The Pennsylvania System
of School Assessment
Mathematics
Preliminary
Item and Scoring Sampler

2013–2014
Grade 4
# TABLE OF CONTENTS

- Introduction .................................................................................. 1
- Mathematics Reporting Categories .................................................. 2
- General Description of Scoring Guidelines for Mathematics Open-Ended Questions ................................. 3
- Description of Sample Questions ..................................................... 4
- Mathematics Formula Sheet ................................................................. 5
- Multiple-Choice Questions ................................................................. 7
- First Open-Ended Question ............................................................... 32
  - Item-Specific Scoring Guideline ..................................................... 34
  - First Open-Ended Question Responses ........................................ 36
- Second Open-Ended Question ......................................................... 46
  - Item-Specific Scoring Guideline ..................................................... 48
  - Second Open-Ended Question Responses .................................... 50
- Third Open-Ended Question ............................................................. 60
  - Item-Specific Scoring Guideline ..................................................... 62
  - Third Open-Ended Question Responses ...................................... 64
INTRODUCTION

General Introduction

The Pennsylvania Department of Education provides districts and schools with tools to assist in delivering focused instructional programs aligned with the Pennsylvania Core Standards Assessment Anchors. These tools include Academic Standards, Assessment Anchor documents, assessment handbooks, and content-based item and scoring samplers. This Item and Scoring Sampler is a useful tool for Pennsylvania educators in preparing local instructional programs. It can also be useful in preparing students for the statewide assessment.

What Is Included

This sampler contains test questions (items) that have been written to align to the Assessment Anchors that are based on the Pennsylvania Core Standards (PCS). The test questions provide an idea of the types of items that will appear on an operational, PCS-based PSSA. Each sample test question has been through a rigorous review process to ensure alignment with the Assessment Anchors.

Purpose and Uses

The items in this sampler may be used as examples for creating assessment items at the classroom level, and they may also be copied and used as part of a local instructional program. Classroom teachers may find it beneficial to have students respond to the open-ended items in this sampler. Educators can then use the sampler as a guide to score the responses either independently or together with colleagues within a school or district.

Item Format and Scoring Guidelines

The multiple-choice (MC) items have four answer choices. Each correct response to an MC item is worth one point.

Each open-ended (OE) item is designed to take approximately ten to fifteen minutes to complete. During the administration of the PSSA students are given additional time as necessary to complete the test items. Each OE item in mathematics is scored using an item-specific scoring guideline based on a 0–4 point scale. In this sampler, every item-specific scoring guideline is combined with examples of student responses that represent each score point to form a practical, item-specific scoring guide.

The sampler also includes the General Description of Scoring Guidelines for Mathematics Open-Ended Questions used to develop the item-specific guidelines. The general description of scoring guidelines can be used if any additional item-specific scoring guidelines are created for use within local instructional programs.

Item Alignment

All PSSA items are aligned to statements and specifications included in the Assessment Anchors and Eligible Content Aligned to the Pennsylvania Core Standards. The mathematics content, process skills, directives, and action statements included in the PSSA mathematics questions will align with the Assessment Anchor Content Standards. The Eligible Content statements represent the limits of the content of the mathematics questions.

1 The permission to copy and/or use these materials does not extend to commercial purposes.
Testing Time and Mode of Testing Delivery for the PCS-Based PSSA

The PSSA is delivered in traditional paper-and-pencil format as well as in an online format. The estimated time to respond to a test question is the same for both methods of test delivery. During an official testing administration, students are given additional time as necessary to complete the test questions. The following table shows the estimated response time for each item type.

<table>
<thead>
<tr>
<th>Item Type</th>
<th>MC</th>
<th>OE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Response</td>
<td>1.5</td>
<td>10 to 15</td>
</tr>
<tr>
<td>Time (in minutes)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MATHEMATICS REPORTING CATEGORIES

The Assessment Anchors are organized into four classifications, as listed below.

- A = Numbers and Operations
- B = Algebraic Concepts
- C = Geometry
- D = Data Analysis and Probability

These four classifications are used throughout the grade levels. In addition to these classifications, there are five Reporting Categories for each grade level. The first letter of each Reporting Category represents the classification; the second letter represents the Domain as stated in the Common Core State Standards for Mathematics. Listed below are the Reporting Categories for Grade 4.

- A-T = Numbers and Operations in Base Ten
- A-F = Numbers and Operations—Fractions
- B-O = Operations and Algebraic Thinking
- C-G = Geometry
- D-M = Measurement and Data

Examples of multiple-choice and open-ended items assessing these categories are included in this booklet.
GENERAL DESCRIPTION OF SCORING GUIDELINES
FOR MATHEMATICS OPEN-ENDED QUESTIONS

4 – The response demonstrates a **thorough** understanding of the mathematical concepts and procedures required by the task.

The response provides correct answer(s) with clear and complete mathematical procedures shown and a correct explanation, as required by the task. Response may contain a minor “blemish” or omission in work or explanation that does not detract from demonstrating a **thorough** understanding.

3 – The response demonstrates a **general** understanding of the mathematical concepts and procedures required by the task.

The response and explanation (as required by the task) are mostly complete and correct. The response may have minor errors or omissions that do not detract from demonstrating a **general** understanding.

2 – The response demonstrates a **partial** understanding of the mathematical concepts and procedures required by the task.

The response is somewhat correct with **partial** understanding of the required mathematical concepts and/or procedures demonstrated and/or explained. The response may contain some work that is incomplete or unclear.

1 – The response demonstrates a **minimal** understanding of the mathematical concepts and procedures required by the task.

0 – The response has no correct answer and **insufficient** evidence to demonstrate any understanding of the mathematical concepts and procedures required by the task for that grade level.

Response may show only information copied from the question.

Special Categories within zero reported separately:

BLK (blank) ..........Blank, entirely erased, or written refusal to respond
OT .......................Off-task
LOE ......................Response in a language other than English
IL .........................Illegible
DESCRIPTION OF SAMPLE QUESTIONS

The mathematics multiple-choice questions begin on page 7. Each question is preceded by the Assessment Anchor and Eligible Content coding to which it aligns. Incorrect answer options are followed by the “rationale” which supports the student’s response. All correct answer options are indicated by an asterisk (*).

Three open-ended questions follow the multiple-choice questions. Each open-ended question includes question-specific scoring guidelines and examples of student responses with scores and annotations.

Since the PSSA is delivered in both paper-and-pencil and online formats, OE items of each method of test delivery are included in this sampler. The online OE sample items are presented as screen shots in a landscape orientation in order to best approximate the view of a computer monitor. The examples of student responses that follow the online OE sample items are also presented as screen shots.

A calculator is permitted for use in solving questions numbered 4–43 in this sampler. Questions numbered 1–3 are to be solved without the use of a calculator. Scratch paper may be used in solving all questions, and a protractor similar to that shown below should be used to answer question number 43.

GRADE 4 PROTRACTOR

The protractor shown below is not intended to be used to measure. It has been included as a representation of the protractors that will be provided for students when they take the test. Due to differences in printers, the protractor may not accurately reproduce to scale.
MATHEMATICS FORMULA SHEET

Below is a Mathematics formula sheet that will be available to students during the test. The formula sheet reflects the mathematical approach included in the Assessment Anchors that are based on the Pennsylvania Core Standards (PCS). The formula sheet is also available in Spanish.

Formulas and conversions that you may need to work questions on this test are found below. You may refer back to this page at any time during the mathematics test.

Standard Conversions
1 yard (yd) = 3 feet (ft)
1 foot = 12 inches (in.)
1 pound (lb) = 16 ounces (oz.)
1 gallon (gal) = 4 quarts (qt)
1 quart = 2 pints (pt)
1 pint = 2 cups (c)

Metric Conversions
1 kilometer (km) = 1,000 meters (m)
1 meter = 100 centimeters (cm)
1 kilogram (kg) = 1,000 grams (g)
1 liter (L) = 1,000 milliliters (mL)

Time Conversions
1 year (yr) = 12 months (mo)
1 year = 52 weeks (wk)
1 year = 365 days
1 week = 7 days
1 day = 24 hours (hr)
1 hour = 60 minutes (min)
1 minute = 60 seconds (sec)

Area = length × width
A = l × w

Perimeter = length + length + width + width
P = l + l + w + w

Rectangle

<table>
<thead>
<tr>
<th>l</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
</tr>
</tbody>
</table>
On the following pages are the mathematics questions.

- You may **not** use a calculator for questions 1–3. You may use a calculator for all other questions on this test.
- You may need a protractor for question(s) on this test.

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**Directions for Multiple-Choice Questions:**

Some questions will ask you to select an answer from among four choices.

For the multiple-choice questions:

- First solve the problem on scratch paper.
- Choose the correct answer and record your choice in the answer booklet.
- If none of the choices matches your answer, go back and check your work for possible errors.
- Only one of the answers provided is the correct response.

---

**Directions for Open-Ended Questions:**

Some questions will require you to write your response.

For the open-ended questions:

- These questions have more than one part. Be sure to read the directions carefully.
- You cannot receive the highest score for an open-ended question without completing all tasks in the question. For example, if the question asks you to show your work or explain your reasoning, be sure to show your work or explain your reasoning in the space provided.
- If the question does **not** ask you to show your work or explain your reasoning, you may use the space provided, but only those parts of your response that the question specifically asks for will be scored.
- Write your response in the appropriate location within the response box in the answer booklet. Some answers may require graphing, plotting, labeling, drawing, or shading. If you use scratch paper, be sure to transfer your final response and any needed work or reasoning to the answer booklet.
MULTIPLE-CHOICE QUESTIONS

Questions 1–3 in this sampler are to be solved without the use of a calculator.

A-T.2.1.3

1. Divide: 7,218 ÷ 4
   A. 1,002  
      \textit{didn’t do any subtraction, just divided 4 into each value}
   B. 1,554 R2  
      \textit{added 4 and 1 instead of multiplying in the first step}
   C. 1,804 R2  
   D. 1,840 R2  
      \textit{4 didn’t go into 1 in the tens place, so the student brought down the next place value and then divided}

A-F.2.1.7

2. Chantel made a quilt using fabric squares that measured $\frac{3}{4}$ foot on each side. She used 6 squares to make the length of the quilt. What is the length, in feet, of Chantel's quilt?
   A. $1\frac{1}{3}$  
      \textit{multiplied 6 x 4, then 6 x 3 OR 6 x 3, then 6 x 4 (both derive 24/18)}
   B. $4\frac{1}{2}$  
   C. $6\frac{3}{4}$  
      \textit{added the values instead of multiplying}
   D. 8  
      \textit{cross multiplied 6 x 4, then 1 x 3 and divided}
**PSSA MATHEMATICS**

A-f.3.1.1

3. Add: \( \frac{8}{100} + \frac{3}{10} \)

<table>
<thead>
<tr>
<th>Option</th>
<th>Answer</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>( \frac{24}{1,000} )</td>
<td>multiplies numerators and denominators</td>
</tr>
<tr>
<td>B.</td>
<td>( \frac{11}{110} )</td>
<td>adds numerators and denominators</td>
</tr>
<tr>
<td>C.</td>
<td>( \frac{38}{100} )</td>
<td>*</td>
</tr>
<tr>
<td>D.</td>
<td>( \frac{38}{200} )</td>
<td>converts 3/10 to 30/100, then adds numerators and denominators</td>
</tr>
</tbody>
</table>
4. Mr. Coffman saw this ad for a used car in the newspaper.

Car for Sale

- red
- CD player
- new tires
- runs well
- 126,500 miles (rounded to the nearest 100)

What is the **greatest** number of miles that the car could have been driven?

A. 126,450 miles  
   *least number of miles that rounds to 126,500*

B. 126,499 miles  
   *greatest number of miles under 126,500 that rounds to 126,500*

C. 126,549 miles  
   *

D. 126,550 miles  
   *least number of miles that rounds to 126,600*
5. The populations of two towns are listed below.

Springfield: three hundred four thousand, twenty

Greenville: three hundred forty thousand, two

Which inequality correctly compares the two populations?

A. 300,420 < 342,000
   misreads the two numbers but gets them in the right order

B. 304,020 < 340,002
   * reads the numbers correctly but gets them in the wrong order

C. 340,002 < 304,020
   misreads the numbers and gets them in the wrong order

D. 342,000 < 300,420
   * misreads the two numbers but gets them in the right order

6. When rounded to the nearest ten thousand, Jake’s high score on a video game is 170,000 points. Which could be Jake’s actual high score?

A. sixteen thousand, seven hundred thirty-five
   thinks this represents 167,350 instead of 16,735 and rounds correctly

B. one hundred seventeen thousand, two hundred forty-one
   reads this as 170,241

C. one hundred sixty-two thousand, nine hundred ninety-nine
   makes a rounding error, thinking this rounds up because of the 999

D. one hundred seventy-three thousand, nine hundred twenty-two
   *
PSSA MATHEMATICS

A-T.2.1.1

7. Graham practiced piano for 135 minutes this morning. He practiced for 65 more minutes this afternoon. Altogether, Graham practiced 10 times longer today than he practiced yesterday. How many minutes did Graham practice piano yesterday?

   A. 2 \( \text{divided by 100} \)
   B. 20
   C. 200 \( \text{forgot to divide by 10} \)
   D. 2000 \( \text{multiplied by 10} \)

A-T.2.1.1

8. Mt. Etna is a volcano that measures 10,925 feet above sea level at its highest point. This is 11,664 feet less than the height of the world’s highest volcano. What is the height, in feet, of the world’s highest volcano?

   A. 21,589 \( \text{didn’t regroup when adding} \)
   B. 21,599 \( \text{added from left to right with regrouping (from the hundreds place to the tens place)} \)
   C. 22,581 \( \text{subtracted in the ones place instead of adding, added the remaining values} \)
   D. 22,589 \*
9. The number of houses in each of three cities is shown below.

- City 1 has 49,508 houses.
- City 2 has 650,279 houses.
- City 3 has 124,908 houses.

What is the total number of houses in all three cities rounded to the nearest thousand?

A. 820,000 rounds to ten thousands
B. 823,000 rounds each number down to thousands and then adds
C. 824,000 adds 3 numbers and then rounds down to thousands
D. 825,000 *

10. Ruth and Mari sold fruit baskets for a school fundraiser. Ruth sold 42 fruit baskets. Mari sold twice as many fruit baskets as Ruth. They sold each fruit basket for $9. What is the total amount of money Ruth and Mari made selling fruit baskets?

A. $126 total number of fruit baskets
B. $378 amount of money Ruth made
C. $756 amount of money Mari made
D. $1,134 *
A-F.1.1.2

11. Jason has a red pail and a blue pail that are the same size. The red pail is $\frac{3}{5}$ full with water. The blue pail is $\frac{9}{10}$ full with water. Which statement best explains why the blue pail has more water in it?

A. The numerator 9 is greater than the numerator 3.
   * Ignores the denominators

B. The denominator 10 is greater than the denominator 5.
   * Ignores the numerators

C. The fraction $\frac{3}{5}$ is equal to $\frac{6}{10}$, and $\frac{6}{10}$ is less than $\frac{9}{10}$.

D. The difference between the numerator and the denominator in $\frac{9}{10}$ is less than it is in $\frac{3}{5}$.
   * True only for fractions that have a common denominator and are less than or equal to 1

A-F.2.1.3

12. To make a repair, Jane needs a piece of wood that is $7\frac{1}{8}$ inches long. She has a piece of wood that is $12\frac{5}{8}$ inches long. How many inches of wood needs to be cut off so she has exactly $7\frac{1}{8}$ inches remaining?

A. $4\frac{4}{8}$
   * Borrows from the 12

B. 5
   * Just subtracts 12 – 7

C. $5\frac{4}{8}$
   * *

D. $5\frac{6}{8}$
   * Subtracts 12 – 7 but adds 5/8 + 1/8
13. In Mr. Thom’s marble collection, \( \frac{5}{12} \) of the marbles are glass and \( \frac{3}{12} \) of the marbles are steel. What fraction of the marbles in Mr. Thom’s marble collection are either glass or steel?

A. \( \frac{1}{6} \) subtracted fractions

B. \( \frac{1}{3} \) added numerators and denominators

C. \( \frac{5}{8} \) multiplied numerators and added denominators

D. \( \frac{2}{3} \) *

14. A fruit drink is made from orange juice and pineapple juice. Orange juice makes up \( \frac{7}{10} \) of the fruit drink. What is the amount of orange juice in 8 gallons of the fruit drink?

A. 1.5 gallons incorrect fraction (15/10), correct conversion

B. 5.6 gallons *

C. 15 gallons incorrect fraction (15/10), incorrect conversion

D. 56 gallons correct fraction (56/10), incorrect conversion
15. On Jenny’s farm \( \frac{48}{100} \) of the trees are pine trees and \( \frac{3}{10} \) of the trees are birch trees. What decimal number is equal to the fraction of the trees on Jenny’s farm that are either pine trees or birch trees?

A. 0.051  
   *incorrect sum of 51/100 and incorrect placement of decimal point*

B. 0.078  
   *correct sum of 78/100 but incorrect placement of decimal point*

C. 0.51  
   *incorrect sum of 51/100 but correct placement of decimal point*

D. 0.78  
   *incorrect comparison*

16. Which statement correctly compares 10.26 and 10.35?

A. Since 2 + 6 = 8 and 3 + 5 = 8, 10.26 = 10.35.  
   *added the numbers after the decimal to establish their values*

B. Since the whole numbers are the same, 10.26 = 10.35.  
   *compared the whole values correctly, but stopped there*

C. Since the 2 in the tenths place is less than 3, 10.26 < 10.35.  
   *correct comparison*

D. Since the 6 in the hundredths place is greater than 5, 10.26 > 10.35.  
   *compared the decimal values from right to left instead of left to right*
**PSSA MATHEMATICS**

**B-O.1.1.1**

17. Leo and Rachel have boxes of chalk.
   - Leo has 6 boxes with 8 pieces in each box.
   - Rachel has 8 boxes with 6 pieces in each box.

Which number sentence correctly shows the relationship between the total number of pieces of chalk in Leo’s and Rachel’s boxes?

A. \( 6 + 8 = 8 + 6 \)  
   *uses addition instead of multiplication*

B. \( 6 + 8 < 8 + 6 \)  
   *chooses the inequality sign based on the first number in each addition expression*

C. \( 6 \times 8 = 8 \times 6 \)

D. \( 6 \times 8 < 8 \times 6 \)  
   *chooses the inequality sign based on the first number in each multiplication expression*

**B-O.1.1.3**

18. Peter, Ingrid, and Anna collect posters. Peter has 14 posters. Ingrid has 6 more posters than Peter. Anna has 3 times as many posters as Ingrid. How many posters do Peter, Ingrid, and Anna have altogether?

A. 46  
   *used 8 posters \((14 - 6)\) for Ingrid and 24 posters \((3 \times 8)\) for Anna*

B. 76  
   *used 42 posters \((3 \times 14)\) for Anna*

C. 94  
   *

D. 104  
   *used 42 posters \((3 \times 14)\) for Anna and 48 posters \((42 + 6)\) for Ingrid*
19. Omar has 25 books. Nan has 3 times as many books as Omar. Nan stores her books in boxes that hold 6 books each. She fills as many boxes as she can and puts the remaining books on a shelf. How many books does Nan put on the shelf?

A. 1 \( \text{divides } 25 \text{ by } 6 \)
B. 3 *
C. 4 \( \text{divides } 28 \text{ by } 6 \) (thinks Nan has 3 more books than Omar)
D. 5 \( \text{interprets the 5 in } 12.5 \text{ as 5 remaining books} \)

20. On vacation, Lou took \( p \) photographs. He used 4 times as many memory cards as Kathy. Kathy used 2 memory cards and each card contained 240 photographs. Which equation shows how many photographs (\( p \)) Lou took while on vacation?

A. \( 4 + p = 2 \times 240 \) \( \text{interprets “4 times as many” as “4 +” AND switches Lou’s amount with Kathy’s amount} \)
B. \( 4 + 2 \times 240 = p \) \( \text{interprets “4 times as many” as “4 +”} \)
C. \( 4 \times p = 2 \times 240 \) \( \text{switches Lou’s amount with Kathy’s amount} \)
D. \( 4 \times 2 \times 240 = p \) *

* clues
B-O.1.1.4

21. Mr. Jones has 50 paintbrushes to give to each of his two art classes.

- His first class has 7 students.
- His second class has 9 students.

During class, Mr. Jones gives each student the same number of paintbrushes. He gives out as many paintbrushes as possible. He then writes the statement shown below to compare the number of paintbrushes he has remaining from each class.

number remaining from the first class \( \square \) number remaining from the second class

What symbol should go into the \( \square \) to make the comparison true?

A. <  

B. >  

C. =  

D. ÷  

B-O.2.1.1

22. How many numbers are both multiples of 4 and factors of 36?

A. 0  

B. 1  

C. 2  

D. 3  

*
B-O.3.1

23. Paula starts making a pattern by drawing the shapes shown below.

Shape 1  Shape 2  Shape 3  Shape 4

The pattern continues. How many sides will Shape 20 have?

A. 17  subtracts 3 from the shape number
B. 20  thinks the number of sides is equal to the shape number
C. 22  adds 2 to the shape number
D. 23

B-O.3.1.2

24. Jarod keeps his coin collection in a coin book. The table below shows the total number of coins he has stored based on the number of pages with coins.

<table>
<thead>
<tr>
<th>Number of Pages</th>
<th>Number of Coins</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>42</td>
</tr>
<tr>
<td>11</td>
<td>66</td>
</tr>
<tr>
<td>15</td>
<td>90</td>
</tr>
</tbody>
</table>

How many coins does Jarod store on each page of the book?

A. 4  pattern from the left column
B. 6  *
C. 18  first number in the “Number of Coins” column
D. 24  pattern from the right column
Mrs. Lawson plants the same number of flowers in her garden each week. The table below shows the total number of flowers in her garden at the end of weeks 2, 3, and 4.

<table>
<thead>
<tr>
<th>Week</th>
<th>Number of Flowers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>?</td>
</tr>
</tbody>
</table>

The pattern continues. Which number sentence could be used to find the number of flowers in Mrs. Lawson’s garden at the end of week 5?

A. 5 + 4 = 9  
   recognizes a pattern (add 4) but adds it to Week

B. 5 + 12 = 17  
   since 4 + 12 = 16

C. 5 × 4 = 20  
   *

D. 5 × 5 = 25  
   since 4 × 4 = 16
B-O.3.1.3

26. The cost for Akito to call his aunt in Japan is shown in the table below.

<table>
<thead>
<tr>
<th>Time (minutes)</th>
<th>Cost (cents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>40</td>
</tr>
</tbody>
</table>

Which pair of equations show two different ways Akito could find the cost to call his aunt for 5 minutes?

A. $40 + 40 = 80$ and $40 \times 2 = 80$

\textit{thinks the amount doubles each time, just looking at the first two values in the table}

B. $40 + 5 = 45$ and $5 \times 9 = 45$

\textit{thinks the previous cost should be added to the number of minutes (and then comes up with a multiplication equation to match)}

C. $40 + 10 = 50$ and $5 \times 10 = 50$

* 

D. $40 + 160 = 200$ and $40 \times 5 = 200$

\textit{thinks the previous cost should be multiplied by 5 (and then comes up with an addition equation to match)}
27. Marisa is using the right triangle, rectangle, rhombus, and square shown below for an art project.

Marisa cuts one of the shapes along a line of symmetry to form two new shapes. The two new shapes can be identified by the same shape name as the shape that was cut. Which shape did Marisa cut?

A. no line of symmetry

B.  

C. line of symmetry would form 2 triangles

D. line of symmetry would form 2 rectangles or 2 triangles
C-G.1.1

28. The top of Ricky’s kitchen table has exactly one pair of parallel sides. Which figure could be the shape of the top of Ricky’s kitchen table?

A. [Diagram: Trapezoid with one pair of parallel sides]  
   B. [Diagram: Rectangle with two pairs of parallel sides]
   C. [Diagram: Pentagon with no parallel sides]  
   D. [Diagram: Circle with no parallel sides]

C-G.1.1.2

29. A company chooses a shape for its new logo. The shape has only obtuse angles and exactly three sets of parallel line segments. Which shape could be the new logo?

A. hexagon  
   B. pentagon [Note: Could contain only obtuse angles but not three sets of parallel line segments]
   C. square [Note: Contains no obtuse angles and only two sets of parallel line segments]
   D. triangle [Note: Contains one obtuse angle at most and no parallel line segments]
30. Jeremy has a gameboard which folds along a line of symmetry that is perpendicular to one side of the board. Which figure could be Jeremy’s gameboard with its line of symmetry?

A. 

B. 

C. 

D. 

*line of symmetry, but not perpendicular

*perpendicular, but not a line of symmetry

*line of symmetry, but not perpendicular
31. A triangular store display is built from three pieces of wood. Exactly two of the pieces of wood are the same size, and the angle formed by these two pieces of wood is an obtuse angle. Which picture could be the shape of the triangular display?

A. obtuse angle, but no congruent sides

B. *

C. exactly two congruent sides, but no obtuse angles

D. three congruent sides, and no obtuse angles
32. Which shape has both a line of symmetry and an obtuse angle?

A. \[
\begin{array}{c}
\text{has a line of symmetry,} \\
\text{but no obtuse angles}
\end{array}
\]

B. \[
\begin{array}{c}
\text{has obtuse angle, but} \\
\text{no line of symmetry}
\end{array}
\]

C. \[
\begin{array}{c}
\text{has obtuse angle, but} \\
\text{no line of symmetry}
\end{array}
\]

D. \[
\begin{array}{c}
\text{has a line of symmetry,} \\
\text{but no obtuse angles}
\end{array}
\]

33. Jason bought a rectangular canvas and a square canvas with the same perimeter. The rectangular canvas is shown below.

\[
\text{Rectangular Canvas}
\]

1 yard

3 yards

What is the length, in feet, of one side of the square canvas?

A. 2 \[
\text{length, in yards, of one side of square canvas}
\]

B. 3 \[
\text{adds only 3 and 9 to get perimeter of 12}
\]

C. 6 \[
\star
\]

D. 9 \[
\text{length, in feet, of longer side of rectangular canvas}
\]
34. Mikail rode her bike $1\frac{3}{4}$ miles from her school to the park. She then rode her bike $2\frac{3}{4}$ miles from the park to her home. What is the total distance Mikail rode her bike from her school, to the park, and to her home?

A. $3\frac{3}{8}$ miles

B. $3\frac{2}{4}$ miles

C. $3\frac{6}{8}$ miles

D. $4\frac{2}{4}$ miles

35. Lucy started knitting a scarf at a quarter to 5. She finished knitting the scarf at 10 minutes after 7. How many minutes did it take Lucy to knit the scarf?

A. 115

B. 125

C. 145

D. 225
Ellie is sorting books based on their thickness in inches. She makes a bar graph to show the number of books she has of each thickness.

<table>
<thead>
<tr>
<th>Thickness (inches)</th>
<th>Number of Books</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>1</td>
</tr>
<tr>
<td>1/2</td>
<td>6</td>
</tr>
<tr>
<td>3/4</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Ellie stacks all of the books on top of one another. How thick is Ellie’s stack of books?

A. $2 \frac{1}{2}$ inches *adds one of each different thicknesses*

B. $5 \frac{3}{4}$ inches *forgets to include the three 1-inch books*

C. $8 \frac{3}{4}$ inches *

D. 14 inches *counts the total number of books*
37. In the time it took Gia to run a mile, five other runners had run the distances, in miles, shown below.

\[
\begin{array}{ccccccc}
1 & 2 & 3 & 4 & 5 & 6 & 7 \\
5 & 8 & 3 & 7 & 7 & 8 & 8 \\
\end{array}
\]

Which line plot shows the distances, in miles, the other five runners had run?

A. Running Distances

```
0 1 2 3 4 5 6 7 1
8 8 8 8 8 8 8 8 8
```

Distance (miles)

- only uses the numerators

B. Running Distances

```
0 1 2 3 4 5 6 7 1
8 8 8 8 8 8 8 8 8
```

Distance (miles)

- *

C. Running Distances

```
0 1 2 3 4 5 6 7 1
8 8 8 8 8 8 8 8 8
```

Distance (miles)

- includes just one x for each unique value

D. Running Distances

```
0 1 2 3 4 5 6 7 1
8 8 8 8 8 8 8 8 8
```

Distance (miles)

- correctly converts 1/2 to 4/8 but incorrectly converts 3/4 to 3/8
38. Craig draws two angles. The smaller angle is an acute angle, and the larger angle is an obtuse angle. The measure of the smaller angle is 10° less than the measure of the larger angle. Both angle measures are whole numbers of degrees. What is the greatest possible measure of the larger angle?

A. 89°  
   greatest possible measure of the smaller angle
B. 91°  
   least possible measure of the larger angle
C. 99°  
D. 100°  
   thinks 90° angle is acute

39. At 11:00, the hands of a clock form a 30° angle.

What is the measure of the angle formed by the clock hands at 8:00?

A. 60°  
   doubles given angle
B. 90°  
   angle formed by hands pointing to 8 and 11
C. 120°  
D. 150°  
   angle formed at 7 o’clock
D-M.3.1.2

40. Three cables holding up a pole are shown below.

The angle between cable SQ and cable SR is 25°. The angle between cable SP and cable SR is 65°. What is the measure of the angle between cable SP and cable SQ?

A. 25° \(\text{assumes both smaller angles are congruent}\)
B. 30° \(\text{answers by appearance, noting that the larger angle is only slightly larger than QSR}\)
C. 40° \(*\)
D. 90° \(\text{adds the two angle measures together}\)
Joanne is counting her art supplies. She has 32 bottles of paint. That is 4 times the number of paint brushes she has.

A. How many paint brushes does Joanne have?

B. Write a number sentence that can be used to find m.
Joanie has 127 crayons. She equally divides as many of her crayons as possible into 8 boxes.

C. What is the greatest number of crayons Joanie can put into each box? Show or explain all your work.

Joanie wants to fill 3 more boxes with the same number of crayons as determined in part C.

D. How many more crayons does Joanie need? Show or explain all your work.
ITEM-SPECIFIC SCORING GUIDELINE

Question #41

Grade 4

Assessment Anchor this item will be reported under:

M04.B-O.1–Use the four operations with whole numbers to solve problems.

Specific Anchor Descriptor addressed by this item:

M04.B-O.1.1–Use numbers and symbols to model the concepts of expressions and equations.

Scoring Guide:

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<tbody>
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<td>Demonstrates a thorough understanding of using the four operations with whole numbers by correctly solving problems and clearly explaining procedures.</td>
</tr>
<tr>
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Non-scorables

BLK (blank) .......Blank, entirely erased, or written refusal to respond
OT .....................Off-task
LOE ...................Response in a language other than English
IL .......................Illegible

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Question #41

Top Scoring Response:

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<tr>
<th>Part A Answer</th>
<th>What?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 (paint brushes)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(½ score point)
½ point for correct answer

<table>
<thead>
<tr>
<th>Part B Answer</th>
<th>What?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>44 = 2 × m + 16</td>
<td>OR equivalent</td>
<td></td>
</tr>
</tbody>
</table>

(½ score point)
½ point for correct answer

<table>
<thead>
<tr>
<th>Part C Answer</th>
<th>What?</th>
<th>Why?</th>
</tr>
</thead>
</table>
| 15 (crayons) | **Sample Work:**  
127 ÷ 8 = 15 R7  
OR  
**Sample Explanation:**  
Joanie can put up to 15 crayons into each box. This would leave her with 7 extra crayons, which is not enough to put 1 more into each box. | |

(1½ score points)
½ point for correct answer  
1 point for complete support  
OR ½ point for correct but incomplete support

<table>
<thead>
<tr>
<th>Part D Answer</th>
<th>What?</th>
<th>Why?</th>
</tr>
</thead>
</table>
| 38 (crayons) | **Sample Work:**  
8 + 3 = 11  
11 × 15 = 165  
165 − 127 = 38  
OR  
**Sample Explanation:**  
To fill 3 more boxes with the same number of crayons, Joanie would need 3 × 15 = 45 extra crayons. Since she already has 7 crayons remaining from the 127, Joanie would need only 38 more crayons to fill the 3 boxes. | |

(1½ score points)
½ point for correct answer  
1 point for complete support  
OR ½ point for correct but incomplete support
Joanie is counting her art supplies. She has 32 bottles of paint. That is 4 times the number of paint brushes she has.

A. How many paint brushes does Joanie have?

B. Write a number sentence that can be used to find m.

\[ 44 = 2m + 16 \]
Joanie has 127 crayons. She equally divides as many of her crayons as possible into 8 boxes.

C. What is the greatest number of crayons Joanie can put into each box? Show or explain all your work.

\[
\begin{align*}
127 \div 8 &= 15 \text{ with a remainder of } 7 \\
\text{So } 15 \text{ is the most because then there are only } 7 \text{ left so not enough for all the boxes}
\end{align*}
\]

The student has given a correct answer. The student has shown complete support.

Joanie wants to fill 3 more boxes with the same number of crayons as determined in part C.

D. How many more crayons does Joanie need? Show or explain all your work.

\[
\begin{align*}
3 \times 15 &= 45 \\
\text{She has } 7 \text{ left already} \\
45 - 7 &= 38 \\
\text{So } 38 \text{ more}
\end{align*}
\]

The student has given a correct answer. The student has shown complete support.
Joanie is counting her art supplies.

She has 32 bottles of paint. That is 4 times the number of paint brushes she has.

**A.** How many paint brushes does Joanie have?

32 ÷ 4 = 8

The student has given a correct answer.

Joanie has a total of 44 markers. She has 1 pack that has 16 markers in it. She has 2 packs that each have \( m \) markers.

**B.** Write a number sentence that can be used to find \( m \).

\[ m - 44 + 16 \times 2 \]

The student has given an incorrect answer.
Joanie has 127 crayons. She equally divides as many of her crayons as possible into 8 boxes.

C. What is the greatest number of crayons Joanie can put into each box? Show or explain all your work.

The student has given a correct answer.
The student has shown complete support.

127 ÷ 8 = 15 \text{ and there are 7 left}

D. How many more crayons does Joanie need? Show or explain all your work.

The student has given an incorrect answer due to a calculation error.
The student has shown complete support.

127 \text{ now}
127 + 15 + 15 + 15 = 172
172 - 7 = 165
165 - 127 = 35
Joanie is counting her art supplies.
She has 32 bottles of paint. That is 4 times the number of paint brushes she has.

A. How many paint brushes does Joanie have?

\[ \text{eq} \]
8

The student has given a correct answer.

Joanie has a total of 44 markers. She has 1 pack that has 16 markers in it. She has 2 packs that each have \( m \) markers.

B. Write a number sentence that can be used to find \( m \).

\[ \text{eq} \]
\( m - 16 \times 2 \)

The student has given an incorrect answer.
Joanie has 127 crayons. She equally divides as many of her crayons as possible into 8 boxes.

C. What is the greatest number of crayons Joanie can put into each box? Show or explain all your work.

I think 15 cuz 127 ÷ 8 = 15

Joanie wants to fill 3 more boxes with the same number of crayons as determined in part C.

D. How many more crayons does Joanie need? Show or explain all your work.

I think 36 cuz she needs that many more.
B-O.1 Response Score: 1

Joanie is counting her art supplies. She has 32 bottles of paint. That is 4 times the number of paint brushes she has.

A. How many paint brushes does Joanie have?

\[ 32 \div 4 = 8 \]

B. Write a number sentence that can be used to find how many packs of markers she has if she has 16 markers in each pack. She has 2 packs of markers.

\[ m \times 2 \]
Question 41

Joanie has 127 crayons. She equally divides as many of her crayons as possible into 8 boxes.

C. What is the **greatest** number of crayons Joanie can put into each box? Show or explain all your work.

```
\[ \frac{127}{8} \]
```

Joanie wants to fill 3 more boxes with the same number of crayons as determined in **part C**.

D. How many more crayons does Joanie need? Show or explain all your work.

```
\[ 3 \times \frac{127}{8} \]
```

The student has given an incorrect answer.

The student has given an incorrect answer.
Joanie is counting her art supplies.

She has 32 bottles of paint. That is 4 times the number of paint brushes she has.

A. How many paint brushes does Joanie have?

\[
32 \times 4 = 128
\]

The student has given an incorrect answer.

Joanie has a total of 44 markers. She has 1 pack that has 16 markers in it. She has 2 packs that each have \( m \) markers.

B. Write a number sentence that can be used to find \( m \).

\[
m = \]

The student has given an incorrect answer.
Question 41

Joanie has 127 crayons. She equally divides as many of her crayons as possible into 8 boxes.

What is the greatest number of crayons Joanie can put into each box? Show or explain all your work.

A. $127 + 8 = 135$

B. 13

C. What is the greatest number of crayons Joanie can put into each box? Show or explain all your work.

D. How many more crayons does Joanie need? Show or explain all your work.

The student has given an incorrect answer. The student has shown incorrect support.

The student has given an incorrect answer. The student has shown no support.
SECOND OPEN-ENDED QUESTION

C-G.1

42. A square flag is shown below.

A. On the flag shown below, draw two lines of symmetry that are perpendicular to each other.

B. Explain how someone could know that the lines you drew in part A are lines of symmetry.

Go to the next page to finish question 42.
42. *Continued.* Please refer to the previous page for task explanation.

C. Explain how someone could know that the lines you drew in part A are perpendicular to each other.

D. Explain why it is not possible to draw two different lines of symmetry that are parallel to each other.
ITEM-SPECIFIC SCORING GUIDELINE

Question #42

Grade 4

Assessment Anchor this item will be reported under:

M04.C-G.1–Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Specific Anchor Descriptor addressed by this item:

M04.C-G.1.1–List properties, classify, draw, and identify geometric figures in two dimensions.

Scoring Guide:

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<tr>
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<td>Demonstrates a thorough understanding of drawing and identifying lines and classifying shapes by correctly solving problems and clearly explaining procedures.</td>
</tr>
<tr>
<td>3</td>
<td>Demonstrates a general understanding of drawing and identifying lines and classifying shapes by correctly solving problems and clearly explaining procedures with only minor errors or omissions.</td>
</tr>
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</tr>
<tr>
<td>1</td>
<td>Demonstrates minimal understanding of drawing and identifying lines and classifying shapes.</td>
</tr>
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Non-scorables

BLK (blank) ............Blank, entirely erased, or written refusal to respond
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</tr>
</tbody>
</table>
| 1     | Student earns 0.5 – 1.5 points.  
    OR  
    Student demonstrates minimal understanding of drawing and identifying lines and classifying shapes. |
| 0     | Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured. |
Question #42

Top Scoring Response:

<table>
<thead>
<tr>
<th>Part A Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What?</td>
</tr>
<tr>
<td>Flag</td>
</tr>
<tr>
<td>OR</td>
</tr>
</tbody>
</table>

(1 score point)
1 point for correct answer
OR ½ point for incomplete response (only 1 line drawn, or lines of symmetry are not perpendicular, or lines are perpendicular but are not lines of symmetry)

<table>
<thead>
<tr>
<th>Part B Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What?</td>
</tr>
<tr>
<td>Sample Explanation:</td>
</tr>
</tbody>
</table>

(1 score point)
1 point for complete explanation
OR ½ point for correct but incomplete explanation

<table>
<thead>
<tr>
<th>Part C Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What?</td>
</tr>
<tr>
<td>Sample Explanation:</td>
</tr>
</tbody>
</table>

(1 score point)
1 point for complete explanation
OR ½ point for correct but incomplete explanation

<table>
<thead>
<tr>
<th>Part D Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What?</td>
</tr>
<tr>
<td>Sample Explanation:</td>
</tr>
</tbody>
</table>

(1 score point)
1 point for complete explanation
OR ½ point for correct but incomplete explanation
SECOND OPEN-ENDED QUESTION RESPONSES

C-G.1 Response Score: 4

42. A square flag is shown below.

A. On the flag shown below, draw two lines of symmetry that are perpendicular to each other.

![Flag](image)

The student has given a correct answer.

B. Explain how someone could know that the lines you drew in part A are lines of symmetry.

> when you fold them on the lines they are exactly the same on both sides.

The student has given a complete explanation.

Go to the next page to finish question 42.
42. **Continued.** Please refer to the previous page for task explanation.

C. Explain how someone could know that the lines you drew in part A are perpendicular to each other.

Where they cross there are right angles.

[Box: The student has given a complete explanation.]

D. Explain why it is not possible to draw two different lines of symmetry that are parallel to each other.

A line of symmetry divides into 2 halves that are just exactly alike so if a line is parallel it won’t be in the same exact place as the first line so the halves won’t be the same any more.

[Box: The student has given a complete explanation.]
42. A square flag is shown below.

**A.** On the flag shown below, draw two lines of symmetry that are perpendicular to each other.

![Flag with two lines of symmetry](image.png)

The student has given a correct answer.

**B.** Explain how someone could know that the lines you drew in **part A** are lines of symmetry.

"The 2 halves are exactly the same on both sides."

The student has given a complete explanation.
42. **Continued.** Please refer to the previous page for task explanation.

C. Explain how someone could know that the lines you drew in part A are perpendicular to each other.

They cross each other

The student has given a correct but incomplete explanation.

D. Explain why it is **not** possible to draw two different lines of symmetry that are parallel to each other.

The lines would have to be on top of each other so the two halves would be the same so then they would not be two different lines that would be parallel.

The student has given a complete explanation.
42. A square flag is shown below.

A. On the flag shown below, draw two lines of symmetry that are perpendicular to each other.

B. Explain how someone could know that the lines you drew in part A are lines of symmetry.

Both sides of the lines are the same. When you fold them everything matches.

Go to the next page to finish question 42.
42. **Continued.** Please refer to the previous page for task explanation.

**C.** Explain how someone could know that the lines you drew in part A are perpendicular to each other.

They make squares

The student has given a correct but incomplete explanation.

**D.** Explain why it is **not** possible to draw two different lines of symmetry that are parallel to each other.

They would not be lines of symmetry.

The student has given an insufficient explanation.
42. A square flag is shown below.

**A.** On the flag shown below, draw two lines of symmetry that are perpendicular to each other.

**B.** Explain how someone could know that the lines you drew in **part A** are lines of symmetry.

they are the same.

---

The student has given a correct answer.

The student has given an insufficient explanation.
42.  **Continued.** Please refer to the previous page for task explanation.

C. Explain how someone could know that the lines you drew in part A are perpendicular to each other.

```
they are like a flag.
```

The student has given an incorrect explanation.

D. Explain why it is not possible to draw two different lines of symmetry that are parallel to each other.

```
they are next to each other.
```

The student has given an incorrect explanation.
42. A square flag is shown below.

A. On the flag shown below, draw two lines of symmetry that are perpendicular to each other.

B. Explain how someone could know that the lines you drew in part A are lines of symmetry.

The student has given an incorrect answer.

They have symmetry

The student has given an incorrect explanation.

Go to the next page to finish question 42.
42. **Continued.** Please refer to the previous page for task explanation.

C. Explain how someone could know that the lines you drew in part A are perpendicular to each other.

![Student response: They are perpendicular.]

The student has given an incorrect explanation.

D. Explain why it is not possible to draw two different lines of symmetry that are parallel to each other.

![Student response: They are parallel.]

The student has given an incorrect explanation.
**THIRD OPEN-ENDED QUESTION**

D-M.3

43. Every day, Liban walks the same route to school.

The diagram below shows a part of the route he walks.

![Diagram of First Street and Third Avenue]

**A.** Using your protractor, what is the measure of the angle, in degrees, created by First Street and Third Avenue?

As Liban continues his route, Third Avenue meets School Lane. The angle created by Third Avenue and School Lane is 115°.

**B.** Using your protractor and the line segment shown below, draw the angle created by Third Avenue and School Lane.

![Line segment for Third Avenue]

Go to the next page to finish question 43.
On Friday, Liban walked to the park after school. When he looked at the playground, he noticed many different angles, including the ones shown below.

Combined, the three angles have a measure of 180°. Liban tried to find the measure of the middle angle using the work shown below.

\[180° - 78° + 75° = ?\]

\[177° = ?\]

Liban’s answer is not correct.

**C.** Explain the error Liban made.

**D.** What is the measure, in degrees, of the middle angle?
ITEM-SPECIFIC SCORING GUIDELINE

Question #43

Grade 4

Assessment Anchor this item will be reported under:

M04.D-M.3–Geometric measurement: understand concepts of angles and measure angles

Specific Anchor Descriptor addressed by this item:

M04.D-M.3.1–Use appropriate tools and units to sketch an angle and determine angle measurements.

Scoring Guide:

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Question #43

Top Scoring Response:

<table>
<thead>
<tr>
<th>Part A Answer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What?</strong></td>
<td>61°</td>
</tr>
<tr>
<td><strong>Why?</strong></td>
<td></td>
</tr>
</tbody>
</table>

(1 score point)
1 point for correct answer

<table>
<thead>
<tr>
<th>Part B Answer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What?</strong></td>
<td>Answers may vary. Accept any angle that measures between (and including) 113° and 117°.</td>
</tr>
<tr>
<td><strong>Why?</strong></td>
<td></td>
</tr>
</tbody>
</table>

Sample Response:

Third Avenue

(1 score point)
1 point for correct answer

<table>
<thead>
<tr>
<th>Part C Answer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What?</strong></td>
<td>Sample Explanation:</td>
</tr>
<tr>
<td><strong>Why?</strong></td>
<td>Liban should have subtracted 75° from 180° instead of adding it.</td>
</tr>
<tr>
<td></td>
<td>OR Liban should have set up his problem like 78° + ? + 75° = 180°.</td>
</tr>
</tbody>
</table>

(1 score point)
1 point for complete support

<table>
<thead>
<tr>
<th>Part D Answer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What?</strong></td>
<td>27°</td>
</tr>
<tr>
<td><strong>Why?</strong></td>
<td></td>
</tr>
</tbody>
</table>

(1 score point)
1 point for correct answer
43. Every day, Liban walks the same route to school.

A. Using your protractor, what is the measure of the angle, in degrees, created by First Street and Third Avenue?

The student has given a correct answer.

As Liban continues his route, Third Avenue meets School Lane. The angle created by Third Avenue and School Lane is $115^\circ$.

B. Using your protractor and the line segment shown below, draw the angle created by Third Avenue and School Lane.

The student has given a correct answer.

Go to the next page to finish question 43.
On Friday, Liban walked to the park after school. When he looked at the playground, he noticed many different angles, including the ones shown below.

\[ \begin{align*}
78° & \quad 75° \\
? & \\
\end{align*} \]

Combined, the three angles have a measure of 180°. Liban tried to find the measure of the middle angle using the work shown below.

\[ 180° - 78° + 75° = ? \]

\[ 177° = ? \]

Liban’s answer is not correct.

C. Explain the error Liban made.

The student has given a complete explanation.

D. What is the measure, in degrees, of the middle angle?

\[ 27° \]

The student has given a correct answer.
43. Every day, Liban walks the same route to school.

The diagram below shows a part of the route he walks.

A. Using your protractor, what is the measure of the angle, in degrees, created by First Street and Third Avenue?

The student has given an incorrect answer.

As Liban continues his route, Third Avenue meets School Lane. The angle created by Third Avenue and School Lane is 115°.

B. Using your protractor and the line segment shown below, draw the angle created by Third Avenue and School Lane.

The student has given a correct answer.

Go to the next page to finish question 43.
On Friday, Liban walked to the park after school. When he looked at the playground, he noticed many different angles, including the ones shown below.

\[ \begin{array}{c}
\text{?} \\
78^\circ \\
75^\circ
\end{array} \]

Combined, the three angles have a measure of 180°. Liban tried to find the measure of the middle angle using the work shown below.

\[ 180^\circ - 78^\circ + 75^\circ = ? \]
\[ 177^\circ = ? \]

Liban’s answer is not correct.

C. Explain the error Liban made.

He did add 75° instead of subtract it.

The student has given a correct explanation.

D. What is the measure, in degrees, of the middle angle?

\[ 180 - 78 - 75 = 27^\circ \]

The student has given a correct answer.
Every day, Liban walks the same route to school.

The diagram below shows a part of the route he walks.

A. Using your protractor, what is the measure of the angle, in degrees, created by First Street and Third Avenue?

As Liban continues his route, Third Avenue meets School Lane. The angle created by Third Avenue and School Lane is 115°.

B. Using your protractor and the line segment shown below, draw the angle created by Third Avenue and School Lane.

Go to the next page to finish question 43.
On Friday, Liban walked to the park after school. When he looked at the playground, he noticed many different angles, including the ones shown below.

Combined, the three angles have a measure of 180°. Liban tried to find the measure of the middle angle using the work shown below.

\[
180° - 78° + 75° = ?
\]

\[
177° = ?
\]

Liban’s answer is not correct.

C. Explain the error Liban made.

\[\text{It should be } 180°\]

The student has given an incorrect explanation.

D. What is the measure, in degrees, of the middle angle?

\[180°\]

The student has given an incorrect answer.
43. Every day, Liban walks the same route to school.

The diagram below shows a part of the route he walks.

A. Using your protractor, what is the measure of the angle, in degrees, created by First Street and Third Avenue?

The student has given an incorrect answer.

As Liban continues his route, Third Avenue meets School Lane. The angle created by Third Avenue and School Lane is 115°.

B. Using your protractor and the line segment shown below, draw the angle created by Third Avenue and School Lane.

The student has given an incorrect answer.

Go to the next page to finish question 43.
43. **Continued.** Please refer to the previous page for task explanation.

On Friday, Liban walked to the park after school. When he looked at the playground, he noticed many different angles, including the ones shown below.

\[ \begin{align*}
78° & \quad 75° \\
\text{?} & \\
\end{align*} \]

Combined, the three angles have a measure of 180°. Liban tried to find the measure of the middle angle using the work shown below.

\[ 180° - 78° + 75° = ? \]
\[ 177° = ? \]

Liban’s answer is not correct.

**C.** Explain the error Liban made.

**D.** What is the measure, in degrees, of the middle angle?

\[ 27° \]
43. Every day, Liban walks the same route to school.

The diagram below shows a part of the route he walks.

A. Using your protractor, what is the measure of the angle, in degrees, created by First Street and Third Avenue?

The student has given an incorrect answer.

As Liban continues his route, Third Avenue meets School Lane. The angle created by Third Avenue and School Lane is $115°$.

B. Using your protractor and the line segment shown below, draw the angle created by Third Avenue and School Lane.

The student has given an incorrect answer.

Go to the next page to finish question 43.
On Friday, Liban walked to the park after school. When he looked at the playground, he noticed many different angles, including the ones shown below.

\[
\begin{align*}
78^\circ & \quad 75^\circ \\
\end{align*}
\]

Combined, the three angles have a measure of 180°. Liban tried to find the measure of the middle angle using the work shown below.

\[
180^\circ - 78^\circ + 75^\circ = ?
\]

\[
177^\circ = ?
\]

Liban’s answer is not correct.

C. Explain the error Liban made.

He didn't know how to subtract and add

The student has given an incorrect explanation.

D. What is the measure, in degrees, of the middle angle?

\[
78 + 75 = 153
\]

The student has given an incorrect answer.