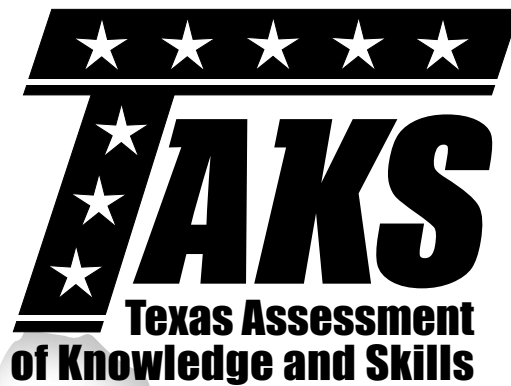


August 2004



Information Booklet

MATHEMATICS **Grade 6** **SPANISH VERSION** **Revised**

Texas Education Agency • Student Assessment Division

INTRODUCTION

The Texas Assessment of Knowledge and Skills (TAKS) is a completely reconceived testing program. It assesses more of the Texas Essential Knowledge and Skills (TEKS) than the Texas Assessment of Academic Skills (TAAS) did and asks questions in more authentic ways. TAKS has been developed to better reflect good instructional practice and more accurately measure student learning. We hope that every teacher will see the connection between what we test on this new state assessment and what our students should know and be able to do to be academically successful. To provide you with a better understanding of TAKS and its connection to the TEKS and to classroom teaching, the Texas Education Agency (TEA) has developed this newly revised edition of the TAKS information booklet. The information booklets were originally published in January 2002, before the first TAKS field test. Now, after several years of field tests and live administrations, we are able to provide an even more comprehensive picture of the testing program. We have clarified some of the existing material and, in some cases, provided new sample items and/or more explanations of certain item types. However, it is important to remember that these clarifications do not signify any change in the TAKS testing program. The objectives and TEKS student expectations assessed on TAKS remain unchanged. We hope this revised version of the TAKS information booklet will serve as a user-friendly resource to help you understand that the best preparation for TAKS is a coherent, TEKS-based instructional program that provides the level of support necessary for all students to reach their academic potential.

BACKGROUND INFORMATION

The development of the TAKS program included extensive public scrutiny and input from Texas teachers, administrators, parents, members of the business community, professional education organizations, faculty and staff at Texas colleges and universities, and national content-area experts. The agency involved as many stakeholders as possible because we believed that the development of TAKS was a responsibility that had to be shared if this new assessment was to be an equitable and accurate measure of learning for all Texas public school students.

The three-year test-development process, which began in summer 1999, included a series of carefully conceived activities. First, committees of Texas educators identified those TEKS student expectations for each grade and subject area assessed that should be tested on a statewide assessment. Then a committee of TEA Student Assessment and Curriculum staff incorporated these selected TEKS student expectations, along with draft objectives for each subject area, into eleventh grade exit level surveys. These surveys were sent to Texas educators at the middle school and secondary levels for their review. Based on input we received from more than 27,000 survey responses, we developed a second draft of the objectives and TEKS student expectations. In addition, we used this input during the development of draft objectives and student expectations for grades 3 through 10 to ensure that the TAKS program, like the TEKS curriculum, would be vertically aligned. This vertical alignment was a critical step in ensuring that the TAKS tests would become more rigorous as students moved from grade to grade. For example, the fifth grade tests would be more rigorous than the fourth grade tests, which would be more rigorous than the third grade tests. Texas educators felt that this increase in rigor from grade to grade was both appropriate and logical since each subject-area test was closely aligned to the TEKS curriculum at that grade level.

In fall 2000 TEA distributed the second draft of the objectives and TEKS student expectations for eleventh grade exit level and the first draft of the objectives and student expectations for grades 3 through 10 for review at the campus level. These documents were also posted on the Student Assessment Division’s website to encourage input from the public. Each draft document focused on two central issues: first, whether the objectives included in the draft were essential to measure on a statewide assessment; and, second, whether students would have received enough instruction on the TEKS student expectations included under each objective to be adequately prepared to demonstrate mastery of that objective in the spring of the school year. We received more than 57,000 campus-consensus survey responses. We used these responses, along with feedback from national experts, to finalize the TAKS objectives and student expectations. Because the state assessment was necessarily limited to a “snapshot” of student performance, broad-based input was important to ensure that TAKS assessed the parts of the TEKS curriculum most critical to students’ academic learning and progress.

In the thorough test-development process that we use for the TAKS program, we rely on educator input to develop items that are appropriate and valid measures of the objectives and TEKS student expectations the items are designed to assess. This input includes an annual educator review and revision of all proposed test items before field-testing and a second annual educator review of data and items after field-testing. In addition, each year panels of recognized experts in the fields of English language arts (ELA), mathematics, science, and social studies meet in Austin to critically review the content of each of the high school level TAKS assessments to be administered that year. This critical review is referred to as a content validation review and is one of the final activities in a series of quality-control steps designed to ensure that each high school test is of the highest quality possible. A content validation review is considered necessary at the high school grades (9, 10, and 11) because of the advanced level of content being assessed.

ORGANIZATION OF THE TAKS TESTS

TAKS is divided into test objectives. It is important to remember that the objective statements are not found in the TEKS curriculum. Rather, the objectives are “umbrella statements” that serve as headings under which student expectations from the TEKS can be meaningfully grouped. Objectives are broad statements that “break up” knowledge and skills to be tested into meaningful subsets around which a test can be organized into reporting units. These reporting units help campuses, districts, parents, and the general public understand the performance of our students and schools. Test objectives are not intended to be “translations” or “rewordings” of the TEKS. Instead, the objectives are designed to be identical across grade levels rather than grade specific. Generally, the objectives are the same for third grade through eighth grade (an elementary/middle school system) and for ninth grade through eleventh grade (a high school system). In addition, certain TEKS student expectations may logically be grouped under more than one test objective; however, it is important for you to understand that this is not meaningless repetition—sometimes the organization of the objectives requires such groupings. For example, on the TAKS writing test for fourth grade, some of the same student expectations addressing the conventions of standard Spanish usage are listed under both Objective 2 and Objective 6. In this case, the expectations listed under Objective 2 are assessed through the overall strength of a student’s use of language conventions on the written composition portion of the test; these same expectations under Objective 6 are assessed through multiple-choice items attached to a series of revising and editing passages.

ORGANIZATION OF THE INFORMATION BOOKLETS

The purpose of the information booklets is to help Texas educators, students, parents, and other stakeholders understand more about the TAKS tests. These booklets are not intended to replace the teaching of the TEKS curriculum, provide the basis for the isolated teaching of skills in the form of narrow test preparation, or serve as the single information source about every aspect of the TAKS program. However, we believe that the booklets provide helpful explanations as well as show enough sample items, reading and writing selections, and prompts to give educators a good sense of the assessment.

Each grade within a subject area is presented as a separate booklet. However, it is still important that teachers review the information booklets for the grades both above and below the grade they teach. For example, eighth grade mathematics teachers who review the seventh grade information booklet as well as the ninth grade information booklet are able to develop a broader perspective of the mathematics assessment than if they study only the eighth grade information booklet.

The information booklets for each subject area contain some information unique to that subject. For example, the mathematics chart that students use on TAKS is included for each grade at which mathematics is assessed. However, all booklets include the following information, which we consider critical for every subject-area TAKS test:

- an overview of the subject within the context of TAKS
- a blueprint of the test—the number of items under each objective and the number of items on the test as a whole
- information that clarifies how to read the TEKS
- the reasons each objective and its TEKS student expectations are critical to student learning and success
- the objectives and TEKS student expectations that are included on TAKS
- additional information about each objective that helps educators understand how it is assessed on TAKS
- sample items that show some of the ways objectives are assessed

TAKS MATHEMATICS INFORMATION BOOKLET GENERAL INTRODUCTION

Learning mathematics is essential in finding answers to real-life questions. The study of mathematics helps students to think logically, solve problems, and understand spatial relationships. The concepts learned in mathematics courses help students communicate clearly and use logical reasoning to make sense of their world. TEKS instruction in mathematics throughout elementary, middle, and high school will build the foundation necessary for students to succeed in advanced math and science courses and later in their careers.

The six strands identified in the mathematics curriculum for kindergarten through eighth grade are the foundation skills necessary for high school-level mathematics courses. The TAKS assessment objectives are closely aligned with the six strands identified in the TEKS curriculum. For example, in TAKS Objective 1 students are to “demonstrate an understanding of numbers, operations, and quantitative reasoning”; in the TEKS curriculum the first strand identified is “number, operation, and quantitative reasoning.” This close alignment reflects the important link between TAKS and the TEKS curriculum. In fact, the TAKS mathematics tests are based on those TEKS student expectations Texas educators have identified as the most critical to student achievement and progress in mathematics.

The TEKS were developed to provide educators with instructional goals at each grade level. Although some student expectations are not tested, they are nonetheless critical for student understanding and must be included in classroom instruction. For each strand of learning, the mathematics TEKS provide more rigorous expectations as students master skills and progress through the curriculum. It is important for educators to vertically align their instructional programs to reinforce the unifying strands of learning each year through grade-level-appropriate instruction. To understand how student learning progresses, educators are encouraged to become familiar with the curriculum at all grade levels. Educators may find it helpful to examine sample items at each grade level to gain a greater understanding of what students need to know and be able to do in mathematics as they move from grade to grade.

A system of support has been designed to ensure that all students master the TEKS. The Student Success Initiative (SSI) requires that students meet the standard on TAKS to be eligible for promotion to the next grade level as specified below:

- the reading test at Grade 3, beginning in the 2002–2003 school year;
- the reading and mathematics tests at Grade 5, beginning in the 2004–2005 school year; and
- the reading and mathematics tests at Grade 8, beginning in the 2007–2008 school year.

To prepare students for the SSI requirements and to promote vertical alignment, it is essential that teachers collaborate and coordinate across grade levels.



Sample Math Items for TAKS in Spanish

The sample items in this Grade 6 mathematics booklet are Spanish adaptations of the samples included in the Grade 6 English TAKS information booklet.

TAKS MATHEMATICS INFORMATION BOOKLET GRADE 6

The sixth grade mathematics TEKS describe what students should know and be able to do in sixth grade. However, teachers need to be aware of the “big picture”—an understanding of the TEKS curriculum for both the lower and the higher grades. This awareness of what comes before and after sixth grade will enable teachers to more effectively help their students develop mathematics knowledge and skills.

TEST FORMAT

- The sixth grade test includes a test booklet and a separate machine-scorable answer document. Enough room is left around each item in the booklet for students to work each problem. However, student responses must be recorded on the separate answer document.
- Any item may include application context and extraneous information.
- Most items will be in a multiple-choice format with four answer choices.
- *No esta aquí* or a variation of this phrase may be used as the fourth answer choice when appropriate.
- There will be a limited number of open-ended griddable items. For these items a seven-column grid (with one column designated as a fixed decimal point) will be provided on the answer document for students to record and bubble in their answers. Digits must be in the correct column(s) with respect to the fixed decimal point. This griddable format is intended to allow students to work a problem and determine the correct answer without being influenced by answer choices. An example of a blank grid is shown below.

				.		
0	0	0	0		0	0
1	1	1	1		1	1
2	2	2	2		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		5	5
6	6	6	6		6	6
7	7	7	7		7	7
8	8	8	8		8	8
9	9	9	9		9	9

MATHEMATICS CHART (TABLA DE MATEMÁTICAS)

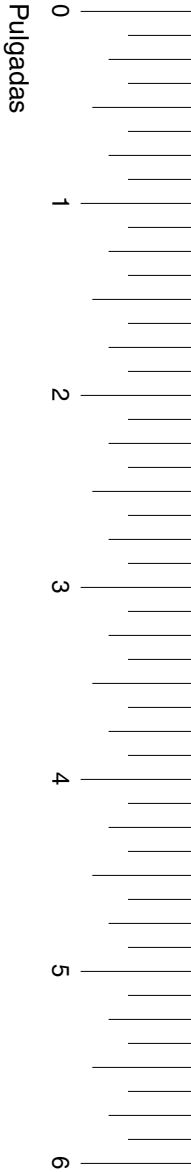
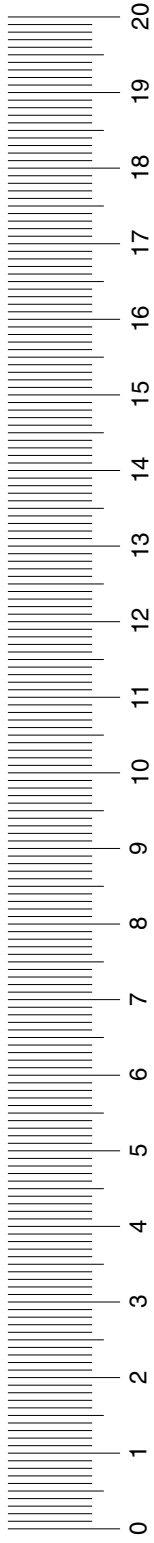
- For sixth grade the TABLA DE MATEMÁTICAS (found on pages 9 and 10) will have measurement conversions on the front and formulas on the back.
- A metric ruler and a customary ruler will be provided on the front of the separate TABLA DE MATEMÁTICAS.
- Items that require students to measure with a ruler from the TABLA DE MATEMÁTICAS may be found in any objective as appropriate.

**TEXAS ASSESSMENT OF KNOWLEDGE AND SKILLS (TAKS)
BLUEPRINT FOR GRADE 6 MATHEMATICS**

TAKS Objectives	Number of Items
Objective 1: Numbers, Operations, and Quantitative Reasoning	10
Objective 2: Patterns, Relationships, and Algebraic Reasoning	9
Objective 3: Geometry and Spatial Reasoning	7
Objective 4: Measurement	5
Objective 5: Probability and Statistics	6
Objective 6: Mathematical Processes and Tools	9
Total number of items	46

6° GRADO

TABLA DE MATEMÁTICAS



LONGITUD

Sistema métrico

1 kilómetro = 1000 metros

1 metro = 100 centímetros

1 centímetro = 10 milímetros

Sistema inglés (usual)

1 milla = 1760 yardas

1 milla = 5280 pies

1 yarda = 3 pies

1 pie = 12 pulgadas

CAPACIDAD Y VOLUMEN

Sistema métrico

1 litro = 1000 mililitros

Sistema inglés (usual)

1 galón = 4 cuartos de galón

1 galón = 128 onzas

1 cuarto de galón = 2 pintas

1 pinta = 2 tazas

1 taza = 8 onzas

MASA Y PESO

Sistema métrico

1 kilogramo = 1000 gramos

1 gramo = 1000 miligramos

Sistema inglés (usual)

1 tonelada = 2000 libras

1 libra = 16 onzas

TIEMPO

1 año = 365 días

1 año = 12 meses

1 año = 52 semanas

1 semana = 7 días

1 día = 24 horas

1 hora = 60 minutos

1 minuto = 60 segundos

Continúa en la página siguiente

6° GRADO TABLA DE MATEMÁTICAS

A continuación se presentan fórmulas de matemáticas tanto en español como en inglés.

		ESPAÑOL	INGLÉS
Perímetro	cuadrado	$P = 4l$	$P = 4s$
	rectángulo	$P = 2l + 2a$ o $P = 2(l + a)$	$P = 2l + 2w$ o $P = 2(l + w)$
Circunferencia	círculo	$C = 2\pi r$ o $C = \pi d$	$C = 2\pi r$ o $C = \pi d$
Área	cuadrado	$A = l^2$	$A = s^2$
	rectángulo	$A = la$ o $A = bh$	$A = lw$ o $A = bh$
		triángulo	$A = \frac{1}{2}bh$ o $A = \frac{bh}{2}$
	trapecio	$A = \frac{1}{2}(b_1 + b_2)h$ o $A = \frac{(b_1 + b_2)h}{2}$	$A = \frac{1}{2}(b_1 + b_2)h$ o $A = \frac{(b_1 + b_2)h}{2}$
		círculo	$A = \pi r^2$
Volumen	cubo	$V = l^3$	$V = s^3$
	prisma rectangular	$V = lah$	$V = lwh$
Pi	π	$\pi \approx 3.14$ o $\pi \approx \frac{22}{7}$	$\pi \approx 3.14$ o $\pi \approx \frac{22}{7}$

A Key to Understanding the TEKS Included on TAKS

Example from Objective 1

- A** → (6.2) **Números, operaciones y razonamiento cuantitativo.** El estudiante suma, resta, multiplica y divide para resolver problemas y justificar soluciones. Se espera que el estudiante:
- B** → (A) demuestre comprensión de la suma y la resta de fracciones usando [objetos,] dibujos, palabras y números. **C** →

KEY

A. Knowledge and Skills Statement

This broad statement describes what students should know and be able to do for sixth grade mathematics. The number preceding the statement identifies the instructional level and the number of the knowledge and skills statement.

B. Student Expectation

This specific statement describes what students should be able to do to demonstrate proficiency in what is described in the knowledge and skills statement. Students will be tested on skills outlined in the student expectation statement.

C. [bracketed text]

Although the entire student expectation has been provided for reference, text in brackets indicates that this portion of the student expectation will not specifically be tested on TAKS.

NOTE: The full TEKS curriculum can be found at <http://www.tea.state.tx.us/teks/>.

TEKS STUDENT EXPECTATIONS—IMPORTANT VOCABULARY

For every subject area and grade level, the terms *como*, *tal(es) como*, *por ejemplo*, *incluyendo*, and *que incluyen* are used to help make the TEKS student expectations more concrete for teachers. However, these terms function in different ways. To help you understand the effect each of the terms has on specific student expectations, we are providing the following:

- a short definition of the terms
- an example from a specific student expectation for this subject area
- a short explanation of how the terms affect this student expectation

The terms *como*, *tal(es) como*, and *por ejemplo* are used when the specific examples that follow them function only as representative illustrations that help define the expectation for teachers. These examples are just that—examples. Teachers may choose to use them when teaching the student expectation, but there is no requirement to use them. Other examples can be used in addition to those listed or as replacements for those listed.

Example from TEKS (not assessed on TAKS)

(6.11) (D) *utilice en la resolución de problemas instrumentos tales como papel y lápiz, tecnología, objetos reales y manipulativos de instrucción, así como técnicas tales como cálculo mental, estimación y otras estrategias que faciliten el manejo de los números*

This student expectation lists *instrumentos tales como papel y lápiz, tecnología, objetos reales y manipulativos de instrucción*. Many other tools exist to help students solve problems.

The terms *incluyendo* and *que incluyen* are used when the specific examples that follow them must be taught. However, other examples may also be used in conjunction with those listed.

Example from Objective 1

(6.1) (B) *genere formas equivalentes de números racionales incluyendo números enteros, fracciones y decimales*

This student expectation lists several forms of rational numbers. Other forms of rational numbers may be taught in addition to those listed.

Remember

- Any example preceded by the terms *como*, *tal(es) como*, or *por ejemplo* in a particular student expectation may or may not provide the basis for an item assessing that expectation. Because these examples do not necessarily have to be used to teach the student expectation, it is equally likely that other examples may be used in assessment items. The rule here is that an example will be used only if it is central to the knowledge, concept, or skill the item assesses.
- It is more likely that some of the examples preceded by the terms *incluyendo* or *que incluyan* in a particular student expectation will provide the basis for items assessing that expectation, since these examples must be taught. However, it is important to remember that the examples that follow the terms *incluyendo* or *que incluyan* do not represent all the examples possible, so other examples may also provide the basis for an assessment item. Again, the rule here is that an example will be used only if it is central to the knowledge, concept, or skill the item assesses.

TAKS Grade 6 Spanish Mathematics—Objective 1

Knowledge of **numbers, operations, and quantitative reasoning** is critical for the development of mathematical skills. Students need to understand the value of digits based on their positions in numbers, including rational numbers, in order to read and work with numbers. Students should know how to use both negative and positive integers in real-life problems. Students should understand prime factorization of numbers and the exponential representation of numbers as used in science and mathematics. The understanding of common factors and multiples becomes important as students learn to simplify more complicated fractions and algebraic expressions. More abstract and complicated numbers will be used as students work with and distinguish among the four basic operations of addition, subtraction, multiplication, and division. Students should also be developing a sense of the reasonableness of an expected answer. Quantitative reasoning is knowing when an answer makes sense and is one purpose for rounding numbers to estimate. Students should be prepared to apply the basic concepts included in Objective 1 to other topics in sixth grade mathematics. In addition, the knowledge and skills in Objective 1 at sixth grade provide the foundation for mastering the knowledge and skills in Objective 1 at seventh grade.

Objective 1 groups together the basic building blocks within the TEKS—**numbers, operations, and quantitative reasoning**—from which all mathematical understanding stems.

TAKS Objectives and TEKS Student Expectations

Objetivo 1

El estudiante demostrará comprensión de números, operaciones y razonamiento cuantitativo.

- (6.1) **Números, operaciones y razonamiento cuantitativo.** El estudiante representa y utiliza números racionales en una variedad de formas equivalentes. Se espera que el estudiante:
- (A) compare y ordene números racionales no negativos;
 - (B) genere formas equivalentes de números racionales incluyendo números enteros, fracciones y decimales;
 - (C) utilice enteros para representar situaciones de la vida diaria;
 - (D) escriba la descomposición en números primos utilizando exponentes;
 - (E) identifique factores y múltiplos incluyendo factores comunes y múltiplos comunes.

- (6.2) **Números, operaciones y razonamiento cuantitativo.** El estudiante suma, resta, multiplica y divide para resolver problemas y justificar soluciones. Se espera que el estudiante:
- (A) demuestre comprensión de la suma y la resta de fracciones usando [objetos,] dibujos, palabras y números;
 - (B) utilice la suma y la resta para resolver problemas en los que use fracciones y decimales;
 - (C) utilice la multiplicación y la división de números enteros para resolver problemas incluyendo situaciones en las que use razones equivalentes y tasas;
 - (D) haga estimaciones y redondee para aproximarse a resultados razonables y resolver problemas en los cuales no se requieran respuestas exactas.

Objective 1—For Your Information

The following list provides additional information for some of the student expectations tested in Objective 1. At sixth grade, students should be able to

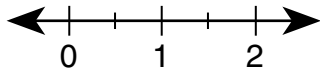
- sequence numbers or the words associated with numbers;
- work with problems that include information expressed as numbers or ranges of numbers; and
- round numbers before performing any computations when estimating. The use of compatible numbers (numbers that are easy to compute mentally) may be helpful.

Objective 1 Sample Items

- 1 El lunes, una tienda de computadoras regaló un juego electrónico con cada compra de más de \$50 dólares. Ese día hubo 36 compras de más de \$50. ¿Qué número entero representa el cambio en el número de juegos gratis que la tienda tenía al final del lunes?

A -50
B* -36
C 36
D 50

- 2 Si Janet marca correctamente 0.13 , $\frac{3}{2}$, 0.032 , y $\frac{1}{3}$ en una recta numérica, ¿cuál número está más cerca del cero?



A 0.13
B* 0.032
C $\frac{3}{2}$
D $\frac{1}{3}$

Note: Students should be able to work with numbers given in various forms within the same problem.

- 3 En un carnaval de la escuela vendían pasteles. Cada pastel se cortó en 12 rebanadas del mismo tamaño. La Sra. Delgado vendió 8 rebanadas, el Sr. Vargas vendió 6 rebanadas y la Sra. D'Angelou vendió 10 rebanadas. ¿Cuál expresión se puede usar para encontrar el total de pasteles que vendieron estas 3 personas?

A $12 + 8 + 6 + 10$
B $12(8 + 6 + 10)$
C* $\frac{8}{12} + \frac{6}{12} + \frac{10}{12}$
D $\frac{8}{12} \times \frac{6}{12} \times \frac{10}{12}$

TAKS Grade 6 Spanish Mathematics—Objective 2

Understanding **patterns, relationships, and algebraic thinking** is an integral component of the foundation of algebra. In sixth grade, students should understand how to relate data in a problem situation to a proportion, set up the proportion, and then manipulate the data to find the missing information. These skills are applicable in geometry and in other academic areas, including science, social studies, and art. These skills are also useful in relating quantities in everyday situations such as cooking, carpentry, etc. Students should use variables to generate expressions and equations needed to solve problems. The concepts in Objective 2 should prepare students to continue their learning of more-advanced algebraic ideas. In addition, mastering the knowledge and skills in Objective 2 at sixth grade will help students master the knowledge and skills in Objective 2 at seventh grade.

Objective 2 combines the basic algebra concepts within the TEKS—**patterns, relationships, and algebraic thinking**.

TAKS Objectives and TEKS Student Expectations

Objetivo 2

El estudiante demostrará comprensión de patrones, relaciones y razonamiento algebraico.

- (6.3) **Patrones, relaciones y razonamiento algebraico.** El estudiante resuelve problemas que involucren relaciones de proporción. Se espera que el estudiante:
- (A) utilice razones para describir relaciones de proporción;
 - (B) represente razones y porcentajes con modelos [concretos], fracciones y decimales;
 - (C) utilice razones para hacer predicciones en relaciones de proporción.
- (6.4) **Patrones, relaciones y razonamiento algebraico.** El estudiante utiliza letras como variables en expresiones matemáticas para describir cómo una cantidad cambia cuando otra cantidad relacionada cambia. Se espera que el estudiante:
- (A) utilice tablas y símbolos para representar y describir relaciones de proporción y otras relaciones que involucren conversiones, secuencias, perímetros, áreas, etc.;
 - (B) genere fórmulas obtenidas de una tabla de datos para representar relaciones en la que se incluyen el perímetro, área, volumen de un prisma rectangular, etc.
- (6.5) **Patrones, relaciones y razonamiento algebraico.** El estudiante utiliza letras para representar la incógnita en una ecuación. Se espera que el estudiante:
- (A) formule una ecuación a partir de un problema contextualizado.

Objective 2—For Your Information

The following list provides additional information for some of the student expectations tested in Objective 2. At sixth grade, students should be able to

- match a description of a proportional situation with a ratio, which may or may not be expressed in lowest terms;
- identify the method for finding any term of a numerical or geometric sequence;
- match a relationship represented by an equation or written description with the same relationship shown in pairs of numbers; and
- match an equation with a given context.

Objective 2 Sample Items

- 1 Los científicos han observado que 0.5 pulgadas de lluvia son aproximadamente lo mismo que 5 pulgadas de nieve. ¿Cuál fracción representa mejor la razón de pulgadas de lluvia a pulgadas de nieve?

A $\frac{10}{1}$

B $\frac{10}{5}$

C $\frac{0.5}{1}$

D* $\frac{1}{10}$

- 2 ¿Cuál de estas expresiones representa mejor los valores de y en relación con los valores de x ?

x	1	2	3	4	5	6
y	2	5	8	11	14	17

A $1 - 3x$

B $x + 3$

C* $3x - 1$

D $2x + 3$

- 3 Si 1 onza de cierto líquido equivale a 30 mililitros, ¿qué ecuación se puede usar para encontrar x , el número de mililitros que hay en 8 onzas de ese líquido?

A $x = 30 + 8$

B $x = 30 - 8$

C $x = 30 \div 8$

D* $x = 30 \cdot 8$

TAKS Grade 6 Spanish Mathematics—Objective 3

Knowledge of **geometry and spatial reasoning** is important because the structure of the world is based on geometric properties. With this knowledge, students should be able to classify angles, identify angle relationships in basic polygons, and describe the relationship between basic terms of a circle. Students must learn to plot points on a coordinate grid using ordered pairs of non-negative rational numbers. These concepts build spatial reasoning skills that help develop an understanding of distance and location. The knowledge and skills contained in Objective 3 will allow students to understand the basic concepts of geometry as related to the real world. In addition, the knowledge and skills in Objective 3 at sixth grade are closely aligned with the knowledge and skills in Objective 3 at seventh grade.

Objective 3 combines the fundamental concepts of size and shape found within the TEKS—**geometry and spatial reasoning**—from which all geometric understanding is built.

TAKS Objectives and TEKS Student Expectations

Objetivo 3

El estudiante demostrará comprensión de geometría y razonamiento espacial.

- (6.6) **Geometría y razonamiento espacial.** El estudiante utiliza un vocabulario geométrico para describir ángulos, polígonos y círculos. Se espera que el estudiante:
- (A) utilice la medición de los ángulos para clasificarlos en agudos, obtusos o rectos;
 - (B) identifique relaciones que involucren ángulos en triángulos y cuadriláteros;
 - (C) describa la relación entre el radio, el diámetro y la circunferencia de un círculo.
- (6.7) **Geometría y razonamiento espacial.** El estudiante utiliza geometría coordenada para identificar la posición en dos dimensiones. Se espera que el estudiante:
- (A) localice y nombre puntos en una cuadrícula utilizando pares ordenados de números racionales no negativos.

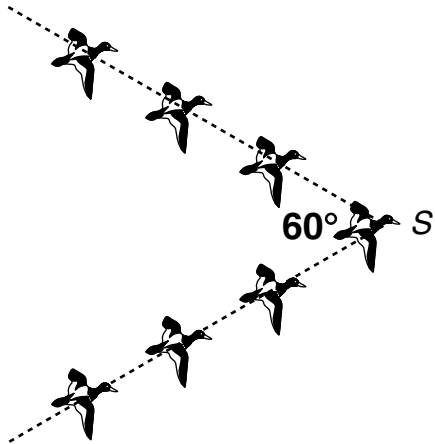
Objective 3—For Your Information

The following list provides additional information for some of the student expectations tested in Objective 3. At sixth grade, students should be able to

- use geometric models shown individually or as part of a more complex figure (for example, an obtuse angle may be shown as part of a trapezoid);
- identify a method for finding the radius, diameter, or circumference of a circle. The method can be written in words or as a mathematical equation or expression; and
- graph points, including fractions and decimals, on coordinate grids limited to the first quadrant.

Objective 3 Sample Items

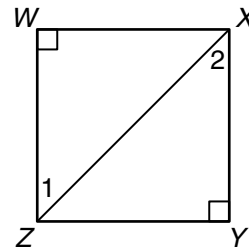
- 1 Los patos a veces vuelan en la forma que se muestra abajo.



¿Cuál respuesta describe mejor al $\angle S$, el ángulo formado por los patos cuando vuelan así?

- A Llano
- B Obtuso
- C* Agudo
- D Recto

- 2 Encuentra la medida, en grados, del $\angle 2$ en el cuadrado $WXYZ$.



Anota tu respuesta y llena los círculos correspondientes en tu documento de respuestas. Asegúrate de usar el valor de posición correcto.

		4	5	.		
0	0	0	0		0	0
1	1	1	1		1	1
2	2	2	2		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		5	5
6	6	6	6		6	6
7	7	7	7		7	7
8	8	8	8		8	8
9	9	9	9		9	9

Note: The correct answer to this item is 45. It is acceptable, although not necessary, to grid the zeros before the four and/or after the decimal. These zeros will not affect the value of the correct answer.

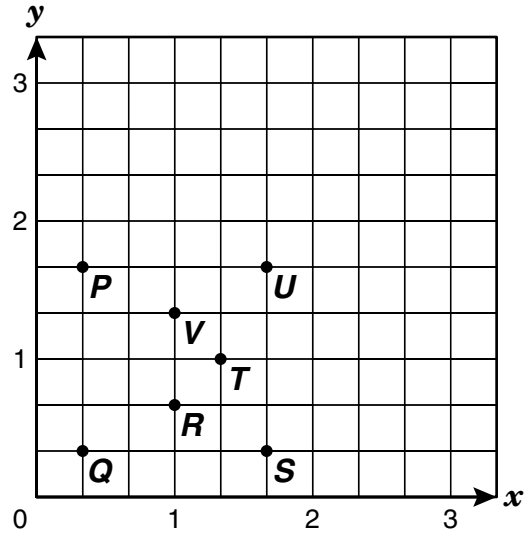
This item specifically asks for the measure in *grados*. On griddable items, students do not grid the units, such as *grados*.

Objective 3 Sample Items

3 Algunos estudiantes hicieron una señal de tránsito en forma circular para una obra de teatro escolar. El diámetro de la señal medía aproximadamente 3 pies. ¿Cómo se compara el diámetro con la circunferencia de la señal?

- A*** El diámetro es aproximadamente $\frac{1}{3}$ de la circunferencia.
- B** El diámetro es aproximadamente $\frac{1}{2}$ de la circunferencia.
- C** El diámetro es aproximadamente 2 veces la circunferencia.
- D** El diámetro es aproximadamente 3 veces la circunferencia.

4 ¿Cuál par de coordenadas representa mejor al punto S en la cuadrícula de abajo?



- A** (5, 1)
- B** $(1\frac{1}{2}, \frac{1}{2})$
- C** $(1, \frac{2}{3})$
- D*** $(1\frac{2}{3}, \frac{1}{3})$

Note: Non-negative rational numbers include fractions, decimals, and whole numbers in the first quadrant.

TAKS Grade 6 Spanish Mathematics—Objective 4

Understanding the concepts and uses of **measurement** has many real-world applications and provides a basis for developing skills in geometry. Students will continue to develop measurement skills, including angle measurement, in order to solve application problems. These problems will require students to correctly use formulas and appropriate units of measure. The understanding and application of measurement concepts provide students with the skills necessary to solve problems in geometry and develop spatial perception. These skills are important in real-world applications and in other academic disciplines. Understanding the basic concepts included in Objective 4 will prepare students to apply measurement skills in various situations. In addition, the knowledge and skills found in Objective 4 at sixth grade are closely aligned with the knowledge and skills found in Objective 4 at seventh grade.

Objective 4 includes the concepts within the TEKS from which an understanding of **measurement** is developed.

TAKS Objectives and TEKS Student Expectations

Objetivo 4

El estudiante demostrará comprensión de los conceptos y usos de la medición.

- (6.8) **Medición.** El estudiante resuelve problemas de aplicación que involucren estimación y medidas de longitud, área, tiempo, temperatura, capacidad, peso y ángulos. Se espera que el estudiante:
- (A) haga estimaciones de medidas y evalúe lo razonable de los resultados;
 - (B) seleccione y utilice unidades, fórmulas o instrumentos que sean apropiados para medir y resolver problemas de longitud (incluyendo perímetro y circunferencia), área, tiempo, temperatura, capacidad y peso;
 - (C) mida ángulos;
 - (D) convierta medidas dentro del mismo sistema de medición, el sistema inglés (usual) o el métrico, basándose en relaciones entre unidades.

Objective 4—For Your Information

The following list provides additional information for some of the student expectations tested in Objective 4. At sixth grade, students should be able to

- utilize the conversions and formulas on the TABLA DE MATEMÁTICAS to solve problems;
- measure with the ruler on the TABLA DE MATEMÁTICAS *only if* the item specifically instructs students to use the ruler;
- use the given dimensions of a figure to solve problems;
- recognize abbreviations of measurement units; and
- use a pictorial representation of a protractor to measure angles.

Objective 4 Sample Items

1 Daniel mide 69 pulgadas de estatura. Cuando entra al salón de clase, la altura vertical entre su cabeza y el marco superior de la puerta es de 1 pie aproximadamente. ¿Cuál de estas medidas es más cercana a la distancia en pies entre el piso y la parte superior del marco de la puerta?

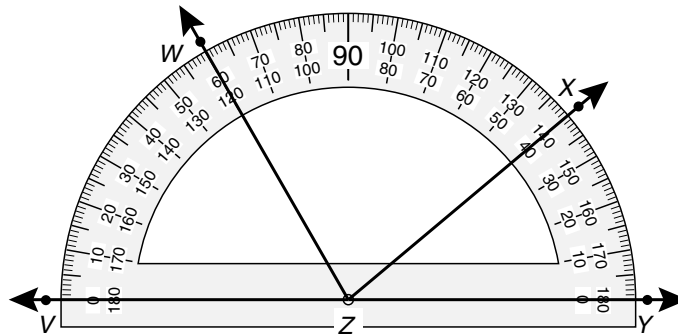
- A 8 pies
- B* 7 pies
- C 6 pies
- D 5 pies

2 La circunferencia de un círculo mide 25.12 centímetros. Encuentra el largo aproximado del radio del círculo.

- A* 4 cm
- B 5 cm
- C 8 cm
- D 10 cm

Note: For this item students may choose to use compatible numbers. Pi is close to 3 and the circumference, 25.12 cm, is close to 24 cm. Dividing 24 by 3 gives an approximate diameter of 8 cm and therefore, an approximate radius of 4 cm. In sixth grade, it is developmentally appropriate for students to approximate the value of pi as 3 in order to solve the problem.

3 Encuentra la medida del $\angle WZX$ al grado más cercano.



- A 20°
- B 40°
- C 60°
- D* 80°

Note: Students should be able to find the measure of an angle that may or may not begin at 0 degrees.

TAKS Grade 6 Spanish Mathematics—Objective 5

Understanding **probability and statistics** will help students become informed consumers of data and information. As students become more skilled in describing and predicting the results of a probability experiment, they should begin to recognize and account for all the possibilities of a given situation. Students should be able to compare different graphical representations of the same data and solve problems by analyzing the data presented. Students must be able to recognize appropriate and accurate representations of data in everyday situations and in information related to science and social studies (for example, in polls and election results). The knowledge and skills contained in Objective 5 are essential for processing everyday information. In addition, the knowledge and skills in Objective 5 at sixth grade provide the foundation for mastering the knowledge and skills in Objective 5 at seventh grade.

Objective 5 includes the concepts within the TEKS that form the groundwork for an understanding of **probability and statistics**.

TAKS Objectives and TEKS Student Expectations

Objetivo 5

El estudiante demostrará comprensión de probabilidad y estadística.

- (6.9) **Probabilidad y estadística.** El estudiante utiliza probabilidad experimental y teórica para hacer predicciones. Se espera que el estudiante:
- (A) construya espacios muestrales utilizando listas, diagramas de árbol y combinaciones;
 - (B) encuentre las probabilidades de un evento simple y su complemento, y describa la relación entre los dos.
- (6.10) **Probabilidad y estadística.** El estudiante utiliza representaciones estadísticas para analizar datos. Se espera que el estudiante:
- (A) [dibuje y] compare diferentes representaciones gráficas de los mismos datos;
 - (B) utilice la mediana, el modo y el rango para describir datos;
 - (C) dibuje gráficas circulares para mostrar datos;
 - (D) resuelva problemas reuniendo, organizando, mostrando e interpretando datos.

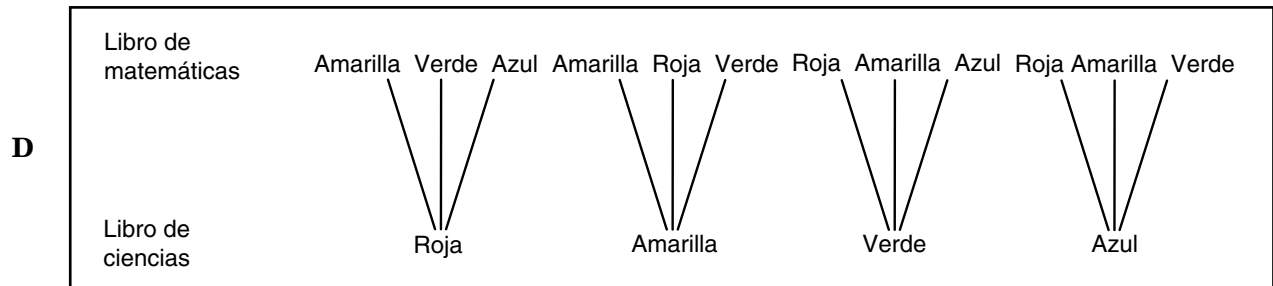
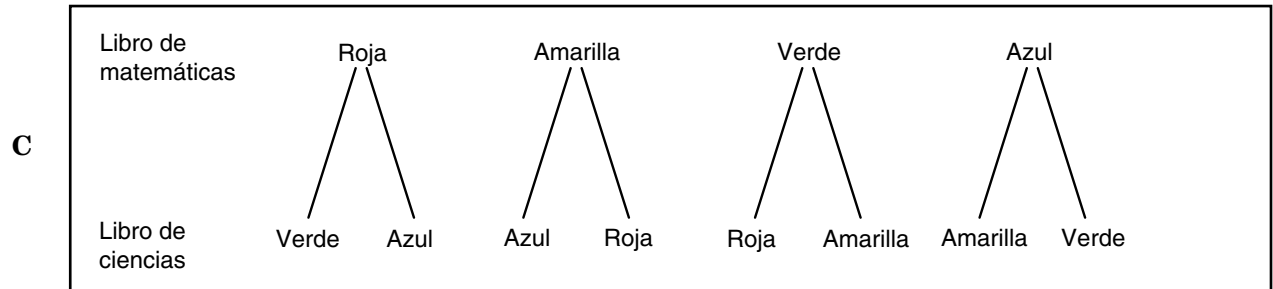
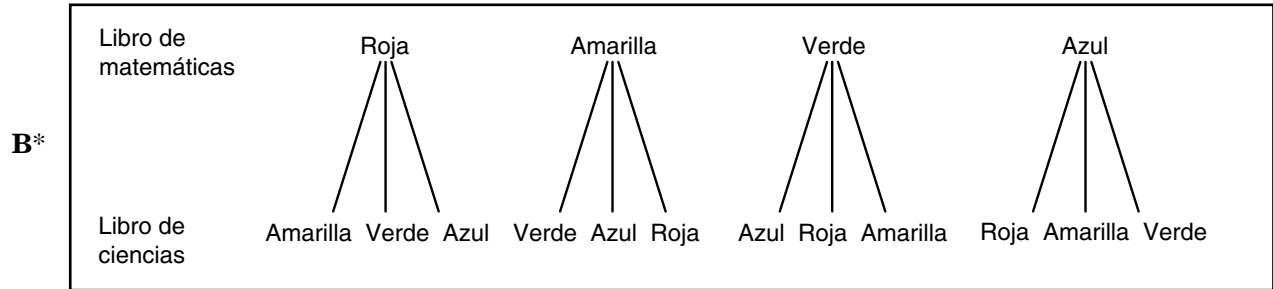
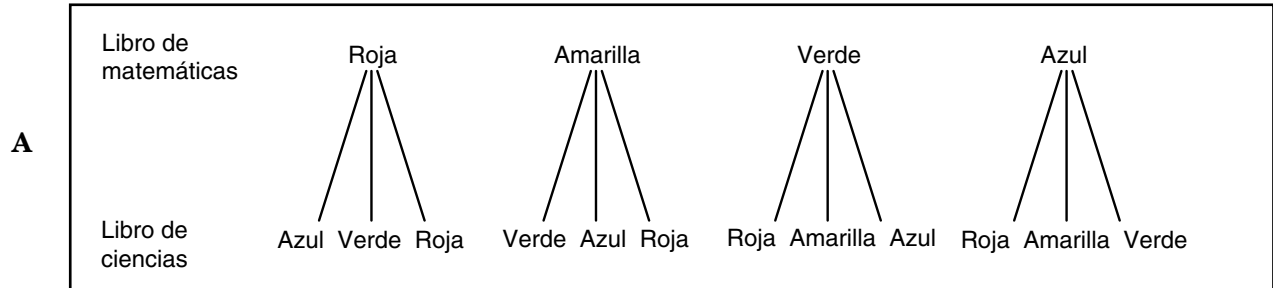
Objective 5—For Your Information

The following list provides additional information for some of the student expectations tested in Objective 5. At sixth grade, students should be able to

- match a situation with a sample space that lists all possible combinations or select the missing portion of a given sample space;
- match the median, mode, and/or range with a given data set, which may be listed in the text of the item or presented in a graphical representation;
- identify the missing piece of data that will produce a target median, mode, and/or range for a data set; and
- match a circle graph with a data set listed in table, chart, graph, or sentence form.

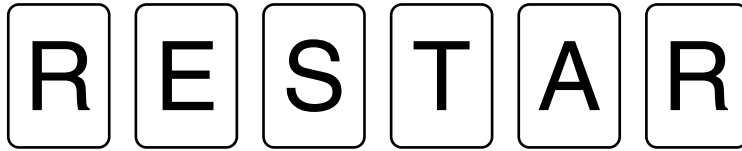
Objective 5 Sample Items

- 1 Teresa necesitaba forrar su libro de matemáticas y su libro de ciencias con hojas de papel de colores. Ella tenía 1 hoja roja, 1 amarilla, 1 verde y 1 azul. ¿Qué diagrama muestra todas las combinaciones posibles de 1 libro y 1 color de hoja de papel para forrar?



Objective 5 Sample Items

- 2 El capitán del equipo de matemáticas escoge una tarjeta al azar de las siguientes tarjetas con letras.



¿Cuál es la probabilidad de que la tarjeta que escogió el capitán haya sido una vocal?

- A* $\frac{1}{3}$
- B $\frac{2}{4}$
- C $\frac{2}{3}$
- D $\frac{1}{6}$

Objective 5 Sample Items

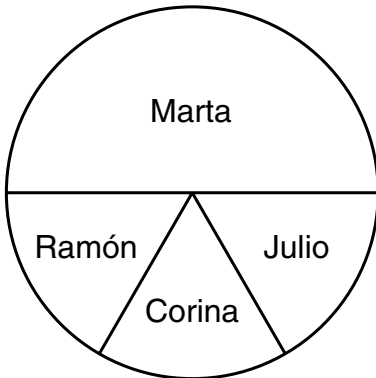
3 ¿Cuál gráfica circular presenta mejor los datos que se muestran en la tabla?

Ventas de suscripciones

Nombre	Número de suscripciones
Ramón	100
Marta	300
Corina	100
Julio	100

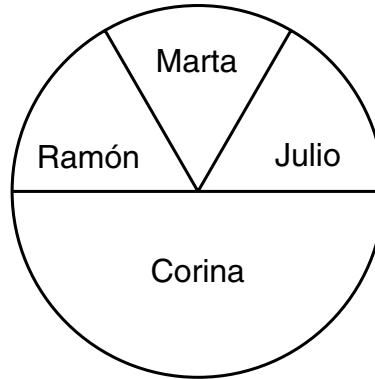
Ventas de suscripciones

A*



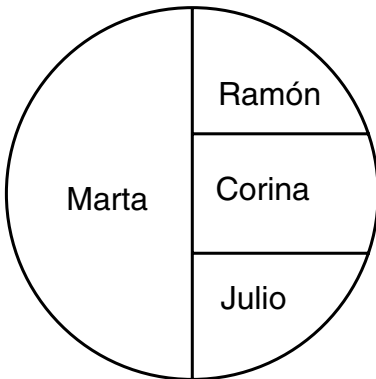
Ventas de suscripciones

C



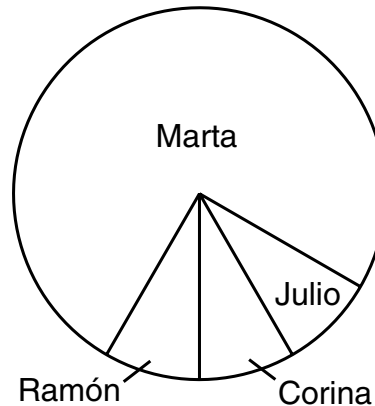
Ventas de suscripciones

B



Ventas de suscripciones

D



TAKS Grade 6 Spanish Mathematics—Objective 6

Knowledge and understanding of **underlying processes and mathematical tools** are critical for students to be able to apply mathematics in their everyday lives. Problems that occur in the real world often require the use of multiple concepts and skills. Students should be able to recognize mathematics as it occurs in real-life problem situations, generalize from mathematical patterns and sets of examples, select an appropriate approach to solving a problem, solve the problem, and then determine whether the answer is reasonable. Expressing problem situations in mathematical language and symbols is essential to finding solutions to real-life questions. These concepts allow students to communicate clearly and use logical reasoning to make sense of their world. Students can then connect the concepts they have learned in mathematics to other disciplines and to higher mathematics. Through an understanding of the basic ideas found in Objective 6, students will be able to analyze and solve real-world problems. In addition, the knowledge and skills in Objective 6 at sixth grade are closely aligned with the knowledge and skills in Objective 6 at seventh grade.

Objective 6 incorporates the **underlying processes and mathematical tools** within the TEKS that are used in finding mathematical solutions to real-world problems.

TAKS Objectives and TEKS Student Expectations

Objetivo 6

El estudiante demostrará comprensión de los procesos y recursos utilizados para solucionar problemas matemáticos.

- (6.11) **Procesos fundamentales y recursos matemáticos.** El estudiante aplica las matemáticas de sexto grado para resolver problemas relacionados con experiencias diarias, con investigaciones dentro de otras disciplinas y con actividades dentro y fuera de la escuela. Se espera que el estudiante:
- (A) identifique y aplique las matemáticas en experiencias diarias, en actividades dentro y fuera de la escuela, en otras disciplinas y en otros temas de matemáticas;
 - (B) utilice un modelo de resolución de problemas que incluya comprender el problema, hacer un plan, llevarlo a cabo y evaluar que la solución sea razonable;
 - (C) seleccione o desarrolle una variedad de estrategias apropiadas de resolución de problemas, incluyendo hacer dibujos, buscar patrones, adivinar y comprobar siguiendo un método, actuar el problema, hacer una tabla, resolver un problema más sencillo o resolver el problema al revés, es decir, empezando por el final.

(6.12) **Procesos fundamentales y recursos matemáticos.** El estudiante comunica sus conocimientos matemáticos de sexto grado utilizando un lenguaje matemático e informal, representaciones y modelos. Se espera que el estudiante:

(A) exprese ideas de matemáticas utilizando lenguaje, unidades y recursos eficaces apropiados y modelos gráficos, numéricos, físicos o algebraicos.

(6.13) **Procesos fundamentales y recursos matemáticos.** El estudiante utiliza un razonamiento lógico para hacer conjeturas y verificar conclusiones. Se espera que el estudiante:

(A) haga conjeturas de patrones o de grupos de ejemplos y de los que no son ejemplos;

(B) compruebe sus conclusiones utilizando propiedades y relaciones matemáticas.

Objective 6—For Your Information

The following list provides additional information for some of the student expectations tested in Objective 6. At sixth grade, students should be able to

- select the description of a mathematical situation when provided with a written or pictorial prompt;
- identify the information that is needed to solve a problem;
- select or describe the next step or a missing step in a problem-solving situation;
- match informal language to mathematical language or symbols;
- identify the question that is being asked or answered;
- draw a conclusion by investigating patterns and/or sets of examples and nonexamples. A nonexample, or counterexample, proves a general statement to be false;
- understand that nonsensical words may be used to label sets of examples and/or nonexamples; and
- choose the correct supporting information for a given conclusion.

Objective 6 Sample Items

- 1 Mindy quiere encontrar el valor total de las monedas que tiene.

A continuación se presentan los pasos que hay que seguir para resolver este tipo de problema. Coloca los pasos en el orden correcto para que Mindy encuentre el valor total de sus monedas.

Paso P: Encuentra la suma de los productos para cada clase de moneda.

Paso Q: Cuenta y anota el número de monedas de cada clase.

Paso R: Para cada clase de moneda, encuentra el producto del número de monedas y el valor de cada clase de moneda.

Paso S: Separa las monedas en grupos de la misma clase.

¿Cuál lista muestra los pasos en el orden correcto?

- A R, S, Q, P
- B*** S, Q, R, P
- C S, R, Q, P
- D P, Q, R, S

Note: Students should recognize that there are multiple strategies to solve problems. Students should be able to select the most appropriate strategy given for a particular situation.

- 2 Anita midió los ángulos de un triángulo isósceles. Un ángulo mide 50° y los otros 2 ángulos son congruentes. ¿Cuál método se puede usar para encontrar la medida de cada uno de los ángulos congruentes?

- A Multiplicar 50 por 2 y después sumar 180
- B*** Restar 50 de 180 y después dividir entre 2
- C Sumar 50 a 180 y después dividir entre 3
- D Dividir 50 entre 2 y después restar de 180

- 3 Una ruleta se divide en secciones iguales. Hay 4 secciones rojas y 3 secciones azules. Sonia gira la ruleta 21 veces. ¿Cuál proporción se puede usar para encontrar r , el número de veces en que se espera que la ruleta se detenga en una sección roja?

- A $\frac{r}{21} = \frac{3}{7}$
- B $\frac{r}{21} = \frac{3}{4}$
- C*** $\frac{r}{21} = \frac{4}{7}$
- D $\frac{r}{21} = \frac{4}{3}$

Objective 6 Sample Items

- 4 El tesorero de la clase tenía \$175 para gastar en un evento de reconocimiento académico. Compró un pastel por \$27, 4 cajas de refrescos, platos y vasos de papel por \$12, y 6 placas de reconocimiento por \$72. ¿Qué información falta para saber cuánto dinero le queda?
- A El precio de cada placa de reconocimiento
 - B El número de porciones de pastel que se necesita
 - C* El precio de los refrescos
 - D El número de estudiantes que asistirán al evento