STAAR CONNECTION™

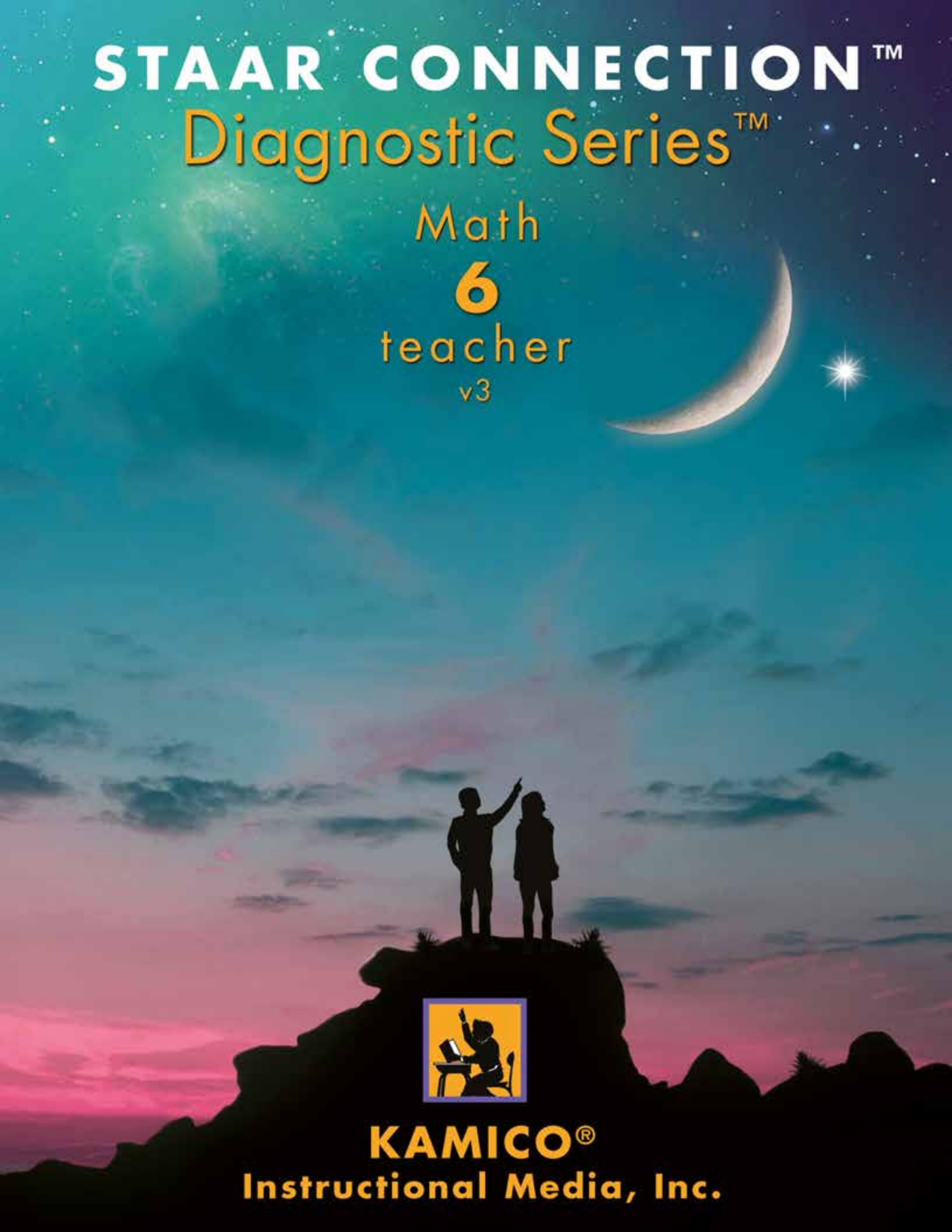
Diagnostic Series™

Math

6

teacher

v3



KAMICO®

Instructional Media, Inc.

STAAR CONNECTION™

Math
6
teacher

Diagnostic Series™

XXII/vii/MMXXV
Version 3

KAMICO®
Instructional Media, Inc.

KAMICO® Instructional Media, Inc.
P.O. Box 1143
Salado, Texas 76571
Telephone: 254.947.7283 Fax: 254.947.7284
E-mail: kmichael@kamico.com Website: https://www.kamico.com

KAMICO® Instructional Media, Inc.
STAAR CONNECTION™
Introduction

KAMICO® Instructional Media's program is validated by scientifically based research. **STAAR CONNECTION™ Diagnostic Series™** and **Developmental Series™** can be used in tandem to ensure mastery of Texas reporting categories and TEKS. The *Diagnostic Series™* consists of a bank of assessments. Each assessment covers a mixture of reporting categories and TEKS. This research-based format provides continual reinforcement for and ensures retention of mastered concepts. To take full advantage of this series, administer an assessment to students. After they have completed the assessment, use it as an instructional tool. Go over each item with the class, discussing all correct and incorrect answers. Then, use the assessment as a diagnostic tool to determine a standard for which students need remediation. Find that standard in the *Developmental Series™*.

Each book in the *STAAR CONNECTION Developmental Series™* consists of isolated activities and assessments to allow for the development of specific TEKS. For every TEKS, there is at least one individual or group activity. The activities provide a fun, challenging, yet nonthreatening, way to develop mastery of the TEKS. In addition to these activities, each *Developmental Series™* book has assessments on isolated standards to be used to identify mastery or the need for further skill development or reinforcement. Continue to alternate between the *STAAR CONNECTION™ Diagnostic Series™* and the *Developmental Series™*.

KAMICO's **DATA CONNECTION®** software prints student answer sheets on plain paper using a standard laser printer, scans answer sheets using a TWAIN-compliant scanner, scores assessments, and disaggregates student academic data, showing which goals and objectives are mastered and which goals and objectives are in need of reinforcement. The software is preprogrammed to work with all KAMICO® assessments. It is easily customized to work with other instructional materials and assessments as well as teacher-, school-, district-, or state-created assessments. DATA CONNECTION® analyzes academic data from individual students, classes, grade levels, and demographic groups. Reports are presented in tabular and graphic form. Item analysis is provided to help determine the most effective method of instruction.

KAMICO® Instructional Media, Inc., supports efforts to ensure adequate yearly progress and eliminate surprises in high-stakes test results.

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Telephone: 254.947.7283 Fax: 254.947.7284
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KAMICO® Instructional Media, Inc.
STAAR CONNECTION™
Diagnostic Series™
Grade 6 Math
Table of Contents

Reporting Categories and Related TEKS
Grade 6 Mathematics

Mathematical Process Standards

These student expectations will not be listed under a separate reporting category. Instead, they will be incorporated into test questions across reporting categories since the application of mathematical process standards is part of each knowledge statement.

(6.1) **Mathematical process standards**. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to

(A) apply mathematics to problems arising in everyday life, society, and the workplace;

(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

(E) create and use representations to organize, record, and communicate mathematical ideas;

(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Reporting Category 1:
Numerical Representations and Relationships

The student will demonstrate an understanding of how to represent and manipulate numbers and expressions.

(6.2) **Number and operations.** The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to

(A) classify whole numbers, integers, and rational numbers using a visual representation such as a Venn diagram to describe relationships between sets of numbers; ***Supporting Standard***

(B) identify a number, its opposite, and its absolute value; ***Supporting Standard***

(C) locate, compare, and order integers and rational numbers using a number line; ***Supporting Standard***

(D) order a set of rational numbers arising from mathematical and real-world contexts; and ***Readiness Standard***

(E) extend representations for division to include fraction notation such as a/b represents the same number as $a \div b$ where $b \neq 0$. ***Supporting Standard***

(6.4) **Proportionality.** The student applies mathematical process standards to develop an understanding of proportional relationships in problem situations. The student is expected to

(C) give examples of ratios as multiplicative comparisons of two quantities describing the same attribute; ***Supporting Standard***

(D) give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients; ***Supporting Standard***

(E) represent ratios and percents with concrete models, fractions, and decimals; ***Supporting Standard***

(F) represent benchmark fractions and percents such as 1%, 10%, 25%, 33 1/3%, and multiples of these values using 10 by 10 grids, strip diagrams, number lines, and numbers; and ***Supporting Standard***

(G) generate equivalent forms of fractions, decimals, and percents using real-world problems, including problems that involve money. ***Readiness Standard***

(6.5) **Proportionality.** The student applies mathematical process standards to solve problems involving proportional relationships. The student is expected to

(C) use equivalent fractions, decimals, and percents to show equal parts of the same whole. ***Supporting Standard***

(6.7) **Expressions, equations, and relationships.** The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to

(A) generate equivalent numerical expressions using order of operations, including whole number exponents, and prime factorization; ***Readiness Standard***

(B) distinguish between expressions and equations verbally, numerically, and algebraically; ***Supporting Standard***

(C) determine if two expressions are equivalent using concrete models, pictorial models, and algebraic representations; and ***Supporting Standard***

(D) generate equivalent expressions using the properties of operations: inverse, identity, commutative, associative, and distributive properties. ***Readiness Standard***

Reporting Category 2:
Computations and Algebraic Relationships

The student will demonstrate an understanding of how to perform operations and represent algebraic relationships.

(6.3) **Number and operations.** The student applies mathematical process standards to represent addition, subtraction, multiplication, and division while solving problems and justifying solutions. The student is expected to

(A) recognize that dividing by a rational number and multiplying by its reciprocal result in equivalent values; ***Supporting Standard***

(B) determine, with and without computation, whether a quantity is increased or decreased when multiplied by a fraction, including values greater than or less than one; ***Supporting Standard***

(C) represent integer operations with concrete models and connect the actions with the models to standardized algorithms; ***Supporting Standard***

(D) add, subtract, multiply, and divide integers fluently; and ***Readiness Standard***

(E) multiply and divide positive rational numbers fluently. ***Readiness Standard***

(6.4) **Proportionality.** The student applies mathematical process standards to develop an understanding of proportional relationships in problem situations. The student is expected to

(A) compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships; and ***Supporting Standard***

(B) apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates. ***Readiness Standard***

(6.5) **Proportionality.** The student applies mathematical process standards to solve problems involving proportional relationships. The student is expected to

(A) represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions; and ***Supporting Standard***

(B) solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models. ***Readiness Standard***

(6.6) **Expressions, equations, and relationships.** The student applies mathematical process standards to use multiple representations to describe algebraic relationships. The student is expected to

(A) identify independent and dependent quantities from tables and graphs; ***Supporting Standard***

(B) write an equation that represents the relationship between independent and dependent quantities from a table; and ***Supporting Standard***

(C) represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$. ***Readiness Standard***

(6.9) **Expressions, equations, and relationships.** The student applies mathematical process standards to use equations and inequalities to represent situations. The student is expected to

(A) write one-variable, one-step equations and inequalities to represent constraints or conditions within problems; ***Supporting Standard***

(B) represent solutions for one-variable, one-step equations and inequalities on number lines; and ***Supporting Standard***

(C) write corresponding real-world problems given one-variable, one-step equations or inequalities. ***Supporting Standard***

(6.10) **Expressions, equations, and relationships.** The student applies mathematical process standards to use equations and inequalities to solve problems. The student is expected to

(A) model and solve one-variable, one-step equations and inequalities that represent problems, including geometric concepts; and ***Readiness Standard***

(B) determine if the given value(s) make(s) one-variable, one-step equations or inequalities true. ***Supporting Standard***

Reporting Category 3:
Geometry and Measurement

The student will demonstrate an understanding of how to represent and apply geometry and measurement concepts.

(6.4) **Proportionality.** The student applies mathematical process standards to develop an understanding of proportional relationships in problem situations. The student is expected to

(H) convert units within a measurement system, including the use of proportions and unit rates. ***Readiness Standard***

(6.8) **Expressions, equations, and relationships.** The student applies mathematical process standards to use geometry to represent relationships and solve problems. The student is expected to

(A) extend previous knowledge of triangles and their properties to include the sum of angles of a triangle, the relationship between the lengths of sides and measures of angles in a triangle, and determining when three lengths form a triangle; ***Supporting Standard***

(B) model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes; ***Supporting Standard***

(C) write equations that represent problems related to the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers; and ***Supporting Standard***

(D) determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers. ***Readiness Standard***

(6.11) **Measurement and data.** The student applies mathematical process standards to use coordinate geometry to identify locations on a plane. The student is expected to

(A) graph points in all four quadrants using ordered pairs of rational numbers. ***Readiness Standard***

Reporting Category 4:
Data Analysis and Personal Financial Literacy

The student will demonstrate an understanding of how to represent and analyze data and how to describe and apply personal financial concepts.

(6.12) **Measurement and data.** The student applies mathematical process standards to use numerical or graphical representations to analyze problems. The student is expected to

(A) represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots; ***Supporting Standard***

(B) use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution; ***Supporting Standard***

(C) summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution; and ***Readiness Standard***

(D) summarize categorical data with numerical and graphical summaries, including the mode, the percent of values in each category (relative frequency table), and the percent bar graph, and use these summaries to describe the data distribution. ***Readiness Standard***

(6.13) **Measurement and data.** The student applies mathematical process standards to use numerical or graphical representations to solve problems. The student is expected to

(A) interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots; and ***Readiness Standard***

(B) distinguish between situations that yield data with and without variability. ***Supporting Standard***

(6.14) **Personal financial literacy.** The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to

(A) compare the features and costs of a checking account and a debit card offered by different local financial institutions; ***Supporting Standard***

(B) distinguish between debit cards and credit cards; ***Supporting Standard***

(C) balance a check register that includes deposits, withdrawals, and transfers; ***Supporting Standard***

(E) describe the information in a credit report and how long it is retained; ***Supporting Standard***

(F) describe the value of credit reports to borrowers and to lenders; ***Supporting Standard***

(G) explain various methods to pay for college, including through savings, grants, scholarships, student loans, and work-study; and ***Supporting Standard***

(H) compare the annual salary of several occupations requiring various levels of post-secondary education or vocational training and calculate the effects of the different annual salaries on lifetime income. ***Supporting Standard***

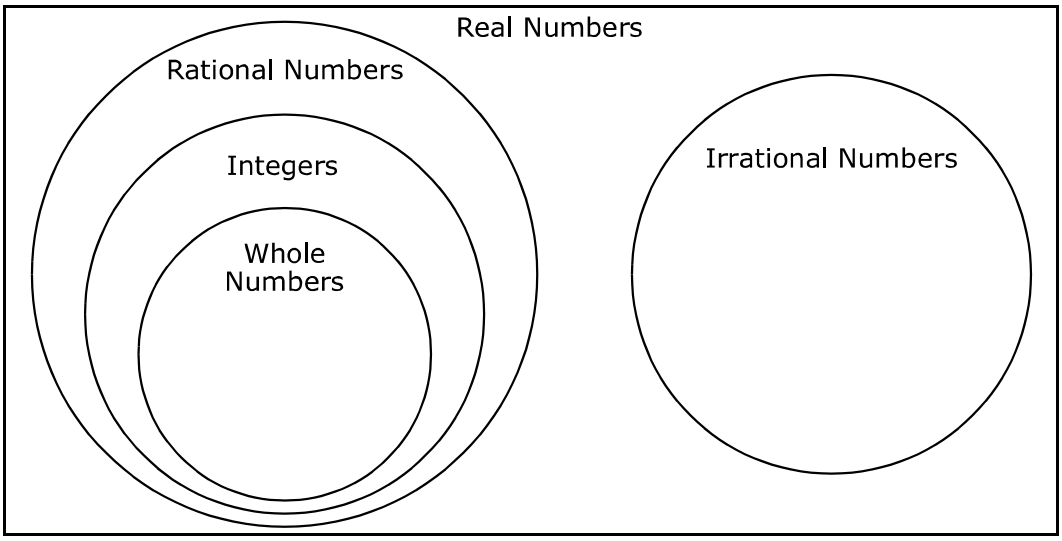
Name _____ Date _____

CSE TEKS 1/6.2A
PSE TEKS 6.1D

DIRECTIONS

Read each question carefully. Choose the best answer to each question. For open-response questions, determine the best answer to the question.

1 The Venn diagram shows the relationship among numbers.



Indicate where each number in the table belongs in each of these sets: rational numbers, integers, whole numbers, and irrational numbers.

Some numbers will have more than one correct answer.

Number	Rational Number	Integer	Whole Number	Irrational Number
$\frac{1}{4}$	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ
0.15	Ⓐ	Ⓑ	Ⓒ	Ⓓ
0	Ⓐ	Ⓑ	Ⓒ	Ⓓ
−2	Ⓐ	Ⓑ	Ⓒ	Ⓓ
$-1\frac{1}{5}$	Ⓐ	Ⓑ	Ⓒ	Ⓓ

GO ON

2 Alison can purchase 12 4-GB memory cards for $96. If she pays the same rate per card for any number of 4-GB memory cards she buys, how much will it cost her to buy 40 memory cards?

CSE TEKS 1/6.4C
PSE TEKS 6.1B

Record your answer in the space provided.

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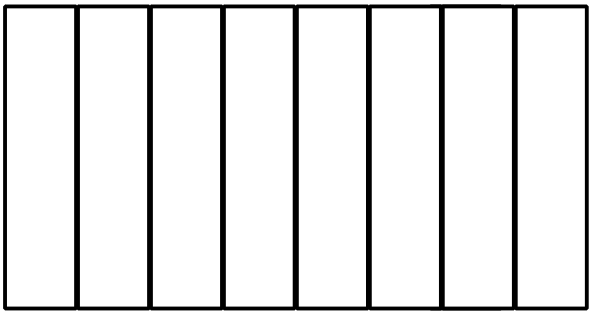
3 Alec has a rectangular plot of land. He divides the plot into eight sections. Alec decides to plant squash in 3 of the eight sections.



Since Alec only plans on planting yellow squash and zucchini squash, he decides to divide the $\frac{3}{8}$ of the garden into 2 equal parts, $\frac{3}{8} \div 2$. What fractional part of the plot of land represents the amount of the garden used for yellow squash?

CSE TEKS 2/6.3A
PSE TEKS 6.1B

Record your answer in the space provided.

GO ON

4 James is going to use a wheelbarrow to move bricks across his yard. If James puts too few bricks in the wheelbarrow, he will have to make extra trips. If he puts too many bricks in the wheelbarrow, it will be too heavy to move. James collects the following data concerning the weight of the bricks.

CSE TEKS 2/6.4A
PSE TEKS 6.1A

Number of Bricks (x)	1	2	3	4
Total Weight of Bricks (lb) (y)	4	8	12	16

Create an equation that James can use to find the total weight of x number of bricks.

Write the correct answer in the box. $y = \square x$

---

5 Speed limit signs in the United States are in miles per hour. Speed limit signs in Canada are in kilometers per hour. Complete the table, given that 1 kilometer is approximately equal to 0.62 mile.

CSE TEKS 3/6.4H
PSE TEKS 6.1B

Select **ONE** correct answer in each row. Not all answers will be used.

A 16	**B** 30	**C** 34	**D** 37	**E** 40	**F** 47	**G** 372

Kilometers per Hour	Miles per Hour
26	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
55	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
60	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
76	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ

---

6 Which measures can be used to create the sides of the base of a triangular vase?

CSE TEKS 3/6.8A
PSE TEKS 6.1B

Select **ONE** correct answer in each row.

Measures	Yes	No
5 in., 7 in., 11 in.	Ⓐ	Ⓑ
15 cm, 12 cm, 6 cm	Ⓐ	Ⓑ
9 cm, 9 cm, 12 cm	Ⓐ	Ⓑ
2 in., 3 in., 6 in.	Ⓐ	Ⓑ

GO ON

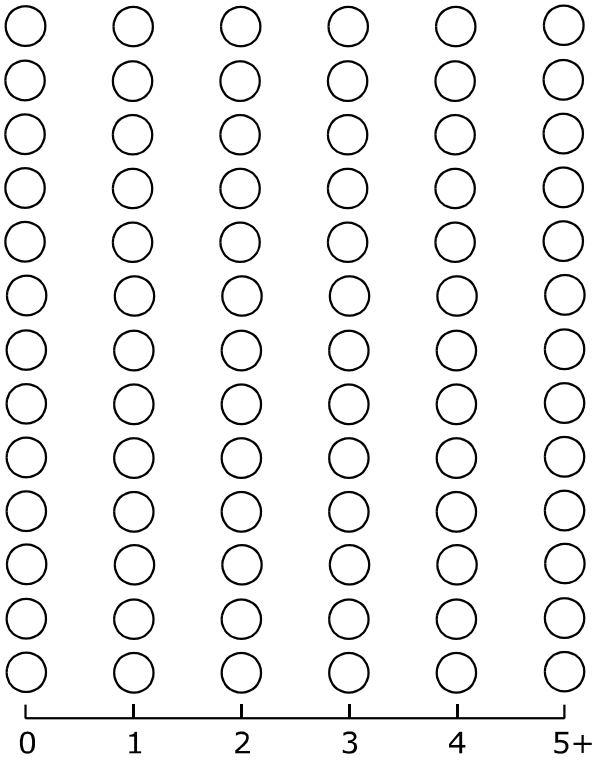
7 For a class project, Tavi asks his classmates how many pets are in their household. He records their answers in a frequency table, one mark per student. The data for the first 35 students interviewed is shown.

CSE TEKS 4/6.12A
PSE TEKS 6.1E

Number of Pets in Household	
0	𝍸 𝍸
1	𝍸 𝍸 ||
2	𝍸 ||||
3	|||
4	
5+	|

Create a dot plot to represent the data Tavi collected.

Number of Pets in Household



GO ON

8 Drew is 15 years old. He works part time at a feed store. He decides to open a bank account.

There are 4 banks in town. Following is a chart showing the banks and their fees. Which bank provides the best account for Drew?

	Fee to Open Account	Monthly Account Maintenance Fee	Maintenance Fee Waived with a Minimum Daily Amount	or	Maintenance Fee Waived with a Monthly Direct Deposit
Ⓐ Bank A	$50.00	$8.95	$300.00		$400.00
Ⓑ Bank B	$50.00	$5.00	$1500.00		$500.00
Ⓒ Bank C	$25.00	$12.00 (waived for students under 17)	$1500.00		$250.00
Ⓓ Bank D	$25.00	$12.00	$1500.00		$500.00

CSE TEKS 4/6.14A
PSE TEKS 6.1A

GO ON

9 Kathryn has a pedometer that measures the number of steps she takes and calculates the distance she walks. She also has a GPS watch that calculates the distance she walks based on satellite signals. For an experiment, Kathryn uses both devices for two weeks.

CSE TEKS 3/6.4H
PSE TEKS 6.1B

She creates the following chart.

	Watch (distance in miles)		Pedometer (distance in miles)	
	Week 1	Week 2	Week 1	Week 2
Monday	3.52	3.83	3.59	3.85
Wednesday	3.43	2.78	3.48	2.92
Friday	2.82	4.24	2.87	4.27

What is the difference between the distance calculated by the pedometer and the distance calculated by GPS watch each day of the first week?

Select the correct answer for each row. Each answer may be used more than once. Not all answers will be used.

A 0.02 **B** 0.07 **C** 0.03 **D** 0.14 **E** 0.05

Monday	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
Wednesday	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
Friday	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

---

10 A female bird that is 22.3 centimeters long. She has 3 eggs that are 24.6, 25.5, and 24.9 millimeters long respectively. How many times as long as the average length of her eggs is this female bird?

Record your answer in the space below. Be sure to show how you arrive at your answer.

CSE TEKS 3/6.4H
PSE TEKS 6.1B

BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS IN THE TEST BOOKLET.

STAAR CONNECTION™
Diagnostic Series™
Grade 6 Math
Answer Key

Assessment 1

1

Number	Rational Number	Integer	Whole Number	Irrational Number
$\frac{1}{4}$	✓	Ⓑ	Ⓒ	Ⓓ
3	✓	✓	✓	Ⓓ
0.15	✓	Ⓑ	Ⓒ	Ⓓ
0	✓	✓	✓	Ⓓ
−2	✓	✓	Ⓒ	Ⓓ
$-1\frac{1}{5}$	✓	Ⓑ	Ⓒ	Ⓓ

2 96 ÷ 12 = $8 40 × $8 = $320

3 $\frac{3}{8} \div \frac{2}{1} = \frac{3}{8} \times \frac{1}{2} = \frac{3}{16}$

4 $y = \boxed{4}x$

A 16 **B** 30 **C** 34 **D** 37 **E** 40 **F** 47 **G** 372

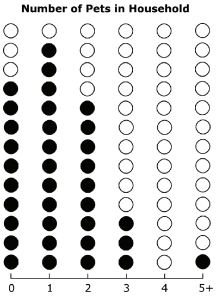
5

Kilometers per Hour	Miles per Hour
26	✓ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
55	Ⓐ Ⓑ ✓ Ⓓ Ⓔ Ⓕ Ⓖ
60	Ⓐ Ⓑ Ⓒ ✓ Ⓔ Ⓕ Ⓖ
76	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ ✓ Ⓖ

6

Measures	Yes	No
5 in., 7 in., 11 in.	✓	Ⓑ
15 cm, 12 cm, 6 cm	✓	Ⓑ
9 cm, 9 cm, 12 cm	✓	Ⓑ
2 in., 3 in., 6 in.	Ⓐ	✓

7



8

	Fee to Open Account	Monthly Account Maintenance Fee	Maintenance Fee Waived with a Minimum Daily Amount	or Monthly Direct Deposit
Ⓐ Bank A	$50.00	$8.95	$300.00	$400.00
Ⓑ Bank B	$50.00	$5.00	$1500.00	$500.00
✓ Bank C	$25.00	$12.00 (waived for students under 17)	$1500.00	$250.00
Ⓓ Bank D	$25.00	$12.00	$1500.00	$500.00

A 0.02 **B** 0.07 **C** 0.03 **D** 0.14 **E** 0.05

9

Monday	Ⓐ ✓ Ⓒ Ⓓ Ⓔ
Wednesday	Ⓐ Ⓑ Ⓒ Ⓓ ✓
Friday	Ⓐ Ⓑ Ⓒ Ⓓ ✓

10 24.6 mm + 25.5 mm + 24.9 mm = 75 mm
75 mm = 7.5 cm
22.3 ÷ 7.5 = 2.9 or approximately 3
The female bird is approximately 3 times as long as the average length of her eggs.

Student Name:

STAAR CONNECTION™
Grade 6
Diagnostic Series Math

The following charts provide each item along with the corresponding reporting category, identification of readiness or supporting standard, content student expectation, and process student expectation.

Circle the number of any question that has been answered incorrectly. Circle the TEKS that need additional reinforcement.

Assessment 1				
Item Number	**Reporting Category**	**Readiness or Supporting**	**Content Student Expectation (TEKS)**	**Process Student Expectation (TEKS)**
1	1	Supporting	6.2A	6.1D
2	1	Supporting	6.4C	6.1B
3	2	Supporting	6.3A	6.1B
4	2	Supporting	6.4A	6.1A
5	3	Readiness	6.4H	6.1B
6	3	Supporting	6.8A	6.1B
7	4	Supporting	6.12A	6.1E
8	4	Supporting	6.14A	6.1A
9	3	Readiness	6.4H	6.1B
10	3	Readiness	6.4H	6.1B