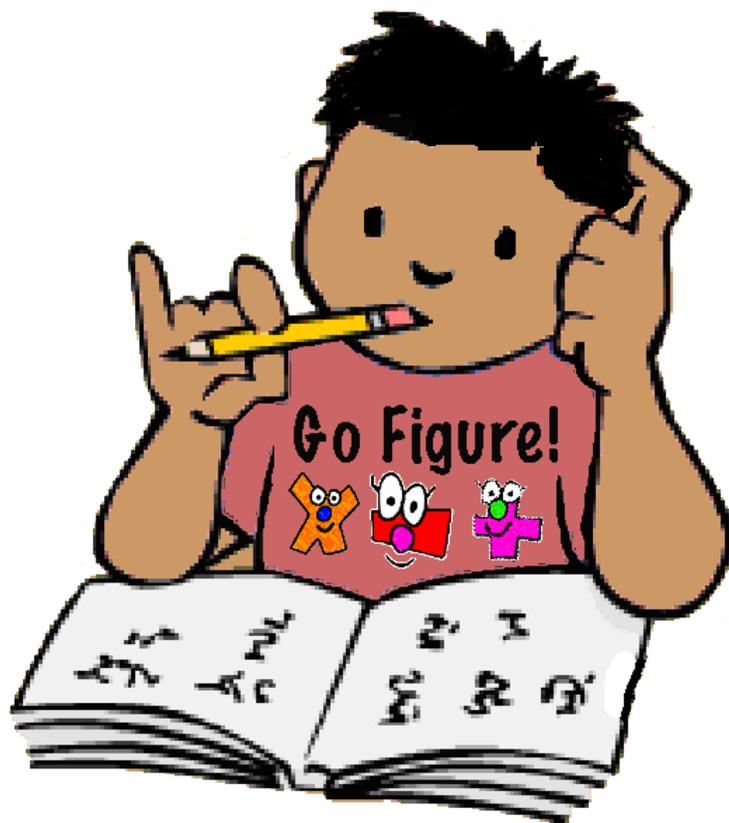


# Math Problem of the Day



A daily (or weekly) exercise in problem-solving for  
Kivalliq Math Month and throughout the year.

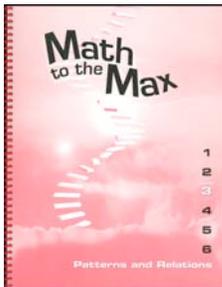
Preface

During Math Month challenge your class to a “Math Problem of the Day” each morning. Give students a few minutes to work on it and let them return to it throughout the day when their other work is finished. Students who have solved the problem may complete an entry form with their name and solution. At the end of the day randomly select an entry (a correct one!) and award a small prize to the student. Note: if the selected entry does not have the correct answer, choose another until a correct solution is found. Always go through the solution with your entire class, even if no correct answers are submitted. If once a day is too much, consider doing a “Problem of the Week.”

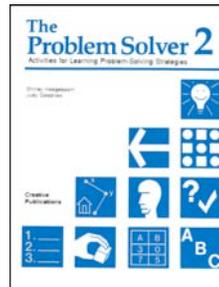
Suitable problems may be found in the Math to the Max resources, the Problem Solver Binders, or on math-related web sites, They may also be created by teachers to directly match the content and difficulty level familiar to their classes.

The problems in this document are suitable for grades 5 to 8 and were taken from the web site: (<http://www.stfx.ca/special/mathproblems/grade5.html>). Solutions for these problems and more can be found on this web site as well.

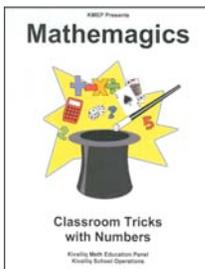
**Resources and Supports (that are in your school)**



**Math to the Max (Gr. 1-6)**  
Edmonton Public Schools  
Resource Development  
Services (2000)  
ISBN #1-894522-41-9



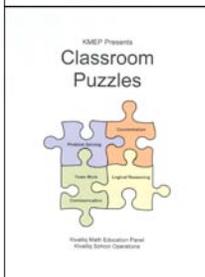
**Problem Solver (Gr.1- 8)**  
By Shirley Hoogeboom &  
Judy Goodnow  
Creative Publications  
Wright Group/McGraw-Hill  
(1989)  
ISBN 0-88488-582-8



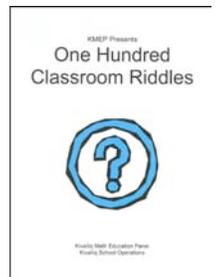
**Mathemagics**  
Kivalliq Math Ed. Panel  
FirstClass Server:  
Teacher Conferences→  
Kivalliq Math Forum



**Key Skills Computer  
Software (K-Gr. 6)**  
Sunburst Technology Corp.  
[www.sunburst.com](http://www.sunburst.com)  
(2005)



**Classroom Puzzles**  
Kivalliq Math Ed. Panel  
FirstClass Server:  
Teacher Conferences→  
Kivalliq Math Forum



**100 Classroom Riddles**  
Kivalliq Math Ed. Panel  
FirstClass Server:  
Teacher Conferences→  
Kivalliq Math Forum

## Web-Based Resources

<http://www.figurethis.org/>

Figure This! Math Challenge for Families—This web site is developed by the National Council of Teachers of Mathematics (NCTM) and contains eighty different mathematical challenges suitable for home and school. The activities are organized into five pdf documents that may be downloaded, viewed and/or printed. (These five pdf files are also available in the First Class folder for Math Month) The problems are suitable for upper elementary and junior high school, but are also challenging for high school students and teachers alike. An index is included that maps the challenges to its specific math content area.

<http://www.rhlschool.com/math.htm>

Math Problem Solving--Featuring original mathematics problem solving worksheets for teachers and parents to copy for their kids. Use them for teaching, reinforcement, and review. They are most appropriate for grades four and five, but many are designed to be challenging and informative to older and more advanced students as well.

[http://www.abcteach.com/directory/basics/math/problem\\_solving/](http://www.abcteach.com/directory/basics/math/problem_solving/)

ABC Teach—This site contains many sets of word problems in downloadable pdf format for elementary and middle school.

[http://www.teach-nology.com/teachers/lesson\\_plans/math/](http://www.teach-nology.com/teachers/lesson_plans/math/)

Teachnology—This is an on-line teacher resource complete with free lesson plans, worksheets and assessment ideas. For a paid membership, you can have access to even more resources.

Jim Kreuger

Baker Lake, October/09



### Grade Five-Grade Eight Example Problems

(<http://www.stfx.ca/special/mathproblems/grade5.html>)

1. How many addition signs should be put between digits of the number 987654321 and where should we put them to get a total of 99?
2. Divide the face of the clock into three parts with two lines so that the sum of the numbers in the three parts are equal.
3. According to experts the first 4 moves in a chess game can be played in 197299 totally different ways. If it takes 30 seconds to make one move, how long would it take one player to try every possible set of 4 moves?
4. Batman has been imprisoned by the Riddler. To escape he must find the quickest way to move the tower of plutonium disks from one post to another so that the disks have the same arrangement as on the original post. He may move only one disk at a time. What is the minimum number of moves he must make in order to move the ten disk tower and have it appear the same?
5. A man has to be at work by 9:00 a.m. and it takes him 15 minutes to get dressed, 20 minutes to eat and 35 minutes to walk to work. What time should he get up?

Replace each blank with the correct digit.

$$\begin{array}{r} 43\_2 \\ 45\_ \\ \_127 \\ \hline 8893 \end{array}$$

6. In the first year of production a play sells 1572 tickets, in its second year it sells 1753 tickets, in its third year it sells 152 less than in its second year. How many tickets are sold in 3 years?
7. The Riddler has left a clue for Batman to follow at the scene of each crime. These are the clues that Batman has found:
  - (1) There is a 1 in the thousands place.
  - (2) The digit in the tens place is 9 times the digit in the thousands place.
  - (3) Multiply the digit in the thousands place by 2.
  - (4) The digit in the ones place is a hand without a thumb.
  - (5) The digit in the hundreds is 2 less than the number in the tens.

Solve the riddle to find the number and help Batman stop the Riddler.

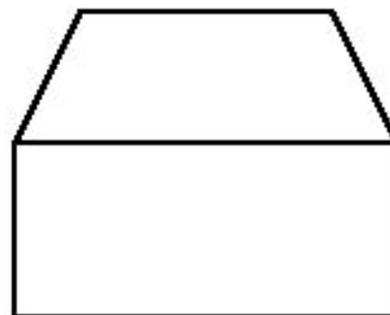
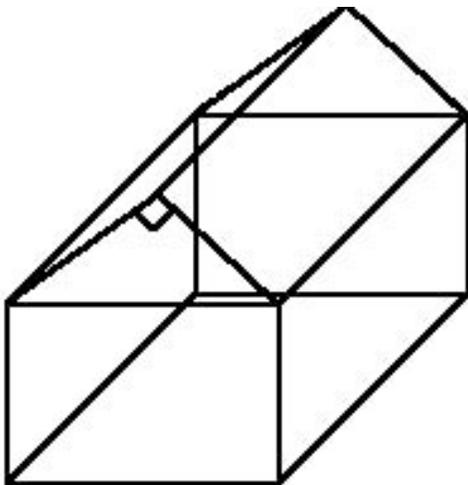
8. Scientists have just discovered people on Neptune. There are 3 villages, 2

cities and 1 super city on Neptune. These are the populations in 1994 and 1996.

<b>Communities on Neptune</b>	<b>1994</b>	<b>1996</b>
1. Eilosa	129	204
2. Vertu	308	292
3. Pridi	90	50
4. Dedrun	500	600
5. Antran	700	693
6. Maran	1200	1500

List the places in order of increasing size in 1994 and 1996. In which year was the population of the planet greater?

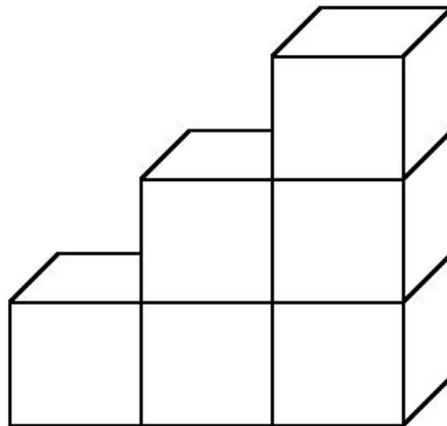
9. Rachel, Kim and Shawn went to Cuba for a vacation. On the way to Cuba, the plane made the trip in 315 minutes. On the return trip, the flight took 216 minutes. They stayed in Cuba for 3629 minutes. Estimate how long the trip took to the nearest 10. How long did the trip really take?
10. The mass of the Great Pyramid is 557 tonnes greater than that of the Leaning Tower of Pisa. Stone Henge has a mass of 2695 tonnes which is 95 tonnes less than the Leaning Tower of Pisa. There once was a Greater Pyramid which had a mass twice that of the Great Pyramid, what was the mass of the Greater Pyramid?
11. Find the number of faces, edges and vertices on the figure shown below. What would the two figures contained in it be called?



**Side View**

12. Draw a 3 dimensional figure with a square base, having 8 edges, 5 vertices and 5 faces.

13. If every vertex of a regular pentagon is connected to every other vertex, how many triangles are formed?
14. The weather during Pith Possum's vacation was strange. It rained on 15 different days, but it never rained for a whole day.
- Rainy mornings were followed by clear afternoons.
  - Rainy afternoons were preceded by clear mornings.
  - There were 12 clear mornings and 13 clear afternoons in all.
- How long was the vacation?
15. If you begin with a certain one digit integer, multiply by 3, add 8, divide by 2 and subtract 6, you will get the same one digit integer back. Determine this number.
16. This stairway below is made of cubes. How many cubes would be needed to make the steps 9 steps high?



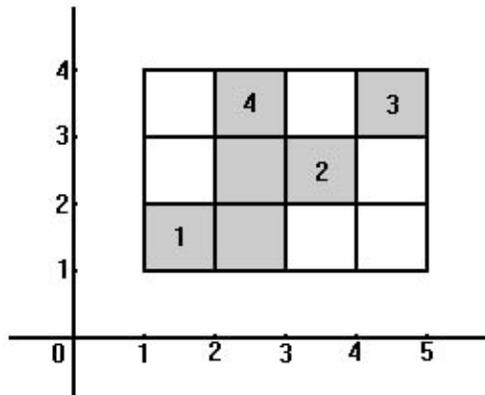
17. Determine the pattern in the first three columns and then apply it to the remaining columns to find the missing numbers.

4	5	9	_____	_____	_____	16	_____	7
2	2	4	_____	5	7	_____	1	_____
2	3	5	6	_____	8	_____	_____	4
4	6	20	42	25	_____	63	2	_____

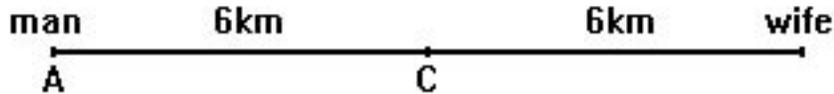
18. If Jane is older than Kim, Kim is older than Shawn. Shawn is younger than Jane and Rachel is older than Jane List the people from oldest to youngest.
19. There are 12 people in a room. 6 people are wearing socks and 4 people are wearing shoes, 3 people are wearing both. How many people are in bare feet?
20. One morning grasshopper fell down a hole 2 metres deep. He would climb  $\frac{1}{4}$  of a metre every day but at night he slid down  $\frac{1}{8}$  of a metre. At this rate, how many days until the grasshopper gets out?
21. Kim, Raelene, Jim and Rick finished first, second, third and fourth in a motor bike race. If their numbers were 5, 17, 1 and 7, use the following clues to find out who had what number and what order they finished in.
- 17 said she would have placed higher if her bike had not stalled.
  - Rick finished before 7 but after Raelene.
  - 1's father, said he was very proud of his daughter's finish.
  - Kim finished after 5.
  - Jim wasn't third.
22. An ice cream stand has nine different flavours. A group of children come to the stand and each buys a double scoop cone with two flavours of ice cream. If none of the children choose the same combination of flavours, and every different combination of flavors is chosen, how many children are there?
- FLAVOURS
- 1 Vanilla
  - 2 Maple
  - 3 Chocolate
  - 4 Tiger
  - 5 Raspberry
  - 6 Strawberry
  - 7 Coffee
  - 8 Moon Mist
  - 9 Cherry Vanilla
23. Place the digits 9,4, 7, 6, 5, 1, in the blanks below so that the answer is the biggest possible. (Don't forget your order of operations!)

$$\underline{\quad} \underline{\quad} \times \underline{\quad} \underline{\quad} + \underline{\quad} \times \underline{\quad} = ?$$

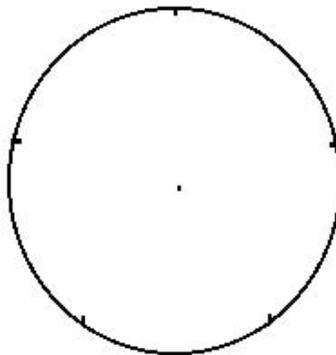
24. Four boys work together painting houses for the summer. For each house they paint they get \$256.00. If the boys work for 4 months of summer and their expenses are \$152.00 per month, how many houses must they paint for each of them to have one thousand dollars at the end of the summer?
  
25. In her first year a dog breeder's dogs produce 2 puppies. In her second year her dogs produce three-times as many puppies. In her third year her dogs produce 5 times as many puppies as the first year. How many puppies will the breeder have produced in her first 3 years? If she sells the puppies for \$200.00 each, how much will she have made?
  
26. Two frogs are hopping along a path one lily pad wide, going in the same direction. There are 18 lily pads and one frog jumps 3 lily pads at a time, the other jumps two lily pads at a time. If the frogs leave the shore one after the other, how many lily pads will be jumped on by both frogs?
  
27. A grocery store has a sale on bananas. If you buy six bananas you get the sale price. If the grocer has 489 bananas how many bunches of six can he sell at his sale price? In this case how many can be sold at the regular price?
  
28. Some students hold a bake sale to raise money for their school library. They sold fudge and squares and cookies. One of each type of treat was put into 95 paper bags and the students were allowed to keep the left overs. If they started out with 110 cookies, 130 pieces of fudge and 116 squares, the students put the same number of each kind of treat in each bag(eg. 2cookies, 1 fudge, 1 square. How many of each treat did they keep?
  
29. Describe the shaded area of the following figure in terms of a fraction.



30. Sixteen players enter a tennis tournament. If there can be no draws (ties), how many games must be played if each player can be eliminated by one loss.
31. If a man can walk 4km in 1 hour and his wife can walk 5km in 1 hour, how many minutes will it take them to meet if they begin walking at the same time at opposite ends of a 12km road, and have agreed to meet at the half way point?



32. In how many different ways can three barges be arranged in a line behind the tug boat?
33. In 1989 the price of a soccer ball was \$8.00. A financial analyst predicted that the price would rise \$0.25/year for the next 10 years. In what year will the price be \$9.75?
34. A math student interviewed 50 fifth graders. 41 said they like peanut butter sandwiches, 35 liked jam sandwiches and 30 liked both on their sandwiches. How many students liked neither?
35. See how many triangles you can draw using any three of the five points on the circle as vertices.

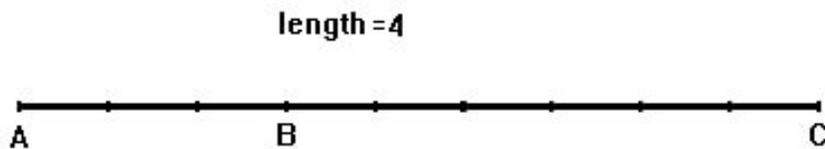


36. Nobody knows how old Aunt Helen is but she gave a few hints. She had passed  $\frac{1}{20}$  of her life before she started school. She spent  $\frac{3}{20}$  of her life in school; She worked for  $\frac{1}{10}$  of her life before she got married. She was married for  $\frac{2}{5}$  of her life. Her husband died after  $\frac{7}{10}$  of her life. From reading Uncle Harry's gravestone you find out that she has been a widow for 24 years. How old is Aunt Helen?

37. If a ball is dropped from a height of 100m, each time it hits the ground it bounces  $\frac{3}{5}$  of the height it fell. How far will the ball have travelled in the 5th bounce?
38. Two girls went on a vacation together and they agreed to split all expenses. Their trip was prepaid so Mary wrote a cheque for food and one for lodging. Clare wrote the cheques for gas and entertainment. How much does Clare owe Mary?

	FOOD	LODGING
Mary:	\$56.97	\$83.29
	GAS	ENTERTAINMENT
Clare:	\$41.96	\$37.47

39. The record for the greatest number of consecutive jumping jacks is 14500 in 5 hours and 35 minutes. If Joe does 55 jumping jacks per minute, how long will it take Joe to tie the record?
40. A line of length 4 is divided into nine equal segments. Find a fraction to describe the length AB.



41. Rachel opened her math book and found that the sum of the facing pages was 243. What pages did she open to?