


AFTER MATHS TEACHERS GUIDE BOOK E

Dear Teacher,

Welcome to *AfterMaths*[™]. This program is designed to engage students in using a variety of maths skills that will be important to them as developmental learners and as thinkers in the years ahead. Students will use critical thinking, problem solving, and computation skills as they complete the thirty-six lessons in the student book.

The activities in the *AfterMaths* student book are based on seven concepts. These concepts are numeration, number theory, measurement, geometry, prealgebra, data interpretation, and logical reasoning. A list of activities and the skills covered appears on the following page.

The activities in the *AfterMaths* student book may be applied in various ways. They may be used to supplement and reinforce classroom lessons. They may be used to extend or enrich daily lessons. Or, they may be used to provide challenges to students who enjoy experimenting with maths. The activities are designed for students to work on their own, in pairs, or in small groups at their own pace.

The activities provide a variety of experiences for students, including writing, computing, experimenting, completing small projects, conducting research, and playing games. An icon  marks challenging creative-thinking items. Students will become aware that mathematics is not reserved just for the classroom; it is a vital part of the world around them.

Try to preview all thirty-six activities in the student book before assigning particular activities. Students can complete the activities in any order that fits your needs. Note that some maths experiments require the use of basic hands-on materials such as calculators, number cubes, playing cards, dominoes, and rulers.

AfterMaths, Book E is designed specifically for students in grade five. However, the activities can be used with advanced mathematics students in grade four, as well as with students who require mathematics skills reinforcement in grade six.

Enjoy the activities. Encourage students to do as many as possible. Galileo once said that mathematics is the alphabet in which the universe was created. So, let's begin to learn that alphabet.

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N: Numeration
 NT: Number Theory
 M: Measurement

G: Geometry
 PA: Prealgebra
 DI: Data Interpretation

LR: Logical Reasoning

Answers

LET'S GO A FEW ROUNDS (SB page 2)

Rounding: (**bold is largest rounded number in row**)

	A	B	C
1. 189,217 –	189,000	190,000	200,000
2. 246,709 –	247,000	250,000	200,000
3. 314,289 –	314,000	310,000	300,000
4. 75,216 –	75,000	80,000	100,000
5. 905,213 –	905,000	910,000	900,000
6. 678,217 –	678,000	680,000	700,000
7. 8,124,214 –	8,124,000	8,120,000	8,100,000
8. 956,212 –	956,000	960,000	1,000,000
9. 600,956 –	601,000	600,000	600,000
10. 189,717 –	190,000	190,000	200,000

Taking a Closer Look:

- See boldfaced numbers in *Rounding* list above.
- Column A: 4 times
Column B: 1 time
Column C: 5 times
- | |
|-----------|
| 200,000 |
| 200,000 |
| 300,000 |
| 100,000 |
| 200,000 |
| 1,000,000 |

(956,212 rounded to the hundred-thousands place)
- 680,000; Any number from 675,000 to 684,999 will round to 680,000.

SPEAKING OF NUMBERS (SB page 3)

- | | |
|-----------------|---------------------|
| 1. Chaz: 18 | 5. Elizabeth: 5,232 |
| 2. Nan: 164 | 6. Rien: 722,485 |
| 3. Lara: 1361.4 | 7. Kaleb: 95.372 |
| 4. David: 0.945 | 8. James: 65 |

SKILL BUILDERS 1 (SB page 4)

They Add Up:

- $11 + 12 + 13 = 36$
- $6 + 8 + 10 + 12 = 36$
- $11 + 13 + 15 + 17 = 56$
- $15 + 16 + 17 + 18 = 66$
- $16 + 18 + 20 + 22 = 76$

Number Match:

- | | | | |
|------|------|------|-------|
| a. 9 | d. 4 | g. 1 | j. 10 |
| b. 2 | e. 3 | h. 7 | |
| c. 5 | f. 6 | i. 8 | |

Number Scramble:

Largest possible number: 8 ten thousands, 7 thousands, 5 hundreds, 4 tens, 3 ones, 2 tenths

EVERYTHING IN PLACE (SB page 5)

- Numbers will vary. Rolls of four 1s and four 6s will produce equal largest and smallest numbers.
- Students' largest and smallest numbers will vary (smallest possible number: 1,111; largest possible: 6,666).
- Number lines will vary.

NUMBER-SPEAK (SB page 6)

Order Up:

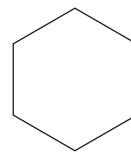
- | | | |
|----------------|-------------|-------------------|
| 1. dozen: 12 | week: 7 | millimetre: 1,000 |
| trio: 3 | pentagon: 5 | decade: 10 |
| centipede: 100 | unicorn: 1 | octagon: 8 |
- | | |
|-------------|---------------|
| a. unicorn | f. decade |
| b. trio | g. dozen |
| c. pentagon | h. centipede |
| d. week | i. millimetre |
| e. octagon | |

Quad Time:

Words and definitions will vary. Sample words:

- quadruped*: an animal that walks on four legs
- quadrilateral*: a figure with four sides and four angles
- quadruple*: multiply by four

Here's a Hexagon: See illustration.



EVEN, ODDS, AND PLACES (SB page 7)

Card Magic:

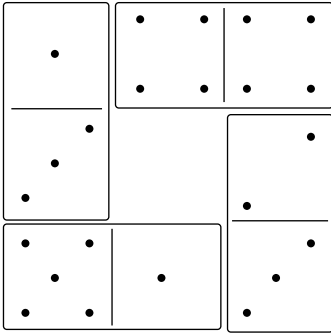
- Students should be able to do the trick.
- Students' responses will vary.

You've Got My Number:

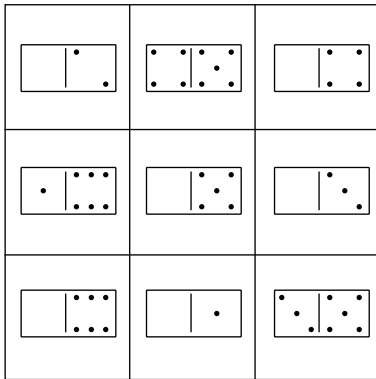
Card placement: 3, 4, 2, 6, 5, 1

'DOMINATION' (SB page 8)

1. See illustration:



2. See illustration:



NUMBER TRICKS (SB page 9)

Peculiar Problems:

1. a.
$$\begin{array}{r} 243 \\ + 675 \\ \hline 918 \end{array}$$
 b.
$$\begin{array}{r} 628 \\ + 317 \\ \hline 945 \end{array}$$
 c.
$$\begin{array}{r} 748 \\ + 215 \\ \hline 963 \end{array}$$

 d. All nine one-digit numbers are in each problem.
2. a. 381,381 b. 726,726 c. 419,419
 d. Each product has the same three digits as the multiplicand, twice.
3. a.
$$\begin{array}{r} 539 \text{ (17)} \\ +393 \text{ (15)} \\ \hline 932 \text{ (14)} \\ (17)(15)(14) \end{array}$$
 b.
$$\begin{array}{r} 426 \text{ (12)} \\ +258 \text{ (15)} \\ \hline 684 \text{ (18)} \\ (12)(15)(18) \end{array}$$

 c. In each problem, the sums of all three horizontal rows of digits are the same as the sums of all three vertical columns of digits (include the problem sums in the rows and columns).

Be Careful:

65 (Remember that 30 divided by $\frac{1}{2}$ is 60, not 15!)

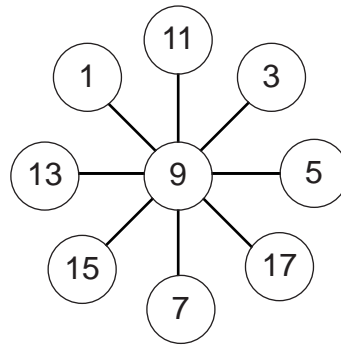
SKILL BUILDERS 2 (SB page 10)

Leaning Tower:

1. Most students will guess that problem a has the largest sum.
2. Actually, problems a and b each equal 1,083,676,269.

Magic Circles:

See illustration for sample number placement:



'Numbinitions':

- a. six of one and a half dozen of another
- b. we're in the money

TOURNEY TIME (SB page 11)

Frame	Jesse's Score	Carla's Score
1	6	7
2	8	9
3	10	7
4	6	9
5	9	7
6	8	8
7	7	7
8	8	10
9	7	7
10	7	6
Totals	76	77

The winner: Carla, by 1 pin

DOES IT ADD UP? (SB page 12)

Where the Steps Take You:

- A. Results will vary.
- B. When you follow the steps, you always end up with the same three-digit number you started with.

Box It:

There are 880 solutions. See illustration for example:

14	7	12	1
11	2	13	8
5	16	3	10
4	9	6	15