical lines? _____

58
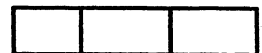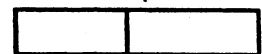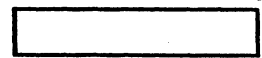
SUNSHINE MATH - 8
Pluto, XXIII

★★ 1. Mrs. Thomas had 12 math books in each of 2 stacks. Her young daughter was staying with her after school one day, so she gave her the challenge of putting the books in 3 stacks so that:

- the first stack had one less than the third stack, and
- the third stack had one less than the middle stack.

How many books should be in each stack?

Answer : 1st stack: ____ ; 2nd stack: _____ ; 3rd stack: _____
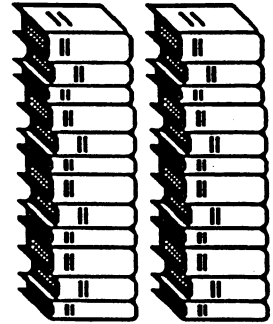
★★ 2. The Fahrenheit temperature (T)under the earth's surface is given by $T = 68 + 40k$, for each kilometer k in depth.

a. What temperature would you find at the bottom of a 1-kilometer mine shaft?

b. How far down would you have to go before you could boil water at 212° F?

Answers: a. _____ b. _____

★ 3. Shania needs some ketchup for her family's barbecue. She's comparing prices at the store and finds that a 12-oz. bottle of ketchup is $1.38 and an 8-oz. bottle is $1.02. Which is the best buy?

Answer: _____ oz. bottle
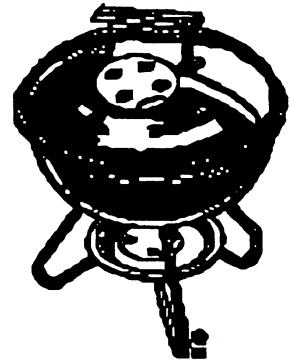
★★★★ 4. A compact disk has a $4\frac{1}{2}$ inch diameter. The outer non-playing margin is $\frac{1}{4}$ inch wide, and the non-playing central area is 1 inch in diameter. There are an average of 120 grooves per inch. What is the area of the playing section?
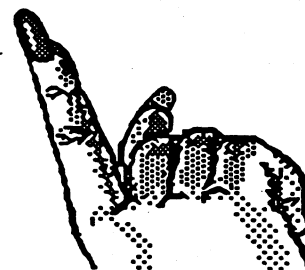
Answer : _____ sq. inches

★★ 5. The chance of rain on Saturday is given by the weatherman as 50%. The chance of rain on Sunday is also 50%. What is the chance that you will make it through the weekend without rain messing up your plans?

Answer : _____
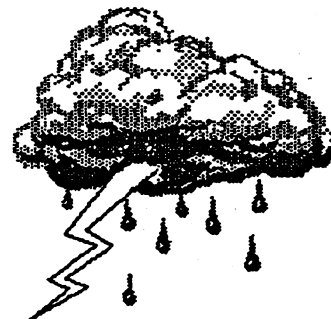
★★ 6. Fingernails grow about 1.5 inches per year.

a. Measure the length of your index fingernail. What is it?

b. Write an equation, using y for years, that tells how long (L) your fingernail will be y years from now.

c. The longest fingernail on record is 37 inches. How many years from today will it take for your fingernail to equal the record?

Answers: a. _____ inches   b. $L =$ _____   c. _____ years

★★★ 7. Bees travel about one hundred forty thousand miles as they make a pound of honey. About three million pounds of honey are produced in the United states and Canada each year. Determine about how far bees had to travel to make all the honey in the United States and Canada in 1996. Write your answer in scientific notation.

Answer : _____ miles

★★ 8. The smallest bacteria that can be seen with an ordinary microscope is 0.00002 centimeters in length. Write this number in scientific notation.

Answer : _____ centimeters

★★★ 9. One of two 6-sided dice has a blank face rather than a face with 2 dots. The other die has a blank face rather than a face with 5 dots. What is the probability that a sum of seven appears when the dice are thrown?
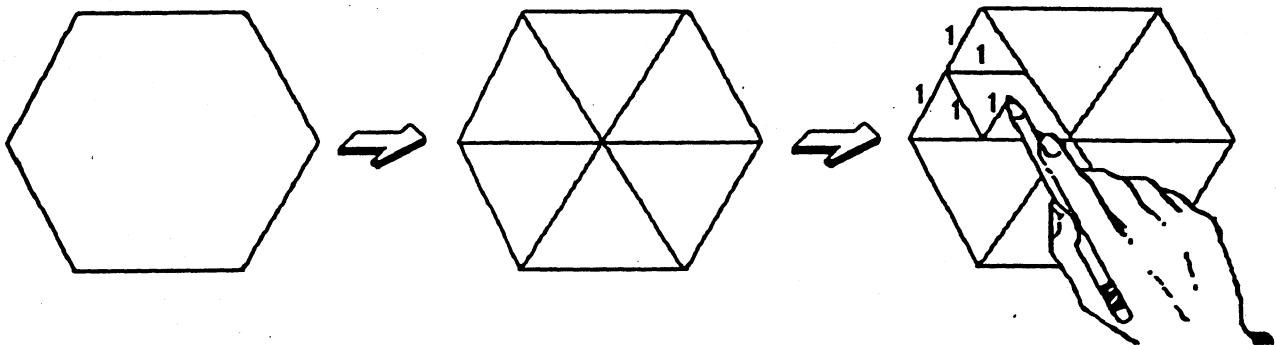
Answer : _____

Name: _____

(This shows my own thinking.)

★★★   1. A regular hexagon can be divided into six equilateral triangles by connecting the opposite vertices.

a) If the side of the original hexagon is 2 inches, how many non-overlapping equilateral triangles with sides of 1 inch can be drawn inside the hexagon?   Answer:
_____

b) If the side of the original hexagon is 4 inches, how many equilateral triangles with sides of 1 inch can be drawn?   Answer: _____

★★★   2. The volume of a sphere is given by $V = \frac{4}{3}\pi r^3$. The earth's radius is about 4000 miles. The sun's radius is about 433,000 miles. Answer (a) and (b) below using scientific notation:

a. What is the approximate volume of the earth?_____ mi^3

b. What is the approximate volume of the sun? _____ mi^3

c. How many earths would fill up the sun? _____

★   3. Justin has 13 coins in his pocket that total $1. What coins does he have?

Answer: ___ pennies, ____ nickels, ____ dimes, ____ quarters

★★ 4. A fast stamp machine can make 360 stamps in 3 seconds. How many stamps can such a machine make in a normal, eight hour workday?
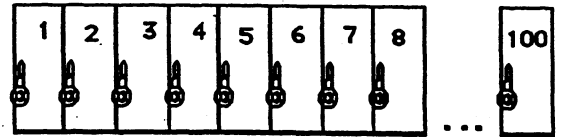

Answer : _____stamps

★★★★ 5. The school policy is to open student lockers regularly to check for illegal items. The following pattern is followed from September through May:

September: Open {2, 4, 6, 8, ..., 2n, ...}

October: Open {3, 6, 9, 12, ..., 3n, ...}

November: Open {4, 8, 12, 16, ...,4n, ...}

December: Open {5,10,15, 20, ...,5n, ...}

a   Which locker would be opened most often? _____

b. Which lockers from 1-100 would never be opened? _____

_____

★★ 6. Juanita spent half of her money on a new skirt. She then spent half of the remaining amount on a new blouse and lunch. If she had $11.00 left at the end of the day, how much money did she start with?

Answer : $_____

★ 7. A sign in a department store says, "Sale! All C.D. players are now 25 % off!" George wants a C.D. player that was originally $240.00. He can calculate the price he has to pay by multiplying $240 by which fraction?

Answer : _____

62

Name: _____

(This shows my own thinking.)

★★★ 1. Coach LeBeau ordered jerseys for his soccer team. The company he is ordering from is having a 25% off sale. Coach will receive another 8% off because of the size of the order and another 5% off for paying cash. The discounts are taken one after the other. If Coach LeBeau paid $210.85, what was the original price before the discounts?

Answer: _____

★ 2. Find this product: $2.658 \times -217.95 \times \frac{758}{1395} \times 0 \times 1.5094 \times -13\frac{2}{3}$.

Answer : _____

★★★★ 3. Suppose that your favorite uncle put $1,000 in the bank for you the day you were born. The bank account draws 10% simple interest at the end of each year. The interest earned is added back into the account. Use a calculator to find out how much you would have:

a. at age 5
b. at age 10
c. at age 15
d. at age 21, when you can remove it

Answers: (a) _____ (b) _____ (c) _____ (d) _____

★★★ 4. Ann's and Joan's birthdays were approaching, so Harry, Pam, Beth, and Andy wanted to treat them to lunch as a gift. They both agreed to go, but Ann wanted to chip in her fair share to help buy Joan's meal, and Joan wanted to do likewise for Ann's meal. If the total came to $54, including tax and tip, what would be fair for each person to pay?

Answer : Harry, Pam, Andy and Beth should each pay $_____
Joan and Ann should each pay $ _____.

★★★★ 5. Ben printed a flyer to encourage people to vote for him for student council. He used a "chain letter" system where each person who received the flyer agreed to copy it and give the flyer to 5 more students who had not gotten one, within an hour. He passed out the first copy to five friends at 8:00 AM. How much time had elapsed before he could be sure the whole student body of 853 students had gotten his flyer?

Answer : _____ hours

★★★ 6. Scott drove his new motorcycle to Atlanta for vacation. He traveled at 80 km per hour for 56 km, 75 km per hour for 60 km, and 92 km per hour for 46 km. What is the average rate of speed over the entire trip?

Answer: _____ km/hour
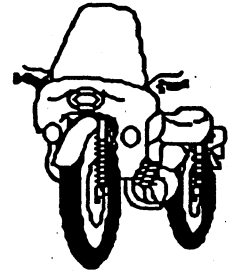
★★ 7. Find five consecutive even integers whose sum is ⁻250.

Answer : _____

★★ 8. Try this number trick:

Take the number of people living in your house, and double it.
Add 5, then multiply the result by 10.
Subtract 50.
*Divide by twice as many people as live in your house.*

Write your answer here: _____

★★★ 9. Nikita earns $4.50 an hour for her first 40 hours each week, and "time and a half" for every hour beyond 40. She worked 46 hours the week between Christmas and New Year's. How much money did she make?

Answer: _____

SUNSHINE MATH - 8
Pluto, XXVI

★★★★ 1. Mr. Nielsen, a grocer, stacks all of his apples in triangular pyramids. Each layer of apples is in the shape of an equilateral triangle, and the top layer is a single apple.

    a. How many apples are in a stack four layers high? _____

    b. How many apples are in a stack five layers high? _____

    c. How many apples are in a stack six layers high? _____

    d. How many apples are in a stack ten layers high? _____
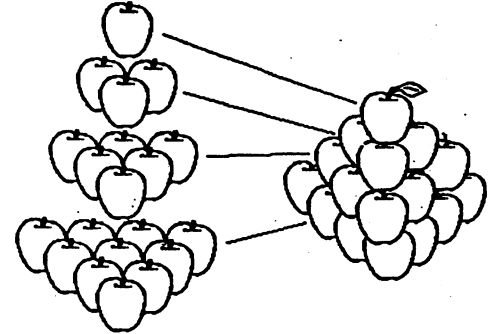
★★★★ 2. Every day, I count the fleas on my dog. The first day he had 1 flea, the second day 3, the third day 5, then 7, then 9, and so on.

    a. How many fleas were there on the 100th day?

        Answer: _____

    b. Write an algebraic expression for the number of fleas on the *nth* day:
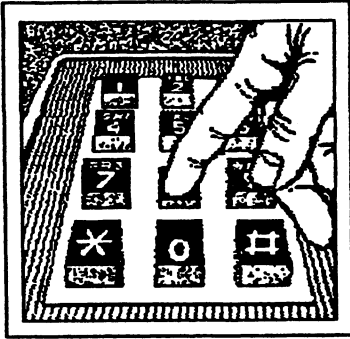
        Answer: _____

★ 3. 1×10^{-4} meters is the thickness of a piece of paper. Write this measurement as a decimal.

        Answer : _____ meters

★ 4. What fraction of the letters in the word *multiply* are also in the word *product*?

        Answer : _____

★★★★ 5. Telephone area codes have three digits. The first digit must be chosen from 2 through 9. The second digit must be a 0 or a 1. The third digit cannot be 0. How many area codes are possible?

Answer : _____ area codes

★★ 6. A 25-foot ladder is placed against the top of an inside wall 20 feet high. How far out from the wall will the foot of the ladder be placed?
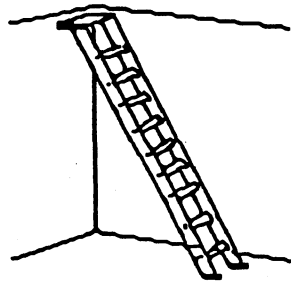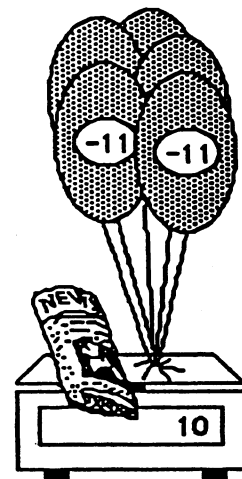
Answer : _____ feet

★★ 7. Five identical helium balloons are shown on the scale. They have negative weights since they pull up. Use n to stand for the weight of the newspaper.

a. Write an equation for this situation.

Answer: _____

b. Intuitively, find the weight of the newspaper.

Answer: _____

SUNSHINE MATH - 8
Pluto, XXVII

Name: _____

(This shows my own thinking.)

★   1. Replace O, N, E, T, and W with numerals to make a true equation.

          O N E   Answer :   ☐ ☐ ☐
        + O N E   + ☐ ☐ ☐
        ─────────   ─────────
          T W O   ☐ ☐ ☐

★★★   2. Find the number represented by *N*. Begin with 512. Divide by 16. Divide by *N*. Add 256. The result is 320.

Answer : _____ = *N*

★★   3. Charles needs 100 hamburger buns for his party. They come in packages of 8 for $1.10 and 6 for $0.90. To spend the least amount of money and have enough buns he should buy:

a. 10 packages of 8 and 4 packages of 6
b. 11 packages of 6 and 7 packages of 8
c. 13 packages of 8
d. 17 packages of 6
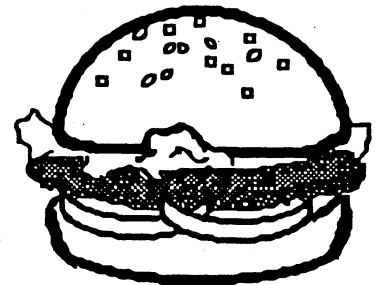
Answer: _____

★★★★   4. Ralph has 5 baseball trophies, 4 tennis trophies, and 3 soccer trophies. He wants to arrange them on a shelf in the family room so that all the baseball trophies are together on the left end, and all the tennis trophies are together in the middle. How many different arrangements of the trophies on the shelf are possible?

Answer : _____ different arrangements

★ 5. Two cars are driving next to each other in 2 lanes from New Port Richey to Weeki Wachee. Both cars leave New Port Richey at the same time, and travel the same speed. Yet one car takes 90 minutes to arrive, while the other takes 1 hour and 30 minutes. Explain why.
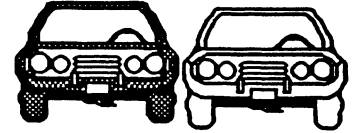
Answer: _____

★ 6. Last year the 8th grade class raised $86.75, $42.50, $105.00, and $70.50 at four car washes. They plan on having more car wash fund raisers this year. On the average, how much should they plan on raising at each car wash?

Answer : $_____

★★ 7. A number of campers are standing in a circle at summer camp, evenly spaced. They begin to "count off," starting with 1. Camper number 5 hears the one directly opposite her count "seventeen" but is distracted by a bug crawling on her leg. Later she wanted to tell her Dad about the game they played, and quickly figured out how many campers were in the circle. What was the number?

Answer : _____ campers

★★ 8. Marcus' Dad made $42,000 a year in 1993. He was forced to take a 10% pay cut the following year due to the company losing business. The next year, the company did well again and said it was giving all its employees a 10% raise for their loyalty during the hard times. After the 10% cut and a 10% raise, how much was Marcus' Dad to make?

Answer: $_____ per year