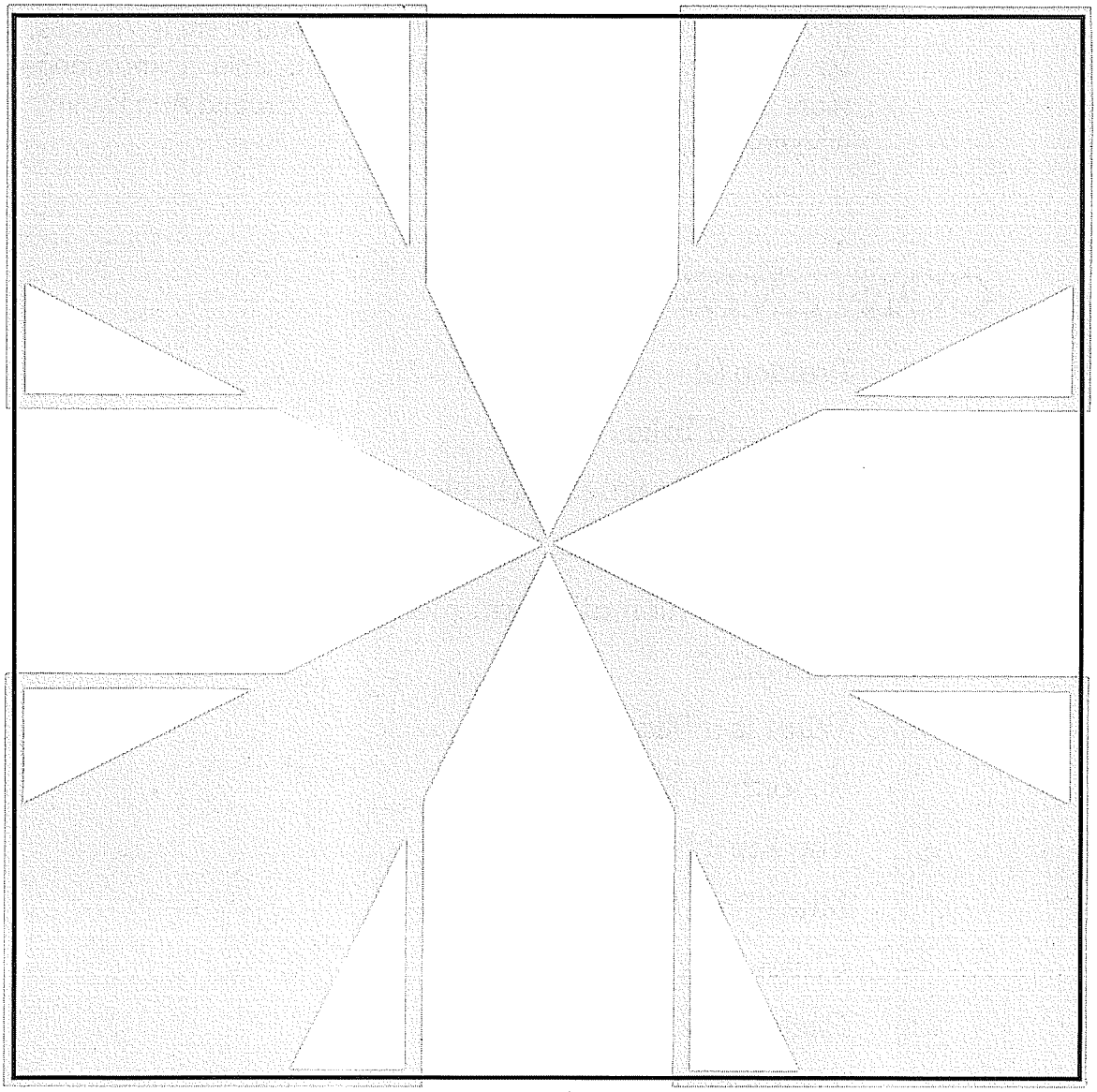
Abacus

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Preface

Welcome to another edition of the *Abacus*, the Elementary section of *The Gazette*. There are some exciting activities in this issue which we hope will enhance your ideas for your classroom. The articles begin at the primary level and become more difficult. The editors welcome any contributions that you might have for future inclusion in the *Abacus*. Send them to *Abacus*, 93 Arthur St., N., Guelph, Ont. N1E 4V1. Special acknowledgment is given to Susan Stuart, Lorna Morrow and Ann Kenny, who contributed to this edition.

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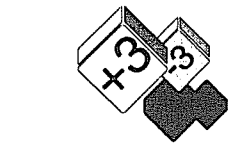
Give and Take

For: 2 to 4 players

Skill: Counting

Materials: 1 die, marked with +1, +2, +3, –1, –2, –3, and counters

Rules: Place the counters in a pile in the centre of the playing area.



Each player takes 5 counters to start.

Each player rolls the die in turn and either takes from the centre pile (+1, +2, or +3) or gives to the centre pile (–1, –2, or –3).



The player with the most counters after 10 rounds is the winner.

Note: A player who has no counters and rolls –1, –2, or –3, (a 'take-away' number), simply loses a turn.

Le terrain de jeu dans la classe de mathématiques

Le terrain de jeu attire l'attention de l'élève primaire à cause de sa fidélité aux jeux et à ses ami(e)s. Il y a ici les matériaux pour un thème de mathématiques La motivation de l'élève se trouve où il y a un objet qui lui intéresse.

«Voici un terrain de jeu et voici l'équipement,» comme on dit. Il y a des glissoires, des balançoires (à bascule), et une place pour grimper à l'échelle. Il y a des groupes d'enfants: 3 groupes de 4 enfants, ça fait 3 x 4 = 12. Trois classes, ça fait 60. Et si deux personnes quittent le terrain de jeu? Si nous jouons au terrain de jeu pendant deux récréations, ça fait combien de minutes? Nomme le plus grand objet. Est-ce que c'est la grande glissoire? Quelles sont les règles de sécurité au terrain de jeu? Quelles sont les règles des jeux où to joues à la marelle, ou à yaki, ou à cache-cache? Sur le papier pointillé, dessine un terrain de jeu: un géo-plan du terrain de jeu.

Le travail de ces activités peut être collectionné dans le journal de mathématiques. Pour l'élève, ce n'est pas débordant. Pour le professeur, c'est un moyen pour une variété de leçons.

Odds and Evens

For: 2 players

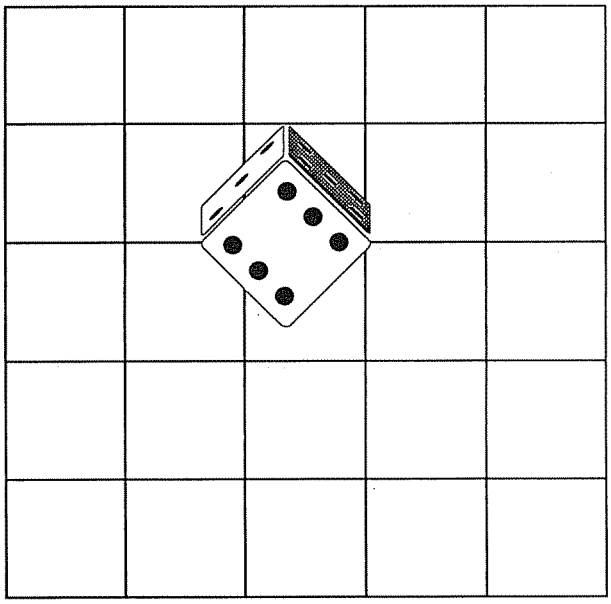
Skill: addition

Materials: 1 regular die

1 grid (3 by 3, 4 by 4, or 5 by 5)

Rules: Each of the two players decides on whether he/she will be 'odd' or 'even'.

Player A rolls the die and puts the number anywhere on the grid.



Player B rolls the die and puts his/her number anywhere on the same grid.

When the grid is filled, totals are calculated horizontally, vertically, and diagonally.

The 'even' player scores a point for every total that is an even number; the 'odd' player scores a point for every total that is an odd number.

The player with the most points is the winner.

Variations: Players use their own grids.

Roll two dice and put the difference of the two numbers on the grid.

Le journal de mathématiques

Pendant la journée à l'école, il y a souvent des occasions où les enfants et l'enseignant(e) partagent leurs observations de la classe, de leurs activités, ou même de ce qui s'est passé à la maison le weekend dernier. Le professeur peut donner un "Journal de mathématiques" à tous les élèves. Au cas où il y a une observation spéciale, ils peuvent la décrire par l'écriture. Il est possible que vous suggérez à l'élève qu'il écrit des chiffres dans sa réponse. Par exemple, une 'expérience' dans la cuisine, les activités au centre d'eau, ou une forme favorite peuvent être décrites dans leurs journaux.

Voici quelques exemples tirés des journaux des élèves en deuxième année d'immersion française:

Il y a trois professeurs de la classe. Il y a cinq personnes dans ma famille et nous avons deux enfants. Un, c'est à moi. Il y a beaucoup de personnes dans l'école. (Taylor)

J'ai dix boules pour l'arbre de Noël. Je suis allée au magasin avec $5.00 et j'ai reçu un cadeau de $1.00. Au magasin, j'ai acheté un jouet à $4.00 et maintenant j'ai $2.00 pour un cadeau. (Julie)

Quand je suis allée au magasin, j'ai acheté cinq pommes de terre. (Mandy)

Pick-off

For: 2 players

Skill: reinforcing addition facts

Materials: 2 regular dice

18 markers

2 playing boards

1	2	3	4	5	6	7	8	9

Rules: Begin with the 9 markers covering the numbers on the board.

Player A rolls the dice and adds the two numbers.

Player A then uncovers numbers on the board with the same total.

For example: Suppose the dice show 5 and 2. The total is 7. Player A may then uncover either 5 and 2; or 3 and 4; or 6 and 1; or 7; or 1, 2, and 4; etc.

Player B rolls the dice and adds the two numbers.

Player B uncovers numbers on the board with the same total.

Both players continue to roll the dice and 'pick off' totals until they cannot play any more. They record the numbers still covered.

The winner is the one with the lowest total of numbers left uncovered at the end of the game.

Variations: Allow all four arithmetic operations with the numbers on the board to make the dice total. For example, if the roll is 5 and 2, a player could uncover 8 and 1 because $8 - 1 = 7$; or, he/she could uncover 4, 5, and 2, because $4 + 5 - 2 = 7$; etc.

Instead of using the dice total to indicate what markers to remove, use the product (or the difference) of the numbers on the dice.

Extend the board beyond 9.

What is a Minute?

The following activity can be used in a cooperative learning atmosphere. It is applicable to any grade level, as the students themselves will set the degree of difficulty in their work. The example of a lesson in measurement within the theme of 'What is a minute?' is shown as it is taught in a cooperative environment.

Objectives: Understand the concept of one minute.

Express speed as a number per minute.

Materials: stop watch or clock with a second hand

job cards for each group: Timekeeper, Ball Bouncer, Building Engineer, Mathematician

Timekeeper
I am the timekeeper and recorder. I tell others when to start. At the end of one minute, I tell them to stop. I record the results for the Ball Bouncer and the Building Engineer. I collect the Math Facts worksheet.

Ball Bouncer
When the timekeeper tells me to start, I bounce the ball and count the number of times I can bounce the ball in one minute.

Building Engineer
When the timekeeper tells me to start, I build the highest tower possible with the cube-a-links. At the end of one minute, I count the number of blocks I used.

Mathematician
When the timekeeper tells me to start, I complete as many math facts as possible in one minute.

balls for each group

cube-a-links for each group

math fact sheet for each group

copy of the problem sheet for each group

Note: Young students may need the directions read to them.

Have students exchange and take-up math sheets. Record data.

Have a member of each group share the group's results with the class.

What is the activity that students can do the greatest number of times in one minute?

What is the activity that students can do the smallest number of times in one minute?

What was the total number of math facts correct in your group?

In the higher grades, students can make projections about how many times an activity will occur in one hour or one day.

Accountability: Have each student attempt an activity (perhaps one suggested by the group) to complete in one minute.

Have each student report orally or in writing.

RECORDING SHEET

Before beginning the activity, each student draws a job card that tells who is the timekeeper, who is the ball bouncer, who is the building engineer, and who is the mathematician. Pupils write their names on a line of the record card.

Each student should read aloud what he or she must do.

Complete one round. The timekeeper records the count for the ball bouncer and building engineer. The timekeeper collects the math facts sheet.

Students switch jobs and repeat until each student has done each activity once.

Record Chart Sheet			
Pupil's Name	Number of Bounces Per Minute	Number of Cubes Per Minute	Number of Correct Math Facts Per Minute

When each student has completed all three activities, have students exchange and mark their sheets. Record information.

After all the results are in the record chart, talk about the results.

What is the activity that students can do the greatest number of times in one minute?

What is the activity that students can do the smallest number of times in one minute?

What was the total number of math facts correct in your group?

Suggest other things you can try to do in one minute.

The April Fool's Joke

Here is a number trick to try with a friend on April 1st.

Have your friend choose a 3-digit number so that the first and last digits differ by more than 1,

683

Reverse the digits and subtract the smaller 3-digit number from the larger.

$$\begin{array}{r} 683 \\ -386 \\ \hline 297 \end{array}$$

Reverse the digits in the answer and add,

$$\begin{array}{r} 297 \\ +792 \end{array}$$

If you have tried this with several different 3-digit numbers beforehand, you can tell your friend to hide the answer and you will guess! What will the answer always be?

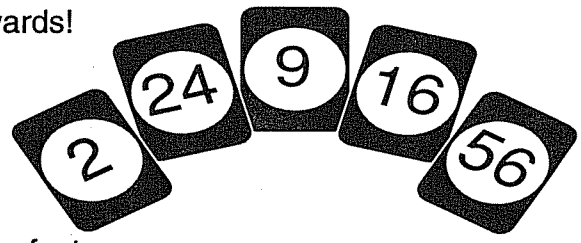
Now continue with these instructions:

Multiply by one million.

Subtract 733 361 573.

Then substitute L for 3, I for 8, O for 5, R for 4, F for 6, P for 2, A for 7

Read the word backwards!



Multi-Fact

For: 2 to 6 players

Skill: multiplication and division facts

Materials: a set of cards marked 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 24, 25, 27, 28, 30, 32, 35, 36, 40, 42, 45, 48, 49, 50, 54, 56, 60, 63, 64, 70, 72, 80, 81, 90, 100, Wild.

Rules: Deal five cards to each player.

Dealer turns over top card of the remaining deck and names a factor of it. (All factors named throughout the game should be less than or equal to 10.)

Next player chooses a card from his/her hand that is a multiple of the factor named, places it on top of the face-up card, and names a factor of the new card. (This new factor named may be different from the first factor or may be the same.)

Play continues in this way until one player (the winner) runs out of cards.

Note: If players at any time cannot play a card from their hands, they draw one from the remaining deck. If it is playable, they play it; otherwise, they keep that card and pass.

Variations: When players cannot play, they must continue to draw until they get a playable card.

Choosing Factors

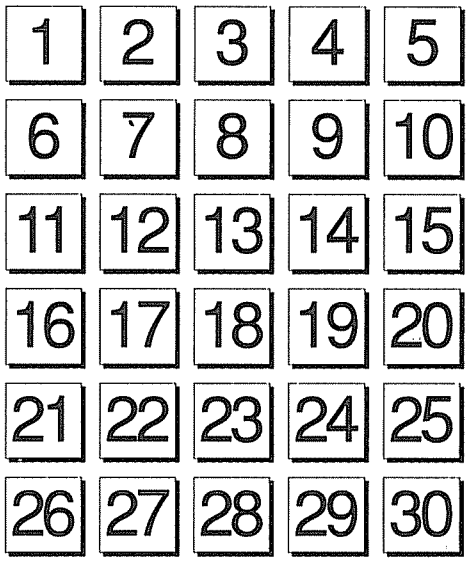
For: 2 players or 2 teams

Skill: multiplication and division facts

Materials: a set of cards numbered 1 through 30

Rules: Set out the cards in an easy-to-read array.

For example:



Player/Team A chooses a card.

Player/Team B takes all the cards that are factors of the card chosen by A.

Player/Team B then chooses a card, and A takes all the cards still available that are factors of the number on that card. To be sure that there is at least one factor available, players/teams may not choose cards that have no factors available for the other player/team.

When all cards possible have been taken, the values of the cards held by each player/team are totalled and the winner is the person/team with the highest total.

Variations: Remove card 1 before beginning to play.

Allow an illegal move (choosing a card that has no factors available) with this condition:

If A makes an illegal move, B takes two turns in a row. If B then makes an illegal move on the first of the two turns, play returns to normal.

Factors

For: 2 players

Skill: multiplication and division facts

Materials: 2 dice marked 2, 3, 4, 5, 6, 7

1 die marked 10, 12, 14, 15, 16, 18

Rules: Each player in turn rolls the three dice.

One point is scored for each number showing that is a factor of another number showing.

For example, suppose the dice show 2, 3, and 12

2 is a factor of 12;

3 is a factor of 12;

Total: 2 points

Suppose the dice show 3, 3, and 15

3 is a factor of 15;

the other 3 is a factor of 15;

each 3 is a factor of the other 3;

Total: 4 points

Players keep a running score for 10 turns and the winner is the one with the highest score.

April Weather

April showers bring May flowers, but what about April snow?

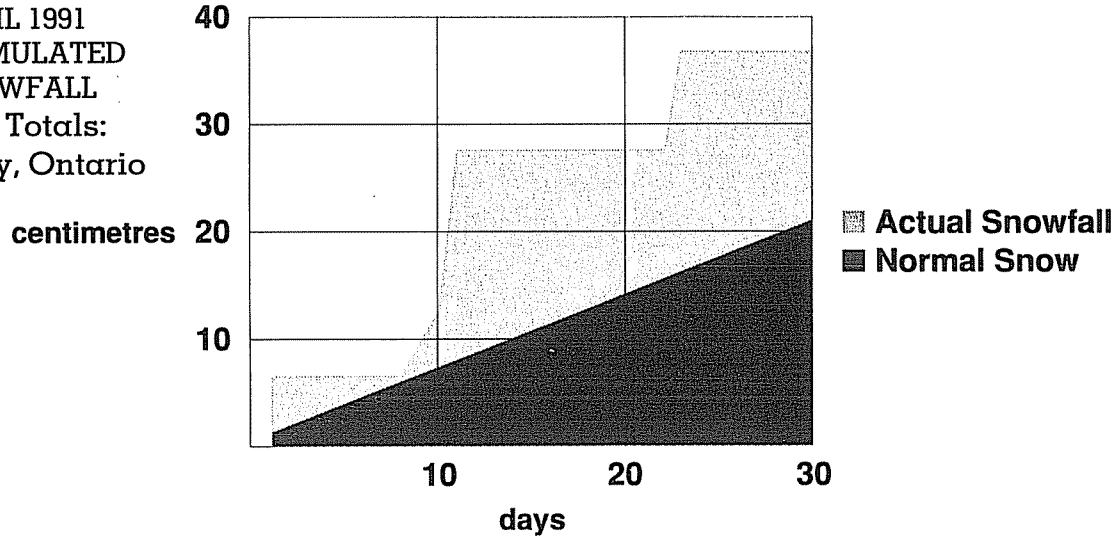
April is a great time to collect data about the weather

- sunshine hours
- accumulated precipitation
- extreme temperatures

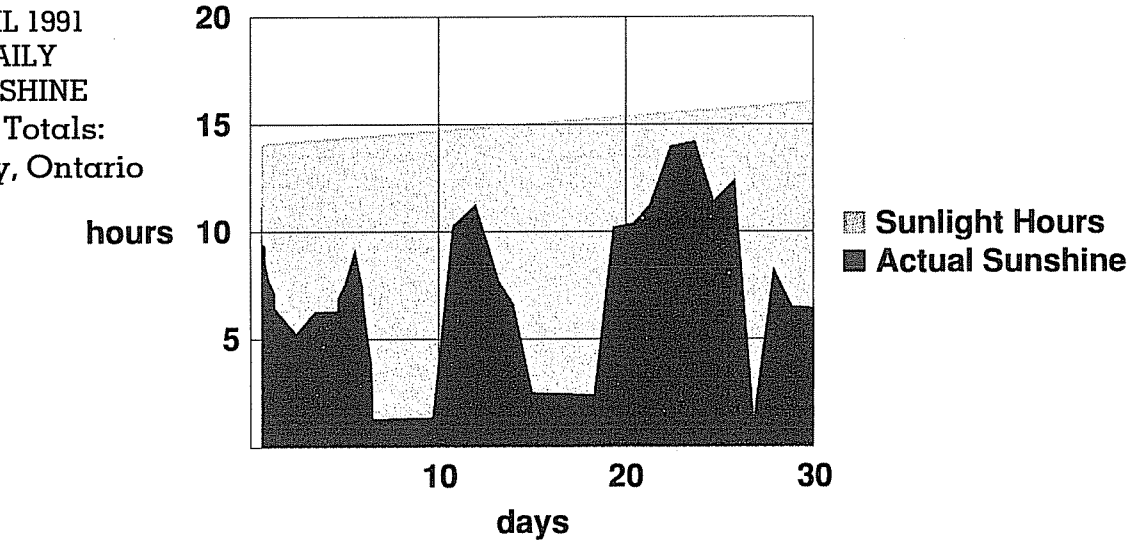
Your local Atmospheric Environment Services may provide you with the data you need.

Sudbury, Ontario, had extreme variable conditions in April, 1991. Many questions could be asked, based on these graphs.

APRIL 1991
ACCUMULATED
SNOWFALL
Daily Totals:
Sudbury, Ontario



APRIL 1991
DAILY
SUNSHINE
Daily Totals:
Sudbury, Ontario



On April 10, 1991, a storm dumped 30 cm of snow in Sault Ste Marie. How much snow did Sudbury receive that day?

Which days in April were snowy days? Did Sudbury get any sunshine on those days?

By the end of the month, how much more snow did Sudbury have than what is considered normal?

Approximately how many hours of sunshine did Sudbury have in 1991? Which part of the month was the sunniest?

The region received only 80% of what is considered normal sunshine. About how many hours do they normally receive?

MAXIMUM TEMPERATURES FOR APRIL

Date	Temp.	Date	Temp.	Date	Temp.
1	3°	2	4°	3	7°
4	12°	5	14°	6	16.5°
7	23.6°	8	11°	9	0°
10	–1°	11	3.5°	12	5°
13	10°	14	11°	15	5.5°
16	5°	17	7°	18	9°
19	5°	20	8°	21	11°
22	5°	23	15°	24	15.5°
25	18.5°	26	20°	27	18.5°
28	16°	29	23°	30	19°

Create a graph showing the daily maximum temperatures in Sudbury in April 1991.

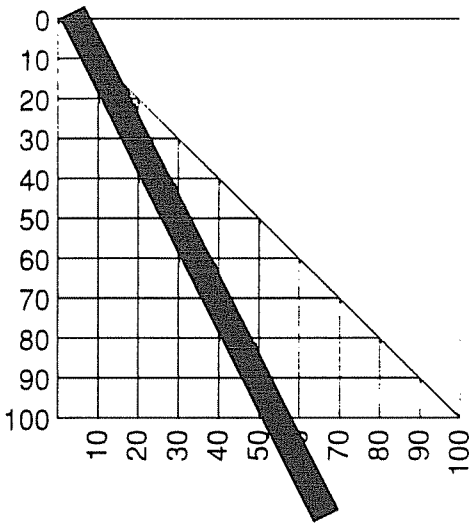
Compare your temperature graph to the snowfall and sunshine graphs.

Draw as many conclusions as you can based on this information.

The region's monthly average temperature was 2 degrees warmer than normal. What is the normal average temperature for April?

The Percent Machine

Grade 7 and 8 students may be interested in a device which approximates the answers to certain percent problems. The larger the device, the more precise the answers become. Groups of students could make their own Percent Machine.



Materials: plywood, cardboard or bristol board, 50 cm square

a metre stick or cardboard strip 100 cm long

To find what percent 30 is of 60, place the cardboard strip at the vertical 0 and the intersection of 30 and 60. Small numbers are read from the base, the larger ones from the side. Read the answer from the base line (50).

To find 50% of 80, place the bottom of the strip on 50% and find what number intersects with 80.

Which Child Are You?

Some of Carol Danbrook's "Which Child Are You?" was printed incorrectly in the last edition of 'Abacus.' Here and on the next page we have corrected and re-printed this interesting activity. (Editor)

Monday's child is fair of face;
Tuesday's child is full of grace;
Wednesday's child is full of woe;
Thursday's child has far to go;
Friday's child is loving and giving;
Saturday's child works hard for a living;
But the child that is born on the Sabbath day
Is both happy and bonny and good and gay.

INSTRUCTIONS FOR WHICH CHILD ARE YOU?

Write your birthdate as shown below. The value of A is the last two digits of the year in which you were born.

Month	Day	Year
8	**28**	**1958**

A = 58

Write the last two digits of the year and divide by 4. The value of B is the whole number part in the quotient.

B = 14

$58 \div 4 = 14.5$

C = 3

Use the chart to find the value of C. Its value is the number assigned to the month in which you were born.

Jan	1	Apr	0	July	0	Oct	1
Feb	4	May	2	Aug	3	Nov	4
Mar	4	June	5	Sept	6	Dec	6

D = 28

The value of D is the number of the day in which you were born.

Calculate. E = A + B + C + D = 103

E = 103

Calculate. E ÷ 7 = 103 ÷ 7 = 14 with 5 as a remainder

Use the chart below, and the remainder from the step above, to find which child you are in the rhyme above.

Sun	1	Mon	2	Tue	3	Wed	4
Thu	5	Fri	6	Sat	0		

Thus, the person born on August 28, 1958, is Thursday's child.