Steck-Vaughn Adult Education

Aztec Paxen Publishing

Math

Level C

Sampler

A Tutor™ for CASAS GOALS 2 Workbook

- Companion workbook to *A Tutor™ for CASAS GOALS 2 Student Edition*
- Additional practice items aligned to CASAS GOALS 2 and CCRS

Aztec Paxen Publishing

Math

A Tutor™ for CASAS GOALS 2 Workbook

Level C

Trademarks: The *A Tutor* Series is a trademark of Aztec Software, LLC. *A Tutor™ for CASAS* is not endorsed or approved by CASAS.

Photo credits: iStock.com/wildpixel (cover), iStock.com/Deagreez (p. 89), iStock.com/kutaytanir (p. 138), iStock.com/Xacto (p. 139)

ISBN: 979-8-89141-066-4

Copyright by Aztec Software, LLC. All rights reserved. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying or recording, or by any information storage or retrieval system, without the prior written permission of the copyright owner, unless such copying is expressly permitted by federal copyright law. Requests for permission to make copies of any part of the work should be addressed to permissions@aztecsoftware.com or Aztec Software, LLC, 461 Headquarters Plaza North Tower, 2nd Floor, Morristown, NJ, 07960.

Printed in the U.S.A.

334 PX2040 34 33 32 31 30 29 28 27 26 25

A B C D E F

Contents

About CASAS Math GOALS 2 v

Using *A Tutor™ for CASAS Math GOALS 2 Workbook* vi

Test-Taking Tips vii

Unit 1 Number Sense and Operations

Practice 1 Add and Subtract Whole Numbers 2
Practice 2 Multiply Whole Numbers 4
Practice 3 Divide Whole Numbers 6
Practice 4 Fractions as Division 8
Practice 5 Computations with Decimals 10
Practice 6 Add and Subtract Fractions and Mixed Numbers 12
Practice 7 Multiply Fractions 14
Practice 8 Multiply Fractions and Mixed Numbers 16
Practice 9 Divide Fractions 18
Practice 10 Divide Fractions and Mixed Numbers 20
Practice 11 Properties of Exponents 22

Unit 1 Review 24

Unit 2 Ratios and Percentages

Practice 12 Equivalent Ratios 26
Practice 13 Understand Unit Rate 28
Practice 14 Calculate Unit Rates 30
Practice 15 Solve Problems Involving Ratios 32
Practice 16 Relate Benchmark Decimals to Percentages 34
Practice 17 Relate Benchmark Fractions to Percentages 36
Practice 18 Percent of a Quantity 38
Practice 19 Calculate Percent Greater than 100% and Less than 1% 40
Practice 20 Proportional Relationships and Tables 42
Practice 21 Proportional Relationships and Graphs 44
Practice 22 Constant of Proportionality 46
Practice 23 Direct Variation 48
Practice 24 Unit Rate in Proportional Relationships 50

Unit 2 Review 52

Unit 3 Algebraic Thinking

Practice 25 Solve Problems with Equations 54
Practice 26 Solve Simple Inequalities 56
Practice 27 Unknown Numbers in Equations and Inequalities 58
Practice 28 Solve Two-Step Equations 60
Practice 29 Solve Two-Step Inequalities 62
Practice 30 Interpret Relationships Between Variables 64

Unit 3 Review 66

Unit 4 Geometry

Practice 31 Understand Angles 68
Practice 32 Transformations: Congruency 70
Practice 33 Transformations: Similarity 72
Practice 34 The Pythagorean Theorem 74
Practice 35 The Pythagorean Theorem and Coordinate Plane 76

Unit 4 Review 78

Unit 5 Measurement

Practice 36 Convert Metric Measurements 80
Practice 37 Convert Customary Measurements 82
Practice 38 Use Ratios to Convert Measurements 84
Practice 39 Understand Scale Drawings 86
Practice 40 Solve Problems Involving Scale 88
Practice 41 Perimeter and Area of Rectangles 90
Practice 42 Area of Polygons 92
Practice 43 Area of Triangles 94
Practice 44 Circumference of a Circle 96
Practice 45 Area of a Circle 98
Practice 46 Solve Problems with Area 100
Practice 47 Understand Surface Area 102
Practice 48 Solve Problems with Surface Area 104
Practice 49 Use the Unit Cube to Understand Volume 106
Practice 50 Use the Volume Formula 108
Practice 51 Volume of Composed Figures 110
Practice 52 Solve Problems with Volume 112

Unit 5 Review 114

Unit 6 Data Analysis and Statistics

Practice 53 Line Plots 116
Practice 54 Dot Plots, Histograms, and Box Plots 118
Practice 55 Distribution of Data 120
Practice 56 Determine Measures of Data 122
Practice 57 Measures of Center 124
Practice 58 Measures of Variability 126
Practice 59 Choose Appropriate Measures of Center 128
Practice 60 Compare Data Points to Mean and Median 130
Practice 61 Compare Data Sets 132
Practice 62 Scatter Plots 134

Unit 6 Review 136

Unit 7 Probability

Practice 63 Possible Outcomes of Data 138
Practice 64 Use Probability 140
Practice 65 Theoretical and Experimental Probability 142
Practice 66 Understand Sample Space 144
Practice 67 Differentiate Between Independent and Conditional Events 146

Unit 7 Review 148

Answers and Explanations 150
Unit Review Analysis Charts 205

About CASAS Math GOALS 2

The CASAS Math GOALS 2 tests measure basic adult math skills and the ability to make calculations and solve word problems that relate to real-world situations and traditional academic contexts. The CASAS Math GOALS 2 tests include multiple-choice items with four answer options. Basic calculators are allowed. Formulas are provided.

The CASAS Math GOALS 2 tests align with the CASAS Competencies and the Adult Education College and Career Readiness (AE-CCR) Mathematics Standards.

CASAS Math GOALS 2 Level C Blueprint

Level C Content Areas	Percentage of Coverage	CCR Standard Code
Number Sense and Operations	28%	NBT, NOF, NS, RPR
Algebraic Thinking	28%	OA, EE
Geometry and Measurement	28%	G, MD
Data Analysis, Statistics, and Probability	16%	MD, SP

AE-CCR Mathematics Standard Code Key

NBT	Number and Operations: Base Ten
NOF	Number and Operations: Fractions
NS	The Number System
RPR	Ratios and Proportional Relationships
OA	Operations and Algebraic Thinking
EE	Expressions and Equations
G	Geometry
MD	Measurement and Data
SP	Statistics and Probability

Using *A Tutor™ for CASAS Math GOALS 2 Workbook*

A Tutor™ for CASAS Math GOALS 2 Level C: Workbook is designed to be used hand-in-hand with *A Tutor™ for CASAS Math GOALS 2 Level C: Student Edition.* The student edition includes instruction and practice for the Adult Education College and Career Readiness standards assessed on the CASAS Math GOALS 2 tests.

Practice Sets

A Tutor™ for CASAS Math GOALS 2 Level C: Workbook includes practice sets for each lesson in *A Tutor™ for CASAS Math GOALS 2 Level C: Student Edition*. Each practice set provides additional items similar to those found on the CASAS Math GOALS 2 Level C test.

- Use the practice sets after completing the corresponding student edition lesson if you feel you need additional practice.
- Use the practice sets after completing the unit reviews in the student edition for areas that need review and improvement.

Unit Reviews

A Tutor™ for CASAS GOALS 2 Workbook unit reviews allow you to check your understanding of the skills presented in each unit. Use the corresponding Unit Review Analysis Charts on pages 205–217 to identify strengths and weaknesses. These charts will help you determine if you need to go back to any of the lessons before continuing.

Answers and Explanations

A Tutor™ for CASAS Math GOALS 2 Workbook includes explanations for the correct answers to all practice items. After completing a practice set or unit review, check your answers on pages 150–204. For each item answered incorrectly, read the provided explanation to help you rework the item to obtain the correct answer.

Please remember, there may be more than one way to solve a math problem. The explanations show one method of solving a problem. You may have used a different method than the one provided to correctly answer the question.

Test-Taking Tips

- Read the directions very carefully. Read through them word for word.
- Read each question carefully. Make sure you know what it means and what you have to do.
- Read all of the answer options carefully, even if you think you know the answer.
- Answer all of the questions. If you cannot find the right answer, rule out the answers that you know are wrong. Then try to figure out the right answer. If you still do not know, make your best guess.
- If you cannot figure out the answer on the paper-and-pencil test, put a light mark by the question number on the answer sheet and come back to it later. Erase your marks before you finish. If you cannot figure out the answer on the online test, flag the item for review.
- Do not change an answer unless you are sure your first answer is wrong. Usually, your first idea is the correct answer.
- If you get nervous, stop for a while. Take a few breaths and relax. Then start working again.

Practice 1 Add and Subtract Whole Numbers

4.NBT.4

1 What is the sum?

$$\begin{array}{r} 383 \\ +\ 291 \\ \hline \end{array}$$

A. 574
B. 664
C. 674
D. 764

2 Nick scores 216 points in a basketball season. During the next season, he scores 527 points. How many total points does Nick score during the 2 seasons?

A. 733 points
B. 743 points
C. 833 points
D. 843 points

3 What is the difference?

$$\begin{array}{r} 671 \\ -\ 345 \\ \hline \end{array}$$

A. 326
B. 334
C. 336
D. 344

4 Jerome has 2,374 words in his report. Diane has 1,645 words in her report. How many more words does Jerome's report have than Diane's report?

A. 329 words
B. 721 words
C. 729 words
D. 1,729 words

5 What is the sum?

$$\begin{array}{r} 1{,}825 \\ +\ 414 \\ \hline \end{array}$$

A. 1,139
B. 1,239
C. 2,139
D. 2,239

6 Chris has 256 GB of memory on his phone. Jeff's phone has 64 GB of memory. How much more memory does Chris's phone have than Jeff's phone?

A. 182 GB
B. 192 GB
C. 292 GB
D. 320 GB

7 What is the difference?

$$\begin{array}{r} 5{,}672 \\ -\ 3{,}438 \\ \hline \end{array}$$

A. 2,234
B. 2,246
C. 2,344
D. 2,346

8 Juanita's house has 1,340 square feet. She puts an addition on her house that is 268 square feet. What is the total square footage of her house including the addition?

A. 1,508 ft^2
B. 1,518 ft^2
C. 1,608 ft^2
D. 1,618 ft^2

9 Caroline has 267 gallons of water in her pool. She drains 123 gallons out of the pool. Which statement is *true*?

A. The word *gallons* indicates addition.
B. The words *drains* and *out* indicate subtraction.
C. Caroline has 390 gallons of water left in her pool.
D. Add 267 and 123 to find how many gallons are in the pool.

10 David and Jen have one car payment of $268 per month and another car payment of $337 per month. How much do David and Jen pay for both of their cars each month?

A. $555
B. $575
C. $585
D. $605

11 Chelsea is at a camp that has an elevation of 6,785 feet. She hikes downhill and changes her elevation by 3,421 feet. What is Chelsea's new elevation?

A. 3,264 ft

B. 3,364 ft

C. 10,106 ft

D. 10,206 ft

12 Jason combines 382 milliliters of water and 149 milliliters of oil. What is the new volume of the mixture?

A. 431 mL **B.** 501 mL

C. 531 mL **D.** 551 mL

13 Kim makes 360 bracelets and sells 328 of them. How many bracelets does Kim have left?

A. 22 bracelets

B. 32 bracelets

C. 42 bracelets

D. 688 bracelets

14 Mitch boards a jet and flies 1,697 miles and then transfers to another jet and flies 352 miles. What is the total number of miles that Mitch flies?

A. 1,049 mi **B.** 1,345 mi

C. 1,945 mi **D.** 2,049 mi

15 Judy climbs 298 feet up the side of a mountain. She climbs down 133 feet vertically before stopping. At what height does Judy stop climbing?

A. 165 ft **B.** 175 ft

C. 421 ft **D.** 431 ft

16 Hannah runs a marathon in 218 minutes. She runs a second marathon in 184 minutes. How much faster is Hannah's second time than her first?

A. 24 min **B.** 28 min

C. 34 min **D.** 38 min

17 Oscar loads 372 pounds of dirt into a dump truck. He adds 425 more pounds of dirt. How many total pounds of dirt does Oscar load in the truck?

A. 787 lb

B. 797 lb

C. 807 lb

D. 887 lb

18 Monica has $3,568 in her checking account. She deposits her paycheck, which is $1,259. How much money is in Monica's checking account now?

A. $2,309

B. $3,321

C. $3,827

D. $4,827

19 Todd is buying a television originally priced at $899. After a discount of $125, what is the price of the television before taxes?

A. $754

B. $764

C. $774

D. $784

20 One day, John picks 457 blueberries. The next day, he picks 322 more blueberries. Which statement is *true*?

A. The word *picks* indicates subtraction.

B. John picks 135 blueberries over two days.

C. Add 457 and 322 to find how many blueberries John picks.

D. Subtract 322 from 457 to find how many blueberries John picks.

Practice 12 Equivalent Ratios

6.RP.3, 6.RP.3.a

1 A space heater heats a room at a constant rate. The table shows the relationship between the time in minutes and the area of the room in square feet. What is the value of y?

Time (minutes)	Area (square feet)
1	8
2	y
3	24

A. $y = 8$ **B.** $y = 10$

C. $y = 12$ **D.** $y = 16$

2 An elephant walks at a constant rate. The table shows the relationship between the time in hours and the distance in miles. What is the value of x?

Time (hours)	Distance (miles)
1	15
2	30
x	165
22	330

A. $x = 3$ **B.** $x = 11$

C. $x = 15$ **D.** $x = 16$

3 In a bin, there is a mix of 5 black pens for every 4 blue pens. Which ratio is equivalent to the ratio of blue pens to black pens?

A. $\frac{12}{15}$ **B.** $\frac{14}{15}$

C. $\frac{10}{8}$ **D.** $\frac{12}{8}$

4 Which of the following are equivalent ratios?

A. $\frac{4}{7}$ and $\frac{7}{21}$ **B.** $\frac{8}{9}$ and $\frac{11}{12}$

C. $\frac{13}{8}$ and $\frac{26}{21}$ **D.** $\frac{18}{2}$ and $\frac{36}{4}$

5 A shelter has an adoption rate of 8 dogs for every 7 cats. Which ratio is equivalent to the ratio of cats to dogs?

A. 7:15 **B.** 24:28

C. 21:24 **D.** 16:14

6 A group of friends build patterns using a ratio of triangles to diamonds. The table shows the patterns. Which friend uses a different ratio from the others?

Friend	Triangles	Diamonds
Addie	9	24
Betty	12	36
Cate	6	16
Dottie	18	48

A. Addie **B.** Betty

C. Cate **D.** Dottie

7 What is the unknown value?

$$\frac{5}{7} = \frac{y}{42}$$

A. $y = 6$ **B.** $y = 24$

C. $y = 30$ **D.** $y = 36$

8 A group of students track the speed at which they read. The table shows the number of pages read and the amount of time in minutes. Which list shows the students in order from *fastest* to *slowest*.

Student	Pages Read	Time (minutes)
Jan	32	16
Fran	25	10
Stan	9	6

A. Fran, Stan, Jan

B. Jan, Fran, Stan

C. Stan, Jan, Fran

D. Fran, Jan, Stan

9 A dog walker bases the length of the walk on the weight of the dog. She determines that she needs to walk 12 yards for every pound the dog weighs. How far should the dog walker walk a 4-pound dog?

A. 12 yd **B.** 16 yd

C. 36 yd **D.** 48 yd

10 In the previous season, a baseball team played 25 games. They hit the same number of foul balls each game, for a total of 200 foul balls for the season. How many foul balls did they hit each game?

A. 8 foul balls **B.** 10 foul balls

C. 20 foul balls **D.** 50 foul balls

11 George makes smoothies with a ratio of 2 banana slices to every 3 blueberries. Which ratio is equivalent to the ratio of blueberries to banana slices?

A. 9:7 **B.** 20:50

C. 8:12 **D.** 30:20

12 What is the unknown value?

$\frac{3}{8} = \frac{27}{x}$

A. $x = 36$ **B.** $x = 63$

C. $x = 72$ **D.** $x = 76$

13 A doctor sees 9 patients with rosacea for every 3 patients with eczema. Which ratio is equivalent to the ratio of patients with rosacea to eczema?

A. 1:3 **B.** 3:1

C. 2:3 **D.** 18:9

14 A baker mixes flour with milk. The table shows the relationship between the flour in cups and milk in cups for his recipe. What is the value of y?

Milk (cups)	Flour (cups)
1	2.5
4	y
8	20

A. $y = 4.5$ **B.** $y = 8$

C. $y = 10$ **D.** $y = 15$

15 On a 40-question test, Frank gets 32 correct answers. Which ratio is equivalent to the ratio of correct answers to total questions?

A. 16:24 **B.** 4:5

C. 40:32 **D.** 18:20

16 Which of the following are equivalent ratios?

A. $\frac{2}{12}$ and $\frac{5}{30}$ **B.** $\frac{7}{8}$ and $\frac{9}{10}$

C. $\frac{11}{8}$ and $\frac{22}{32}$ **D.** $\frac{13}{7}$ and $\frac{26}{21}$

17 There are 5 paper clips for every 2 pennies in a drawer. Which ratio is equivalent to the ratio of paper clips to pennies?

A. 8:20

B. 4:7

C. 2:5

D. 15:6

18 At a bird feeder, Brigitte sees 2 cardinals for every 9 chickadees. There are 27 chickadees at the feeder. How many cardinals does Brigitte see?

A. 4 cardinals **B.** 6 cardinals

C. 8 cardinals **D.** 18 cardinals

19 A plumber fixes 8 sinks for every 3 showers. In the last 6 months, the plumber fixed 48 sinks. How many showers did the plumber fix in the last 6 months?

A. 18 showers **B.** 24 showers

C. 36 showers **D.** 40 showers

20 A gardener plants 5 red flowers for every 3 yellow flowers. The gardener plants 35 red flowers. How many yellow flowers does the gardener plant?

A. 15 yellow flowers

B. 18 yellow flowers

C. 21 yellow flowers

D. 30 yellow flowers

Practice 25 Solve Problems with Equations

6.EE.7

1 What is the value of x in this equation?

$40x = 8{,}000$

A. $x = 32{,}000$
B. $x = 16{,}000$
C. $x = 4{,}000$
D. $x = 200$

2 What is the value of x in this equation?

$56x = 5{,}040$

A. $x = 45$
B. $x = 90$
C. $x = 450$
D. $x = 900$

3 What is the value of x in this equation?

$x + 4{,}500 = 5{,}383$

A. $x = 338$
B. $x = 383$
C. $x = 833$
D. $x = 883$

4 What is the value of x in this equation?

$x + 754 = 2{,}958$

A. $x = 2{,}042$
B. $x = 2{,}204$
C. $x = 2{,}240$
D. $x = 4{,}022$

5 What is the value of x in this equation?

$240 + x = 2{,}000$

A. $x = 1{,}067$
B. $x = 1{,}076$
C. $x = 1{,}670$
D. $x = 1{,}760$

6 What is the value of x in this equation?

$5{,}030 + x = 8{,}678$

A. $x = 3{,}468$
B. $x = 3{,}648$
C. $x = 4{,}368$
D. $x = 4{,}638$

7 What is the value of x in this equation?

$x + 122 = 206$

A. $x = 426$
B. $x = 328$
C. $x = 84$
D. $x = 48$

8 Amanda has 96 plants to put in her garden. She can put 4 plants in a row. How many rows does Amanda need for *all* of her plants?

A. 12 rows
B. 24 rows
C. 36 rows
D. 384 rows

9 What is the value of x in this equation?

$x + 1{,}040 = 5{,}834$

A. $x = 4{,}794$
B. $x = 4{,}947$
C. $x = 9{,}474$
D. $x = 9{,}744$

10 What is the value of x in this equation?

$x + 2{,}500 = 6{,}100$

A. $x = 3{,}660$
B. $x = 3{,}600$
C. $x = 3{,}060$
D. $x = 3{,}006$

11 A collector sells 3,792 coins at a show. Afterward, she has 4,565 coins left. How many coins did the collector have *before* the show?

A. 8,357 coins

B. 8,537 coins

C. 8,573 coins

D. 8,735 coins

12 Jaden had a jar with 240 pieces of candy. He invited 6 friends over, and each friend ate the same number of pieces until the jar was empty. How many pieces of candy did each friend eat?

A. 35 pieces

B. 40 pieces

C. 45 pieces

D. 50 pieces

13 At the beginning of the harvest, a farmer had 4,980 rows of corn, but after a storm, only 3,529 rows of corn remained. How many rows of corn were destroyed by the storm?

A. 1,821 rows

B. 1,571 rows

C. 1,361 rows

D. 1,451 rows

14 A contractor orders wooden fence panels to use on multiple projects. If each project requires 12 fence panels, how many projects can he complete with 144 fence panels?

A. 12 projects

B. 13 projects

C. 14 projects

D. 15 projects

15 Erica wants to contribute 750 cookies to the bake sale. If her friend offers to bring 200 cookies, how many cookies does Erica still need to bring?

A. 450 cookies

B. 500 cookies

C. 550 cookies

D. 600 cookies

16 A pizza company makes fresh dough daily and has 1,300 cups of flour. Since it takes 4 cups of flour to make the dough for 1 pizza, how many pizzas can the company make with the flour it has?

A. 325 pizzas

B. 350 pizzas

C. 375 pizzas

D. 400 pizzas

17 Joe's grocery store had a sale on canned vegetables. They sold 1,408 cans of vegetables during the sale and had 242 cans left afterward. How many cans of vegetables did the store have at the start of the sale?

A. 1,600 cans

B. 1,650 cans

C. 1,700 cans

D. 1,750 cans

18 What is the value of x in this equation?

$30x = 3{,}960$

A. $x = 132$

B. $x = 126$

C. $x = 138$

D. $x = 130$

Practice 31 Understand Angles

7.G.5

1 In his notes, Amit draws 3 angles that have a sum of 180°. The measure of ∠1 is 67°. Which are possible measures of ∠2 and ∠3?

A. 3° and 20°

B. 13° and 100°

C. 15° and 33°

D. 60° and 115°

2 The measure of ∠1 is $(2x + 3)°$. Which statement is *true*?

A. When ∠2 and ∠1 are vertical angles, the measure of ∠2 is $(2x + 3)°$.

B. When ∠3 and ∠1 are adjacent angles, the measure of ∠3 is $(2x + 3)°$.

C. When ∠5 and ∠1 are complementary, the sum of the angle measures is 180°.

D. When ∠5 and ∠1 are supplementary, the sum of the angle measures is 90°.

3 Majinder measures 2 angles that are complementary. One angle measures 87°. What is the measure of the second angle?

A. 113°

B. 93°

C. 13°

D. 3°

4 Clarence builds a cabinet using 2 angles that are complementary. One angle is less than 90°. Which statement about the second angle is *true*?

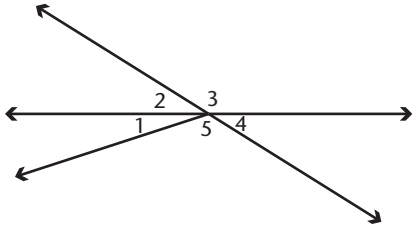
A. It is 90°.

B. It is less than 90°.

C. It is more than 90°

D. It is 180°.

Use the diagram to answer questions 5–7.



5 Hettie draws a diagram of some veins on a leaf. Which angles are adjacent angles?

A. ∠1 and ∠3

B. ∠1 and ∠4

C. ∠2 and ∠3

D. ∠2 and ∠4

6 What is the measure of ∠2 when the measure of ∠4 is 32°?

A. 32°

B. 58°

C. 68°

D. 148°

7 What is the measure of ∠5 when the measure of ∠4 is 32° and the measure of ∠1 is 18°?

A. 32°

B. 68°

C. 130°

D. 148°

---

8 Two angles, ∠*ABC* and ∠*CBD*, are supplementary. ∠*ABC* is twice the size of ∠*CBD*. What is the measure of ∠*ABC*?

A. 30°

B. 60°

C. 115°

D. 120°

9 Sanaa uses 2 angles to form a straight angle for her miter saw. One angle measures $(7x + 20)°$, and the other angle measures $(8x + 40)°$. What is the measure of the greater angle?

A. 88° **B.** 95°

C. 104° **D.** 180°

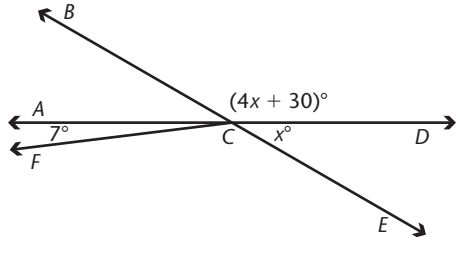
10 Brendan glues a broken frame with 2 angles that are complementary. The measure of the first angle is $(10x + 36)°$. The measure of the second angle is $(8x - 18)°$. What is the measure of the first angle?

A. 76° **B.** 72°

C. 4° **D.** 2°

Use the information and diagram to answer questions 11–13.

Tashin measures angles made by a see-saw at the community day care.



11 What is the measure of $\angle BCD$?

A. 145° **B.** 150°

C. 165° **D.** 175°

12 What is the measure of $\angle ACB$?

A. 20° **B.** 30°

C. 40° **D.** 50°

13 What is the measure of $\angle ECF$?

A. 113° **B.** 123°

C. 133° **D.** 143°

---

14 One angle in a pair of vertical angles measures 118°, and the other angle measures $(9x + 37)°$. What is the value of x?

A. $x = 19$ **B.** $x = 17$

C. $x = 9$ **D.** $x = 7$

15 Tallulah designs a logo with 2 angles that are supplementary. The measure of the first angle is $(6x + 17.5)°$. The measure of the second angle is $(3x + 27.5)°$. What is the measure of the second angle?

A. 72.5° **B.** 75.5°

C. 77.5° **D.** 82.5°

16 Two angles are complementary. The measure of the first angle is $(7x - 9)°$. The measure of the second angle is $(6x + 21)°$. What is the measure of the first angle?

A. 3° **B.** 13°

C. 23° **D.** 33°

17 One angle in a pair of vertical angles measures 110°, and the other measures $(7x - 30)°$. What is the value of x?

A. $x = 10$ **B.** $x = 20$

C. $x = 30$ **D.** $x = 40$

18 $\angle DEF$ and $\angle FEG$ are adjacent angles. Which statement is *false*?

A. $\angle DEF$ and $\angle FEG$ are vertical angles.

B. $\angle DEF$ and $\angle FEG$ are supplementary.

C. $\angle DEF$ and $\angle FEG$ are complementary.

D. $\angle DEF$ and $\angle FEG$ are both 90°-angles.

19 Marshal draws a star with 2 angles that are supplementary. The measure of the first angle is $(6x - 8)°$. The measure of the second angle is $(5x + 56)°$. What is the measure of the first angle?

A. 34°

B. 44°

C. 54°

D. 64°

20 $\angle 1$ and $\angle 2$ are complementary. $\angle 2$ and $\angle 3$ are vertical angles. The measure of $\angle 1$ is $(3x + 40)°$. The measure of $\angle 2$ is $(4x - 13)°$. What is the measure of $\angle 3$?

A. 23°

B. 27°

C. 63°

D. 67°

Practice 36 Convert Metric Measurements

5.MD.1

Metric Length	Metric Mass	Metric Capacity
1 centimeter = 10 millimeters 1 meter = 100 centimeters 1 kilometer = 1,000 meters	1 gram = 1,000 milligrams 1 kilogram = 1,000 grams 1 metric ton = 1,000 kilograms	1 liter = 1,000 milliliters

1 An elephant has a mass of 2.5 metric tons. A hippopotamus has a mass of 1,600 kilograms. How much more mass does an elephant have?

A. 1,900 kg **B.** 900 kg

C. 600 kg **D.** 400 kg

2 Meg has 8 teacups. Each teacup holds 250 milliliters. How many liters of tea does Meg need to fill all the cups?

A. 1 L

B. 1.5 L

C. 2 L

D. 2.5 L

3 Tom's shelf is 3 meters long. A planter is 75 centimeters long. How many planters can Tom put on his shelf?

A. 4 planters

B. 5 planters

C. 6 planters

D. 7 planters

4 Nick walks his dog 2.8 kilometers every day. After walking for 975 meters, he stops to talk to a neighbor. How much farther does Nick have to walk?

A. 1,825 m **B.** 1,725 m

C. 1,625 m **D.** 1,025 m

5 Jen prepares a bath for her child with 110 liters of water. By the end of the bath, she cleans 9,500 milliliters of water off the floor. How much water remains in the bathtub?

A. 10.5 L **B.** 95 L

C. 100.5 L **D.** 105 L

6 Jerry catches a 35-centimeter long trout while fishing. Bert catches a 27-centimeter long trout. Which statement is *true*?

A. The total length of both fish is 0.38 meter.

B. The total length of both fish is 1 meter.

C. The total length of both fish is 62 centimeters less than 1 meter.

D. The total length of both fish is 38 centimeters less than 1 meter.

7 Nolan has an 8-kilogram bag of potting soil. He sets aside 2.5 kilograms of soil and evenly divides the rest of the bag among 11 pots. How much soil does Nolan use in each pot?

A. 50.5 g **B.** 55 g

C. 500 g **D.** 550 g

Use the information to answer questions 8 and 9.

Alice sews a quilt that is 2.4 meters wide. Each patch is 12 centimeters wide.

8 How many patches fit in one row across the quilt?

A. 16 patches **B.** 18 patches

C. 19 patches **D.** 20 patches

9 Alice makes another quilt that is 2 meters wide. She designs the width of the quilt with 8 patches and a border. Each patch is 24 centimeters wide. What is the total width of the border?

A. 80 mm **B.** 140 mm

C. 160 mm **D.** 240 mm

10 A rescue center receives a little brown bat, which has a mass of 2,650 milligrams. The bat gains 4,475 milligrams at the center. The bat must be at least 8 grams before it can be released. Which statement is *true*?

A. The bat is ready for release.

B. The bat is not ready for release.

C. The bat has a mass of 7.3 grams.

D. The bat has a mass of 8.1 grams.

11 Amanda needs 0.85 liter of pineapple juice for a recipe. The capacity of a bottle at the store is 170 milliliters. How many bottles of pineapple juice does Amanda need to buy?

A. 4 bottles

B. 5 bottles

C. 6 bottles

D. 7 bottles

12 Julien's truck has a mass of 2.3 metric tons. He transports 2,600 kilograms of equipment. Can Julien safely transport the equipment over a bridge with a 5-ton limit?

A. No, the mass of the truck with equipment is equal to the bridge's limit.

B. Yes, the mass of the truck with equipment is equal to the bridge's limit.

C. Yes, the mass of the truck with equipment is less than the bridge's limit.

D. Yes, the mass of the truck with equipment is greater than the bridge's limit.

13 A mirror should hang 7.5 centimeters from a light fixture. Deb measures 59 millimeters between her mirror and the light fixture. How should Deb adjust the mirror?

A. 16 mm closer to the light fixture

B. 160 mm closer to the light fixture

C. 16 mm farther from the light fixture

D. 160 mm farther from the light fixture

14 Jason's fence is 1.3 kilometers long. Dan's fence is 350 meters shorter than Jason's fence. How long is Dan's fence?

A. 0.95 kilometer

B. 3.5 kilometers

C. 3,500 meters

D. 9,500 meters

15 Linda has a necklace with a mass of 4,700 milligrams, and she has a ring with a mass of 7 grams. What is the total mass of Linda's jewelry?

A. 11.7 g

B. 54 g

C. 117 g

D. 540 g

16 How many meters are in 5,800 millimeters?

A. 580 meters

B. 58 meters

C. 5.8 meters

D. 0.58 meter

17 Everett has 2 nickels that each have a mass of 5 grams and 3 pennies that each have a mass of 2,500 milligrams. Which coins have a greater mass?

A. The pennies are 2.5 grams heavier than the nickels.

B. The nickels are 2.5 grams heavier than the pennies.

C. The nickels are 6,500 milligrams heavier than the pennies.

D. The pennies are 6,500 milligrams heavier than the nickels.

18 Cindy needs 17 millimeters of weather stripping at the top of her door and 85 millimeters at the bottom of the door. What is the total length of weather stripping that Cindy needs?

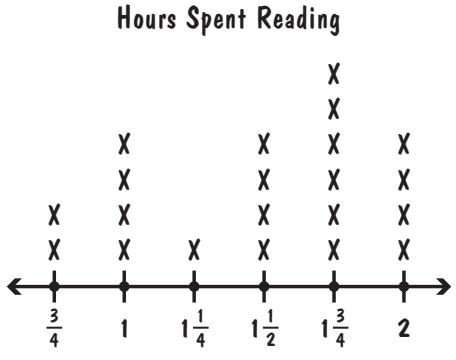
A. 10.2 cm **B.** 102 cm

C. 1,002 cm **D.** 1,020 cm

Practice 53 Line Plots

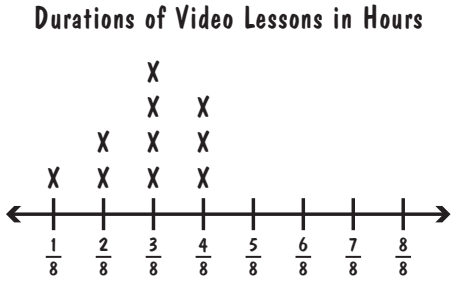
6.SP.4

1 Rebecca's book club records the number of hours that each person read last weekend. What is the *most* common length of time spent reading last weekend?



A. 1 hour
B. $1\frac{1}{2}$ hours
C. $1\frac{3}{4}$ hours
D. 2 hours

2 How many video lessons are exactly $\frac{3}{8}$ hour long?

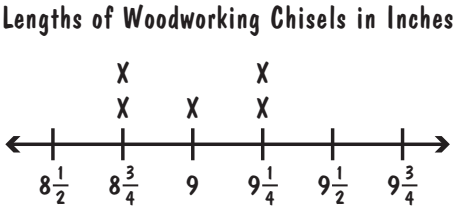


A. 1 video lesson
B. 2 video lessons
C. 3 video lessons
D. 4 video lessons

3 Amelia is a chef who has bought 4 new spatulas. The spatulas measure $8\frac{1}{4}$ inches, 9 inches, $8\frac{1}{4}$ inches, and $8\frac{3}{4}$ inches in length. Amelia records the measurements on a line plot. How many Xs should she place above the mark for $8\frac{1}{4}$ inches?

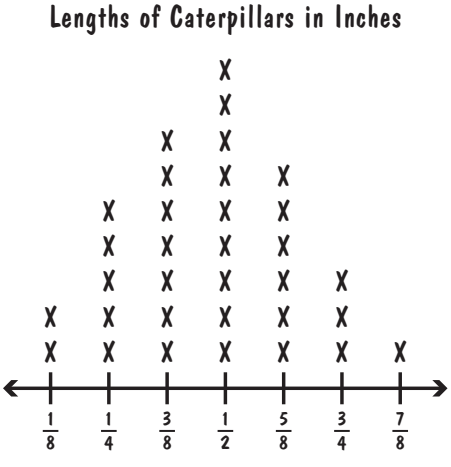
A. 0 Xs
B. 1 X
C. 2 Xs
D. 3 Xs

4 What are the lengths of each of the woodworking chisels on the line plot?



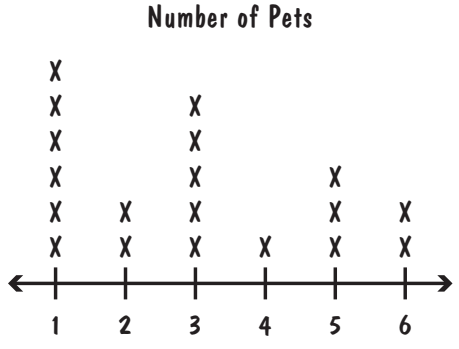
A. $8\frac{1}{2}$ in., $8\frac{1}{2}$ in., 9 in., $9\frac{1}{4}$ in., $9\frac{1}{4}$ in.
B. $8\frac{1}{2}$ in., $8\frac{1}{2}$ in., $9\frac{1}{4}$ in., $9\frac{1}{4}$ in., $9\frac{1}{2}$ in.
C. $8\frac{3}{4}$ in., $8\frac{3}{4}$ in., 9 in., $9\frac{1}{4}$ in., $9\frac{1}{4}$ in.
D. $8\frac{3}{4}$ in., 9 in., $9\frac{1}{4}$ in., $9\frac{1}{4}$ in., $9\frac{1}{2}$ in.

5 A scientist is studying caterpillars that feed on certain plants. The scientist and her team record the lengths of 33 caterpillars to the nearest eighth of an inch. The line plot shows the data recorded on a certain day. Which statement is *false*?



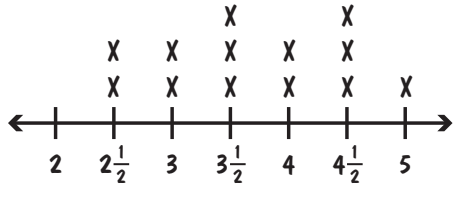
A. 5 caterpillars measure $\frac{1}{4}$ inch
B. 6 caterpillars measure $\frac{5}{8}$ inch
C. 7 caterpillars measure $\frac{3}{8}$ inch
D. 8 caterpillars measure $\frac{1}{2}$ inch

6 Tobi records the number of pets of people in his office. How many pets do all of the people in his office have?



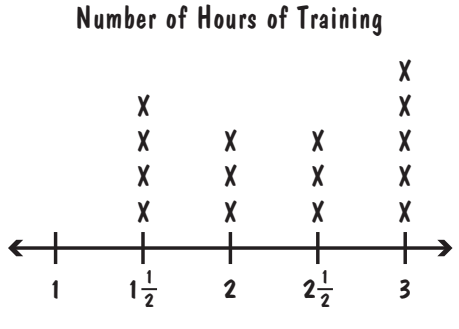
A. 60 pets
B. 56 pets
C. 23 pets
D. 19 pets

7 Roberto records the number of hours his friends spent online last Sunday. Which statement is *true*?



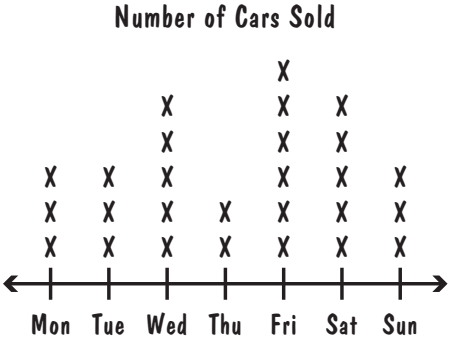
A. None of Roberto's friends spent exactly $3\frac{1}{2}$ hours online.
B. 3 of Roberto's friends spent exactly 3 hours online.
C. 4 of Roberto's friends spent exactly 4 hours online.
D. 4 of Roberto's friends spent more than 4 hours online.

8 How many more people had 3 hours of training than $2\frac{1}{2}$ hours of training?



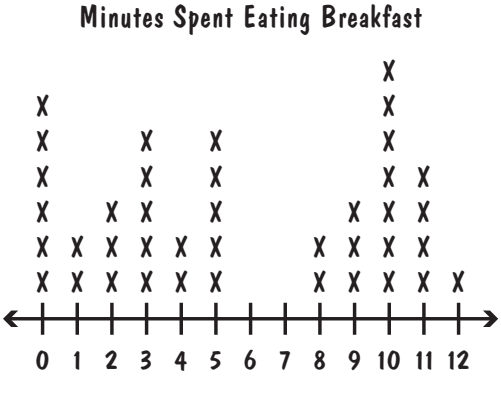
A. 2 people
B. 3 people
C. 4 people
D. 5 people

9 A car dealership records the number of cars sold on each day of one week. How many more cars were sold during the week (Mon—Fri) than were sold on the weekend (Sat—Sun)?



A. 6 cars
B. 8 cars
C. 11 cars
D. 20 cars

10 A company interviewed its employees to learn how much time they spend eating breakfast. Which statement is *true*?



A. The greatest number of employees spend 10 minutes eating breakfast.
B. The least number of employees spend 2 minutes eating breakfast.
C. The number of employees that eat breakfast in 1 minute and the number of employees that eat breakfast in 12 minutes is equal to the number of employees that eat breakfast in 5 minutes.
D. The number of employees that don't eat breakfast is greater than those who spend 10 minutes to eat breakfast.

Practice 63 Possible Outcomes of Data

7.SP.5

1 A soccer match between the Dragons and the Sharks takes place. Which could be the outcome of the soccer match?

A. Dragons–2 goals, Sharks–1 goal

B. Sharks–6 goals, Dolphins–2 goals

C. Dragons–1 goal, Lions–0 goals

D. Sharks–3 goals, Tigers–1 goal

2 A coin is flipped 2 times. Which could be the outcome of the coin flips?

A. heads, tails, heads, heads

B. heads, heads, heads

C. tails, heads, heads

D. tails, tails

3 Twenty people are surveyed about how they feel about their last doctor visit. They can choose one of the following options: very satisfied, satisfied, dissatisfied. Which could be the outcome of this survey?

A. 6–very satisfied; 9–satisfied; 7–dissatisfied

B. 12–very satisfied; 7–satisfied; 1–dissatisfied

C. 9–very satisfied; 11–satisfied; 6–dissatisfied

D. 8–very satisfied; 6–satisfied; 9–dissatisfied

4 Ten people are chosen at random to collect data about their eye color. Which could be the outcome of this survey?

A. 4 brown eyes, 3 green eyes, 3 blond hair

B. 5 brown eyes, 3 green eyes, 2 blue eyes

C. 6 brown eyes, 4 brown hair

D. 7 brown eyes, 2 green eyes, 3 blue eyes

5 Karen has 3 bananas, like the one shown.

If the length of each of the 3 bananas is measured, which is the *most likely* outcome?

A. 4.0 feet, 4.9 feet, 7.9 feet

B. 1.0 mile, 1.3 miles, 2.0 miles

C. 7.0 inches, 7.8 inches, 7.6 inches

D. 68 centimeters, 94 centimeters, 138 centimeters

6 Cards are selected from a standard 52-card deck. Only face cards (jacks, queens, and kings) are kept, and the remaining cards are discarded. Drawing continues until a person has exactly 5 face cards. Which could be the outcome of this situation?

A. 3 kings, 2 queens, 2 jacks, 1 ten

B. 1 ace, 2 kings, 1 queen, 1 jack

C. 4 kings, 4 queens, 4 jacks

D. 3 kings, 1 queen, 1 jack

7 Twenty-five people are surveyed about which candidate they plan to vote for in an upcoming election. Their choices were limited to Candidate R, Candidate D, Candidate I, or Undecided. Which could be the outcome of the survey?

A. 4–Candidate R; 13–Candidate D; 7–Candidate I; 10–Undecided

B. 8–Candidate R; 11–Candidate D; 3–Candidate I; 3–Undecided

C. 6–Candidate R; 20–Candidate D; 0–Candidate I; 1–Undecided

D. 11–Candidate R; 11–Candidate D; 5–Candidate I; 5–Undecided

8 A city recycles some types of plastic. The table shows plastic recycling numbers, whether or not the type of plastic is recycled by the city, and examples of items made with the type of plastic.

Recycling Number	Recycled by the City	Examples
1	yes	soft drink bottles, water bottles, peanut butter containers
2	yes	milk containers, shampoo bottles
3	no	garden hoses, window frames, blood bags
4	no	6-pack soda rings, bread bags, squeezable bottles
6	no	egg cartons, styrofoam cups, meat trays

Given that Koji *only* puts items that are able to be recycled in his recycle bin, which could be the outcome of 10 items randomly selected from Koji's recycle bin?

A. 2 egg cartons, 3 milk containers, 4 soft drink bottles, 1 water bottle

B. 2 peanut butter containers, 2 shampoo bottles, 1 milk container, 5 water bottles

C. 5 styrofoam cups, 1 garden hose, 4 soft drink bottles

D. 1 shampoo bottle, 3 milk containers, 4 water bottles, 2 egg cartons

9 The volumes of 4 water bottles, like the one shown, are measured. What is the *most likely* outcome?

A. 16.0 fluid ounces, 16.2 fluid ounces, 16.4 fluid ounces, 16.0 fluid ounces

B. 70.0 gallons, 52.0 gallons, 51.3 gallons, 50.0 gallons

C. 2.0 feet, 2.2 feet, 2.0 feet, 6.0 feet

D. 75 liters, 85 liters, 105 liters, 125 liters

10 Javaughn surveys 10 of his neighbors about whether or not they want to actively participate in a neighborhood watch program. They could say *yes*, *no*, or *maybe*. Which could be the outcome of the survey?

A. 4–yes; 0–no; 7–maybe

B. 2–yes; 6–no; 5–maybe

C. 3–yes; 2–no; 5–maybe

D. 1–yes; 3–no; 8–maybe

11 The manager of a vegetarian restaurant conducted a survey of 20 people to determine which new food item they prefer out of vegan chili, vegan lasagna, vegan tacos, and vegan burgers. Which could be the outcome of the survey?

A. 8–vegan chili; 11–vegan lasagna; 5–vegan tacos; 4–vegan burgers

B. 7–vegan chili; 8–vegan lasagna; 5–vegan tacos; 2–vegan burgers

C. 3–vegan chili; 7–vegan lasagna; 6–vegan tacos; 4–vegan burgers

D. 1–vegan chili; 13–vegan lasagna; 12–vegan tacos; 0–vegan burgers

12 If the distance between two cities is measured 3 times, which is the *most likely* outcome?

A. 150.0 miles, 149.3 miles, 151.1 miles

B. 1 inch; 100 inches; 1,000 inches

C. 210 tons, 211 tons, 215 tons

D. 1 millimeter, 100 millimeters, 500 millimeters

13 James rolled a 6-sided number cube 4 times. Which of the following could represent the possible results of his rolls?

A. 1, 2, 2, 3, 6

B. 3, 5, 6

C. 2, 3

D. 2, 3, 5, 6