

# Step Up to the TEKS

Sixth Grade Mathematics

Readiness Material

**TEACHER EDITION**

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# Table of Contents

Introduction.....	1
Sixth Grade TEKS .....	2
Rational Numbers (6.1B).....	3
Operations (6.2B, 6.2C and 6.2E) .....	6
Algebraic Reasoning (6.3C, 6.4A and 6.5A).....	15
Geometry (6.6C) .....	24
Measurement (6.8B).....	27
Probability and Statistics (6.10D).....	30

# Introduction

*Step Up to the TEKS* meets the specifications published by the Texas Education Agency for the assessable **T**exas **E**ssential **K**nowledge and **S**kills (TEKS) for the Sixth Grade. The TEKS standard each page addresses is identified at the top of each page along with the category and type of **S**tate of **T**exas **A**ssessment of **A**cademic **R**eadiness (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.

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Category	 <b>Readiness Standards</b>	 <b>Supporting Standards</b>	<b># of Items</b>
<b>1</b> <b>Numbers, Operations, and Quantitative Reasoning</b>	6.1B generate equivalent forms of rational numbers including whole numbers, fractions, and decimals 6.2B use addition and subtraction to solve problems involving fractions and decimals 6.2C use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates 6.2E use order of operations to simplify whole number expressions (without exponents) in problem solving situations	6.1A compare and order non-negative rational numbers 6.1C use integers to represent real-life situations 6.1D write prime factorizations using exponents 6.1E identify factors of a positive integer, common factors, and the greatest common factor of a set of positive integers 6.1F identify multiples of a positive integer and common multiples and the least common multiple of a set of positive integers c6.2A model addition and subtraction situations involving fractions with objects, pictures, words, and numbers 6.2D estimate and round to approximate reasonable results and to solve problems where exact answers are not required	16
<b>2</b> <b>Patterns, Relationships, Algebraic Reasoning</b>	6.3C use ratios to make predictions in proportional situations 6.4A use tables and symbols to represent and describe proportional and other relationships such as those involving conversions, arithmetic sequences (with a constant rate of change), perimeter and area 6.5A formulate equations from problem situations described by linear relationships	6.3A use ratios to describe proportional situations 6.3B represent ratios and percents with concrete models, fractions, and decimals 6.4B use tables of data to generate formulas representing relationships involving perimeter, area, volume of a rectangular prism, etc.	12
<b>3</b> <b>Geometry and Spatial Reasoning</b>	6.6C describe the relationship between radius, diameter, and circumference of a circle	6.6A use angle measurements to classify angles as acute, obtuse, or right 6.6B identify relationships involving angles in triangles and quadrilaterals 6.7A locate and name points on a coordinate plane using ordered pairs of non-negative rational numbers	8
<b>4</b> <b>Measurement</b>	6.8B select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter), area, time, temperature, volume, and weight	6.8A estimate measurements (including circumference) and evaluate reasonableness of results 6.8C measure angles 6.8D convert measures within the same measurement system (customary and metric) based on relationships between units	8
<b>5</b> <b>Probability and Statistics</b>	6.10D solve problems by collecting, organizing, displaying, and interpreting data	6.9A construct sample spaces using lists and tree diagrams 6.9B find the probabilities of a simple event and its complement and describe the relationship between the two 6.10A select and use an appropriate representation for presenting and displaying different graphical representations of the same data including line plot, line graph, bar graph, and stem and leaf plot 6.10B identify mean (using concrete objects and pictorial models), median, mode, and range of a set of data 6.10C sketch circle graphs to display data	8

**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.**



CATEGORY

# Rational Numbers



READINESS

The student is expected to generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.

Quinton has 12 players on his basketball team. Three out of every four ( $\frac{3}{4}$ ) of the team players are guards.

1 Which of the following best represents  $\frac{3}{4}$ ?

A 0.34

C 0.25

**\*B 0.75**

D 0.6

2 How many of Quinton's basketball players are not guards?

**\* 3**

Myron has entered 50 barbecue contests.

He has won  $\frac{2}{5}$  of the contests he entered.

1 Write a fraction that is equivalent to  $\frac{2}{5}$ .

\*  $\frac{4}{10}$

or

\*  $\frac{20}{50}$

or

\*  $\frac{40}{100}$

Answers may vary.

2 How many barbecue contests has Myron won?

A 10

C 30

**\*B 20**

D 40



CATEGORY

# Rational Numbers



READINESS

The student is expected to generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.

Damion and Arnold ordered a pizza for lunch. The pizza was cut into 8 equal pieces.

1 Damion ate 2 of the pieces of pizza. Which pair of numbers are equivalent to the portion of the pizza Damion ate?

A  $0.28, \frac{2}{8}$

C  $0.125, \frac{1}{8}$

B  $0.5, \frac{1}{2}$

\*D  $0.25, \frac{1}{4}$

2 Arnold ate twice as many pieces of pizza as Damion ate. Write a fraction that best represents the portion of pizza Arnold ate.

\* $\frac{4}{8}$

or

\* $\frac{1}{2}$

Answers may vary.

Callie, Cassie, and Heather shared a bag of candy. The bag of candy had 50 pieces in it.

1 Callie ate 30 pieces of the candy. Write a decimal and fraction equivalent to the portion of candy Callie ate.

\*  $0.6$

or

\*  $0.60$

and

\*  $\frac{3}{5}$

or

\*  $\frac{6}{10}$

Answers may vary.

2 Cassie ate half as much candy as Callie. Which fraction is equivalent to the portion of candy Cassie ate?

A  $\frac{6}{5}$

C  $\frac{6}{10}$

\*B  $\frac{3}{10}$

D  $\frac{1}{2}$



CATEGORY

# Rational Numbers



READINESS

The student is expected to generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.

Phil bought chocolate bars that were divided into 8 equal pieces.

- 1 If Phil has eaten 20 pieces of chocolate, which of the following best represents the number of chocolate bars he has eaten?

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

C  $\frac{1}{4}$

B  $1\frac{3}{4}$

D  $\frac{2}{5}$

Carlo bought pizzas that were each cut into 8 equal pieces.

- 1 Carlo's family has eaten 18 pieces of pizza. Write a mixed number that best represents the number of pizzas Carlo's family has eaten.

\*  $2\frac{1}{4}$

*Answers may vary.*

- 2 What additional information is needed to determine how many pieces of chocolate Phil did NOT eat?

\* The number of chocolate bars

- 2 What additional information is needed to determine the amount of pizza Carlos ordered?

- A The number of pieces on each pizza.  
\*B The number of pieces of pizza not eaten.  
C The cost of each pizza.  
D No additional information is needed.



CATEGORY

# Operations



READINESS

The student is expected to use addition and subtraction to solve problems involving fractions and decimals.

Gayle has \$10 to spend on breakfast. Milk costs \$2.25 a pint and donuts cost \$0.25 each.

- 1 If Gayle buys 2 pints of milk, how can she determine how much money she has left for donuts?
- A Divide \$10 by 2, then subtract \$0.50
  - B Divide \$10 by 2, then subtract \$2.25
  - \*C Subtract the product of 2 and \$2.25 from \$10**
  - D Subtract the sum of \$2.25 from \$10

Coach Arnold and Coach Snuffy have \$25 to spend at the movies. Tickets cost \$7.50 each for adults. A large box of popcorn cost \$4.00 and a large drink cost \$3.00.

- 1 How can Arnold and Snuffy determine the amount of money they have left after purchasing tickets for the movie?

**\* subtract the product of 2 and \$7.50 from \$25.00**

- 2 How many donuts can Gayle purchase?

**\* 22**

- 2 Can Arnold and Snuffy purchase tickets for the movie, a large box of popcorn and two large drinks with their money?

- A Yes, and they will have \$1.00 left.
- \*B Yes, they have the exact amount.**
- C No, they need an additional \$3.00.
- D No, they are 50¢ short.



CATEGORY

# Operations



READINESS

The student is expected to use addition and subtraction to solve problems involving fractions and decimals.

Ariel surveyed 30 students at Cobb Middle School. Each student was asked to pick his or her favorite sport. The results are shown below:

- 10 students chose basketball
- 8 students chose football
- 6 students chose volleyball
- ? students chose baseball

1 How many students chose baseball?

- A 4 students                      C 10 students
- \*B 6 students**                      D 24 students

2 What fraction of the students chose basketball or football as their favorite sport?

\*  $\frac{18}{30}$

or

\*  $\frac{3}{5}$

*Answers may vary.*

Dane has 20 movies in his collection. The list shows the number of each type of movie in Dane's collection.

- 6 Action Movies
- 4 Drama Movies
- 4 Science Fiction Movies
- ? Biographical Movies

1 Explain how you would determine the number of Biographical Movies in Dane's collection.

**\* Subtract the sum of 6, 4 and 4 from 20**

2 What fraction of the movies in Dane's collection are either Drama or Biographical?

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

B  $\frac{3}{5}$

C  $\frac{2}{5}$

D  $\frac{3}{4}$





CATEGORY

# Operations



READINESS

The student is expected to use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.

Enrique bought a motorcycle that cost \$4,600, including tax. He wants to pay for his motorcycle in 20 equal payments.

1 What will be the dollar amount of each payment?

- A \$26
- B \$260
- C \$203
- \*D \$230

Danny is training for a marathon. He has to run 450 miles in the next 12 weeks.

1 If Danny wants to run the same amount each week, how many miles does he need to run every week?

\* 37.5 miles

2 If Enrique decides he can afford to pay \$575 each payment, how will that affect his number of payments?

- \* He will only have 8 payments.
- or
- \* He will have 12 fewer payments.

Answers may vary.

2 Danny has an injury that keeps him from starting his training on time. If he decides he has to run 45 miles every week, how did the injury affect his training?

- A Danny could not train for 4 weeks.
- \*B Danny could not train for 2 weeks.
- C Danny will not reach his goal.
- D Danny will run for 4 additional weeks.



CATEGORY

# Operations



READINESS

The student is expected to use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.

Lee is spinning a pizza. In his restaurant, there are 14 tables. Eight of the tables seat 6 people each and six of the tables seat 4 people each.

1 What procedure could be used to determine the maximum number of people who can sit at the table in the Pizzeria?

A Find the product of 8 and 6, then multiply by the product of 6 and 4

**\*B Multiply 8 and 6 and multiply 6 and 4, then find the sum of the two products**

C Find the sum of 14, 8, 6, 6, and 4

D Multiply the difference of 14 and 8 by 6 and the difference of 14 and 6 by 4, then add the two products

Coach Ray is creating 10 teams in his P.E. class. Six of the teams have 8 positions each and four of the teams have 6 positions each.

1 Write a procedure that could be used to determine the maximum number of students Coach Ray could put on his team.

**\* Add the sum of the product of 6 and 8 to the product of 4 and 6**

2 If all of the tables that sit 6 people are full, what is a possible number of customers dining at the Pizzeria?

**\* 48 customers**

2 If all of the teams with 8 positions are full, which is a possible number of students in Coach Ray's class?

**\*A 48**

C 480

B 24

D 74



CATEGORY

# Operations



READINESS

The student is expected to use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.

During the first half of the softball season Jessica has gotten a base hit in 2 out of every 5 at-bats.

- 1 If Jessica has 90 at-bats on the year, which expression could be used to determine the number of hits she has?

- A  $2 \times 5 \times 90$   
 B  $90 \div 2 \times 5$   
 \*C  $2 \div 5 \times 90$   
 D  $2 \times 5 \div 90$

At Forest Creek Middle School there are 4 girls for every 5 boys.

- 1 If there are 420 girls at Forest Creek Middle School, write an expression that could be used to determine the number of boys.

$$* \frac{4}{5} = \frac{420}{b}$$

- 2 If Jessica wants to get 20 more hits on the season, how many at-bats should she expect to get?

\* 50

- 2 If 36 new students are enrolled at Forest Creek Middle School, how many would you expect to be girls?

\*A 16

C 28

B 20

D 29



CATEGORY

# Operations



READINESS

The student is expected to use order of operations to simplify whole number expressions (without exponents) in problems solving situations.

Austin has \$80.00 to go to a professional basketball game at an arena. He needs a certain amount of money for a ticket and a taxi. He also wants to buy food and drinks while at the game.

- 1 Look at the problem solving steps below. Arrange the steps in the correct order to find the amount of money Austin has to spend on food and drinks.

STEP R: Find the sum of the cost of a ticket and the taxi

STEP S: Identify the cost of a ticket and the taxi to and from the game

STEP T: Find the difference between \$80 and the sum of the cost of a ticket and a taxi

A R, S, T

C T, R, S

\*B S, R, T

D S, T, R

- 2 What information is needed to determine the amount of money Austin has to spend on food and drinks?

\*cost of the ticket and the cost of the taxi

Sergio received a \$200 gift certificate to Academy for his birthday. He wanted to use the gift certificate to purchase a putter and a driver. He wanted to spend the remaining money on golf balls.

- 1 What steps would Sergio have to complete in order to determine how much money he has to spend on golf balls?

**Step 1: Determine the cost of putter and driver**

**Step 2: Find the sum of the cost of the putter and the driver**

**Step 3: Subtract sum of the putter and driver from \$200**

*Answers may vary.*

- 2 What information is needed to determine the amount of money Sergio has to spend on golf balls?

\*A The cost of the putter and driver

B The cost of each golf ball

C The cost of only the putter

D No additional information is needed



CATEGORY

# Operations



READINESS

The student is expected to use order of operations to simplify whole number expressions (without exponents) in problems solving situations.

Bob went to the grocery store. He bought 2 loafs of bread for \$0.50 each, a jar of peanut butter for \$2.24 and a bottle of jelly for \$3.15.

- 1 What additional information is needed to determine the amount of change Bob received from the cashier?
- A The size of the peanut butter jar
  - \*B The amount of money Bob gave the cashier**
  - C The total price of the two loafs of bread
  - D The price per ounce of the bottle of jelly

Ashley went to the local diner. She ordered the special plate which cost \$7.89, a glass of tea for \$1.24, and a slice of pie for \$2.30. The tax and tip on Ashley's lunch totaled \$2.74.

- 1 What additional information is needed to determine the amount of money Ashley left for the tip?

**\* Amount of the tax**

---

- 2 If Bob received \$2.61 in change, how much did Bob give the cashier?

**\* \$9.00**

---

- 2 If Ashley paid for her meal with a \$20 bill, how much did she receive in change?

- \*A \$5.83**                      C \$0.83
- B \$4.17                        D \$14.17



CATEGORY

# Operations



READINESS

The student is expected to use order of operations to simplify whole number expressions (without exponents) in problems solving situations.

Tracey bought 4 T-shirts and a blouse at an outlet store. Tracey knows her total bill and knows the tax was \$4.78 and the blouse was \$14.95.

1 How can Tracey find the price of each T-shirt?

A Divide the total by 4, then subtract the sum of \$4.78 and \$14.95

**\*B Subtract the sum of \$4.78 and \$14.95 from the total and then divide by 4**

C Multiply \$14.95 by 4 and then subtract the product from the total bill

D Subtract \$4.78 from the total bill, then divide by 4 and subtract \$14.95

Adrian bought 3 cups of cherries, and a bunch of bananas. Adrian knows his total bill and the bunch of bananas cost \$3.99.

1 How can Adrian determine the cost of each cup of cherries?

**\* Subtract \$3.99 from the total bill and divide the difference by 3**

2 If the total bill was \$64.53, how much was each T-shirt?

**\* \$11.20**

2 If the total bill was \$16.74, how much was each cup of cherries?

A \$4.19

C \$5.58

B \$1.59

**\*D \$4.25**



CATEGORY

# Algebraic Reasoning



READINESS

The student is expected to use ratios to make predictions in proportional situations.

Gary can plant 2 trees every 45 minutes.

- 1 If he continues planting trees at this rate, which portion can be used to determine the number of trees Gary can plant in 4 hours?

A  $\frac{2}{45} = \frac{x}{4}$

C  $\frac{2}{45} = \frac{4}{x}$

B  $\frac{x}{45} = \frac{2}{240}$

\*D  $\frac{2}{45} = \frac{x}{240}$

Brice made 8 out of his first 12 free throws.

- 1 If Brice continues shooting at this rate, write a proportion that could be used to determine the number of free throws shot if Brice made 48 free throws.

\*  $\frac{8}{12} = \frac{48}{x}$

---

- 2 If Gary plants 20 trees, how long did it take him to plant the trees?

\* 450 minutes

or

\*  $7\frac{1}{2}$  hours

or

\* 7.5 hours

*Answers may vary.*

- 2 If Brice shoots 100 free throws, how many is he likely to make?

A 145

C 80

B 73

\*D 67



CATEGORY

# Algebraic Reasoning



READINESS

The student is expected to use ratios to make predictions in proportional situations.

Barry is driving to Burns Flat, Oklahoma. According to his map scale 1 inch on the map represents 50 miles.

- 1 Which strategy can Barry use to determine the number of miles he must travel to get to Burns Flat?
- A Measure the number of inches to Burns Flat and then subtract 50.
  - B Measure the number of inches to Burns Flat and then divide by 50
  - C Measure the number of inches to Burns Flat and then add by 50
  - \*D Measure the number of inches to Burns Flat and then multiply by 50**

2 If Barry is 250 miles from Burns Flat, how many inches should he expect to measure on the map?

**\* 5**

Jason is buying a new house. He is looking at scale drawings of some houses he is interested in purchasing. According to the scale drawing 1 inch represents 4 feet.

- 1 Write a strategy Jason could use to determine the actual length of a bedroom using the scale drawing.
- \* Measure the number of inches and multiply by 4**

*Answers may vary.*

2 If the scale dimensions of a living room is 4 inches by 3 inches, which of the following could be the actual dimensions of the living room in the house?

A 8 ft by 11 ft                      C 1 ft. by  $\frac{3}{4}$  ft

**\*B 16 ft by 12 ft                      D 12 ft. by 8 ft**



CATEGORY

# Algebraic Reasoning



READINESS

The student is expected to use ratios to make predictions in proportional situations.

Ambrusia can read 4 pages of a book every 6 minutes.

- 1 How can Ambrusia find how long it will take her to read a book that is 120 pages long?
- A Divide 4 by 6, then multiply the quotient by 120.
  - B Multiply 4 by 6, then divide the product by 120.
  - C Multiply 4 by 6, then multiply the product by 120.
  - \*D Divide 120 by 4, then multiply the quotient by 6.**

Mike can walk 5 miles in 2 hours.

- 1 Explain how you could find the distance Mike can walk in 30 minutes.

**\*First convert 2 hours to 120 minutes, then multiply 5 by 30 and divide the quotient by 120**

Answers may vary.

- 2 If Ambrusia has 36 minutes, how many pages can she read?

**\* 24**

- 2 If Mike walked 40 miles last week, how many hours did he walk?

A 100 hours

C 8 hours

**\*B 16 hours**

D 20 hours



CATEGORY

# Algebraic Reasoning



READINESS

The student is expected to use tables and symbols to represent and describe proportional and other relationships such as those involving conversions, arithmetic sequences (with a constant rate of change), perimeter and area.

Artie is making milk shakes. The table below shows  $s$ , the number of scoops of ice cream he uses to make  $m$  milkshakes.

Artie's Milkshakes

Number of Milkshake, $m$	Number of Scoops of Ice Cream, $s$
2	6
3	9
5	15
6	18

1 If Artie continues this pattern, which of the following expressions can be use to find  $s$ , the number of ice cream scoops it will take to make  $m$  milkshakes?

A  $2m$

\*C  $3m$

B  $m + 4$

D  $m + 6$

2 How many scoops will Artie use to make 10 milkshakes?

\* 30

Joshua is making pepperoni pizza. The table below shows  $n$ , the number of pepperoni slices he used to make  $p$  different pizzas.

Joshua's Pizzas

Number of Pizzas, $p$	Number of Pepperoni Slices, $n$
2	80
3	120
4	160
6	240

1 If Joshua continues this pattern, write an expression that can be used to find  $n$ , the number of pepperoni slices used for  $p$  pizzas.

\*  $n = 40 \times p$

or

\*  $n = 40p$

or

\*  $n = p \times 40$

Answers may vary.

2 How many pepperoni slices will Joshua use to make 12 pizzas?

\*A 480

C 90

B 42

D 960



CATEGORY

# Algebraic Reasoning



READINESS

The student is expected to use tables and symbols to represent and describe proportional and other relationships such as those involving conversions, arithmetic sequences (with a constant rate of change), perimeter and area.

The table shows Heather's age and Kris' age over 4 years.

Heather's Age, $x$ years	Kris' Age, $y$ years
18	21
19	22
20	
21	24

1 Which expression best represents Heather's age in terms of Kris' age?

A  $x - 3$

C  $y + 3$

\*B  $y - 3$

D  $3x$

2 How old was Kris when Heather was 20 years old?

\* 23

The table shows the recommended number of minutes to cook a brisket and the size of brisket.

Weight of Brisket, $x$ pounds	Time Cooking at 225°, $y$ Minutes
4	240
5	300
6	
7	420

1 Write an expression that best represents the table.

\*  $y = 60 \times x$

or

\*  $y = 60x$

or

\*  $y = x \times 60$

Answers may vary.

2 What amount of time should you cook a brisket hat weights 6 pounds?

\*A 360 minutes

C 330 minutes

B 400 minutes

D 350 minutes



CATEGORY

# Algebraic Reasoning



READINESS

The student is expected to use tables and symbols to represent and describe proportional and other relationships such as those involving conversions, arithmetic sequences (with a constant rate of change), perimeter and area.

Zack has a spinner that has 8 equal sections. 3 of the sections are blue.

- 1 If Zack spins the spinner 200 times, which proportion could you use to determine the number of times the spinner is likely to land on a blue section?

A  $\frac{3}{8} = \frac{200}{x}$

\*C  $\frac{3}{8} = \frac{x}{200}$

B  $\frac{3}{200} = \frac{x}{8}$

D  $\frac{3}{200} = \frac{8}{x}$

Matt owns a bicycle shop. He sells 3 mountain bikes for every 2 road bikes.

- 1 If Matt sold 66 mountain bikes last month, write a proportion you could use to determine the number of road bikes he sold.

\*  $\frac{3}{2} = \frac{66}{x}$

- 2 If the spinner landed on red 100 times out of the 200 spins, how many red sections would you expect?

\* 4

- 2 If Matt plans on selling 200 bikes next month, how many mountain bikes does he expect to sell?

\*A 120

C 80

B 180

D 300



CATEGORY

# Algebraic Reasoning



READINESS

The student is expected to formulate equations from problem situations described by linear relationships.

Three friends went to the movies and agreed to share the cost evenly. The movie tickets cost \$18 all together. A large popcorn cost \$5 and large soft drink cost \$4.

1 Which equation could be used to determine  $c$ , the amount each friend paid?

A  $c = 18 + 5 + 4$

B  $c = (18 + 5 + 4) \cdot 3$

\*C  $c = (18 + 5 + 4) \div 3$

D  $c = (18 - 5 + 4) \cdot 3$

Clint and three of his friends went to eat and agreed to share the cost evenly. They bought 4 soft drinks for \$2 each and 2 pizzas for \$12 each. Tax and tip cost \$8.

1 Write an equation that could be used to determine  $c$ , the amount of money each of the four individuals paid.

\*  $[(4 \times 2) + (2 \times 12) + 8] \div 4$

2 If each friend paid \$10, how much change did they receive?

\$3.00 total  
or  
\$1.00 each

Answers may vary.

2 If each person paid \$10, how much change did they receive?

A \$4

C \$2

B \$12

\*D \$0



CATEGORY

# Algebraic Reasoning



READINESS

The student is expected to formulate equations from problem situations described by linear relationships.

Amber purchased a new television and put \$150 as a down payment, which was  $\frac{1}{4}$  of the cost of the television.

1 Which equation can be used to find  $c$ , the total cost of the television?

A  $c = 150 \left(\frac{1}{4}\right)$

C  $c = \frac{1}{150} \left(\frac{1}{4}\right)$

**\*B  $c = 150 (4)$**

D  $c = \frac{1}{150} (4)$

2 How much more money does Amber owe on the television?

**\* \$450.00**

Daniel is the principal at a high school. He has met 450 of the students, which represents  $\frac{1}{3}$  of the students in the school.

1 Write an equation that could be used to find  $s$ , the number of students in the high school.

**\*  $s = 3 \times 450$**

*Answer may vary.*

2 How many more students does Daniel need to meet in order to have met every student in the school?

A 1350

C 450

B 150

**\*D 900**



CATEGORY

# Algebraic Reasoning



READINESS

The student is expected to formulate equations from problem situations described by linear relationships.

Kim joined a video club. Each month she pays \$5 then rents videos for \$1.50 each.

1 Which equation could be used to find the total cost  $c$ , of renting  $v$  videos each month?

A  $c = 15 + 5v$

**\*C  $c = 1.5v + 5$**

B  $c = 5(1.5 + v)$

D  $c = 1.5(5 + v)$

Charles owes his father \$120. He pays his father \$20 every month to pay off his debt.

1 Write an equation Charles could use to determine  $d$ , the amount of money Charles owes his dad after  $m$ , months.

**\*  $d = 120 - 20m$**

2 If Kim rented 12 movies during the month, how much was the total cost?

**\* \$23.00**

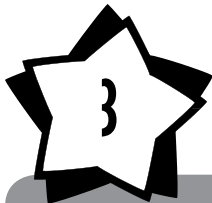
2 How long will it take Charles to pay all of the money back to his father?

A 120 months

**\*C 6 months**

B 12 months

D 1 year



CATEGORY

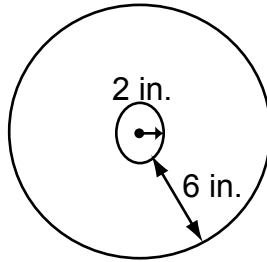
# Geometry



READINESS

The student is expected to describe the relationship between radius, diameter, and circumference of a circle.

Mr. Drew created an extra large donut as shown below.



- 1 Which procedure could be used to determine the circumference of the outer circle of the donut?

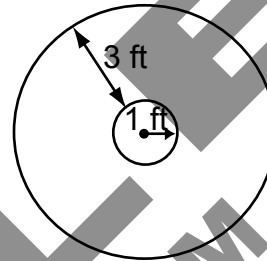
- \*A Add 6 and 2, then multiply the sum by  $2\pi$ .
- B Multiply 6 by  $2\pi$ .
- C Multiply  $\pi$  by the square of 6.
- D Add 6 and 2, then multiply the sum by  $\pi$ .

- 2 Write an expression to find the circumference of the inner circle of the donut.

- \*  $2\pi \times 2$
- or
- \*  $4\pi$

Answers may vary.

Malcolm created a target for his son to use to improve his accuracy of throwing a football.



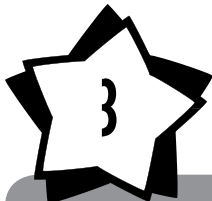
- 1 Write a procedure that could be used to determine  $c$ , the circumference of the inside circle.

- \*  $c = 2\pi \times 1$
- or
- \*  $c = 2\pi$

Answers may vary.

- 2 Which expression could be used to determine the circumference of the outside circle?

- A  $\pi(1 + 3)$
- \*C  $2\pi(1 + 3)$
- B  $\frac{1}{2}\pi(1 + 3)$
- D  $\pi(1) + \pi(3)$



CATEGORY

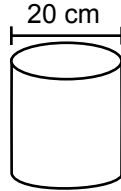
# Geometry



READINESS

The student is expected to describe the relationship between radius, diameter, and circumference of a circle.

Tyson grabbed a coffee can to keep worms in for his fishing trip. The coffee can has a diameter of 20 cm.



1 Which of the following expression could be used to determine the circumference of the top of the coffee can?

\*A  $20 \times \pi$

C  $40 \times \pi$

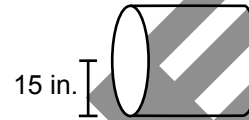
B  $20 \div \pi$

D  $40 \div \pi$

2 What additional information would Tyson need to find the area of the top of the coffee can?

\* No additional information is needed

Cassie wanted to use an old barrel to create a raft. The barrel has a radius of 15 inches.



1 Write an expression that could be used to find the circumference of the top of the barrel.

\*  $2\pi(15)$

or

\*  $2\pi \times 15$

or

\*  $30\pi$

Answers may vary.

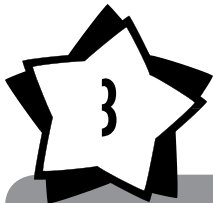
2 What additional information is needed to find the area of the top of the barrel?

A The height of the barrel.

B The circumference of the barrel.

C The diameter of the barrel.

\*D No additional information is needed.



CATEGORY

# Geometry



READINESS

The student is expected to describe the relationship between radius, diameter, and circumference of a circle.

Coach Black painted a circle in the middle of the school's basketball court. The circle has a circumference of about 32 feet.

- 1 Which method could Coach Black use to determine the diameter of the circle?
- A Divide the circumference by 2 and divide the result by  $\pi$ .
  - B Multiply the circumference by  $\pi$ .
  - \*C Divide the circumference by  $\pi$ .**
  - D Multiply the circumference by 2 and multiply the result by  $\pi$ .

- 2 Write an expression that could be used to determine the radius of the circle.

\*  $32 \div (2\pi)$

---

Coach Trojacek cut out a circle on the baseball field for the on deck circle. The circumference of the on deck circle was about 13 feet.

- 1 Write a method that could be used to determine the radius of the on deck circle.

**\* Divide the circumference by 2 and divide the result by  $\pi$**

or

**\* Divide the circumference by  $2\pi$**

---

*Answers may vary.*

- 2 Which expression could be used to determine the diameter of the on deck circle?

\*A  $13 \div \pi$

C  $13 \div (2\pi)$

B  $13 \cdot \pi$

D  $13 \cdot (2\pi)$



CATEGORY

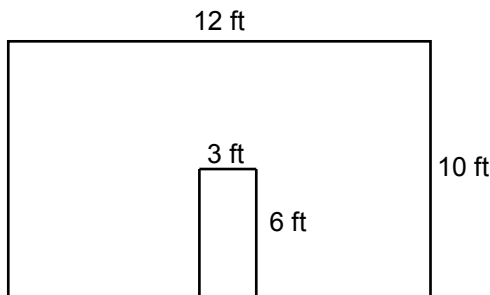
# Measurement



READINESS

The student is expected to select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter), area, time, temperature, volume, and weight.

Kennedy wanted to put princess wall paper on one of the walls in her room.



1 If Kennedy covers just the wall with wall paper, which method could Kennedy use to determine the amount of wall paper needed?

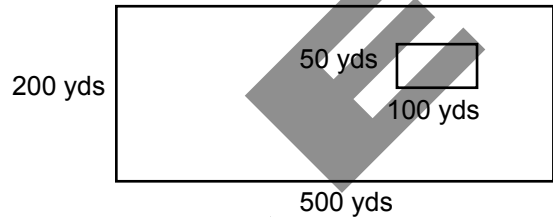
- A Find the area of the wall, then add the area of the door.
- B Find the area of the wall, then multiply by the area of the door.
- C Find the area of the wall, then divide by the area of the door.

**\*D Find the area of the wall, then subtract the area of the door.**

2 If each roll of wall paper covers 20 square feet, how many rolls does Kennedy need to purchase?

**\* 6 rolls**

Kennedy created a water park. She placed a wave pool in the park as shown below.



1 Write a method that could be used to determine how much of the water park is not used by the wave pool.

**\* Find the area of the water park and then subtract the area of the wave pool**

*Answers may vary.*

2 If Kennedy wants to put slides in the park that cover 250 square yards each, how many slides can she fit in the water park?

A 400                      **\*C 380**

B 3                              D 2



CATEGORY

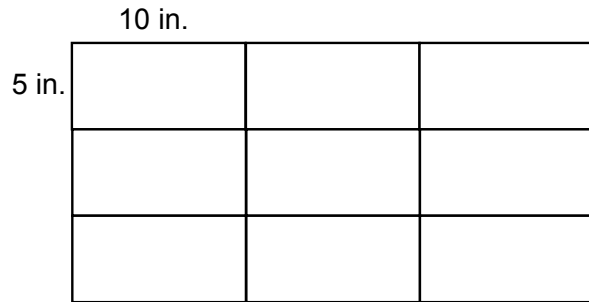
# Measurement



READINESS

The student is expected to select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter), area, time, temperature, volume, and weight.

Willis needs a metal frame with supports to mount congruent rectangular mirrors on his wall as shown below.



1 How could he determine the perimeter of the frame?

A Multiply 5 by 10 then multiply the product by 12

**\*B Add 10 and 5 then multiply the sum by 6**

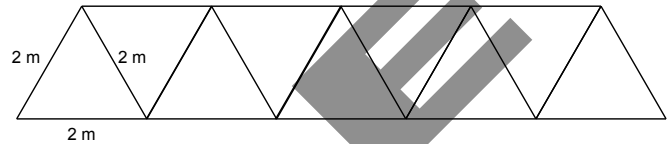
C Add 10 and 5 then multiply the sum by 12.

D Multiply 5 by 10 then multiply the product by 9

2 What area would the frame cover on the wall?

**\* 450 square inches**

Frankie built the support for a bridge using equilateral triangles as shown below.



1 How could Frankie determine the amount of steel needed to build the bridge support?

**\* Multiply 19 by 2**

2 Which of the following would best represent the perimeter of the entire frame?

A 38 m

**\*C 22 m**

B 8 m

D 30 m



CATEGORY

# Measurement



READINESS

The student is expected to select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter), area, time, temperature, volume, and weight.

Lee makes pizzas at Jack's Pizzeria. They have pizzas with diameters of 6 inches, 10 inches, 14 inches, and 20 inches.

1 Which formula would be most useful when determining the total amount of cheese needed to completely cover the pizza?

A  $C = \pi d$

B  $A = lw$

**\*C  $A = \pi r^2$**

D  $P = 2l + 2w$

Mr. Dial makes square paving stones with different designs and sizes. The paving stones have side lengths of 4 inches, 6 inches, 7 inches, and 10 inches.

1 Write the mathematical formula that would be most useful when determining the number of squares needed to cover an area of 100 square feet.

**\*  $A = s^2$**

or

**\*  $A = lw$**

2 If Amber wants to order a pizza with a circumference of about 63 inches, which pizza should she choose?

**\* 20 inch diameter pizza**

2 If Mrs. Dial needs to build a parking stone with a perimeter of 24 inches, what should be the side length of the paving stone?

A 4 in.

C 20 in.

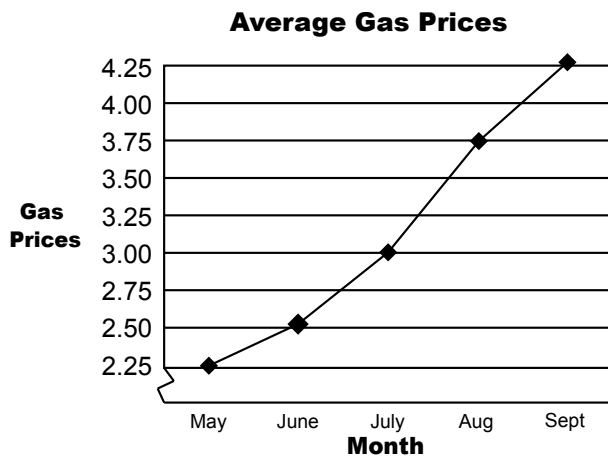
**\*B 6 in.**

D 8 in.

# Probability and Statistics

The student is expected to solve problems by collecting, organizing, displaying, and interpreting data.

The graph below shows the price of a gallon of gas from May to September.



1 Which of the following statements is best supported by the graph above?

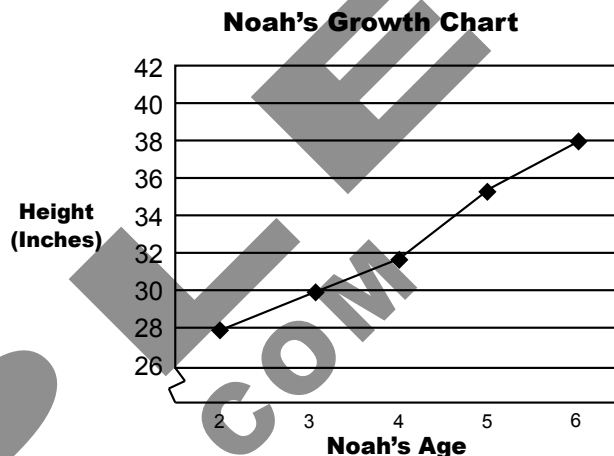
- A Gas prices rose the most between August and September.
- B Gas prices dropped between May and June.
- C Gas prices will be above \$6.00 by November.

**\*D Gas prices increased the most between July and August.**

2 During which months did the price of gas increase the least?

- \* May to June**
- or
- \* May and June**

The graph below shows the height of Noah over a five year period.



1 Write a statement that compares Noah's growth each year.

**\* Noah grew the most between four and five years of age.**

or

**\* Noah grew four inches between age 2 and age. 4**

*Answers will vary.*

2 During which year did Noah grow the most?

- A Years 2 to 3
- B Years 3 to 4
- \*C Years 4 to 5**
- D Years 5 to 6



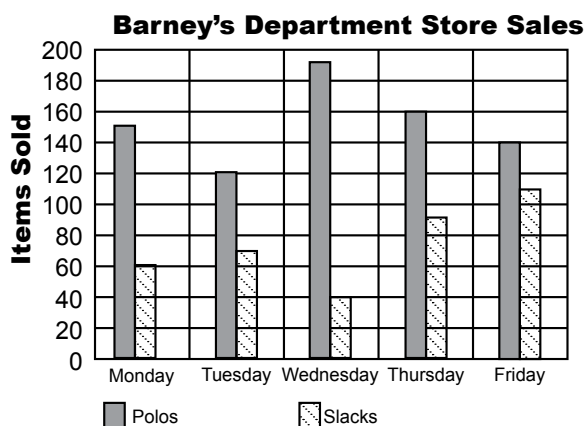
CATEGORY

# Probability and Statistics



The student is expected to solve problems by collecting, organizing, displaying, and interpreting data.

The bar graph shows the number of polos and the number of slacks sold at Barney's Department Store over a five day period.



- 1 Which statement is best supported by the graph?
- A More polos were sold on Wednesday than slacks during the five day period combined.
  - B The same number of polos were sold on Monday and Friday.
  - \*C More slacks were sold on Thursday and Friday than the Monday, Tuesday, and Wednesday combined.**
  - D Polos were on sale during this period.

- 2 Write a procedure Barney could use to determine how many more polos were sold than slacks.
- \* Subtract the sum of 60, 70, 40, 90, and 110 from the sum of 150, 120, 190, 160, and 140**

The bar graph shows the number of basketballs and pairs of running shoes sold over a 5 day period.



- 1 Write a statement that compares the number of basketball shoes sold to the number of running shoes run.
- \* Basketball shoes sold better than running shoes on Monday, Thursday and Saturday.**
- or
- \* Running shoes double in sales from Tuesday to Wednesday.**

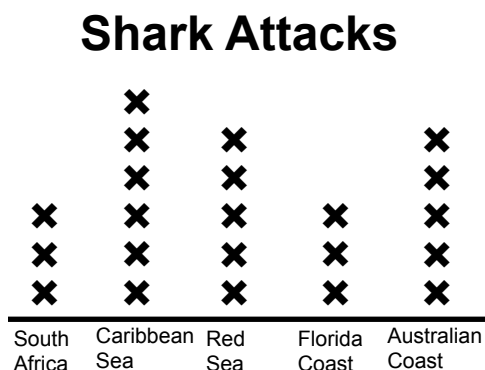
*Answers will vary!*

- 2 Which procedure could be used to determine the total number of basketball shoes and running shoes sold during the 5 day period?
- A Find the sum of 120, 70, 160, 70, and 190.
  - B Find the product of 120, 70, 160, 70, and 190.
  - C Find the sum of 60, 120, 40, 90, and 150.
  - \*D Find the sum of 120, 70, 160, 70, 60, 120, 40, 90, 130 and 190**

# Probability and Statistics

The student is expected to solve problems by collecting, organizing, displaying, and interpreting data.

The line plot shows the number of shark attacks in different bodies of water.

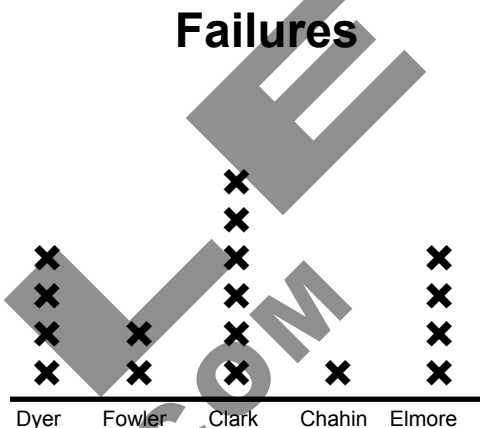


- Which statement is supported by the information in the line plot?
  - A More sharks are in the Caribbean Sea than any other body of water.
  - \*B The Florida Coast and South Africa combined for as many attacks as the Caribbean Sea.**
  - C The Red Sea and Florida Coast had the same number of attacks.
  - D The water in South Africa is cold.

- Write a method that could be used to find the median number of shark attacks.
  - \* Organize the number of attacks from smallest to largest, then identify the number in the middle. If there are an even number of attacks, average the two middle numbers.**

Answers may vary.

The line plot shows the number of failures in 5 different teacher's classes.



- Write a statement that compares the number of failures for each class listed.
  - \* Clark had more failures than the other four teachers**
  - or
  - Fowler had twice as many failures as Chahin.**

Answers will vary.

- Which method could be used to determine the average number of failures for the five teachers?
  - A Organize the number of failures from smallest to largest, then find the number in the middle.
  - B Organize the number of failures from smallest to largest, then subtract the smallest number from the largest number.
  - \*C Add the number of failures from each teacher, then divide the sum by 5.**
  - D Organize the number of failures from smallest to largest, then find the number that occurs the most.