

LESSON 1

- INTRODUCTION TO CODE SWITCHING
 - Placement of the Code Switch Indicators
- THE HYPHEN AND THE DASH
- SIGNS OF OMISSION
- INTRODUCTION TO IDENTIFIERS

Format

- Keep Together—Mathematical Expression
- Margins for Narrative (3-1)
- Margins for Itemized Material with No Subdivisions (1-3)
- FORMAT SUMMARY #1

Answers to Practice Material

HOW TO PREPARE THE EXERCISES

EXERCISE 1

LESSON PREVIEW

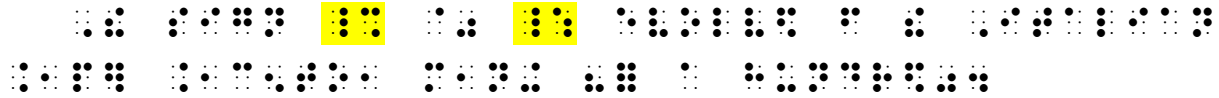
Introduction to the rules regarding code switching and use of code switch indicators. The hyphen and the short dash are studied. Three signs of omission are introduced: the ellipsis, the long dash, and the general omission symbol. Two Nemeth formats are illustrated: 3-1 narrative and 1-3 itemized material.

Do not begin Lesson 1 until you have completed the Preliminary Lesson.

- c. *Clarification:* Except for a freestanding, unmodified number or letter in UEB context, a switch to Nemeth is required for any Nemeth symbol even if a UEB symbol exists for that sign. This is true even when the symbol is standing alone. For example, even though UEB has a symbol for percent, the Nemeth symbol must be transcribed in a Nemeth transcription.

Example 1-10

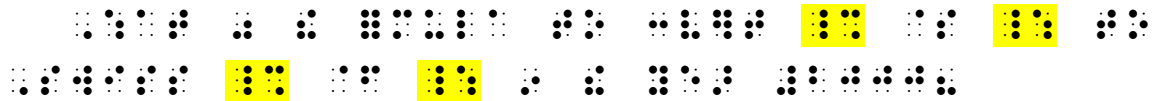
The % sign evolved from the Italian *per cento*, meaning “for a hundred”.



A switch to Nemeth is required for the percent symbol, even though UEB has a symbol for this sign. See Section P11 in the Preliminary Lesson.

Example 1-11

What was the formula to convert \$ to Swiss ₣ in the year 2000?



A switch to Nemeth is required for monetary symbols, even when the symbol is constructed using the same dot configuration as the UEB symbol. See Section P10 in the Preliminary Lesson for a list of monetary symbols.

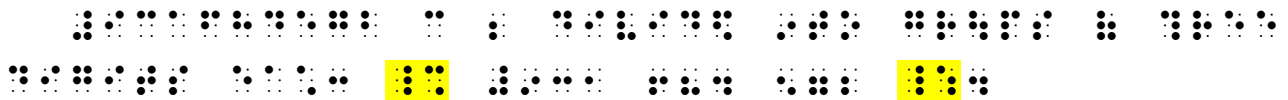
1.4 Placement of Literary Punctuation

When Nemeth is terminating and punctuation follows, the function of the punctuation mark must be determined. If the punctuation applies to the structure of the sentence and is not actually part of the math expression, the Nemeth Code terminator is transcribed first. The punctuation mark then will follow the termination indicator. There is no space between the terminator and the punctuation mark.



Example 1-12

931684572 can be divided into groups of three digits each: 931 684 572.



The period is placed outside of the Nemeth Code terminator. Note that the first numeral is transcribed in UEB because it is a freestanding, unmodified numeral. The second numeral requires a switch because the UEB numeric space indicator is not used in a Nemeth transcription. Review the topic of partitioned numbers in Section P4.1 of the Preliminary Lesson.

Instructions: Center the heading. Begin each problem in cell 3 with runovers in cell 1.

PRACTICE 1B

We use a + sign to add. We use a – sign to subtract. What sign do we use to multiply?

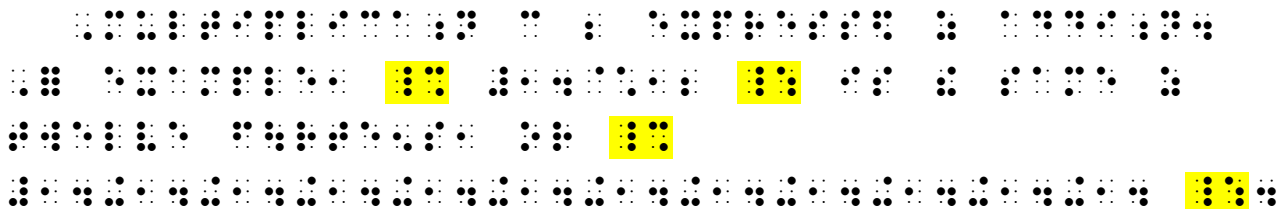
If $47 - 41 > 1$, do you suppose that $41 - 47 < 1$? Why or why not?

If $5 + 10$ equals 15, what does $10 + 5$ equal? Explain.

1.5.2 **A Switch Indicator May Stand Alone on a Line.** If a math expression will fit on one line but there is not room for one or both of the switch indicators, one or both switch indicators may stand alone on a line. Keeping the mathematical expression intact on one line is the priority. Several layouts are illustrated below.

Example 1-17

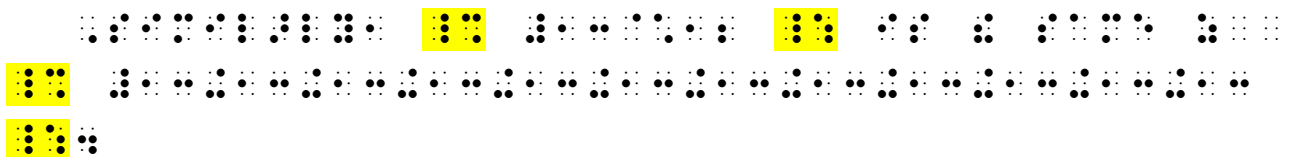
Multiplication can be expressed as addition. For example, 14×12 is the same as twelve fourteens, or $14 + 14 + 14 + 14 + 14 + 14 + 14 + 14 + 14 + 14 + 14 + 14$.



This opening Nemeth Code indicator falls on the line before the long expression.

Example 1-18

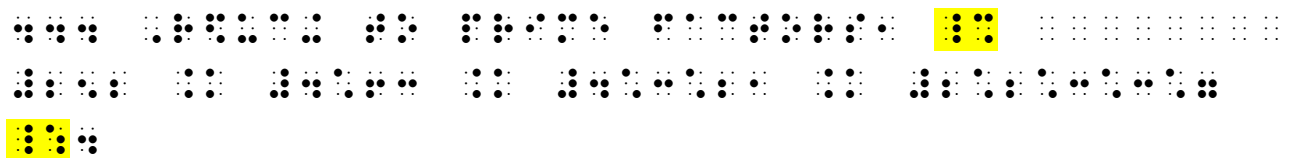
Similarly, 13×12 is the same as $13 + 13 + 13 + 13 + 13 + 13 + 13 + 13 + 13 + 13 + 13 + 13$.



The opening Nemeth Code indicator does not fit on the line before the long expression. The Nemeth Code terminator (along with the related punctuation) falls on the line after the long expression.

Example 1-19

... Reducing to prime factors, $252 = 4 \cdot 63 = 4 \cdot 3 \cdot 21 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 7$.



Because the expression takes up the full available line width, both the opening Nemeth Code indicator and the Nemeth Code terminator fall on separate lines.

Note: A sign of comparison links the symbols on the left side of the comparison sign with the symbols on the right side of the comparison sign and so is considered to be one mathematical

Switch indicators at print page turns will be discussed in Lesson 3.

Instructions: Begin each paragraph in cell 3 with runovers in cell 1.

PRACTICE 1C

How many squares can you find on an 8×8 checkerboard? (*Hint:* There are more than 65 squares.) First determine how many 1×1 squares, then how many 2×2 squares, and so on, you can find.

12×11 is also the same as twelve elevens, or $11 + 11 + 11 + 11 + 11 + 11 + 11 + 11 + 11 + 11 + 11 + 11$.

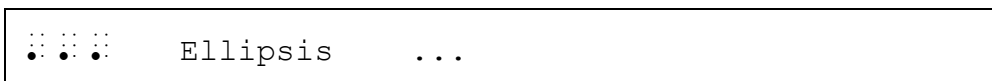
SIGNS OF OMISSION

1.8 General Use of Signs of Omission

Omission of mathematical or literary material may be shown by dots, a low line (underscore), a blank space, a question mark, or a combination of these or other signs devised by the author. Unless otherwise stated, the omission symbol used in braille should correspond to the print sign.

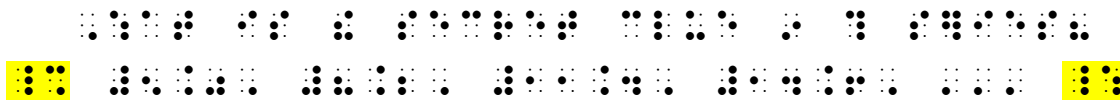
1.9 Ellipsis

An ellipsis is a series of dots which represent an omission. In UEB context, the UEB ellipsis is transcribed. In Nemeth context, the ellipsis of the Nemeth Code is transcribed. Three dot 3s represent the Nemeth ellipsis, regardless of how many dots are used in print. (One exception will be presented in Lesson 17 for ellipses within an array.)



Example 1-34

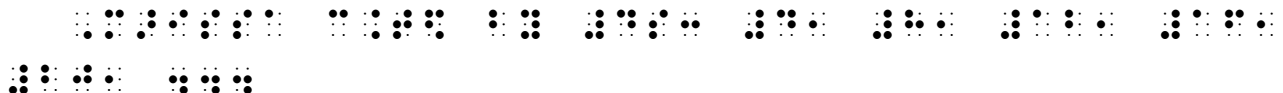
What is the secret clue in this series? 5.0, 8.2, 11.4, 14.6, ...



The Nemeth ellipsis is used inside the switches.

Example 1-35

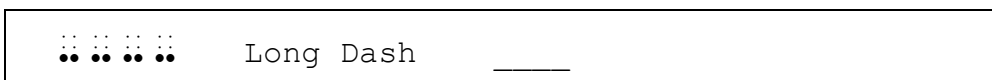
Marissa counted by 4s: 4, 8, 12, 16, 20, ...



The UEB ellipsis is used in nonmathematical context.

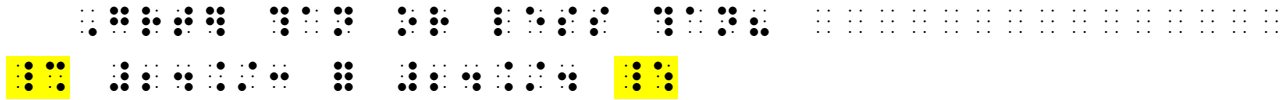
1.10 Long Dash

When a low line (underscore) is used to denote an omission in print, within mathematical context the Nemeth "long dash" is transcribed. Outside of the code switches, the UEB underscore is used.



Example 1-38

Greater than or less than? $24 \div 3$? $24 \div 4$

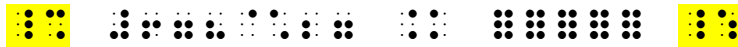


The omitted comparison sign is preceded and followed by a space, according to the spacing rules for signs of comparison.

- b. The number of general omission symbols used in braille must correspond to the number of omission signs used in print. A box or a shaded region that does not show a specific number of places is represented by a single general omission symbol.

Example 1-39

$678 \times 27 = \text{????}$

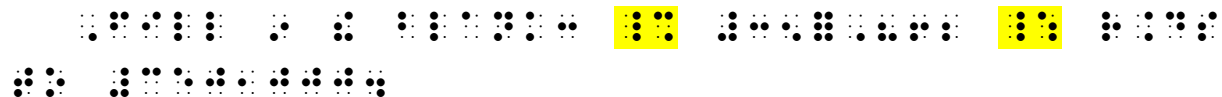


A 5-digit answer is implied by showing five omission signs, which represent the five question marks shown in print.

- c. When an internal dash or underscore is used to show missing digits within a number, the number is considered to be "modified" (as defined in the Preliminary Lesson, section P3.1) and so is transcribed in Nemeth. The general omission symbol is used to represent the omission in this case.

Example 1-40

Fill in the blank: $35__,862$ rounds to 350,000.



The omission is printed as a low line (long dash).

1.12 Spacing of the Ellipsis and Long Dash

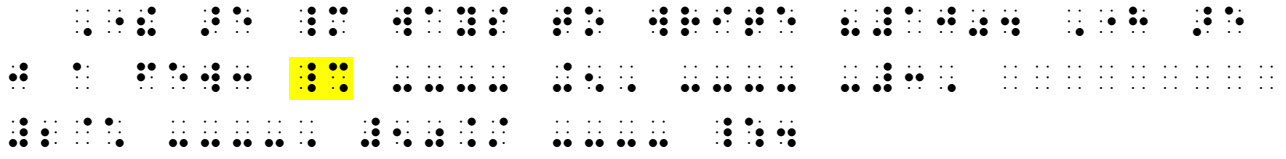
The ellipsis and the long dash are preceded and followed by a space in most circumstances, even when next to an operation sign. The print copy may or may not show a space but to avoid misreading the ellipsis or the long dash as other math symbols Nemeth spacing rules must be followed.

- a. DO insert a space between an ellipsis or a long dash and a symbol of operation.



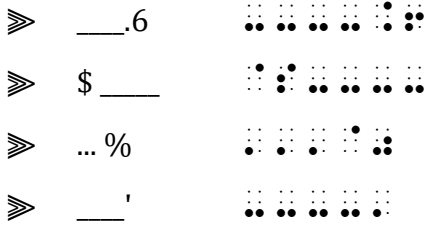
Example 1-41

There are many ways to write "10". Here are just a few: $__ + 5$, $__ - 3$, $2 \times __$, $50 \div __$.



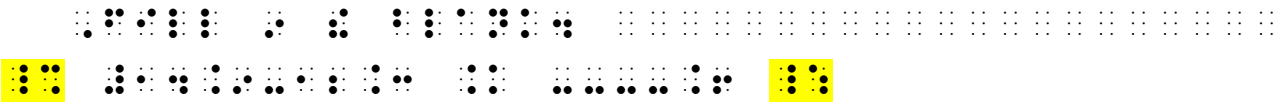
*Each long dash is spaced from the preceding or following operation symbol.
Note that the math expression $2 \times __$ is not divided between lines even though there is a space before the long dash.*

- b. *Exceptions:* DO NOT insert a space between an ellipsis or long dash and a related symbol such as a decimal point, monetary symbol, percent, or prime sign, even if a space is present in print.



Example 1-42

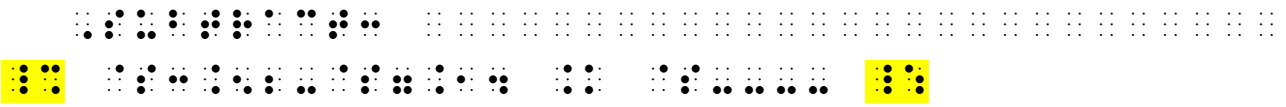
Fill in the blank. $14.9 - 12.3 = __.6$



The long dash is unspaced from the related decimal point.

Example 1-43

Subtract: $\$3.52 - \$7.14 = \$ __$



The long dash is unspaced from the related monetary symbol.

Example 1-44

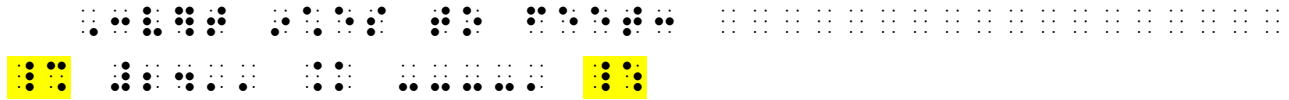
Multiply. $92\% \times .04 = \dots \%$



The ellipsis is unspaced from the related percent symbol.

Example 1-45

Convert inches to feet: 24" = ___'



The long dash is unspaced from the related prime symbol.

1.13 Other Omission Symbols

Omissions are frequently shown in other ways besides a blank space, a question mark, a dash, or an ellipsis. A shape, such as a square or a circle, may indicate an omission. If the omission sign used in print has no braille equivalent in the code, the sign may be represented by a devised braille symbol or by a drawing. Shape symbols, devised symbols, and drawings will be discussed in Lesson 11.

Format

1.14 Paragraph Margins for Narrative Portions of Text (3-1)

The Nemeth Code states that each paragraph is to begin in cell 3, with runovers in cell 1. Nemeth formats are applied throughout a Nemeth transcription, including the UEB portions of text. If the print copy uses blocked paragraphing style, the transcriber must follow Nemeth format rules and begin each new paragraph in cell 3. There is no blank line inserted between paragraphs unless another situation requires a blank line according to *Braille Formats* or according to other Nemeth formats (yet to be studied).

Instructions: Treat the marginal heading as a cell-5 heading.

PRACTICE 1F

Numerical Prefixes Here are some examples of numeral prefixes: "Tetra-" means 4; "hexa-" means 6; "hepta-" means 7; "deca-" means 10; "dodeca-" means 12.

If a *dodecagon* is a 12-sided figure, a *dodecahedron* is a __-faced solid. A 10-faced solid is called a _____.

Example 1-47

- A. If gasoline costs 42 cents a gallon, what will 1,425 gallons cost?
- B. At 60 cents a dozen, how much should 7 eggs cost?

Think: "Should I multiply or should I divide?
Can I solve the problem in one step?"

Braille representation of the text above, including a blank line following the itemized portion.

A blank line follows the itemized portion according to Braille Formats guidelines for exercise material.

Instructions: Format the first sentence as a narrative paragraph. Retain boldface for the paragraph heading. Insert a blank line before the itemized exercise material. Ignore typeface of the identifiers.

PRACTICE 1G

Refresher. These problems will test your skill with decimals.

1. First, addition: $42.6 + 37.23 + 3.215 =$
2. Now subtract: $87.6 - 51.35 =$
3. Try multiplication: $625.1 \times 2.7 =$
4. And now divide: $4.864 \div 3.2 =$

FORMAT SUMMARY #1

Here is a summary of the Nemeth formats encountered so far in this course.

General Principles When an item in a UEB transcription requires the use of Nemeth symbols, format rules of The Nemeth Braille Code for Mathematics and Science Notation are to be applied to the entire transcription including those portions transcribed in UEB. When a format is not specifically addressed in the Nemeth Code, the principles provided in *Braille Formats* should be followed.

Mathematical Expressions—Keep Together If a mathematical expression will fit on one braille line within the current margins, it must not be divided between lines. The entire expression is brought down to the next line.

Paragraph Margins for Narrative Portions of Text (3-1) In a document governed by Nemeth formatting, an unitemized paragraph in explanatory portions of text begins in cell 3 and all runovers begin in cell 1. Blocked paragraphing is not used in a Nemeth transcription.

Margins for Itemized Material with No Subdivisions (1-3) The identifier begins in cell 1; runovers begin in cell 3. If the material contains more than one paragraph, each subparagraph begins in cell 5 with runovers in cell 3. A blank line is inserted before and after a set of itemized exercise material according to *Braille Formats* guidelines.

Placement of Code Switch Indicators within Narrative Place the entire math expression and the two code switch indicators on the same braille line if they will fit within the current margins. If the entire string will not fit on one line, a switch indicator may stand alone on a line to allow the math expression to remain undivided. When a code switch occurs at a braille page turn, the switch indicator is placed on the same braille page as the mathematical material to which it applies.

For further practice, see Appendix A—Reading Practice.

HOW TO PREPARE THE EXERCISES

Each lesson ends with an exercise which will be turned in for grading. Prepare the exercise for each lesson in the following way:

- (1) Use a 40-cell line and 25 lines per page.
- (2) Include the print page number on every page. Use the page number shown at the bottom of each exercise page. Insert page change indicators as needed. The upper-cell numerals of UEB are used for page number designations.
- (3) Include a braille page number on every page, starting each lesson exercise with braille page number 1. The upper-cell numerals of UEB are used for page number designations.
- (4) Instructions for the transcriber may precede the exercise material itself. Do not transcribe those instructions.
- (5) Transcribe the EXERCISE heading on line 1. Center that heading.
- (6) Do not use a running head. Do not divide words.
- (7) Follow general transcribing rules regarding use of the braille line—that is, use as much of the line as possible, unless a specific lineage rule applies.
- (8) Itemized problems may begin at the bottom of a braille page and continue on the next braille page. Do not force a numbered/lettered problem to begin on a new page unless other format rules apply. An identifier should not stand alone at the bottom of a braille page.
- (9) Include your name after a blank line on the last page of the exercise.
- (10) If you send electronic files, submit your first file as a brf file. Your grader will then let you know what file type is preferred. Include your name and date in the filename.

Example: LastnameInitials Ex# Date
HobartEW Ex1 3-25-22

The Study Tips at the end of the Preliminary Lesson offer ways to get the most out of the lesson exercises.

BLANK PAGE

Instructions: Prepare Exercise 1 according to the guidelines given on page 1-31. Note that this exercise includes symbols and rules from the Preliminary Lesson. *Formatting Guidance:* Center the heading EXERCISE 1 on line 1. Place the opening Nemeth Code indicator on line 3, in cell 1. Begin the list on line 4, following *simple vertical list* format guidelines found in *Braille Formats*. For the items arranged in columns arrange them as printed, according to *lists in columns* guidelines found in *Braille Formats*. Place the Nemeth Code terminator in cell 1 on the line following the last listed item on page 2. The blank line will follow. Treat HOMEWORK PROBLEMS as a centered heading.

EXERCISE 1

$$5.3 \times 71 = 53 \times 7.1 = 376.3$$

$$14 \times .5 = 14 \div 2$$

$$.3 > .2 > -.2 > -.3$$

$$957 \div 3 - 14 = 319 - 14 = 305$$

$$46.0 < 460 > 4.6$$

$$18 - 6 - 6 < 18 + 6 - 6$$

$$94 \cdot 3 = 90 \cdot 3 + 4 \cdot 3 = 270 + 12 = 282$$

$$+5, +3, +1, 0, -1, -3, -5$$

$$\$19,343,541,768,824$$

$$9 - 26 = \qquad -4 - 15 =$$

$$50 \div 10 = \qquad 6 \div 3 =$$

$$1.8 \div 2 = \qquad -30 \div 6 =$$

$$\$7.98 \cdot 4.3\% = \qquad \$99 - 40\% =$$

$$£530 + £218 = £748, \quad £1 = \$1.31$$

$$£35 \times 1.435 = \$50.225 = \$50.23$$

$$49¢ + 49¢ < \$1.00$$

$$6 : 4.5 :: 4 : 3$$

$$13'11'' < 180''$$

$$12'10'' \div 2 = 6'5''$$

$$? + 64 + 58 + 97 = 265$$

$$-45 \div 9 = -5$$

$$7.25'' + 3.5'' + 1.5'' = 12.25'' > 1'$$

$$4:3 = 4 * 2:3 * 2 = 8:6$$

$$36,000,000 = 3.6 \times \text{-?}$$

$$1435 \times 6 = 86??$$

$$\$9.86 - \$0.07 + \$468.57 = \$478.36$$

$$41\text{¢} - 32\text{¢} = 9\text{¢} = \$\dots$$

$$.01 - .25 < -.25 - .01$$

$$55\% + 62\% = \underline{\hspace{1cm}}\%$$

$$1.141222 \dots 2 \dots$$

$$35' + 49' > 80'$$

$$8 : 15 :: 24 : \underline{\hspace{1cm}}?$$

$$51,858 \div ? = 402$$

$$.769 \qquad \qquad \qquad -.246 \qquad \qquad \qquad 79,086$$

$$99.9\% \qquad \qquad \qquad 2'11'' \qquad \qquad \qquad 83\text{¢}$$

$$548,712 \qquad \qquad \qquad 365 \div 12 \qquad \qquad \qquad 68.94$$

$$-6.87 \qquad \qquad \qquad 0 \qquad \qquad \qquad -4 > -5$$

$$97.6'' \qquad \qquad \qquad +.54 \qquad \qquad \qquad \$0.84$$

$$72\text{‰} \qquad \qquad \qquad +33.8 \qquad \qquad \qquad -45.67$$

HOMWORK PROBLEMS

1. A box measures 2'4" in height. Express the height in inches only.
2. **Rounding:** Round 79¢ to the nearest dollar. Round 5.16 to the nearest hundredth. Round 3,794 to the nearest ten.
3. The 2nd decimal place represents 100ths. Does .014 indicate 14 hundredths or 1.4 hundredths?
4. The ratio 12 : 15 is the same as $12 \div 3 : 15 \div 3 = 4 : 5$ or "4 out of 5".
Similarly, 4 : 5 is equivalent to $4 \times 20 : 5 \times 20 = 80 : 100$ or "80 out of 100" which—expressed as a percent—is ____%.
5. An *integer* is a positive or negative whole number, or zero. Is -3 an integer? Is 0?
6. As of August 2016, the world population estimate was 7.4 billion humans. The "worldometer" estimated 7 454 043 645 at noon on September 30th.

Mental Multiplication: To solve the problem 67×46 , think of 67 as $60 + 7$ and think of 46 as $40 + 6$. Now simply multiply each number by the other, $60 \cdot 40$, $60 \cdot 6$, $7 \cdot 40$, $7 \cdot 6$, and then add the products: $2400 + 360 + 280 + 42 = 3082$.

- A. There must be a better way to write the number
0.00111122223333444455556666777788889999!
- B. One DVD costs 10.52 euro. How much will five DVDs cost? $\text{€}10.52 \times 5 = \text{€}52.60$
- C. In Exercise 9.7, each expression in your answer must include at least three of the four basic operations: $+$ $-$ \times \div
- D. The sample size, 2.0791812460, rounds to 2.
- E. On a number line, show that -4 is the opposite of $+4$.
- F. Never divide 0 by 0.
- G. List the numbers from .01-.25 on the whiteboard.
- H. Is $6 \cdot 7 \cdot 8$ the same as $8 \cdot 7 \cdot 6$? What rule supports your answer?
- I. Todd just celebrated his 18th birthday. In what year was he born?
 $2022 - 18 = ?$
- J. **True/False** $14 - 2 < 1$, $15 > 9$, $6 + 3 < 7$, $-5 > 3$