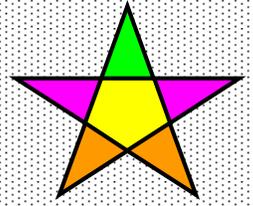
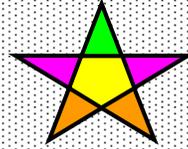
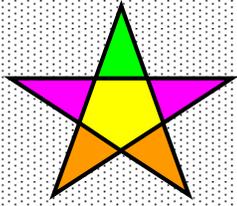


**TEKSING TOWARD STAAR**



**MATHEMATICS**

# **GRADE 4**

## **Open-Ended Problem-Solving Projections**

**Organized by  
TEKS Categories**

**TEKSING TOWARD STAAR  
GRADE 4 PROBLEM-SOLVING PROJECTIONS  
Table of Contents**

**Mathematical Process Standards**

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

**(4.1) Mathematical Process Standards**

The student uses mathematical processes to acquire and demonstrate mathematical understanding.

STAAR Standard	TEKS	STUDENT EXPECTATION
Incorporated into 1-4	4.1(A)	apply mathematics to problems arising in everyday life, society, and the workplace
Incorporated into 1-4	4.1(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
Incorporated into 1-4	4.1(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
Incorporated into 1-4	4.1(D)	communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate
Incorporated into 1-4	4.1(E)	create and use representations to organize, record, and communicate mathematical ideas
Incorporated into 1-4	4.1(F)	analyze mathematical relationships to connect and communicate mathematical ideas
Incorporated into 1-4	4.1(G)	display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

**TEKSING TOWARD STAAR  
GRADE 4 PROBLEM-SOLVING PROJECTIONS  
Table of Contents**

**TEKS Category 2: Number and Operations**

**(4.2) Number and Operations**

The student applies mathematical process standards to represent, compare, and order whole numbers and decimals and understand relationships related to place value.

STAAR Standard	TEKS	STUDENT EXPECTATION
Supporting	4.2(A)	interpret the value of each place-value position as 10 times the position to the right and as one-tenth of the value of the place to its left
Readiness	4.2(B)	represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals
Supporting	4.2(C)	compare and order whole numbers to 1,000,000,000 and represent comparisons using the symbols $>$ , $<$ , or $=$
Supporting	4.2(D)	round whole numbers to a given place value through the hundred thousands place
Supporting	4.2(E)	represent decimals, including tenths and hundredths, using concrete and visual models and money
Supporting	4.2(F)	compare and order decimals using concrete and visual models to the hundredths
Readiness	4.2(G)	relate decimals to fractions that name tenths and hundredths
Supporting	4.2(H)	determine the corresponding decimal to the tenths or hundredths place of a specified point on a number line

**(4.3) Number and Operations**

The student applies mathematical process standards to represent and generate fractions to solve problems.

STAAR Standard	TEKS	STUDENT EXPECTATION
Supporting	4.3(A)	represent a fraction $a/b$ as a sum of fractions $1/b$ , where $a$ and $b$ are whole numbers and $b > 0$ , including when $a > b$
Supporting	4.3(B)	decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations
Supporting	4.3(C)	determine if two given fractions are equivalent using a variety of methods
Readiness	4.3(D)	compare two fractions with different numerators and different denominators and represent the comparison using the symbols $>$ , $=$ , or $<$
Readiness	4.3(E)	represent and solve addition and subtraction of fractions with equal denominators using objects and pictorial models that build to the number line and properties of operations
Supporting	4.3(F)	evaluate the reasonableness of sums and differences of fractions using benchmark fractions 0, $1/4$ , $1/2$ , $3/4$ , and 1, referring to the same whole lines
Supporting	4.3(G)	represent fractions and decimals to the tenths or hundredths as distances from zero on a number line

**TEKSING TOWARD STAAR  
GRADE 4 PROBLEM-SOLVING PROJECTIONS  
Table of Contents**

**TEKS Category 2: Number and Operations**

**(4.4) Number and Operations**

The student applies mathematical process standards to develop and use strategies and methods for whole number computations and decimal sums and differences in order to solve problems with efficiency and accuracy.

STAAR Standard	TEKS	STUDENT EXPECTATION
<b>Readiness</b>	<b>4.4(A)</b>	add and subtract whole numbers and decimals to the hundredths place using the standard algorithm
<b>Supporting</b>	<b>4.4(B)</b>	determine products of a number and 10 or 100 using properties of operations and place value understandings
<b>Supporting</b>	<b>4.4(C)</b>	represent the product of 2 two-digit numbers using arrays, area models, or equations, including perfect squares through 15 by 15
<b>Supporting</b>	<b>4.4(D)</b>	use strategies and algorithms, including the standard algorithm, to multiply up to a four-digit number by a one-digit number and to multiply a two-digit number by a two-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties
<b>Supporting</b>	<b>4.4(E)</b>	represent the quotient of up to a four-digit whole number divided by a one-digit whole number using arrays, area models, or equations
<b>Supporting</b>	<b>4.4(F)</b>	use strategies and algorithms, including the standard algorithm, to divide up to a four-digit dividend by a one-digit divisor
<b>Supporting</b>	<b>4.4(G)</b>	round to the nearest 10, 100, or 1,000 or use compatible numbers to estimate solutions involving whole numbers
<b>Readiness</b>	<b>4.4(H)</b>	solve with fluency one- and two-step problems involving multiplication and division, including interpreting remainders

**TEKSING TOWARD STAAR  
GRADE 4 PROBLEM-SOLVING PROJECTIONS  
Table of Contents**

**TEKS Category 3: Algebraic Reasoning**

**(4.5) Algebraic Reasoning**

The student applies mathematical process standards to develop concepts of expressions and equations.

<b>STAAR Standard</b>	<b>TEKS</b>	<b>STUDENT EXPECTATION</b>
<b>Readiness</b>	<b>4.5(A)</b>	represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity
<b>Readiness</b>	<b>4.5(B)</b>	represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence
<b>Not Tested</b>	<b>4.5(C)</b>	use models to determine the formulas for the perimeter of a rectangle ( $l + w + l + w$ or $2l + 2w$ ), including the special form for perimeter of a square ( $4s$ ) and the area of a rectangle ( $l \times w$ )
<b>Readiness</b>	<b>4.5(D)</b>	solve problems related to perimeter and area of rectangles where dimensions are whole numbers

**TEKSING TOWARD STAAR  
GRADE 4 PROBLEM-SOLVING PROJECTIONS  
Table of Contents**

**TEKS Category 4: Geometry and Measurement**

**(4.6) Geometry and Measurement**

The student applies mathematical process standards to analyze geometric attributes in order to develop generalizations about their properties.

STAAR Standard	TEKS	STUDENT EXPECTATION
<b>Supporting</b>	<b>4.6(A)</b>	identify points, lines, line segments, rays, angles, and perpendicular and parallel lines
<b>Supporting</b>	<b>4.6(B)</b>	identify and draw one or more lines of symmetry, if they exist, for a two-dimensional figure
<b>Supporting</b>	<b>4.6(C)</b>	apply knowledge of right angles to identify acute, right, and obtuse triangles
<b>Readiness</b>	<b>4.6(D)</b>	classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size

**(4.7) Geometry and Measurement**

The student applies mathematical process standards to solve problems involving angles less than or equal to 180 degrees.

STAAR Standard	TEKS	STUDENT EXPECTATION
<b>Not Tested</b>	<b>4.7(A)</b>	illustrate the measure of an angle as the part of a circle whose center is at the vertex of the angle that is "cut out" by the rays of the angle. Angle measures are limited to whole numbers
<b>Not Tested</b>	<b>4.7(B)</b>	illustrate degrees as the units used to measure an angle, where $1/360$ of any circle is one degree and an angle that "cuts" $n/360$ out of any circle whose center is at the angle's vertex has a measure of $n$ degrees. Angle measures are limited to whole numbers
<b>Readiness</b>	<b>4.7(C)</b>	determine the approximate measures of angles in degrees to the nearest whole number using a protractor
<b>Supporting</b>	<b>4.7(D)</b>	draw an angle with a given measure
<b>Supporting</b>	<b>4.7(E)</b>	determine the measure of an unknown angle formed by two non-overlapping adjacent angles given one or both angle measures

**(4.8) Geometry and Measurement**

The student applies mathematical process standards to select appropriate customary and metric units, strategies, and tools to solve problems involving measurement.

<b>Supporting</b>	<b>4.8(A)</b>	identify relative sizes of measurement units within the customary and metric systems
<b>Supporting</b>	<b>4.8(B)</b>	convert measurements within the same measurement system, customary or metric, from a smaller unit into a larger unit or a larger unit into a smaller unit when given other equivalent measures represented in a table
<b>Readiness</b>	<b>4.8(C)</b>	solve problems that deal with measurements of length, intervals of time, liquid volumes, mass, and money using addition, subtraction, multiplication, or division as appropriate

**TEKSING TOWARD STAAR  
GRADE 4 PROBLEM-SOLVING PROJECTIONS  
Table of Contents**

**TEKS Category 5: Data Analysis**

**(4.9) Data Analysis**

The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data.

<b>STAAR Standard</b>	<b>TEKS</b>	<b>STUDENT EXPECTATION</b>
<b>Readiness</b>	<b>4.9(A)</b>	represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions
<b>Supporting</b>	<b>4.9(B)</b>	solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and-leaf plot

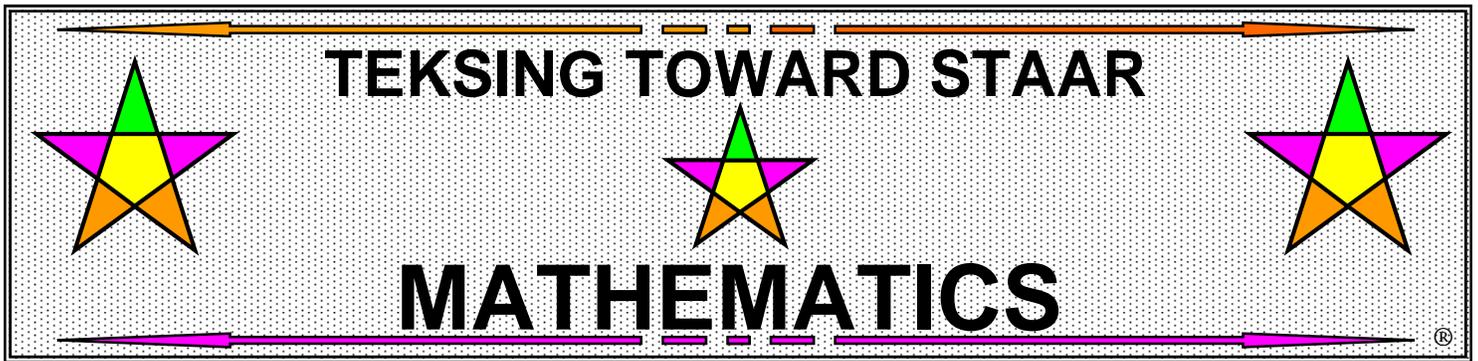
**TEKSING TOWARD STAAR  
GRADE 4 PROBLEM-SOLVING PROJECTIONS  
Table of Contents**

**TEKS Category 6: Personal Financial Literacy**

**(4.10) Personal Financial Literacy**

The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security.

<b>STAAR Standard</b>	<b>TEKS</b>	<b>STUDENT EXPECTATION</b>
<b>Supporting</b>	<b>4.10(A)</b>	distinguish between fixed and variable expenses
<b>Supporting</b>	<b>4.10(B)</b>	calculate profit in a given situation
<b>Not Tested</b>	<b>4.10(C)</b>	compare the advantages and disadvantages of various savings options
<b>Not Tested</b>	<b>4.10(D)</b>	describe how to allocate a weekly allowance among spending; saving, including for college; and sharing
<b>Supporting</b>	<b>4.10(E)</b>	describe the basic purpose of financial institutions, including keeping money safe, borrowing money, and lending



## OVERVIEW

### Grade 4 Open-Ended Problem-Solving Projections

The Open-Ended Problem-Solving Projections were created with all students in mind and provide teachers with large print projections for problem-solving questions that address all TEKS, including the Process Standards TEKS and the TEKS not assessed on STAAR. Each Problem-Solving Projection is correlated to a specific Category and TEKS.

The Open-Ended Problem-Solving Projections document includes a general set of questions that should be addressed by students as they solve the problems and during class discussion of the solution process for each problem. Teachers should make a copy of these questions and distribute for each student to keep in their math notebook.

#### **The Problem-Solving Questions include the following:**

1. What is the main idea of this problem?
2. What are the supporting details in this problem?
3. What skills, concepts and understanding of math vocabulary are needed to be able to answer this problem?
4. Did this problem involve mathematics arising in everyday life, society, or the work place?
5. What is a good problem solving strategy for this problem?
6. Can you explain how you used any math tools, mental math, estimation or number sense to solve this problem?
7. Did this problem involve using multiple representations (symbols, diagrams, graphs, language)?
8. Did you use any relationships to solve this problem?
9. How can you justify your solution?
10. How can you check for reasonableness of your solution to this problem?

These Open-Ended Problem-Solving Projections can be utilized for instruction, guided practice or independent practice. These materials can be utilized with a whole class, small groups and/or tutorial settings.

**NOTE:** There is no answer key provided for the Open-Ended Problem-Solving Projections as the author's philosophy is that each teacher should create a personalized Solutions Manual so the teacher becomes more familiar with the Revised TEKS and assessment of the Revised TEKS, as well as formulates various solution strategies for each question. Teachers are encouraged to communicate with the author regarding discussion of any question in this document.

## **AUTHOR'S VISION FOR IMPLEMENTATION - PROBLEM-SOLVING PROJECTIONS**

Students work with partner pairs to answer the Open-Ended Problem-Solving Projections. Students record their work on notebooks paper.

The teacher projects the problem, then sets a time limit prior to students' beginning their work. Partner pairs are given specific "share" questions from 1-10 on the Problem-Solving Questions page. The process that should be followed by students for all Problem-Solving Projections is to answer questions 1-3, then complete the solution to the problem, and finally answer questions 4-10.

The teacher calls time and the partner pairs guide class discussion on their "share" assignments. Students who did not complete the solutions to the problem prior to the time limit must complete their recording in a different color.

# Problem-Solving Model

Step	Description of Step
1	<p><b>Analyze the given information.</b></p> <ul style="list-style-type: none"><li>• Summarize the problem in your own words.</li><li>• Describe the main idea of the problem.</li><li>• Identify information needed to solve the problem.</li></ul>
2	<p><b>Formulate a plan or strategy.</b></p> <ul style="list-style-type: none"><li>• Draw a picture or a diagram.</li><li>• Find a pattern.</li><li>• Guess and check.</li><li>• Act it out.</li><li>• Create or use a chart or a table.</li><li>• Work a simpler problem.</li><li>• Work backwards.</li><li>• Make an organized list.</li><li>• Use logical reasoning.</li><li>• Brainstorm.</li><li>• Write a number sentence or an equation.</li></ul>
3	<p><b>Determine a solution.</b></p> <ul style="list-style-type: none"><li>• Estimate the solution to the problem.</li><li>• Solve the problem.</li></ul>
4	<p><b>Justify the solution.</b></p> <ul style="list-style-type: none"><li>• Explain why your solution solves the problem.</li></ul>
5	<p><b>Evaluate the process and the reasonableness of your solution.</b></p> <ul style="list-style-type: none"><li>• Make sure the solution matches the problem.</li><li>• Solve the problem in a different way.</li></ul>

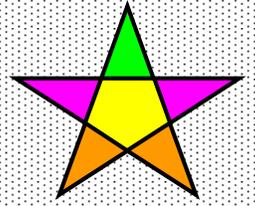
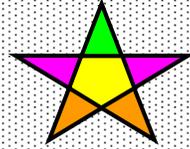
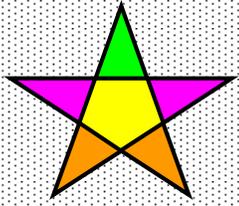
## Grade 4 Problem-Solving Questions

### Directions:

- **Work with a partner.**
- **Write your answers on notebook paper.**
- **Answer questions 1-3.**
- **Complete the solution to the problem.**
- **Answer questions 4-10.**

1. What is the main idea of this problem?
2. What are the supporting details in this problem?
3. What skills, concepts and understanding of math vocabulary are needed to be able to answer this problem?
4. Did this problem involve mathematics arising in everyday life, society, or the work place?
5. What is a good problem solving strategy for this problem?
6. Can you explain how you used any math tools, mental math, estimation or number sense to solve this problem?
7. Did this problem involve using multiple representations (symbols, diagrams, graphs, math language)?
8. Did you use any relationships to solve this problem?
9. How can you justify your solution to the problem?
10. How can you check for reasonableness of your solution to this problem?

**TEKSING TOWARD STAAR**



**MATHEMATICS**

**GRADE 4**

**Open-Ended  
Problem-Solving  
Projections**

**TEKS CATEGORY 2**

**Number and Operations**

**4.2G Problem-Solving 1**

The table represents the coins that three fourth grade students put into their coin banks this week.

Coins in the Bank				
	Quarters	Dimes	Nickels	Pennies
Corina	3	1	1	3
Jeff	1	1	2	2
Angie	2	2	0	1

1. Write Corina's total amount as a decimal in terms of a dollar.
2. Explain why Corina's total amount you wrote as a decimal is correct.
3. Write Corina's total amount as a fraction in terms of a dollar.
4. Explain why Corina's total amount you wrote as a fraction is correct.
5. Write Jeff's total amount as a decimal in terms of a dollar.
6. Explain why Jeff's total amount you wrote as a fraction is correct.

Coins in the Bank				
	Quarters	Dimes	Nickels	Pennies
Corina	3	1	1	3
Jeff	1	1	2	2
Angie	2	2	0	1

- Write Jeff's total amount as a fraction in terms of a dollar.
- Explain why Jeff's total amount you wrote as a fraction is correct.
- Write Angie's total amount as a decimal in terms of a dollar.
- Explain why Angie's total amount you wrote as a decimal is correct.
- Write Angie's total amount as a fraction in terms of a dollar.
- Explain why Angie's total amount you wrote as a fraction is correct.
- How much will Corina have left if she spends  $\frac{63}{100}$  of a dollar? Show your work.
- Explain how you know your answer to question 14 is correct.

**4.2G Problem-Solving 2****PROBLEM 1**

The Whitney Library is 0.3 mile from school.

1. Ginger says after school she is going to walk 3 tenths mile from school to the Whitney Library. Does Ginger's statement make sense?
2. Explain your answer to question 1.
3. Nick says after school he is going to walk 3 miles from school to the Whitney Library. Does Nick's statement make sense?
4. Explain your answer to question 3.

**PROBLEM 2**

Kent says he has  $\frac{8}{100}$  of a dollar in his pocket.

Marcus says that the decimal for  $\frac{8}{100}$  is 0.8.

5. What error did Marcus make?
6. What is correct decimal form for  $\frac{8}{100}$  of a dollar?

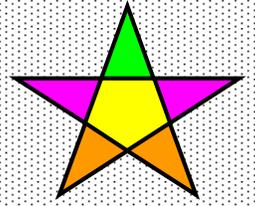
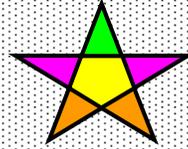
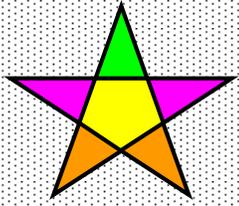
**PROBLEM 3**

Evie and Chandra saw this sign along the highway during their vacation.



- 7.** Eva says it is seventy-five hundredths of a mile to Waterland. Does Eva's statement make sense?
- 8.** Explain your answer to question 7.
- 9.** Chandra says it is seven and five-tenths of a mile to Waterland. Does Chandra's statement make sense?
- 10.** Explain your answer to question 9.

**TEKSING TOWARD STAAR**



**MATHEMATICS**

**GRADE 4**

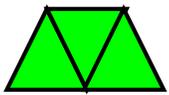
**Open-Ended  
Problem-Solving  
Projections**

**TEKS CATEGORY 3**

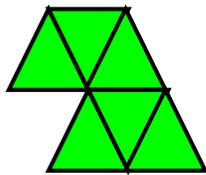
**Algebraic Relationships**

**4.5B Problem-Solving 1**

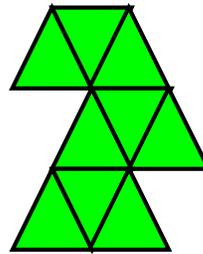
Jeremy used green triangle pattern blocks to make these four designs. The designs create a pattern.



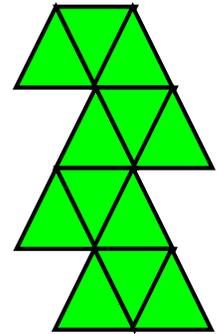
Design 1



Design 2

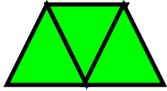


Design 3

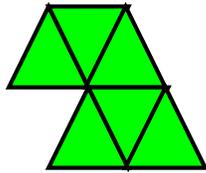


Design 4

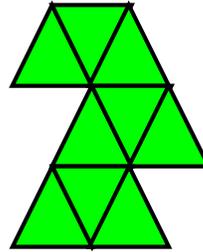
1. Make an input-output table to represent the number of each design and the number of green pattern blocks in each design.
2. If he continues the pattern, how many green pattern blocks will Jeremy use for his 6th design?
3. Explain why your answer to question 2 is correct.
4. How many green pattern blocks will Jeremy use for his 9th design?
5. Explain why your answer to question 4 is correct.



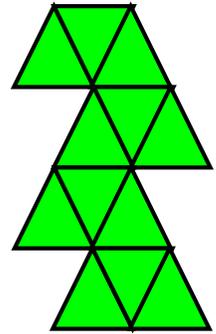
Design 1



Design 2



Design 3



Design 4

6. What is the rule for the pattern in Jeremy's designs?
7. Explain why your answer to question 6 is correct.
8. What is the sequence for the first five terms in this pattern?
9. Explain why your answer to question 8 is correct.

**4.5B Problem-Solving 2****PROBLEM 1**

Bertie uses 9 yards to make 1 quilt. She bought 162 yards of cotton fabric. She will use the fabric to make quilts.

- 1.** Write an expression to represent the amount of fabric Bertie uses to make 1 quilt.
- 2.** Explain why the expression is correct.
- 3.** Write an expression to represent the amount of fabric Bertie bought.
- 4.** Explain why the expression is correct.
- 5.** Write an equation to represent the number of cotton quilts,  **$c$** , Bertie can make using the fabric she bought.
- 6.** Explain why the equation is correct.

**PROBLEM 2**

Reagan bought 8 packages of party napkins. Each package has 8 napkins.

- 1.** Write an expression to represent the number of packages of party napkins Reagan bought.
- 2.** Explain why the expression is correct.
- 3.** Write an expression to represent the number of napkins in each package Reagan bought.
- 4.** Explain why the expression is correct.
- 5.** Write an equation to represent the total number of napkins,  $n$ , that Reagan bought.
- 6.** Explain why the equation is correct.

**4.5B Problem-Solving 3**

One gallon of water is equivalent to 4 quarts of water. You can write a rule to represent this relationship.

**PART 1**

1. Write a rule to represent the relationship between one gallon and four quarts.

Let  $g$  represent the number of gallons, the input, and let  $q$  represent the total number of quarts, the output.

**PART 2**

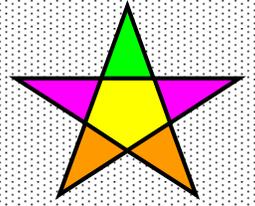
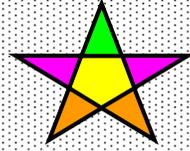
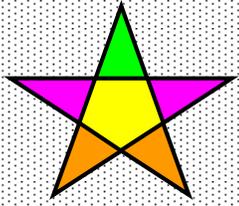
This is an input/output table representing the relationship between gallons and quarts.

Input	Gallons	$g$	1	2	4	6
Output	Quarts	$q$				

Use the rule you wrote in number 1 to answer questions about the table.

2. How many quarts are in one gallon?
3. How many quarts are in two gallons?
4. How many quarts are in four gallons?
5. How many quarts are in six gallons?

**TEKSING TOWARD STAAR**



**MATHEMATICS**

**GRADE 4**

**Open-Ended  
Problem-Solving  
Projections**

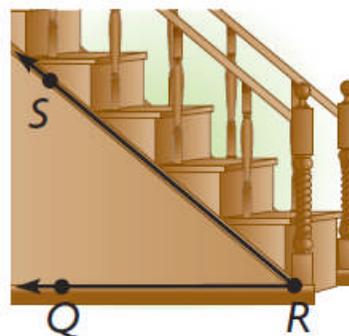
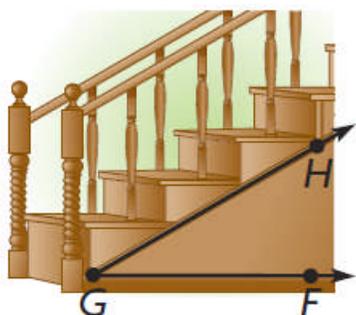
**TEKS CATEGORY 4**

**Geometry  
and  
Measurement**

**4.7C Problem-Solving 1**

Your teacher will give you and your partner a protractor to use to for this problem.

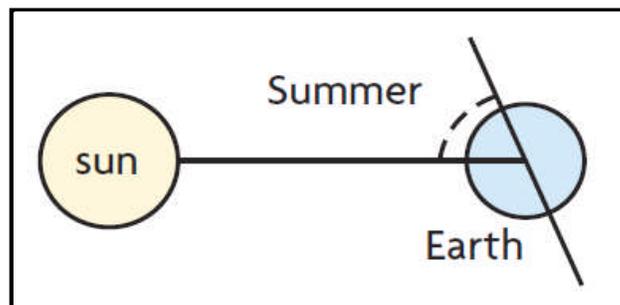
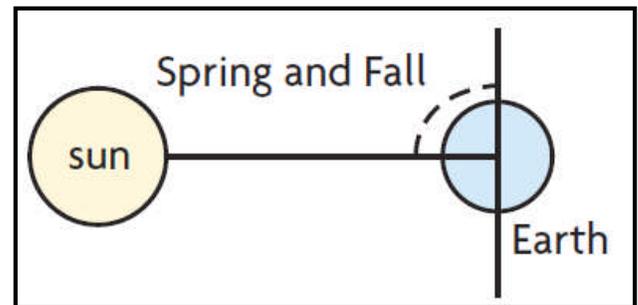
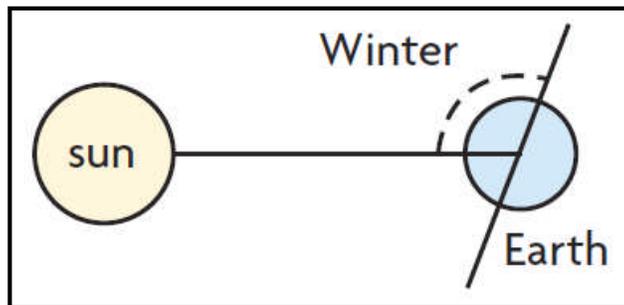
Andrew built two sets of stairs in his new house. The sets of stairs are represented below.



1. Explain how to use a protractor to measure  $\angle HGF$ .
2. What is the measure of  $\angle HGF$ ?
3. Explain how you know the measure for  $\angle HGF$  is correct.
4. Explain how to use a protractor to measure  $\angle QRS$ .
5. What is the measure of  $\angle QRS$ ?
6. Explain how you know the measure for  $\angle QRS$  is correct.
7. What is the difference between the measure of  $\angle HGF$  and  $\angle QRS$ ?
8. Explain why your answer to question 7 is correct.

**4.7C Problem-Solving 2**

These diagrams represent the tilt of the Earth's axis in relationship to the sun in the Northern Hemisphere. The diagrams show the tilt of the axis on the first day of winter, spring and fall, and summer.

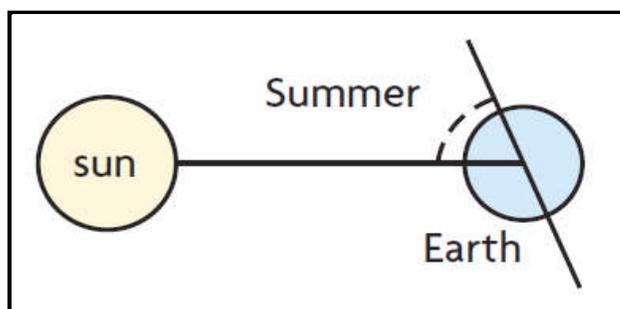
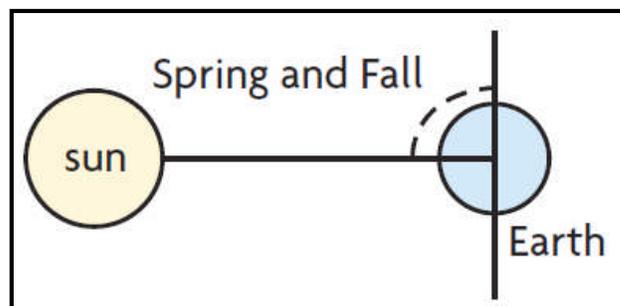
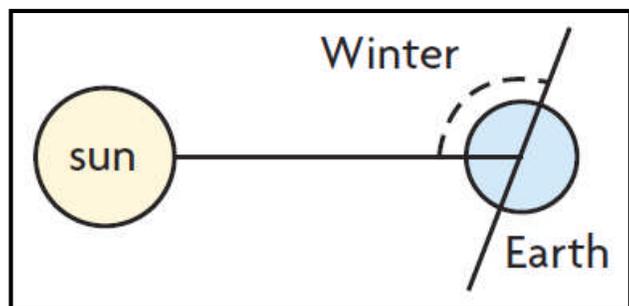


Use a protractor to answer these questions.

- 1.** In the Northern Hemisphere, Earth's axis is tilted away from the sun on the first day of winter, which is often December 21.

Use a protractor to find the measure of the marked angle on the first day of winter, the shortest day of the year.

What is the measure of this angle?



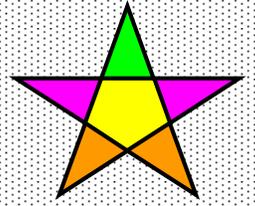
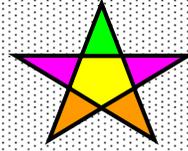
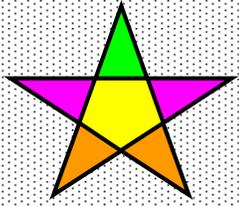
- 2.** Earth's axis is not tilted away from or toward the sun on the first days of spring and fall, which are often on March 20 and September 22.

What is the measure of the marked angle on the first day of spring or fall?

- 3.** Earth's axis is tilted toward the sun on the first day of summer, which is often on June 21.

What is the measure of the marked angle on the first day of summer, the longest day of the year?

**TEKSING TOWARD STAAR**



**MATHEMATICS**

**GRADE 4**

**Open-Ended  
Problem-Solving  
Projections**

**TEKS CATEGORY 5**

**Data Analysis**

**4.9B Problem-Solving 1**

The students in a fourth grade class voted for their favorite ice cream flavor. They recorded the data in a tally table, then counted the tallies to make a frequency table.

Favorite Ice Cream Flavor		
Flavor	Tally	Number
Vanilla	<del>    </del>	9
Strawberry	<del>    </del>	7
Chocolate	<del>    </del> <del>    </del>	13
Banana		4

1. How many more students chose chocolate or vanilla than strawberry and banana combined?
2. Explain how you used the data to answer question 1.
3. How many students are represented in the data?
4. Explain how you used the data to answer question 3.

**4.9B Problem-Solving 2**

Use the dot plot you and your partner created for 4.9A Problem-Solving 2 to answer these questions. Answer the questions on notebook paper.

1. Which length of straws had the greatest number?
2. Which length of straws had the least number?
3. What is the difference between the number of straws with the least and greatest lengths?
4. What is the total number of straws that have a length less than  $1\frac{1}{4}$  inch?
5. What is the total number of straws that have a length greater than  $1\frac{1}{4}$  inch?
6. What is the difference between the number of straws with a length less than  $1\frac{1}{4}$  inch and a length greater than  $1\frac{1}{4}$  inch?
7. What is the difference between the number of straws with a length of  $\frac{1}{4}$  or  $\frac{1}{2}$  in. and the number of straws with a length of  $1\frac{1}{4}$  or  $1\frac{1}{2}$  in.?

**4.9B Problem-Solving 3**

Stephanie asked her 23 classmates how much time they spend doing chores in a week. She recorded the data in a stem-and-leaf plot.

**Minutes Spent Doing Chores**

Stem	Leaves			
2	2	2	4	6
3	0	5	5	8
4	0	6		
5	5	8		
6	2			
7	1	4		

**Key:** 0 | 4 represents 4 free throws

1. How many classmates said they spend some time doing chores in a week?
2. Explain how you know your answer to question 1 is correct.
3. How many of Stephanie's classmates said they spend more than an hour doing chores in a week?
4. Explain how you know your answer to question 3 is correct.

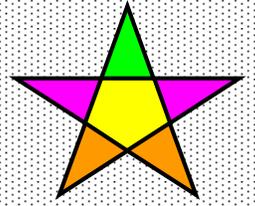
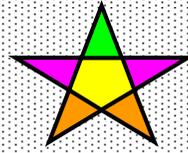
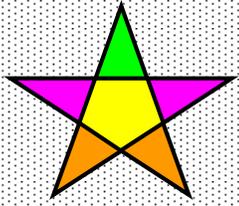
## Minutes Spent Doing Chores

Stem	Leaves			
2	2	2	4	6
3	0	5	5	8
4	0	6		
5	5	8		
6	2			
7	1	4		

**Key:** 0 | 4 represents 4 free throws

5. How many classmates said they spend more than 20 minutes and less than 40 minutes doing chores in a week?
6. Explain how you know your answer to question 5 is correct.
7. How many classmates said they do not spend any time doing chores in a week?
8. Explain how you know your answer to question 7 is correct.

**TEKSING TOWARD STAAR**



**MATHEMATICS**

**GRADE 4**

**Open-Ended  
Problem-Solving  
Projections**

**TEKS CATEGORY 6  
Personal Financial  
Literacy**

**4.10B Problem-Solving 1**

Serena makes sock puppets to earn money to donate to the Theater Club. The items she bought to make the puppets and the cost of each item is shown.

Item	Cost
1 pair of craft scissors	\$10.99
6-pairs of white socks	\$2 per pair
3 yards of felt fabric (1 yd. red, 1 yd. pink, 1 yd. black)	\$6 per yard
Bottle of craft glue	\$5.99
Assorted buttons	\$3.79
10-pack of colored cardboard	\$5.43

Each sock makes one puppet. Serena will use all of the socks to make puppets. She will sell each sock puppet for \$8. Find out if Serena will make a profit if she sells all of the puppets.

First, find the total amount of her expenses.

- 1.** Find the total amount paid for the socks. Show your work.
- 2.** What is the total amount paid for the socks?
- 3.** Find the total amount paid for felt. Show your work.
- 4.** What is the total amount paid for the felt?
- 5.** Find the total amount of Serena's expenses. Show your work.
- 6.** What is the total amount of Serena's expenses?

Next, find the amount Serena received from selling the puppets.

- 7.** Find the total number of puppets she made if she used all of the socks. Show your work.
- 8.** What is the total number of puppets she made?

Finally, find the amount of Serena's profit.

- 9.** Find the difference between Serena's expenses and the amount she received from selling the puppets. Show your work.
- 10.** What is the amount of Serena's profit?