

Step Up to the TEKS

Seventh Grade Mathematics

Readiness Material

Teacher Edition

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Introduction

Step Up to the TEKS meets the specifications published by the Texas Education Agency for the assessable Texas Essential Knowledge and Skills (TEKS) for the Seventh Grade. The TEKS standard each page addresses is identified at the top of each page along with the category and type of State of Texas Assessment of Academic Readiness (STAAR) standard.

The Readiness Book is a unique approach to increase the performance on STAAR Test. This book focuses solely on those TEKS that comprise two-thirds of the STAAR Test and are considered the most important (or **Readiness**) TEKS to master during the year.

Each Readiness TEKS is addressed with three different types of problems. Every type of problem has two different scenarios that are comprised of two questions. These questions focus on incorporating the **Underlying Processes and Mathematical Tools** problem types into the TEKS. Though the Underlying Processes and Mathematical Tools category is not tested directly on the STAAR Test, at least 75% of the test questions will be embedded with the strands of this category.

With the addition of more open ended questions in the STAAR Test, every scenario has a multiple choice question and an open ended question to help ensure the student is demonstrating those higher-level thinking skills.

With the two similar scenarios per problem type, you are encouraged to use one of the questions as a Teaching Model. The other scenario can be used as **Independent Practice** or **Guided Practice**. This model helps the students begin to develop the skills necessary to work on the higher-level thinking process without depending solely on the teacher.

We have strived to provide the most accurate representation of the types of problems the students may encounter on the test. In analyzing the assessed standards as related in the TEKS, the TEA information booklet describing the types of questions for each student expectation, and our 20+ years of developing questions for Texas Standardized Testing, we have created these questions. We have also analyzed the types of wrong answers used on the multiple choice answers for each assessed standard. The criteria we detected are utilized in this book, which provides the same level of thinking as on the test.

Please honor our copyright. We do not allow the copying of this book. These books are sold as student books. **Please do not buy one copy for each campus and make copies for each teacher. This is against our copyright.** A tremendous amount of time and effort goes into each book to provide teachers and students with the most updated, accurate materials possible. Please allow us to stay in business and continue serving your testing needs.

Category	 Readiness Standards	 Supporting Standards	# of Items
1 Numbers, Operations, and Quantitative Reasoning	7.1B convert between fractions, decimals, whole numbers, and percents mentally, on paper, or with a calculator 7.2B use addition, subtraction, multiplication, and division to solve problems involving fractions and decimals 7.2F select and use appropriate operations to solve problems and justify the selections	7.1A compare and order integers and positive rational numbers 7.1C represent squares and square roots using geometric models 7.2A represent multiplication and division situations involving fractions and decimals with models, including concrete objects, pictures, words, and numbers 7.2C use models, such as concrete objects, pictorial models, and number lines, to add, subtract, multiply, and divide integers and connect the actions to algorithms 7.2D use division to find unit rates and ratios in proportional relationships such as speed, density, price, recipes, and studentteacher ratio 7.2E simplify numerical expressions involving order of operations and exponents 7.2G determine the reasonableness of a solution to a problem	13
2 Patterns, Relationships, Algebraic Reasoning	7.3A estimate and find solutions to application problems involving percent 7.3B estimate and find solutions to application problems involving proportional relationships such as similarity, scaling, unit costs, and related measurement units 7.5B formulate problem situations when given a simple equation and formulate an equation when given a problem situation	7.4A generate formulas involving unit conversions within the same system (customary and metric), perimeter, area, circumference, volume, and scaling 7.4B graph data to demonstrate relationships in familiar concepts such as conversions, perimeter, area, circumference, volume, and scaling 7.4C use words and symbols to describe the relationship between the terms in an arithmetic sequence (with a constant rate of change) and their positions in the sequence 7.5A use concrete and pictorial models to solve equations and use symbols to record the actions	13
3 Geometry and Spatial Reasoning	7.6D use critical attributes to define similarity 7.7B graph reflections across the horizontal or vertical axis and graph translations on a coordinate plane	7.6A use angle measurements to classify pairs of angles as complementary or supplementary 7.6B use properties to classify triangles and quadrilaterals 7.6C use properties to classify three-dimensional figures, including pyramids, cones, prisms, and cylinders 7.7A locate and name points on a coordinate plane using ordered pairs of integers 7.8A sketch three-dimensional figures when given the top, side, and front views 7.8B make a net (two-dimensional model) of the surface area of a three-dimensional figure 7.8C use geometric concepts and properties to solve problems in fields such as art and architecture	10
4 Measurement	7.9A estimate measurements and solve application problems involving length (including perimeter and circumference) and area of polygons and other shapes 7.9C estimate measurements and solve application problems involving volume of prisms (rectangular and triangular) and cylinders	7.9B connect models for volume of prisms (triangular and rectangular) and cylinders to formulas of prisms (triangular and rectangular) and cylinders	8
5 Probability and Statistics	7.11B make inferences and convincing arguments based on an analysis of given or collected data 7.12B choose among mean, median, mode, or range to describe a set of data and justify the choice for a particular situation	7.10A construct sample spaces for simple or composite experiments 7.10B find the probability of independent events 7.11A select and use an appropriate representation for presenting and displaying relationships among collected data, including line plot, line graph, bar graph, stem and leaf plot, circle graph, and Venn diagrams, and justify the selection 7.12A describe a set of data using mean, median, mode, and range	10
"Underlying Processes and Mathematical Tools" is not a separate reporting category. These skills will be incorporated into at least 75% of the test questions from reporting categories 1-5 and will be identified along with the content standards.			



Numbers, Operations, and Quantitative Reasoning



Convert between fractions, decimals, whole number, and percents mentally, on paper, [or with a calculator].

George travels around the world for his business. He is away from his home 60% of the year.

- 1 Which procedure could you use to determine how many days George spent away from his home last year?
- A Multiply 60 by 365
 - B Divide 365 by 0.6
 - *C Multiply $\frac{3}{5}$ by 365**
 - D Add $\frac{6}{100}$ to 365

- 2 Write an equivalent fraction or decimal for the amount of time George spent at his home last year.
- * $\frac{2}{5}$, $\frac{4}{10}$, or $\frac{40}{100}$**
or
*** 0.4 or 0.40**

Answers may vary.

Jason and his family drove 880 miles from Orange to El Paso. Jason drove 75% of the trip.

- 1 Write a procedure Jason could use to determine the number of miles he drove on the trip to El Paso?
- * Multiply 880 by 0.75**
 - or**
 - * Multiply 880 by $\frac{3}{4}$**

- 2 Which number is NOT equivalent to the portion Jason drove on the trip to El Paso?
- *A 75**
 - B $\frac{3}{4}$
 - C 0.75
 - D $\frac{75}{100}$

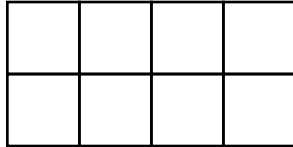


Numbers, Operations, and Quantitative Reasoning



Convert between fractions, decimals, whole number, and percents mentally, on paper, [or with a calculator].

Ryan broke his candy bar into 8 pieces and decided to give 3 pieces to Cybil and 2 pieces to Arnold.



1 Which expression could be used to determine the percentage of the candy bar Ryan gave to Arnold?

A $3 \div 5 \times 100$

***B $2 \div 8 \times 100$**

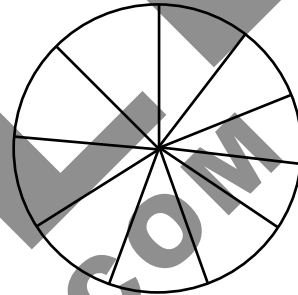
C $5 \div 8 \times 100$

D $3 \div 8 \times 100$

2 Write a decimal that is equivalent to the percentage of the candy bar Ryan kept for himself.

*** 0.375**

Mr. Koen purchased a pizza that was cut into 10 pieces for his family. Kathy ate 3 slices of pizza and Evan ate 4 slices of pizza. Mr. Koen ate the rest of the pizza.



1 Write an expression that could be used to determine the percentage of the pizza Evan ate.

*** $(\frac{4}{10}) \times 100 = P$**

2 Which decimal is equivalent to the percentage of the pizza Mr. Koen ate?

***A 0.30**

B 30.0

C 3.0

D 0.03



Numbers, Operations, and Quantitative Reasoning



Convert between fractions, decimals, whole number, and percents mentally, on paper, [or with a calculator].

Marty surveyed the 7th and 8th graders in his Junior High to determine the number of students who own a MP3 player. Sixty percent (60%) of the 410 7th graders and five out of eight ($\frac{5}{8}$) of the 500 8th graders own an MP3 player.

1 Which method could Marty use to determine which grade has a higher number of students who own MP3 players?

A Find the product of $\frac{3}{10}$ and 410 and the product of 0.58 and 500, then compare products

B Find the product of 0.06 and 500, and 0.625 and 410, then compare products

C Find the product of $\frac{3}{5}$ and 410 and the product of 0.58 and 500, then compare products

*** D Find the product of 0.6 and 410 and the product of 0.625 and 500, then compare products**

2 Write a decimal that is equivalent to the portion of students who do NOT own an MP3 player in 7th grade and in 8th grade at Marty's Junior High.

*** 7th grade - 0.4 or 0.40**

*** 8th grade - 0.375**

Michael and Charles play basketball on different teams. The last time they played each other Michael made 18 of his 30 shots and Charles made 60% of his 25 shots.

1 If Michael and Charles only shot 2-point shots, describe how you could determine which player scored more points.

*** Michael hit 18 of his 30 shots. Each shot is equal to 2 points (18 x 2 = 36).**

Charles hit 60% of his 25 shots; hence, 0.60 x 25 = 15 shots Charles made. Each point is equal to 2 points (15 x 2 = 30).

Michael scored 6 more points than Charles scored.

Answers may vary.

2 Which decimal is equivalent to the portion of shots missed by either Michael or Charles?

A 0.70

***B 0.40**

C 0.04

D 0.06



Numbers, Operations, and Quantitative Reasoning



Use addition, subtraction, multiplication, and division to solve problems involving fractions and decimals.

Mr. Hysaw held a fishing contest and kept track of the weight of the fish in the table below.

Fisherman	Weight (lbs)
Chris	$4 \frac{1}{2}$
Nick	3.75
Jim	$7 \frac{1}{4}$
Gloria	5.3
Kevin	2.8

1 Which expression could be used to determine the average weight of the 5 fish?

A $(4.12 + 3.75 + 7.14 + 5.3 + 2.8) \div 5$

B $4.5 + 3.75 + 7.25 + 5.3 + 2.8 \div 5$

C $4.12 + 3.75 + 7.14 + 5.3 + 2.8 \div 5$

***D $(4.5 + 3.75 + 7.25 + 5.3 + 2.8) \div 5$**

2 What is the total weight of the 5 fish?

*** 23.6 or 23.60 or $23 \frac{3}{5}$**

$4.5 + 3.75 + 7.25 + 5.3 + 2.8 = 23.60$

The table below shows the amount of time Doria spent practicing the piano during the last week.

Day	Amount of Time Practicing (hours)
Monday	1.25
Tuesday	$\frac{3}{4}$
Wednesday	2.2
Thursday	$\frac{1}{6}$
Friday	$3 \frac{1}{8}$
Saturday	0.75
Sunday	2

1 Write an expression that could be used to determine the average amount of time Doria spent practicing the piano each day.

*** $(1.25 + \frac{3}{4} + 2.2 + \frac{1}{6} + 3\frac{1}{8} + 0.75 + 2) \div 7 = T$**
or

*** $(1 \frac{1}{4} + \frac{3}{4} + 2 \frac{2}{10} + \frac{1}{6} + 3 \frac{1}{8} + \frac{3}{4} + 2) \div 7 = T$**
or

*** $(1.25 + 0.75 + 2.2 + 0.166 \frac{2}{3} + 3.125 + 0.75 + 2) \div 7 = T$**

2 What is the approximate amount of time Doria spent practicing the piano last week?

A 8 hours 45.5 minutes

***B 10 hours 15 minutes**

C 7 hours 57 minutes

D 10 hours 54 minutes



Numbers, Operations, and Quantitative Reasoning



Use addition, subtraction, multiplication, and division to solve problems involving fractions and decimals.

Carlos, Jimmy and Dale shared a meal at a restaurant. The total cost of the meal including tax was \$62.45, and they left a 20% tip. Carlos paid for 30% of the meal and tip, and Jimmy paid \$27.85.

1 What additional information is needed to determine how much of the bill each person paid?

- A The dollar amount of the tip
- B The amount of money Carlos paid
- C The cost of the bill plus the tip

***D No additional information is needed**

2 How much of the bill did Dale pay?

*** \$24.61**

Nolan, Charlie, Roger, and John combined to pitch 9 innings in a baseball game. Nolan pitched $\frac{1}{3}$ of the game and Charlie pitched $1\frac{1}{3}$ innings.

1 What additional information, if any, is needed to determine how many innings Roger pitched?

*** The number of innings John pitched**

2 If Roger pitched $2\frac{1}{3}$ innings, how much did John pitch?

*** A $2\frac{1}{3}$ innings**

B 6 innings

C $1\frac{2}{3}$ innings

D $3\frac{1}{3}$ innings



Numbers, Operations, and Quantitative Reasoning



Use addition, subtraction, multiplication, and division to solve problems involving fractions and decimals.

Rodrigo deposited his checks for the last two weeks into his checking account. He made \$235.45 each week. He wrote a check for his new car stereo which cost \$436.20. He also purchased a set of speakers for \$146.50. His grandmother gave him \$100 to help cover the cost.

1 Which method could be used to determine the amount of money Rodrigo spent on audio equipment?

- A Find the sum of 235.45, 436.20, 146.50 and 100.
- B Find the difference of 436.20 and 146.50
- C Find the sum of 436.20, 146.50 and the sum of 235.45 and 100, then subtract the two sums.

***D Find the sum of 436.20 and 146.50.**

2 If Rodrigo had a balance of \$28.40 in his account after these transactions, how much money was in his account prior?

***\$40.20**

Madison had an account balance of \$124.20 in her account. She earns \$7.25 per hour at her job and deposited her biweekly check into her account.

1 If her account balance after the deposit was \$559.20, write a method to determine the number of hours she worked during the two weeks?

*** Subtract the original account balance (\$124.20) from the account balance after the deposit (\$559.20). Divide the difference by her hourly rate (\$7.25).**

or

Subtract 124.20 from 559.20 and divide the difference by 7.25.

2 If she works half as many hours during the next two weeks, how much will she get paid?

A \$870.00

B \$279.60

***C \$217.50**

D \$62.10



CATEGORY

Numbers, Operations, and Quantitative Reasoning



READINESS

Select and use appropriate operations to solve problems and justify selections.

Fulkes Middle School sold out of tickets to the faculty versus student volleyball game. Each ticket cost \$6 and the gym where the game was played had 24 rows with 60 seats in each row.

- 1 Which method could be used to determine the total amount of tickets sold?

A add the number of rows and seats

***B multiply the number of rows and seats**

C divide the number of seats by the number of rows

D multiply the number of rows by the number of seats, then add the product to the cost of each ticket

George went to the outlet mall and purchased a pair of shoes for \$49.95 and two shirts for \$9.95 each. Sales tax is 8% of the purchase.

- 1 Write a method that could be used to determine how much George spent on the shoes and shirts.

***Add the cost of the shoes and the total cost of two shirts. Multiply the total by 0.08 to obtain amount of sales tax. Add the cost of the shoes, the cost of two shirts and the sales tax.**

Add 49.95, the product of 2 and 9.95, the product of 0.08 and 49.95, and the product of 0.08, 2 and 9.95.

- 2 If there were 30 participants in the game, what is the ratio of participants to spectators?

*** 1:48**

- 2 If George received a 20% discount on the shoes, how much was his final purchase?

A \$75.44

B \$71.14

***C \$64.65**

D \$59.91



CATEGORY

Numbers, Operations, and Quantitative Reasoning



READINESS

Select and use appropriate operations to solve problems and justify selections.

Coach Black purchased 10 basketballs for \$34.95 each and 6 nets for \$6.25 each.

1 Which of the following information is needed to determine the total amount Coach Black spent on the equipment?

***A The sales tax rate**

B The total number of items purchased

C The company he purchased the equipment from

D The total amount of money spend on basketballs

During the basketball season, Jason averaged 4.5 points per game and Kris averaged 22.2 points per game.

1 What additional information is needed to determine the total points Jason scored during the basketball season?

*** Total number of games**

or

*** Total points Kris and Jason scored**

2 If the sales tax rate is 8%, how much did Coach Black spend?

$$1.08 \times (10 \times 34.95 + 6 \times 6.25) = 417.96$$

*** \$417.96**

2 If Jason and Kris scored a total of 801 points during the season, how many games did they play?

A 36 games

***B 30 games**

C 178 games

D 25 games



CATEGORY

Numbers, Operations, and Quantitative Reasoning



READINESS

Select and use appropriate operations to solve problems and justify selections.

Lee works two jobs. Last week, he worked 20 hours at Hill Printing Company and made \$8.50 per hour and 15 hours at the G & J Fitness for Life Center and made \$7.25 per hour.

- 1 Which of the following equations can be used to find t , Lee's total earnings from both jobs during the week?

A $t = (20 + 8.50) \times (15 + 7.25)$

B $t = (20 + 15) \times (8.50 + 7.25)$

*C $t = (20 \times 8.50) + (15 \times 7.25)$

D $t = 20 \times 8.50 \times 15 \times 7.25$

- 2 If Lee saves 10% of his earnings, how much Lee's earnings did he put towards savings?

* \$27.88

$s = 0.10 \times (20 \times 8.5 + 15 \times 7.25) = 27.875$

Kamdyn swims for 45 minutes every day and practices diving for 1.5 hours every day.

- 1 Write an equation that Kamdyn could use to determine m , the number of minutes she practices in the pool each week.

* $m = (45 \times 7) + (1.5 \times 60 \times 7)$

or

* $m = (45 \times 7) + (90 \times 7)$

Answers may vary.

- 2 How many more minutes does Kamdyn spend practicing diving than swimming each week?

A 735 minutes

B 304.5 minutes

C 325.5 minutes

* D 315 minutes



CATEGORY

Patterns, Relationships, and Algebraic Thinking



READINESS

Estimate and find solutions to application problems involving percent.

Lynn earned an 85% on her math test. There were 40 equally valued questions on the test.

1 Which proportion could Lynn use to determine how many questions she missed?

A $\frac{x}{40} = \frac{85}{100}$

B $\frac{40}{85} = \frac{x}{100}$

* C $\frac{x}{40} = \frac{15}{100}$

D $\frac{10}{15} = \frac{x}{100}$

2 How many questions did Lynn NOT answer correctly on her test?

* 6

Laura went to the store to purchase a pair of shoes. Laura received a 25% discount and paid \$63.75 for the shoes.

1 Write an expression that could be used to determine the original price for the shoes Laura purchased.

* $x - 0.25x = 63.75$

or

$x(1 - 0.25) = 63.75$

or

$0.75x = 63.75$

Answers may vary.

2 Which represents the dollar amount of discount Laura received?

A \$15.94

* B \$21.25

C \$47.81

D \$17.00



CATEGORY

Patterns, Relationships, and Algebraic Thinking



READINESS

Estimate and find solutions to application problems involving percent.

Todd spent \$60 on DVDs shown below.

- 2 Action movies for \$8 each
- 2 Comedy movies for \$15 each
- 1 Trilogy pack for \$14

1 Which expression could be used to determine what percent of the \$60 was spent on the trilogy?

A $[(2 \times 8) + (2 \times 15) + 14] \times 100$

B $[(2 \times 8) + (2 \times 15) \div 60] \times 100$

C $[(16 + 30) - (14 \div 60)] \times 100$

* D $(14 \div 60) \times 100$

2 What percent of the \$60 was spent on action movies?

* $26\frac{2}{3}\%$

Lee took \$20 to the carnival and spent his money on the items below.

- Entry for \$7.50
- 10 ride tickets for \$0.50 each
- 2 drinks for \$2.00 each
- 1 funnel cake for \$3.50

1 Write an expression that could be used to determine the percent of the \$20 spent on the funnel cake.

* P = $(3.50 \div 20) \times 100$

2 What percent of the \$20 was spent on tickets to ride the attractions?

A 2.5%

*B 25%

C 50%

D 45%



Patterns, Relationships, and Algebraic Thinking



Estimate and find solutions to application problems involving percent.

Mr. Thompson's class kept track of plant growth over a month period in their biology class as shown in the table below.

Student	Original Height (inches)	Height after one month
Joey	12	13.8
Suzie	$4\frac{1}{3}$	8
Alex	6	$8\frac{3}{5}$
Monica	$4\frac{1}{2}$	8.2
Sampson	10.5	$12\frac{1}{4}$

- 1 Which procedure could Monica use to determine the percent of change for her plant?
- *A Subtract $4\frac{1}{2}$ from 8.2 then divide by $4\frac{1}{2}$ and multiply by 100
 - B Subtract $4\frac{1}{2}$ from 8.2 then multiply
 - C Subtract $4\frac{1}{2}$ from 8.2 then divide by 8.2 and multiply by 100
 - D Divide $4\frac{1}{2}$ by 8.2 then multiply by 100

2 Which student has a greater percent of change than Monica?

*Suzie

Nicola went to the store to purchase batteries. He found batteries originally marked \$5.40 on sale for \$3.00.

- 1 Write a procedure Nicola could use to find the percent of change in the price of the batteries.

Subtract 3.00 from 5.40 then divide by 5.40 and multiply by 100

2 Which of the following represents a percent of change greater than the one Nicola found?

- A A baby that weighed 8 pounds at birth, weighs 11 pounds after 3 months.
- B The price of a pair of shoes originally \$125 is on sale for \$75.
- C After taking a test, Aston's grade went from a 72 to a 90.
- *D After installing software, Kim's computer went from 4 GB of free space to 2 GB of free space.



CATEGORY

Patterns, Relationships, and Algebraic Thinking



READINESS

Estimate and find solutions to application problems involving proportional relationships such as similarity, scaling, unit costs, and related measurement units.

Francis wants to ride a ferris wheel at the state fair. The ferris wheel moves at a rate of about $\frac{1}{2}$ a rotation per minute.

- 1 Which statement is best supported by this information?
- A The ferris wheel will rotate 30 times in 30 minutes.
 - B The ferris wheel will rotate 80 times in 45 minutes.
 - *C The ferris wheel will rotate 30 times in an hour.**
 - D The ferris wheel will rotate 100 times in 2 hours.

- 2 If the ferris wheel has made 50 revolutions, how long has it been running?

*** 100 minutes or 1 hour 40 minutes or $1\frac{2}{3}$ hours**

Answers may vary.

Charlie owns a unicycle. The wheel of the unicycle can travel about 9.5 feet in one revolution.

- 1 Write a statement that describes an equivalent rate as shown above.

*** One revolution of the wheel covers 9.5 ft
or
The perimeter of the unicycle wheel is 9.5 ft**

- 2 If the unicycle traveled 304 feet, how many revolutions did it make?

A 294.5

***B 32**

C 30

D 2888



CATEGORY

Patterns, Relationships, and Algebraic Thinking



READINESS

Estimate and find solutions to application problems involving proportional relationships such as similarity, scaling, unit costs, and related measurement units.

Mr. Davis wants to buy fresh strawberries to make chocolate covered strawberries for Valentine's Day. The table below shows the price of fresh strawberries at 4 local fruit stands.

Strawberry Prices	
Fruit Stand	Strawberries
Fred's Fruit	\$4.00 pt
Natal's Market	\$3.60 pt
Raul's Roadside	\$6.00 qt
Pete's Patio	2 pts for \$5.00

1 Which expression could be used to find the price per cup at Natal's Market?

- *A $3.60 \div 2$
- B $3.60 \div 4$
- C 3.60×2
- D $(3.69 \div 2) \times 4$

2 According to the table, which fruit stand has the best price per cup for strawberries?

* Pete's Patio

Kim is wanting to join a gym. The table below shows the rates at four gyms in the area.

Gym Prices	
Gym	Rate
Jim's Gym	\$225 annual membership
Riley's Weights	\$18.95 monthly membership
Sport Courts	\$60 per quarter annual membership
Getting Big	\$7.95 weekly membership

1 Write an expression that could be used to find M , the monthly rate at Getting Big.

* $(7.95 \times 52) \div 12 = M$

2 According to the table, which gym has the best monthly membership rate?

- *A Jim's Gym
- B Riley's Weights
- C Sport Courts
- D Getting Big



CATEGORY

Patterns, Relationships, and Algebraic Thinking



READINESS

Estimate and find solutions to application problems involving proportional relationships such as similarity, scaling, unit costs, and related measurement units.

Patsy is shipping 12 books of equal price to a school. The cost of shipping the books is \$6.95 and the total cost of the books and shipping is \$306.35.

1 Which method can be used to find B , the price of each book?

A $306.35 \div 12$

***B $(306.35 - 6.95) \div 12$**

C $(306.35 \div 12) + \$6.95$

D $(306.35 \div 12) + (6.95 \div 12)$

Ian is lifting weights. He has 6 plates of the same weight on the bar. The weight of the bar is 45 pounds and the total weight of the bar and plates is 195 pounds.

1 Write a method that could be used to determine w , the weight of each plate on the bar.

*** $(195 - 45) \div 6 = w$**

2 If Patsy fulfills another order of 14 books and the shipping cost remains the same, how much will be the total cost of the books and shipping?

$(24.95 \times 14) + 6.95 = 356.25$

*** \$356.25**

2 If Ian adds two more plates of equal weight on the bar, what will be the total weight of the bar and plates?

A 225 lbs

B 240 lbs

***C 245 lbs**

D 255 lbs



CATEGORY

Patterns, Relationships, and Algebraic Thinking



READINESS

Formulate problem situations when given a simple equation and formulate an equation when given a problem situation.

Use the equation below to answer questions 1 and 2.

$$x + 4 = 12$$

- 1 Which problem situation matches the equation above?
- A Jim has 4 fewer marbles than John. John has 12 marbles. How many marbles does Jim have?
 - B Jackson ran 12 miles. and Jane ran 4 miles. How many miles did they run together?
 - *C Jim has 4 more posters than Pam. Jim has 12 posters. How many posters does Pam have?**
 - D Bill has 4 times as many baseball trading cards as Bob has. Bob has 12 baseball trading cards. How many baseball cards does Bill have?

- 2 Write a situation that is different than the answers in problem 1, but also matches the equation.

***Jim is 12 years old. He is 4 years older than his sister, Sue. How old is Jim's sister?**

Answers will vary.

Use the equation below to answer questions 1 and 2.

$$12x = 48$$

- 1 Write a situation that matches the equation above.
- *Jim collects marbles. He has 48 marbles. Jim has 12 times as many marbles as his brother, John. How many marbles does John have?**

- 2 Which problem situation matches the equation above?

- A Bill has 12 more marbles than Bob. Bob has 48 marbles. How many marbles does Bill have?
- B Jim is 48 years old. He is 3 times as old as his nephew, Joe. How old is Joe?
- C Jane is 48 years old. Bill, her brother, is 12 years older than Jane. How old is Bill?
- *D Sam is 48 years old. Sam is 12 times older than his daughter, Shelley. How old is his daughter?**



CATEGORY

Patterns, Relationships, and Algebraic Thinking



READINESS

Formulate problem situations when given a simple equation and formulate an equation when given a problem situation.

The length of a rectangle is l . The width, w , of a rectangle is 4 less than 2 times the length.

- 1 Which of the following equations best represents this situation?

A $l = 2w - 4$

***B $w = 2l - 4$**

C $l = (4 - 2)w$

D $w = (4 - 2)l$

Hamilton has h baseball cards. Nelson has 2 more than three times the number of cards Hamilton has.

- 1 Write an equation that best represents this situation if Nelson has n baseball cards.

*** $n = 3h + 2$**

- 2 If the length of the rectangle is 6 inches, what is the width?

$w = (2 \times 6) - 4$

*** $w = 8$**

- 2 If Hamilton has 16 baseball cards, how many does Nelson have?

A 80

B 46

***C 50**

D 22



CATEGORY

Patterns, Relationships, and Algebraic Thinking



READINESS

Formulate problem situations when given a simple equation and formulate an equation when given a problem situation.

Use the equation below to answer questions 1 and 2.

$$x - 2.75 = 7.25$$

- 1 Which problem situation matches the equation above?
- A Arturo has \$7.25 to spend on roses. How many roses, x , can Arturo buy if they are \$2.75 each?
 - B George ran the 40-yard dash in a time of 7.25 seconds. Austin beat George by 2.75 seconds. How fast, x , did Austin run the 40-yard dash?
 - *C Lara went to the store and bought a sports drink for \$2.75. The clerk gave her \$7.25 in change. How much money, x , did Lara give the clerk?**
 - D Heather wants to run 7.25 miles today. So far she has run 2.75 miles. How many more miles, x , does Heather need to run?

- 2 Write your own problem situation to watch this equation.

Answers will vary.

Use the equation below to answer questions 1 and 2.

$$2.5x = 15$$

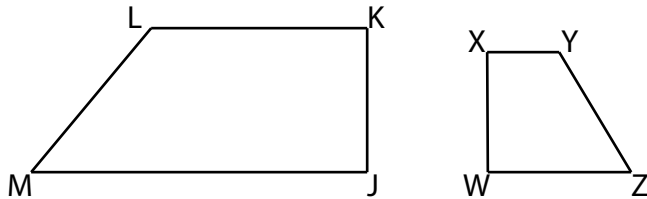
- 1 Write a problem situation that matches the equation above.
- * Lola is 15 years old. She is two and half times older than her little brother.**

Answers will vary.

- 2 Which problem situation matches the equation above?

- A Gayle wrote math problems for 2.5 hours a day for 15 days. How many hours, x , did she spend writing math problems.
- *B Alia has \$15 to spend. How many hamburgers, x , can she buy priced at \$2.50 each?**
- C Phung has \$2.50. How much more money, x , does Phung need in order to buy a DVD priced at \$15?
- D The Raider basketball team averaged 15 assists per game. Austin averaged 2.5 assists. How many assists, x , did the rest of the Raider team average?

Look at the two similar figures below.



1 Which of the following is NOT true about the similar figures?

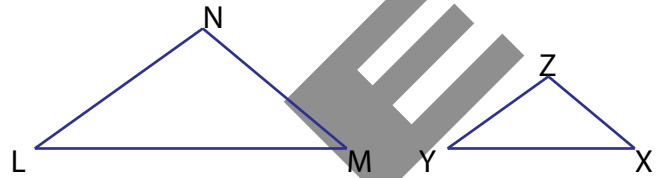
- A The corresponding sides are proportional.
- B They have the same shape.
- C The corresponding angles are equal.

***D The corresponding sides are equal.**

2 Write a proportion that could be used to prove the figures are similar.

*** $\frac{ML}{MJ} = \frac{ZY}{ZW}$**

Look at the two similar triangles below.



1 Write a true statement relating the sides of these two similar triangles.

- * The corresponding sides are proportional.**
- or
- * They have the same shape.**
- or
- * The corresponding angles are equal.**

Answers may vary.

2 Which proportion could be used to prove the two triangles are similar?

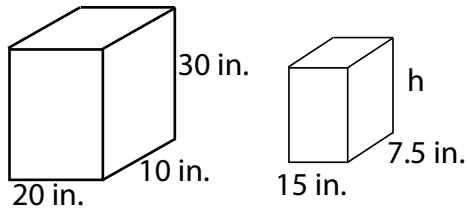
A $m\angle L = m\angle N$ and $m\angle Y = m\angle Z$

***B $\frac{LN}{LM} = \frac{YZ}{YX}$**

C $\frac{LN}{NM} = \frac{LM}{YX}$

D $\frac{m\angle L + m\angle Z}{m\angle Z + m\angle X} = 1$

Kim bought two similar jewelry boxes for herself and her daughter.



- 1 Which of the following proportions could be used to find the value of h ?

*A $\frac{10}{30} = \frac{7.5}{h}$

B $\frac{10}{20} = \frac{h}{7.5}$

C $\frac{30}{10+20} = \frac{15}{h+7.5}$

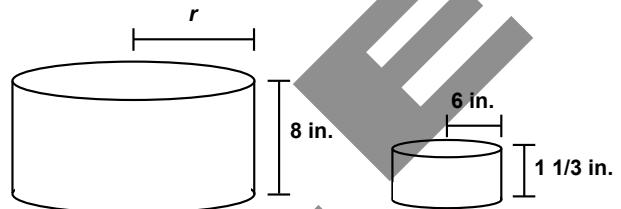
D $\frac{h}{7.5} = \frac{10}{30}$

- 2 Kim had another daughter that also wanted a jewelry box. Write a set of dimensions that could represent a third similar jewelry box.

* 30 in. \times 15 in. \times 45 in.

Answers may vary.

Oscar and his son share the same birthday. At their birthday party, they had similar cakes.



- 1 Write a proportion that could be used to determine r .

* $\frac{r}{8} = \frac{9}{2}$

OR

* $\frac{6}{1} = \frac{r}{6}$

Answers may vary.

- 2 Oscar wanted to make another similar cake for his wife's birthday. What dimensions could he use?

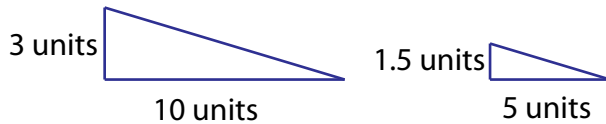
A $h = 6, r = 1$

*B $h = 4, r = 18$

C $h = 18, r = 4$

D $h = 8, r = 6$

Look at the triangles below.



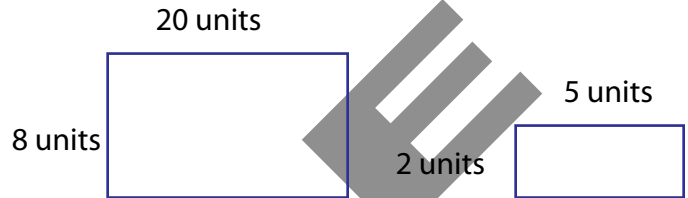
- Which method could you use to prove that the two rectangles are similar?
 - A Divide 1.5 by 5 and 10 by 3 to see if they are the same.
 - B Divide 1.5 by 10 and 5 by 3 to see if they are the same.
 - C Divide 5 by 10 and 3 by 1.5 to see if they are the same.
 - *D Divide 3 by 1.5 and 10 by 5 to see if they are the same.**

- What number would fit in the proportion below to create another similar triangle?

$$\frac{3}{10} = \frac{\square}{15}$$

*** 4.5**

Look at the rectangles below.



- Write a method that could be used to determine if the two rectangles are similar.
 - * Divide 20 by 8 and 5 by 2 to see if they are the same.**

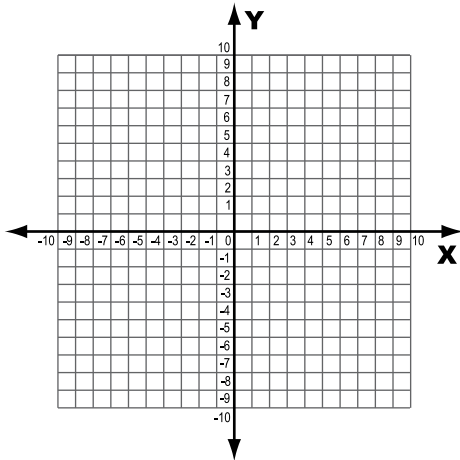
- What number would fit in the proportion to create another similar rectangle?

$$\frac{\square}{20} = \frac{2}{5}$$

- A 4
- B 20
- *C 8**
- D 25

Graph reflections across the horizontal or vertical axis and graph translations on a coordinate plane.

Rajai translated rectangle JKLM to rectangle J'K'L'M'. Vertex L was at $(3, -2)$.

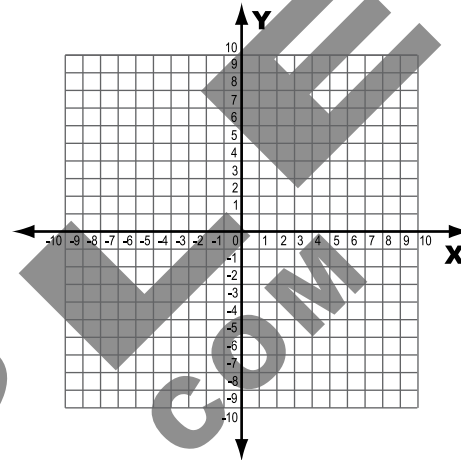


- 1 If vertex L' is at $(-3, 2)$, which best describes this translation?
 - A Move 3 units left and 2 units up
 - *B Move 6 units left and 4 units up**
 - C Move 6 units left and 6 units up
 - D Move 3 units right and 2 units down

2 If rectangle J'K'L'M' has reflected across the y-axis, what would be the coordinates for vertex L''?

*** $(-3, -2)$**

Jose translated triangle RST to triangle R'S'T'. Vertex R was at $(0, 4)$.



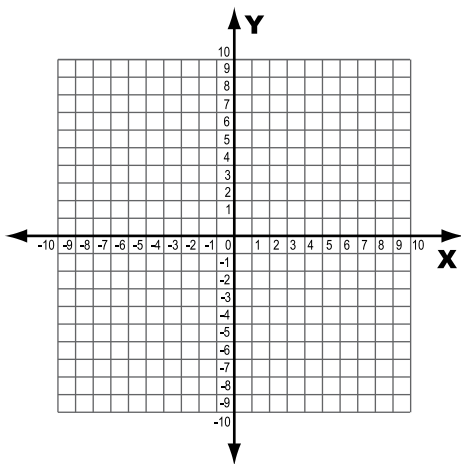
- 1 If vertex R' is at $(-1, 2)$, describe the translation.
 - * Move to the left 1 and down 2**

2 If triangle R'S'T' is reflected across the x-axis, what will be the new coordinates for R''?

- *A $(-1, -2)$**
- B $(1, 2)$
- C $(1, -2)$
- D $(2, -1)$

Graph reflections across the horizontal or vertical axis and graph translations on a coordinate plane.

Kamdyn graphed trapezoid RSTU using the coordinates R(-6, 2), S(-2, 2), T(-3, 4) and U(-5, 4).



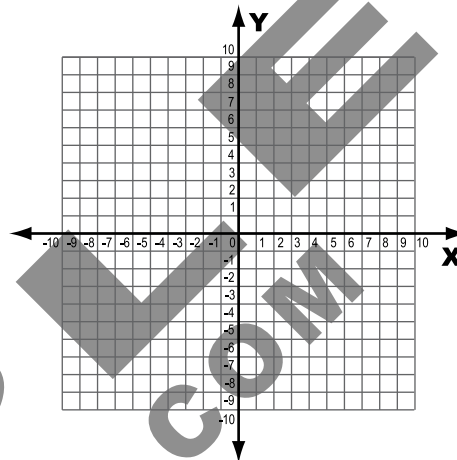
1 Which of the following transformations would create R'S'T'U' with R' at (6, 2)?

- A Reflection across x -axis
- B Move 4 units right and 4 units down
- *C Reflection across y -axis**
- D Move 8 units left

2 What would be the coordinates of S', T', and U' in problem 1?

- * S' = (2,2)**
- * T' = (3,4)**
- * U' = (5,4)**

Arturo graphed triangle JKL using the coordinates J(2, 2), K(8, 5) and L(5, 7).



1 Write a transformation that would create triangle J'K'L' with K' at (8, -5).

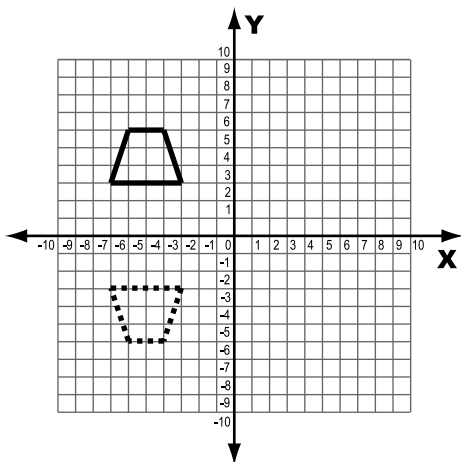
- * Translation: move 10 down**
- or**
- * Reflection: over the x axis**

2 Which of the following would represent J' and L' after a reflection over the x axis?

- *A (5, -7), (2, -2)**
- B (-5, 7), (-2, 2)
- C (5, -3), (2, -8)
- D (-1, 5), (2, 10)

Graph reflections across the horizontal or vertical axis and graph translations on a coordinate plane.

Adolph drew trapezoid 1 on the coordinate plane below. He then transformed it to create trapezoid 2.



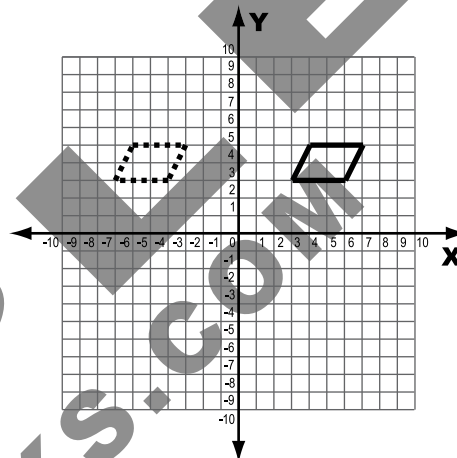
1 Which best describes the transformation Adolph made to the trapezoid?

- *A Reflection over the x-axis
- B Translation 6 units down
- C Reflection over the y-axis
- D Translation 6 units up

2 If Adolph reflects trapezoid 2 across the y-axis, what will be the coordinates of the new trapezoid?

* (3,-3), (7,-3), (4,-6), (6,-6)

Kim plotted a parallelogram on the coordinate plane below. She then transformed the parallelogram as shown with the dashed lines.



1 Write a transformation Kim could have used to produce the new parallelogram.

* Translation

2 Which of the following coordinates would result from translating the new trapezoid 3 units down and 2 units left?

- A (0,0), (1,2), (3,0), (4,6)
- B (3,-3), (6,-3), (3,-5), (6,-5)
- *C (1,0), (4,0), (2,2), (5,2)
- D (3,3), (6,3), (7,5), (4,5)



CATEGORY

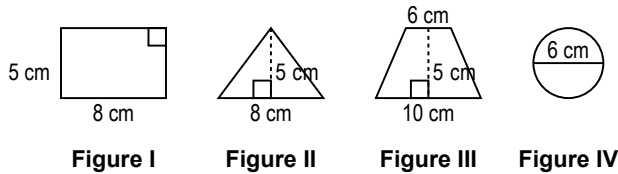
Measurement



READINESS

Estimate measurements and solve application problems involving length (including perimeter and circumference) and area of polygons and other shapes.

Margo designed four different table tops as shown below.



1 Which procedure could be used to determine the area of Figure I?

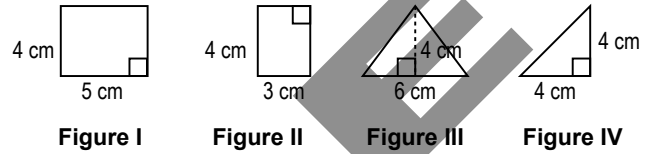
- A Multiply 5 by 8, and divide the product by 2
- B Square 5 and subtract it from the square of 8
- C Add 8 and 5 and multiply the sum by 2

***D Multiply 5 by 8**

2 Which figures have the same area?

*** Figures I and III have the same area.**

John created picture frames in the following shapes.



1 Write a procedure that could be used to find the area of Figure III.

*** Multiply the base and the height together and divide by 2**

or

Multiply 6 by 4 and divide the product by 2

or

Area is equal to half of the product of the base and the height

2 Which figures have the same area?

A All four figures have the same area

B III and IV have the same area

***C II and III have the same area**

D None of the figures have the same area



CATEGORY

Measurement



READINESS

Estimate measurements and solve application problems involving length (including perimeter and circumference) and area of polygons and other shapes.

Ali is trying to determine the amount of sod needed for her rectangular backyard. She knows the area and perimeter of the yard.

$$\begin{aligned} \text{Area} &= 864 \text{ sq ft} \\ \text{Perimeter} &= 120 \text{ ft} \end{aligned}$$

1 Which best represents the length and width of the yard?

A 10 yd by 50 yd

B 12 ft by 72 ft

***C 24 ft by 36 ft**

D 8 yd by 10 yd

James is painting his rectangular garage floor. He knows the area and perimeter of his garage.

$$\begin{aligned} \text{Area} &= 1,000 \text{ sq ft} \\ \text{Perimeter} &= 130 \text{ ft} \end{aligned}$$

1 What are possible dimensions for the floor of Jame's garage?

*** 40 ft by 25 ft**

2 If each mat of sod covers 6.5 square feet, how many mats of sod does Ali need to purchase?

***133 mats**

2 If each can of paint covers 75 square feet, how many cans does James need to purchase?

A 8

B 10

C 12

***D 14**



CATEGORY

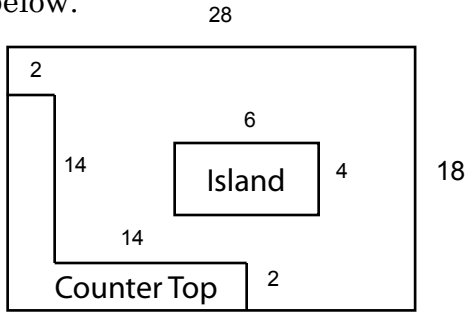
Measurement



READINESS

Estimate measurements and solve application problems involving length (including perimeter and circumference) and area of polygons and other shapes.

Victor wants to tile the floor of his kitchen as shown below.



1 How many square feet of floor does Victor plan to tile?

A 504 sq ft

B 456 sq ft

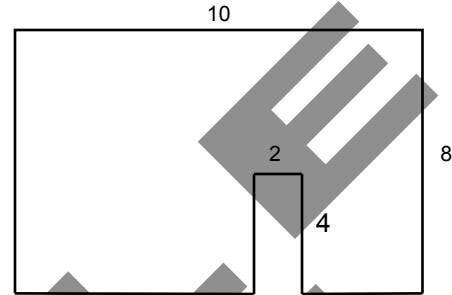
***C 420 sq ft**

D 416 sq ft

2 If each box of tile costs \$180 and covers 75 square feet, how much will it cost Victor to tile his kitchen floor?

*** \$1,080**

Madison wants to paint one of the walls in her bedroom as shown below.



1 How many square feet of wall will Madison paint?

*** 72 sq ft**

$$(8 \times 10) - (2 \times 4) = 72$$

2 If each can of paint costs \$6.25 and covers 20 square feet, how much will Madison spend to paint her wall?

A \$37.50

***B \$25.00**

C \$18.75

D \$12.50



CATEGORY

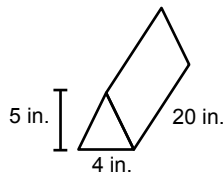
Measurement



READINESS

Estimate measurements and solve application problems involving volume of prisms (rectangular and triangular) and cylinders.

Kris mailed flowers to Kim in a box that was shaped like a triangular prism. The diagram shows the dimensions of the box.



1 Which of the following is the volume of the triangular shaped box?

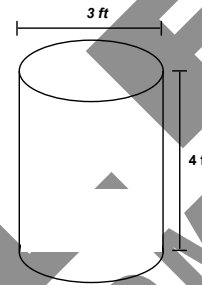
A 400 cubic inches

B 29 cubic inches

C 260 cubic inches

***D 200 cubic inches**

John created a flower pot in the shape of a cylinder. The diagram shows the dimensions of the pot.



1 What is the approximate volume of the flower pot?

28.3 cubic feet

2 If each flowers takes up a volume equal to 30 cubic inches, what is the maximum number of flowers Kris can pack in the box?

6 flowers

2 If John buys bags of dirt that each contains 4 cubic feet of dirt, how many bags does John need to purchase in order to fill the flower pot?

A 3 bags

***B 8 bags**

C 29 bags

D 7 bags



CATEGORY

Measurement



READINESS

Estimate measurements and solve application problems involving volume of prisms (rectangular and triangular) and cylinders.

Kamdyn has a bin where she stores her bows. The bin is in the shape of a rectangular prism with a volume of 48 cubic inches.

- 1 If the length of the bin is 3 inches and the width is 4 inches, what is the height of the bin?

A 36 inches

B 1 inch

C 8 inches

***D 4 inches**

Kennedy is filling a pot shaped like a cylinder with water. The pot has a volume of 2,310 cubic inches.

- 1 If the radius of the tea pot is 7 inches, what is the approximate height?

15 inches

- 2 If the bin can hold 96 bows, what is the volume of each bow?

0.5 cubic feet

- 2 If Kennedy is using a container to fill the pot that holds 190 cubic inches, how many times does she have to fill her container?

A 12

B 10

***C 13**

D 14



CATEGORY

Measurement



READINESS

Estimate measurements and solve application problems involving volume of prisms (rectangular and triangular) and cylinders.

Lee has two types of boxes to carry prisms. The first box is a rectangular prism with a length of 12 inches, a width of 12 inches and a height of 2 inches. The second box is a cylinder with a radius of 7 inches and a height of 2 inches.

- 1 Which best describes the relationship between the two containers?
 - A The rectangular prism has a greater volume.
 - *B The cylinder has a greater volume.**
 - C The volumes can not be determined.
 - D The volumes are equivalent.

- 2 What is the difference in volume of the two boxes?

***20 cubic inches**

John has two types of tents. One tent is in the shape of a rectangular prism with a length of 5 feet, a width of 3 feet and a height of 5 feet. The other tent is in the shape of a triangular prism with a base of 3 feet, a height of 6 feet and a length of 5 feet.

- 1 Describe how the volume of the two tents relate to each other.

***The tent shaped like a rectangular prism has a greater volume.**

- 2 What is the difference in the volume of the two tents?

A 5 cubic feet

***B 30 cubic feet**

C 1 cubic foot

D The volumes are the same.



Probability and Statistics



Make inferences and convincing arguments based on an analysis of given or collected data.

The yearly attendance for a major league baseball team is shown in the table below.

Yearly Attendance

Year	Attendance (Millions)
2007	2.5
2008	3.2
2009	3.6
2010	2.1
2011	2.7

1 Which statement is best supported by the information in the table?

- A Attendance at major league baseball games has steadily increased since 2007.
- B Attendance at major league baseball games has decreased since 2007.
- C A record number of fans stayed away from major league baseball in 2010.

***D Between 2007 and 2011 the largest annual attendance at major league baseball games was in 2009.**

2 Write a procedure that could be used to determine the average attendance during the five years.

*** Add attendance for each of the five years and divide the sum by 5**

John recorded the number of fish he caught in his lake over a 5-day period.

Day	Number of fish caught
Monday	24
Tuesday	16
Wednesday	20
Thursday	24
Friday	18

1 Write a statement that compares the number of fish caught each day.

***The daily average (mean) of fish caught during the week is larger than the median.**

Answers may vary.

2 Which procedure could be used to determine the median number of fish caught?

A $(21 + 16 + 20 + 24 + 18) \div 5$

B $(21 + 16) + (20 + 24) + 18 \div 5$

C $21 + 16 + 20 + 24 + 18 \div 5$

***D None of the above**



Probability and Statistics



Make inferences and convincing arguments based on an analysis of given or collected data.

Alexandra went to the grocery store and purchased each of the following items.

Item	Price
Eggs	\$3.50
Bread	\$1.10
Bacon	\$2.25
Milk	\$3.00
Cereal	\$2.75

1 Which of the following statements is supported by the information in the table?

- A Eggs and milk are the two most popular items purchased.
- B Alexandra can buy one of each item for less than \$12.00.
- C Milk is the most expensive item listed in the table.

***D Alexandra can buy a package of bacon and a box of cereal for \$5.00.**

2 If Alexandra was charged \$14.85, for which item was she charged twice?

*** Bacon**

Nicholas went to the outlet store and purchased the following clothing items.

Item	Prices
Socks	\$6.00
Sandles	\$14.00
T-Shirt	\$9.50
Shorts	\$12.50
Armband	\$2.50

1 Write a statement that compares the prices of each item.

*** If Jim purchases one of each of the items listed, he will spend an average of \$8.90 for each item.**

Answers may vary.

2 If Nicholas was charged \$35.00 before taxes, which item did Nicholas not purchase?

A Socks

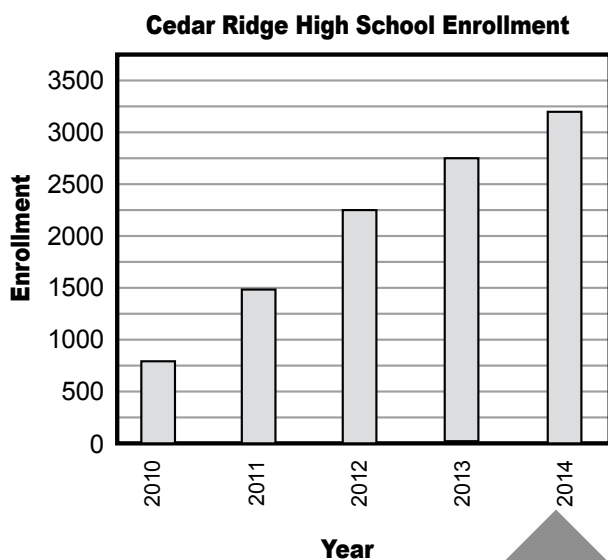
B Sandles

***C T-Shirt**

D Armband

Make inferences and convincing arguments based on an analysis of given or collected data.

The graph below shows the enrollment and enrollment projection over a five-year period for Cedar Ridge High School (CRHS).

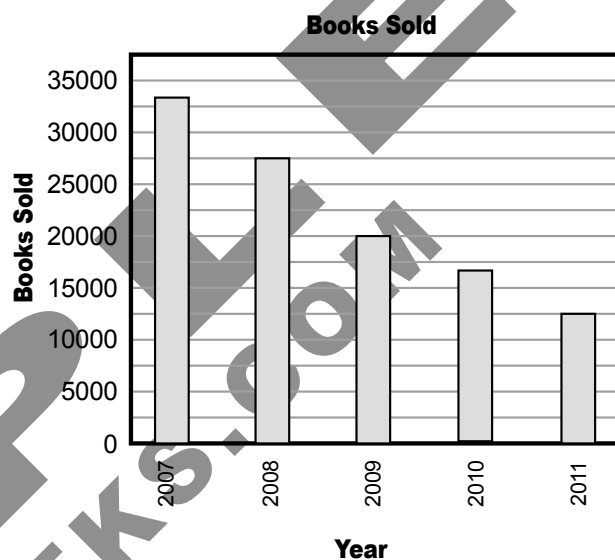


- Which statement is best supported by the data?
 - A The enrollment at CPHS is projected to increase at a constant rate from 2010 to 2014.
 - B The enrollment at CPHS decreased from 2010 to 2011 and is projected to increase every year from 2011 through 2014.
 - *C The mean enrollment at CPHS between 2010 and 2014 is less than the median between 2010 and 2014.**
 - D The median and the mean are the same for the five years listed in the table.

- If the trend continues, predict the enrollment at Cedar Ridge High School in 2016.

*** between 4,000 and 4,500**

The graph below shows the number of books sold for 2007 through 2011 by a publishing company.



- Write a statement that compares the sales of books from year to year.

***The number of books sold from 2007 to 2011 has steadily declined.**

- If this trend continues, how many books will be sold in 2014?

- A Less than 1,000
- B 10,000 to 12,000
- *C 3,000 to 5,000**
- D 14,000 to 15,000

Probability and Statistics

Choose among mean, median, mode, or range to describe a set of data and justify the choice for a particular situation.

Alexandra conducted an experiment for science class. She counted the number of unpopped kernels in 5 bags of microwave popcorn.

Bag	Unpopped Kernels
1	40
2	62
3	28
4	40
5	30

- Which of the following statements is supported by the information in the table above?
 - A It is better to buy popcorn that is pre-popped because there are less unpopped kernels.
 - B Bag 3 represents the mode.
 - C Bag 5 represents the median.
 - *D 40 is the median, mean and mode.**

2 What is the range of the unpopped kernels reported in the table?

*** 34**

Heather leads a yoga class. She measures the pulse of her students at the end of the class.

Student	Pulse
John	108
Gayle	98
Cassie	112
Callie	112
Jason	130

1 Write a statement that represents the pulse in the chart above.

- * The mode is 112.**
- or
- * The mean is 112.**
- or
- *The mean, mode and median are the same.**
- or
- *The median is 112.**

Answers may vary.

2 What is the range for the pulse rates listed in the chart?

- A 130
- B 28
- C 112
- *D 32**



Probability and Statistics



Choose among mean, median, mode, or range to describe a set of data and justify the choice for a particular situation.

Wendy recorded the number of each type of food she sold during lunch at her restaurant.

Type of Food	Number Sold
Hamburger	204
Cheeseburger	120
Chicken Sandwich	102
Salad	120
Chicken Nuggets	198
Corn Dogs	160
Chili	104

1 Which measure of data is represented by 102?

- A Mean
- B Median
- C Mode
- *D Range**

2 What is the mean for the food items listed in the chart?

*** 144**

Mr. McDonald recorded the number of value meals sold at his drive thru over a 7 day period.

Day	Value Meals Sold
Sunday	420
Monday	580
Tuesday	800
Wednesday	580
Thursday	420
Friday	420
Saturday	650

1 Which measure of data is represented by 420?

*** Mode**

2 What day represents the median for the value meals sold?

- *A Wednesday**
- B Thursday
- C Saturday
- D Tuesday



CATEGORY

Probability and Statistics



READINESS

Choose among mean, median, mode, or range to describe a set of data and justify the choice for a particular situation.

Artemis bought 6 pecan trees for \$120 each and one peach tree for \$60.

1 Which measure of data can be used to describe the variation in the price of the trees?

A Mean

B Median

C Mode

***D Range**

Tony scored 6 points in 4 football games and 18 points in 3 football games.

1 Which measure of data can be used to describe the number of points scored most often in the 5 games?

*** Mode (6)**

2 If Artemis bought another tree for \$120, which measure of data would be most affected?

Mean

2 If Tony scored 18 points in the next 2 games, which measure of data would be least affected?

A Mean

B Median

C Mode

***D Range**