Bluebonnet Learning
Secondary Mathematics
EDITION 1

Grade 7

Assessments

STUDENT EDITION

Acknowledgment

Thank you to all the Texas educators and stakeholders who supported the review process and provided feedback. These materials are the result of the work of numerous individuals, and we are deeply grateful for their contributions.

Notice

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Performance Tasks

GRADE 7

MODULE 1

Thinking Proportionally

Name _____ Date _____

1. Approximately how much fencing is needed to enclose a circular pond with a diameter of 12.5 feet?

   A. 122.66 ft

   B. 19.625 ft

   C. 78.5 ft

   D. 39.25 ft

2. A circular marble tabletop has a diameter of 42 inches. Determine the area of the circular marble tabletop in square inches. Use 3.14 for π. Round your answer to the nearest whole square inch.

3. The circumference of a circle is T inches. The radius of the same circle is 4.5 inches. Which expression best represents the value of π?

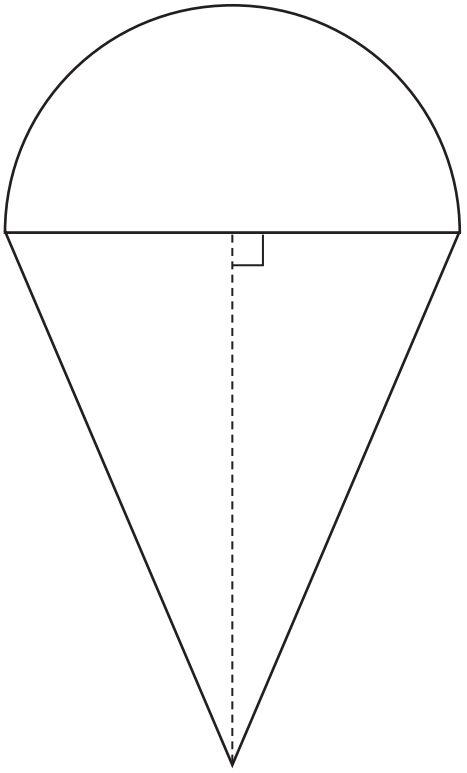
   F. $\frac{T}{4.5}$

   G. $\frac{4.5}{T}$

   H. $\frac{T}{9}$

   J. $\frac{9}{T}$

4. This figure was created using a triangle and a semicircle.



Use a ruler to measure the dimensions of the triangle and semicircle to the nearest centimeter. Which measurement is closest to the area of the figure in square centimeters? Use 3.14 for π.

A. 77.52 cm^2

B. 49.26 cm^2

C. 38.76 cm^2

D. 35.13 cm^2

5. Which of the following statements are true? Select **TWO** correct answers.

A. π is the ratio of the circumference of a circle to its diameter.

B. The area of a circle is the distance around the circle.

C. π is the ratio of the area of a circle to its diameter.

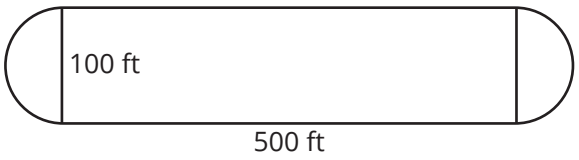
D. π is the ratio of the circumference of a circle to its radius.

E. The circumference of a circle is the distance around the circle.

6. Calculate the diameter of a circle with a circumference of 25 feet. Use 3.14 for π. Round answer to the nearest hundredth, when necessary.

7. Mei and Gabriel want to fence in a circular portion of their backyard for a play space for their children. Determine the area of the circular portion of the yard that they can enclose with 30π feet of fencing. Leave your answer in terms of π.

8. A high school is building a new running track. The track is constructed from a rectangle and two semicircles.



The inside of the track will all be grass. Determine the area of grass needed to fill in the track. Use 3.14 for π.

9. Diego wants to buy a cover for the top of his circular pool, but he doesn't know the area. When the diameter of the pool is 20 feet, what is the area of the pool? Use 3.14 for π. Show or explain your reasoning.

Name _____ Date _____

1. Camilla buys 8 pizzas for $131.36. Each pizza cost the same amount. What is the cost of each pizza in dollars and cents?

   A. $16.42

   B. $32.84

   C. $131.36

   D. $1050.88

2. Carlos hikes $8\frac{1}{2}$ miles in 2 hours. At this constant rate, how many miles will he hike in 1 hour?

   F. $6\frac{1}{2}$ mi

   G. $3\frac{1}{4}$ mi

   H. $4\frac{1}{4}$ mi

   J. 17 mi

3. Kayla uses a rate table to keep track of how much she earns on her job based on how long she works.

Hours Worked	Amount Earned
1	?
$2\frac{1}{2}$	$19.00
$3\frac{1}{2}$	?
4	$30.40
$6\frac{1}{2}$	?
$7\frac{3}{4}$	$58.90

   How much will Kayla earn when she works a $6\frac{1}{2}$-hour shift?

   A. $44.65

   B. $45.60

   C. $49.40

   D. $51.30

4. The distance between two lighthouses is 137 miles. There are approximately 8 kilometers in 5 miles. Which measurement is closest to the number of kilometers between these two lighthouses?

   F. 1096 km

   G. 685 km

   H. 85.6 km

   J. 219.2 km

5. Mei and Mason are planning a party to honor the teachers at their school. They each suggest a recipe for hot chocolate to serve at the party.

Mei's Recipe	Mason's Recipe
$1\frac{3}{4}$ parts cocoa	$3\frac{1}{2}$ parts cocoa
$3\frac{1}{3}$ parts milk	$2\frac{1}{2}$ parts milk

   For each recipe, write a unit rate to represent the parts of cocoa per part of milk. Then, determine which recipe has the stronger chocolate taste. Explain your reasoning.

6. On his last math test, Sebastian completed 15 problems in 75 minutes.
   When he works at a constant rate, how many math problems will Sebastian complete in 55 minutes? Explain your reasoning.

7. A tin of mints has a mass of 48 grams. There are approximately 0.035 ounces in 1 gram. Determine the mass of the tin in ounces.

8. The state's fish and wildlife department keeps track of the silvery minnow population in the Rio Grande River. Of the total silvery minnow population, 54 silvery minnows were tagged and then released. A week later, they captured a total of 62 silvery minnows, which included 12 tagged silvery minnows. What is a good estimate of the total silvery minnow population in the Rio Grande River?

9. A newborn kitten weighs about $\frac{1}{4}$ pound. There are approximately 0.45 kilograms in 1 pound. When a mother cat has a litter of 6 kittens, what is the approximate total weight of the litter of 6 kittens in kilograms?

10. A pool has drained 1088 gallons of water after 2 hours. At this rate, how many gallons of water can drain from the pool in 10.5 hours?

Name _____ Date _____

1. Which of the following does **NOT** represent the distance a car travels when going 75 miles per hour?

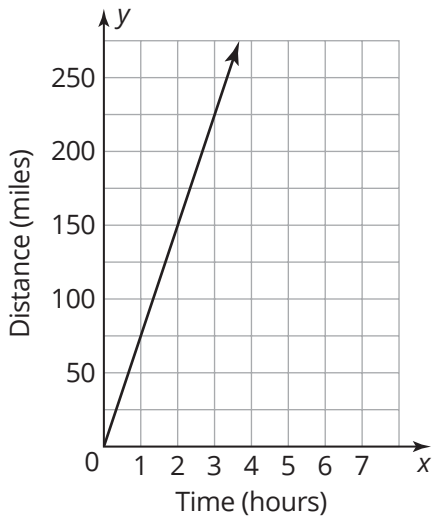
   A. In 1 hour and 15 minutes, a car travels $93\frac{3}{4}$ miles.

   B. $d = 75t$, where d represents the distance in miles and t represents time in hours.

   C.

Time (hours)	Distance (miles)
0.5	42.5
1.5	117.5
2.25	173.75
2.5	192.5

   D.



2. The table shows the number of times each kind of bicycle was rented during two months from a bike shop. Determine whether the relationship is proportional by identifying whether a constant of proportionality exists between the road bikes rented and the mountain bikes rented. Explain your reasoning.

Month	Road Bike	Mountain Bike
May	425	300
June	680	575

3. At an arcade, tickets can be purchased to play games. The table shows the total cost for number of tickets purchased.

Number of Tickets, x	Total Cost (dollars), y
8	6.00
12	9.00
20	15.00
30	22.50
50	37.50

What is the constant of proportionality that relates the total cost in dollars to the number of tickets purchased?

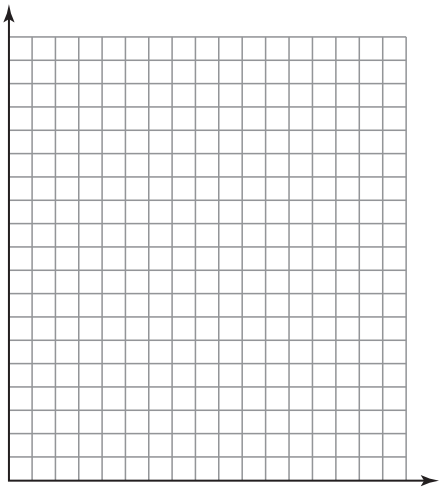
F. 7.50

G. 0.75

H. 1.33

J. 0.13

4. Parker babysat for $4\frac{1}{2}$ hours and earned $27. She charges all customers the same hourly rate for babysitting. Create a graph that represents the relationship between y, the amount of money earned from babysitting in dollars, and x, the amount of time in hours that Parker babysits.



5. A recipe says to use 9 cups of flour to make 72 cookies. What is the constant of proportionality that relates the number of cookies made to the number of cups of flour used?

A. 0.125

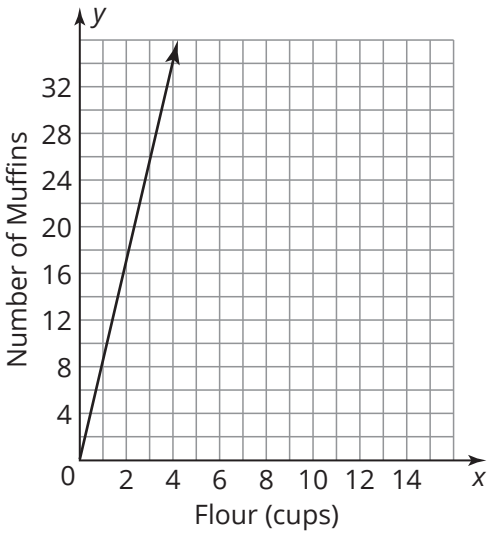
B. 9

C. 72

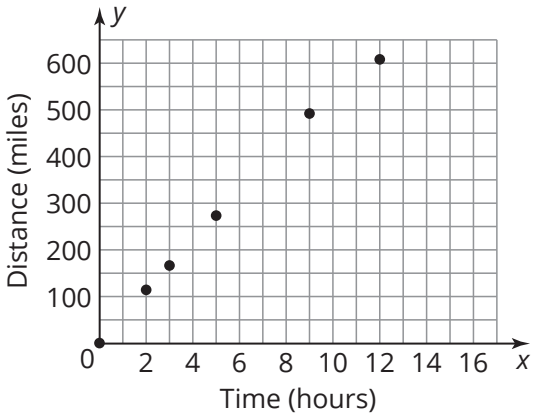
D. 8

6. A recipe for apple muffins calls for 3 cups of flour to make 24 muffins. The graph shows the cups of flour needed for different amounts of muffins.

   What is the constant of proportionality that relates the number of muffins to the number of cups of flour used? What does the constant of proportionality mean in this situation?



7. The graph and table show the distance d Camilla drives over time t.



Time (hours)	Distance (miles)
2	110
3	165
5	275
9	495
12	660

   Write an equation to represent the relationship between distance and time. Then, determine how far Camilla will drive in 7 hours.

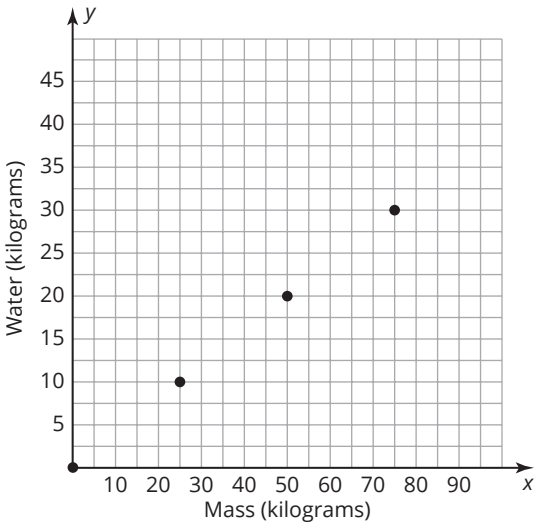
8. The number of campers who sign up for archery each week is listed in the table. The relationship is proportional, how many campers will sign up for archery in Week 3?

Week	Archery Sign-Up	Total Campers
1	36	120
2	45	150
3	?	130

9. The weight of a person on Venus is directly proportional to their weight on Earth. A person weighing 120 pounds on Earth weighs 106 pounds on Venus. Approximately how much would a person weighing 180 pounds on Earth weigh on Venus?

10. The graph represents the proportional relationship between the amount of water in a person's body and the person's mass.

    What is the constant of proportionality for the relationship between the amount of water in a person's body and the person's mass? Write your answer as a decimal.



GRADE 7

MODULE
2

Applying Proportionality

Name _____ Date _____

1. Michael wants to buy a new smart phone. He finds four stores selling the smart phone he wants. The deals at each store are shown.
   - Store *A*: 20% off of the $1000 price
   - Store *B*: 25% off of the $850 price
   - Store *C*: $900 price with a $150 rebate
   - Store *D*: $800 price with a coupon for $200 off

   At which store should Michael buy his new smart phone?

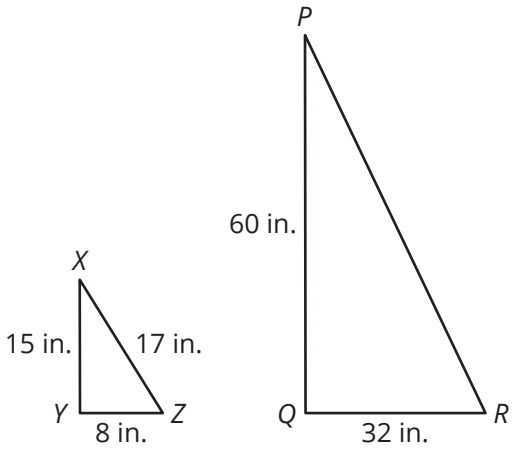
   A. Store *A*

   B. Store *B*

   C. Store *C*

   D. Store *D*

2. Triangle *XYZ* is similar to triangle *PQR*.



   Which proportions can be used to find the length of $\overline{PR}$ in inches? Select **TWO** correct answers.

   F. $\frac{8}{32} = \frac{PR}{17}$

   G. $\frac{8}{32} = \frac{17}{PR}$

   H. $\frac{15}{60} = \frac{PR}{8}$

   J. $\frac{15}{17} = \frac{PR}{60}$

   K. $\frac{60}{15} = \frac{PR}{17}$

3. Last year, Javier bought a mountain bike for $460. It is now worth $320. What percent did the value of Javier's bike decrease over the past year, to the nearest whole percent?

   A. 30%

   B. 44%

   C. 70%

   D. 140%

4. Amir used a coupon to buy new shoes. The original cost of the shoes was $124. After using his coupon, the new cost of the shoes before tax was $86.80. What percent did Amir's coupon take off the original price? Show your work.

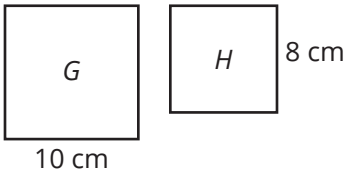
5. William took his three kids to get haircuts. The haircuts cost $57.50. He also gave the stylist a 22% tip. What was the total cost, including tip, for William's three kids to get haircuts?

6. In Kentucky, the state sales tax rate is 6%.

   The price of a digital camera sold in Kentucky is $275. What is the sales tax on this digital camera? Show your work.

7. Ana got a new job that pays $18 per hour. She works 40 hours per week and is paid every 2 weeks. She pays 4% state income tax on her earnings. What is the amount of state income tax that is deducted from Ana's paycheck every 2 weeks?

8. Consider the squares shown. Square *G* has an area of 100 square centimeters. Square *H* has an area of 64 square centimeters.



   Determine the percent decrease in area from Square *G* to Square *H*.

9. A scale model of an aircraft carrier uses a scale in which 1 inch represents 500 feet. If the beam of the actual aircraft carrier is 200 feet, what is the length of the beam on the scale model in inches?

10. An electronics store marks up its prices to maximize profits. Determine the percent increase for each item and order the percent increases of the items from greatest to least.

Item	Cost	Sells For
Camera	$120	$162
Computer	$500	$625
Keyboard	$40	$72

11. Hannah sold a brand new SUV that was listed for $40,000. She earned a 12% commission. How much did Hannah make in commissions on the sale of the SUV?

12. A map uses a scale in which 3 inches represents 450 miles. The actual distance between two cities is 1350 miles. What is the distance between the same two cities on the map in inches?

13. The commission of a real estate agent is directly proportional to the cost of the house.

Cost, x	Commission, y
$250,000	$17,500
$300,000	$21,000
$100,000	$7,000
$450,000	$31,500

Determine the constant of proportionality for the scenario and interpret the meaning.

Name _____ Date _____

1. William invested $2500 in an account paying 3.5% simple interest. How much was his account worth after 5 years?

   A. $2937.50

   B. $437.50

   C. $2587.50

   D. $2969.22

2. Ana deposited $2000 in a retirement account that offers 5% interest compounded annually. She makes no additional deposits or withdrawals. Which amount is closest to the interest Ana earned at the end of 2 years?

   F. $2205

   G. $2600

   H. $205

   J. $600

3. Gabriela used to budget $500 each month for groceries. She decided to change his budget for groceries to $425 this month. By what percent was Gabriela's budget for groceries reduced this month?

   A. 85%

   B. 18%

   C. 15%

   D. 5%

4. Angel earns $1100 each month at his job. The table shows how much he spends each month.

Monthly Budget	
Expense	Amount of Money
Cell phone	$150
Clothes	$75
Food	$125
Car	$400
Savings for college	$300
Other	$50

Based on the table, which statement is true?

F. Angel spends 30% of his budget on his car.

G. Angel spends 25% of his budget on food and his cell phone.

H. Angel spends 40% of his budget on clothes and savings for college.

J. Angel spends 10% of his budget on other.

5. The table below shows Malik's statement of his net worth. Assets are shown as positive numbers, and liabilities are shown as negative numbers. The value of Malik's student loan obligation is not given.

Net Worth Statement	
Item	Value
Checking account	$1500
Savings account	$2500
Credit card debt	−$4500
Student loans	
House (current value)	$262,500
Car (current value)	$19,500
Investments	$7500

Malik's net worth is $266,500. Based on the information in the table, what is the current value of Malik's student loan obligation?

A. −$20,000

B. −$22,500

C. −$25,000

D. −$27,500

6. The table shows Hannah's net worth statement. Assets are shown as positive values, and liabilities are shown as negative numbers.

Checking account	$1580
Savings accounts	$7230
Car loan	−$9850
Home	$162,000
Car	$16,400
Mortgage	−$125,650
Retirement account	$32,200
Credit card balance	−$4625

Based on the information in the statement, what is Hannah's net worth?

Use the scenario to answer Questions 7 and 8.
Abby earns $4400 per month, of which 25% is taken out of her paycheck for taxes and other fees.

7. Calculate Abby's take-home salary.

8. Abby's monthly budget includes $975 for rent, $300 for groceries, $165 for savings, $415 for car payment, and $125 for utilities. What percentage of Abby's take-home pay is used to pay for rent and utilities?

9. The Chen family has created a list of anticipated monthly expenses.

Category	Amount
Mortgage payment	$1140
Property tax	$360
Utility Bills	$225
Food	$600
Transportation	$300
Entertainment	$180
Emergencies	$195

Determine the percent of the monthly expenses represented by entertainment and transportation.

10. Huyen invested $2500 in each of two accounts. The first account pays 5% simple interest. The second account pays 5% compound interest, with interest compounded annually (at the end of each year). After 2 years, how much more will the second account be worth than the first account?

11. The table lists Daniela and Amir's assets and liabilities.

Assets		Liabilities	
Type	Amount	Type	Amount
Checking account	$895	Student loans	$29,560
Savings account	$3670	Car loan	$12,440
House	$232,000	Credit card balance	$3420
Stock fund	$31,462	Mortgage	$213,300

What is their net worth?

GRADE 7

MODULE 3

Reasoning Algebraically

Name _____ Date _____

1. Andrew is putting mulch in a playground area that he built in his yard. He already has $4\frac{1}{4}$ bags of mulch to use. Each bag of mulch covers 90.7 square feet. How many square feet will Andrew be able to cover if he uses all of this mulch?

   A. 385.475 ft^2

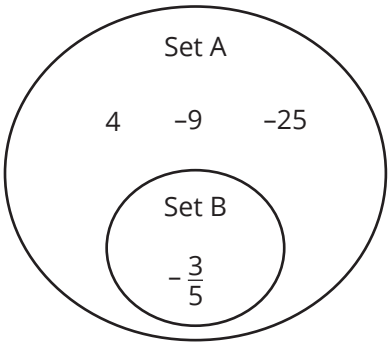
   B. 408.15 ft^2

   C. 362.8 ft^2

   D. 360.175 ft^2

2. Set A represents rational numbers. Set B represents integers. Which diagram shows the numbers placed in the correct sets?

F.



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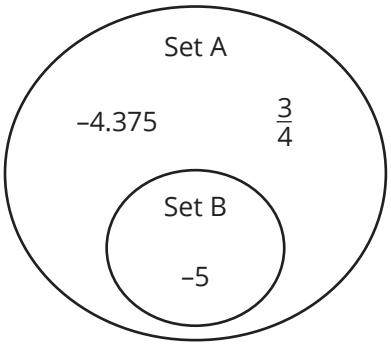

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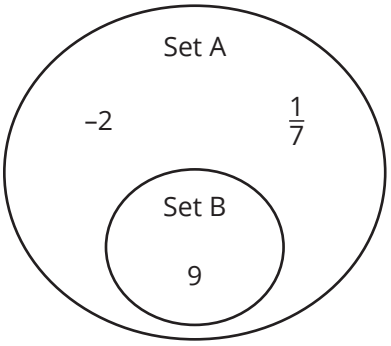

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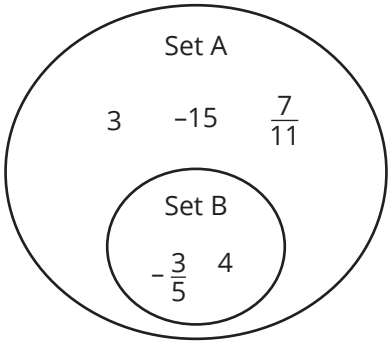
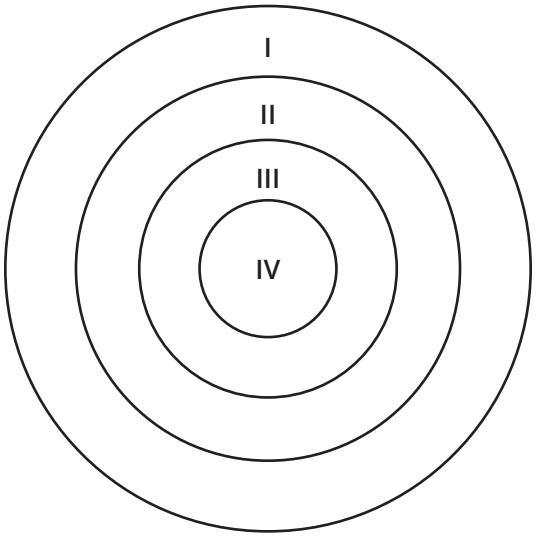


3. The Venn Diagram represents the relationship between integers, natural numbers, rational numbers, and whole numbers.



Which number set is best represented by each section label in the diagram? Select the correct answer in each row.

Number Set	Section I	Section II	Section III	Section IV
Integers				
Natural Numbers				
Rational Numbers				
Whole Numbers				

4. Determine the value of the expression. $-3\frac{4}{5} \div -3\frac{1}{6}$

5. Determine the value of the expression. $-6.2\left(2\frac{3}{4}\right)$

6. Alyssa needs to cut a 12-inch loaf of bread into slices that are $\frac{5}{6}$ inch thick.

   a. How many $\frac{5}{6}$-inch thick slices can Alyssa cut from the 12-inch loaf of bread?

   b. How many inches of bread would be left over?

7. Natalia gave the store clerk $40.00 to pay for 2 pairs of leggings. The store clerk gave her $7.12 in change. Each pair of leggings costs the same amount. What is the cost in dollars and cents for each pair of leggings? Explain your reasoning.

8. Kaya biked a distance of $6\frac{1}{2}$ miles each day for 3 days. Then, she biked $7\frac{1}{4}$ miles each day for the next 5 days. What was the total distance in miles that Kaya biked during these 8 days?

9. Samantha uses a cafeteria account to pay for meals at school. She got a notice saying she owed the school $7.82. The next day, she gave the school a check to add $15.75 to her account and spent $2.25 on lunch. How much money in dollars and cents does Samantha now have in her cafeteria account?

10. Alejandro has 180 pumpkins to sell.

    - $\frac{1}{4}$ of the pumpkins are lumina pumpkins.
    - $\frac{1}{6}$ of the pumpkins are jack o'little pumpkins.
    - $\frac{1}{10}$ of the pumpkins are sugar pie pumpkins.
    - The rest of the pumpkins are cotton candy pumpkins.

    How many pumpkins are cotton candy pumpkins?

    A. 30

    B. 45

    C. 87

    D. 90

11. What is the value of the expression $-4\frac{1}{4} - \left(-5\frac{3}{8}\right)$?

Name _____ Date _____

1. Which situation is best represented by the inequality $150 \leq 15x + 55$?

   A. Jamal has 15 baseball cards in his collection. He will buy 55 new ones every month. Jamal collects baseball cards for x months. For what values of x will Jamal have at least 150 baseball cards?

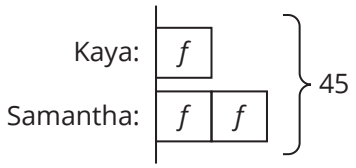
   B. Jamal has 55 baseball cards in his collection. He will buy 15 new ones every month. Jamal collects baseball cards for x months. For what values of x will Jamal have at least 150 baseball cards?

   C. Jamal has 15 baseball cards in his collection. He will buy 55 new ones every month. Jamal collects baseball cards for x months. For what values of x will Jamal have at most 150 baseball cards?

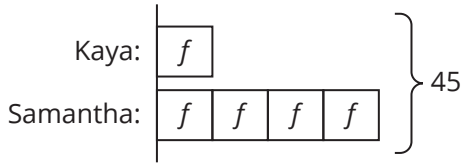
   D. Jamal has 55 baseball cards in his collection. He will buy 15 new ones every month. Jamal collects baseball cards for x months. For what values of x will Jamal have at most 150 baseball cards?

2. Kaya and Samantha assembled 45 fence sections between them. Kaya assembled twice as many fence sections as Samantha. Let f represent the number of fence sections Samantha assembled. Which picture best represents the situation?

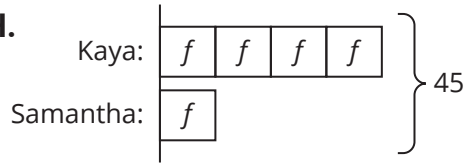
   F.

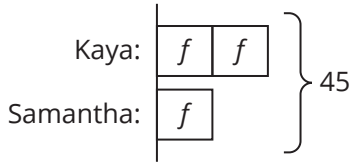
   G.

   H.

   J.

3. Which equation is true when the value of x is -8?

A. $\frac{1}{2}x + 7 = -9$

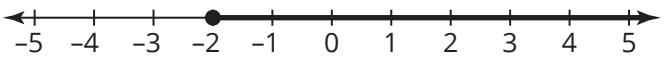
B. $\frac{3}{4}x - 7 = -13$

C. $3x + 15 = -39$

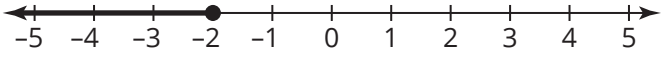
D. $-4x + 17 = -15$

4. Which number line represents the solution to the inequality $5 - 3x \leq 11$?

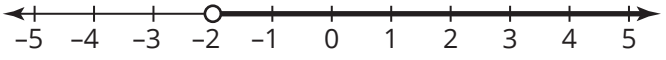
F.



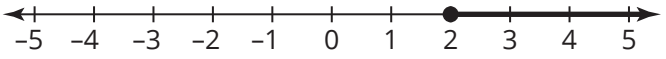
G.



H.



J.



5. There are 260 eighth-grade students at a middle school. All eighth-grade students are required to enroll in either a music class or an art class. No students take both art and music classes. The number of students taking music classes is 14 more than twice the number taking art classes. Which equations model the situation when a represents the number of students taking art classes? Select **TWO** correct answers.

   A. $a + 2a = 260 + 14$

   B. $3a + 14 = 260$

   C. $2(260) = a + 14$

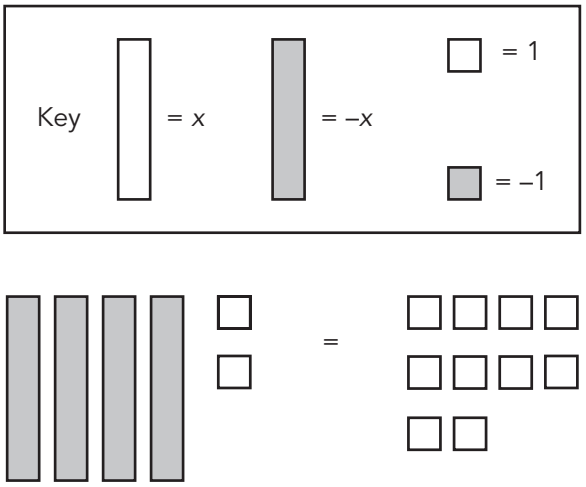
   D. $2a + 14 = 260$

   E. $a + 2a + 14 = 260$

6. Solve the equation using the double number line.

   $1.5x - 10 = -16$

7. An equation is modeled using algebra tiles. Determine the value of x that makes the equation true. Explain your reasoning.



8. A parking garage charges an entry fee of $4.75. Customers pay $2.50 per hour for parking. The maximum price for any given day, including the entry fee, is $30. Write an inequality to represent the situation when x represents the number of hours parked.

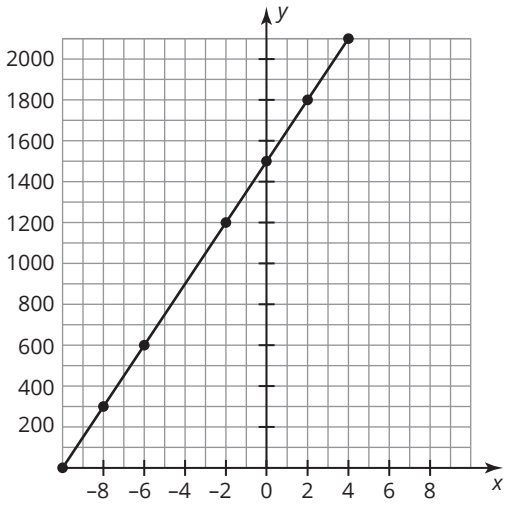
9. Each year, the parents of the eighth-grade class at a middle school host a graduation party for their children. Last year, the parents spent a total of $3410 on decorations, entertainment, and food for the party. They spent three times as much on food as on decorations and $650 less on entertainment than on food. How much was spent on entertainment? Explain your reasoning.

10. What is the value of x in this equation? Write your answer as a decimal.

$$-\frac{1}{3}x - 5 = 7\frac{5}{6}$$

Name _____ Date _____

1. The graph shows a relationship between two quantities.



Which equation best represents the relationship between x and y in the graph?

A. $y = 1500x + 150$

B. $y = -15x + 100$

C. $y = -100x + 15$

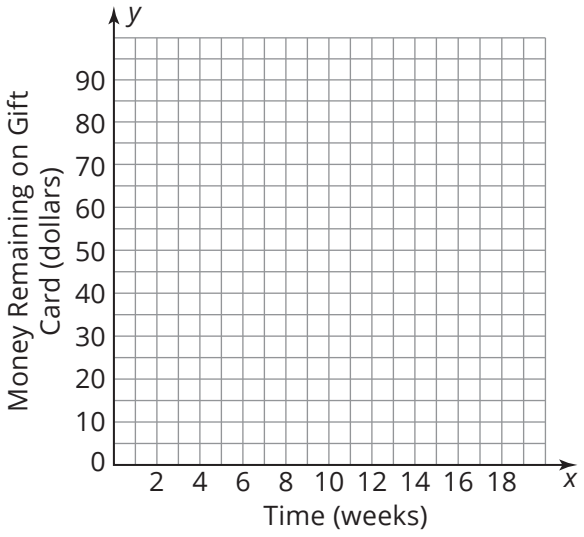
D. $y = 150x + 1500$

Use the information to answer Questions 3 through 5.

Mariana received a gift card for $80 to her favorite coffee shop for her birthday. Every week, she goes to the coffee shop and spends $4 on a drink.

2. Write an equation to represent the relationship between the amount of money remaining, *m*, on Mariana's gift card and the number of weeks, *w*.

3. Create a graph for this situation.



4. If Mariana has $16 remaining on her gift card, how many weeks, *w*, did she use her gift card to buy a drink?

Use the information and the graph to answer Questions 5 and 6.

Every Sunday, Chris rides his bicycle. He bikes for 5 miles and then stops for lunch. After lunch, he bikes at a speed of 15 miles per hour. Chris always bikes less than a total of 60 miles.

5. Write an inequality to represent the number of hours, h, that Chris bikes on Sunday.

6. Solve your inequality and interpret the solution in terms of the problem situation.

Use the information and the table to answer Questions 7 through 9.

A committee at the local middle school is planning a graduation party for eighth-grade students. They need to hire a DJ for the party and received prices from two DJs, Music Man and Party Time, based on the number of hours the DJ will work.

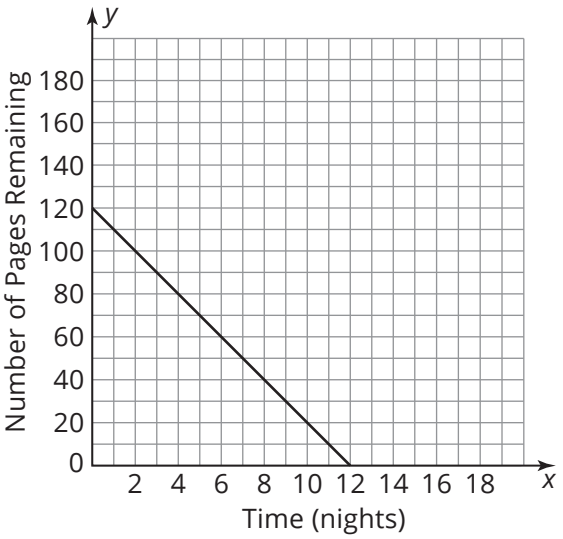
Number of Hours	Music Man	Party Time
0	$38	$28
1	$60	$54
2	$82	$80
3	$104	$106
4	$126	$132

7. After the first hour, how does the cost of hiring each DJ increase when the length of time increases by one hour?

8. For each DJ, write an equation to represent the cost, c, for hiring a DJ for h hours.

9. Calculate the cost of hiring each DJ for 5 hours.

10. Jorge is reading a book for his History class. He reads the same number of pages each night. The graph shows the number of pages remaining to read over time.



Use the graph to determine the constant rate of change. Explain your reasoning.

GRADE 7

MODULE 4

Analyzing Populations and Probabilities

Name _____ Date _____

1. Two out of every 25 parrots have a yellow head. In a population of 800 parrots, how many would you expect to have yellow heads?

   A. 10,000

   B. 64

   C. 32

   D. 16

2. Brianna goes to a batting cage and gets a bucket of softballs. The table shows the number of softballs of each color in the bucket.

Bucket of Softballs

Color	Number
Yellow	6
White	12
Orange	15
Green	7

Brianna puts the balls in the pitching machine in random order. Based on the table, which statement about the first pitched ball is true?

F. The first pitched ball is more likely to be white than orange.

G. The first pitched ball is more likely to be yellow than green.

H. The first pitched ball is twice as likely to be white than yellow.

J. The first pitched ball is 2.5 times as likely to be yellow than orange.

3. The members of the science club are Ben, Gracie, Lauren, Nicky, Nia, and Linh. They all draw straws at random to determine which member will give the demonstration at the science fair. Which simulation could be used to determine the probability that Gracie will give the demonstration?

   A. Toss a coin one time.

   B. Spin a spinner with 4 equal sections one time.

   C. Roll a six-sided fair number cube one time.

   D. Pick a card at random from 10 cards one time.

4. A bag contains 6 cards, each with a number on it. The numbers are 1, 4, 7, 8, 11, and 14. Describe the complement of the event of selecting one card at random that is a multiple of 7. Calculate the probability of the complement of this event as a fraction in simplest terms.

Use the information to answer Questions 5 and 6.

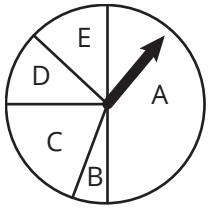
Nia has not been pairing her socks, and she now has a drawer of mismatched socks. Her drawer has 7 black socks, 6 white socks, 2 purple socks, and 5 yellow socks.

5. Suppose Nia reaches into her drawer without looking and selects one sock at random. What is the probability of selecting each of the different colored socks in her drawer? Write each probability as a fraction in simplest terms.

6. Predict the number of socks of each color you would get if you chose a sock from the drawer without looking 40 times, replacing each sock before the next selection.

Use the spinner to answer Questions 7 through 9.

The spinner shown can be divided into 16 equal-sized sections.



7. On which letter do you have the least chance of landing? The greatest chance? Equally likely chances?

8. Determine each probability. Write your answer as both a simplified fraction and a percent.

   i. $P(A) =$

   ii. $P(B) =$

   iii. $P(C) =$

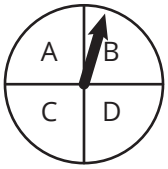
   iv. $P(D) =$

   v. $P(E) =$

9. Results from spinning the spinner 50 times are shown in the table. Calculate the experimental probabilities to complete the table. Write each probability as a simplified fraction and a percent.

Letter	Tally	Total	Probability
A	𝍸𝍸𝍸𝍸𝍸	28	
B	𝍸	2	
C	𝍸𝍸	10	
D	𝍸	6	
E	𝍸	4	

10. The spinner shown has 4 equal-sized sections. Jackson spins the spinner 32 times. The results are shown in the table.

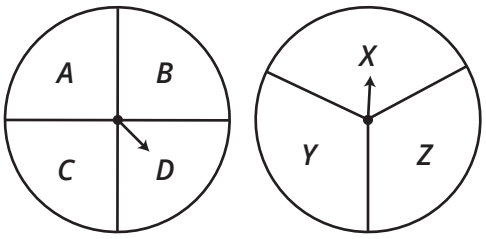


Outcome	Tally
A	6
B	7
C	10
D	9

Based on the information in the table, in how many of the next 160 trials will the spinner land on C?

Name _____ Date _____

1. The arrow on each spinner is spun once. If each spinner has equal-sized sections, what is the probability of selecting a *B* on the first spinner and a *Z* on the second spinner?



A. $\frac{1}{16}$

B. $\frac{1}{12}$

C. $\frac{1}{6}$

D. $\frac{1}{4}$

2. Alejandra wants to determine the probability that in a litter of 5 kittens, there will be more female than male kittens. Which statement describes one trial of a simulation she could use to model this situation?

F. Toss a coin 5 times and count the number of heads.

G. Toss a 6-sided fair number cube 5 times and count the number of times you get a number less than 3.

H. Generate 5 random numbers between 0 and 100 and count the number of prime numbers.

J. Draw 5 cards at random from a standard 52-card deck, replacing each card after it is drawn and count the number of hearts. (There are an equal number of hearts, spades, diamonds, and clubs in a deck.)

3. You have a jar of marbles in front of you with the following colors: 12 red, 17 blue, 8 yellow, and 13 white. Suppose you had a larger jar of 250 marbles with the same ratio of colors. What is the probability of selecting either a red or white marble from the larger jar when one marble is selected at random?

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

   B. $\frac{6}{25}$

   C. $\frac{13}{50}$

   D. $\frac{3}{5}$

4. Hailey flipped a two-color chip counter 2 times during a probability experiment. The chip counter is red on one side and yellow on the other. The outcomes of the first 20 trials are shown in the table.

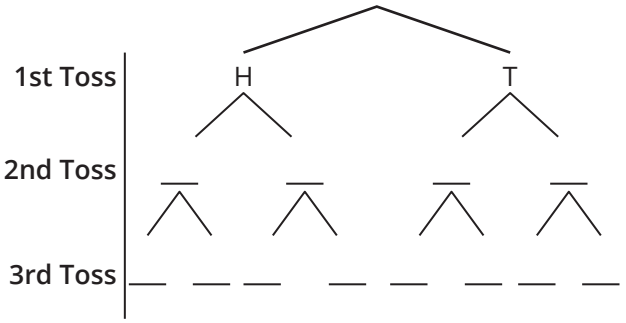
Color Showing on Flipped Chip Counter	Number of Outcomes
Red, Red	4
Red, Yellow	5
Yellow, Red	3
Yellow, Yellow	8

Based on the information in the table, predict how many of the next 55 trials will have an outcome with matching colors for the two flips of the chip counter.

Use the information to answer Questions 5 through 8.

An experiment consists of tossing a fair coin 3 times.

5. Complete the tree diagram for this experiment. How many possible outcomes are there for this experiment?



6. Do you think that if you tossed a coin 3 times, you would be as likely to get 3 tails as to get 2 tails and 1 heads? Explain your reasoning.

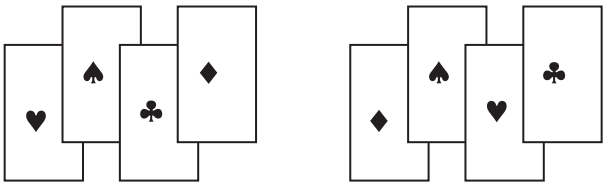
7. In order to figure out the probabilities of getting the various numbers of heads in 3 tosses, Brooke decided to construct a probability model for getting 0, 1, 2, and 3 heads. Complete her probability model. Write each probability as a fraction in simplest terms.

Number of Heads	0	1	2	3
Probability				

8. What is the probability as a fraction in simplest terms of getting more heads than tails after 3 flips of the coin?

Use the information and the drawing to answer Questions 9 and 10.

In a standard deck of playing cards, each card belongs to one of four suits: spades (♠), hearts (♥), diamonds (♦), and clubs (♣). Two piles of cards are placed down on a table so that the person picking the cards cannot see the suits. One card is picked at random from each pile.

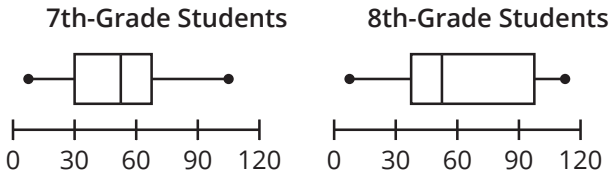


9. Create an organized list of all the possible outcomes. Use *S* to represent a spade, *H* to represent a heart, *D* to represent a diamond, and *C* to represent a club. How many possible outcomes are there?

10. Determine the probability as a fraction, in simplest terms, that both cards that are picked at random are a matching pair (two cards of the same suit). Explain your reasoning.

Name _____ Date _____

1. A sample of seventh- and eighth-grade students were asked how many minutes they spent online last night. The results were recorded in the box plots shown.



Which statement is best supported by the information in the box plots?

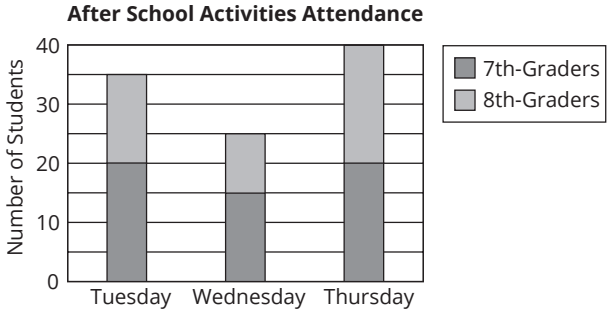
A. The interquartile range is greater for 8th-grade students than for 7th-grade students.

B. The interquartile range is greater for 7th-grade students than for 8th-grade students.

C. The range of number of minutes 7th-grade students spent online last night is greater than the range of 8th-grade students.

D. Q1 and Q2 values for 7th-grade students are equal to the Q1 and Q2 values for 8th-grade students.

2. The stacked bar graph shows the number of students in attendance for after school activities on three different days.



Which statement is **NOT** a valid conclusion that can be drawn from this graph?

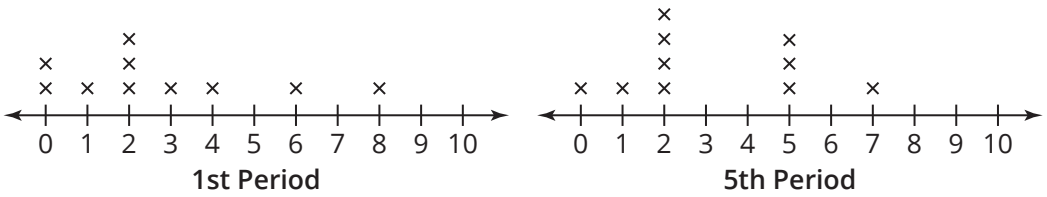
F. 50% of the total students in after school activities attend on Thursday.

G. 55% of the total students in after school activities are 7th-graders.

H. There are 10 fewer total 8th-graders in after school activities than there are 7th-graders.

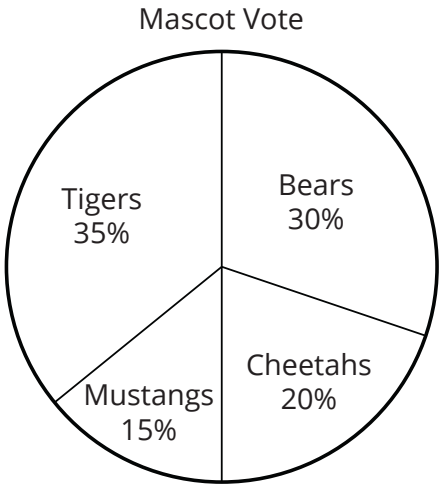
J. About 22% of the total 8th-graders in after school activities attend on Wednesday.

3. Ms. Tanaka took a random sample survey of how many books students in two of her classes read over the summer. The results are in the plots shown.



Determine the mean number of books read by each class period over the summer. Which class had the highest mean number of books read over the summer?

4. A local middle school conducted a student vote to determine the new school mascot. The results from the student vote are shown in the circle graph.



If 480 total students voted, how many more students are there who voted for the Tigers than students who voted for the Cheetahs? Explain your reasoning.

Use the information and the table to answer Questions 5 and 6.

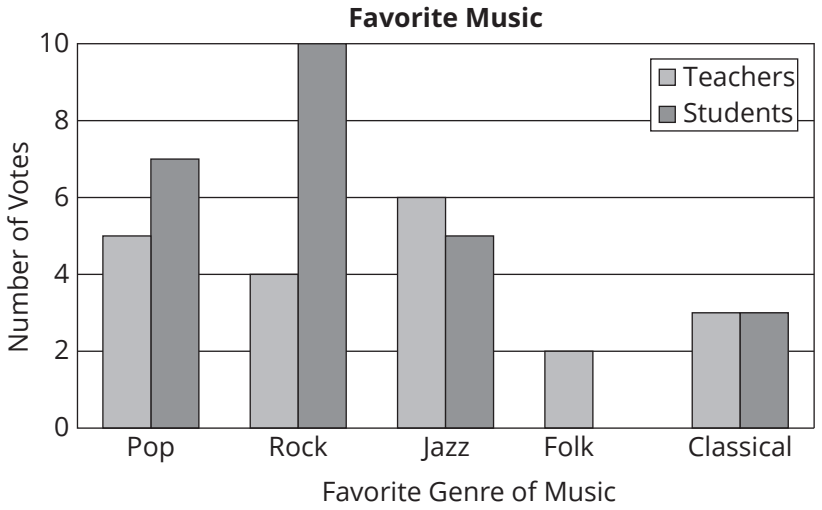
Mr. Hernandez took two random sample surveys of students' favorite ice cream flavors between vanilla, chocolate, strawberry, and mint chocolate chip. The results are shown in the table.

	Vanilla	Chocolate	Strawberry	Mint Chocolate Chip	Other	Total
Sample #1	6	20	11	4	9	50
Sample #2	12	15	9	8	6	50

5. Write 1 inference based on the survey results for Sample #1. Then, write 1 inference based on the survey results for Sample #2.

6. Write 1 comparative statement about a difference between Sample #1 and Sample #2 based on the survey results shown in the table.

7. Miguel surveyed a random sample of teachers and students at his school about their favorite genre of music. His double bar graph shows the results of that survey.



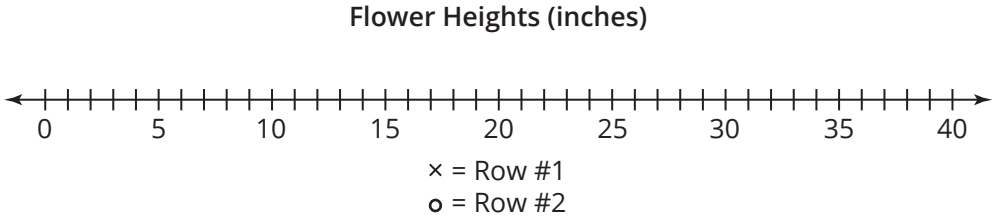
Write a ratio to represent the number of students and teachers who prefer classical music to the total number of people surveyed. What does the ratio mean in this problem situation?

Use the information and table to answer Questions 8 and 9.

Hailey measures the heights in inches of two rows of flowers in her garden. The heights are in the tables shown.

Row #1	Row #2
8, 12, 9, 11, 7,	36, 39, 30, 31, 38,
11, 10, 7, 6, 14	38, 32, 35, 34, 32

8. Construct a dot plot to represent each row of flowers. Which row has the higher mean height of flowers and by how many inches?



9. What percentage of flowers in Hailey's garden are 11 inches or taller?

10. Lucia plays skee ball with her friends after school on Mondays and Wednesdays. Each time she rolls a ball, she can earn 10, 20, 30, 40, 50, or 100 points. Lucia collected a random sample of ten rolls from each day that she played skee ball this week. The data is shown in the table.

	10	20	30	40	50	100
Monday	2	3	3	1	1	0
Wednesday	3	1	4	1	0	1

What is the difference in the mean number of points that Lucia scored on Monday and Wednesday?

GRADE 7

MODULE 5

Constructing and Measuring

Name _____ Date _____

1. An isosceles triangle has base angles measuring 79° and $(3x + 19)°$. If the third angle measures $(x + 2)°$, what is the measure of the third angle?

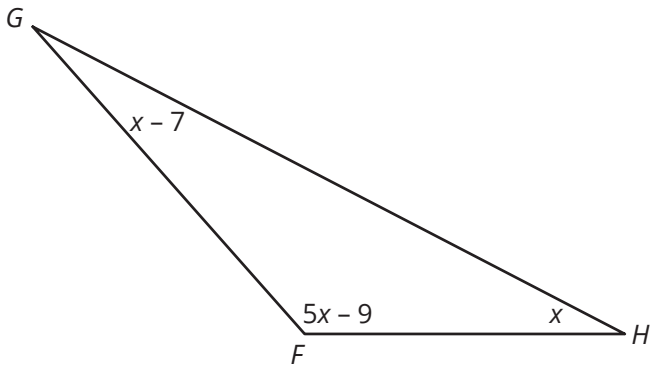
   A. 22°

   B. 79°

   C. 81°

   D. 101°

2. Which equation could be used to determine the measures of the angles of triangle *FGH*?



F. $5x - 9 = 90$

G. $5x - 9 = 180$

H. $7x - 16 = 90$

J. $7x - 16 = 180$

3. Angle P and angle Q are supplementary angles. If the measure of angle P is 62° and the measure of angle Q is $(3x - 14)°$, what is the value of x?

   A. 44

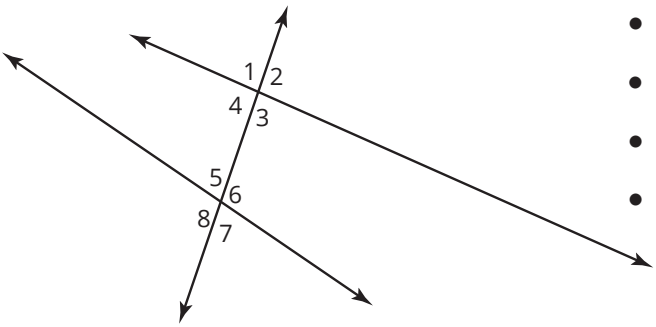
   B. $25\frac{1}{3}$

   C. 14

   D. 132

4. Write and solve an equation to find the measure of the base angles of an isosceles triangle when the non-base angle is 94°.

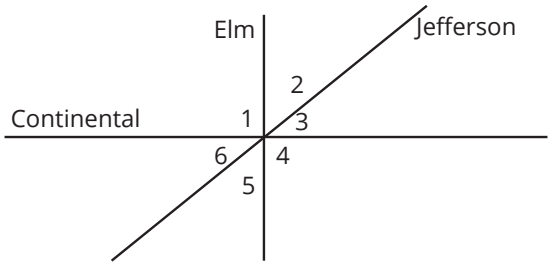
5. The figure shown includes pairs of supplementary angles and pairs of vertical angles.



- Angle 1 is $(3x + 26)°$.
- Angle 2 is $(5x + 10)°$.
- Angle 4 is 100°.
- Angle 6 is 125°.

Determine the value of x. Explain your reasoning.

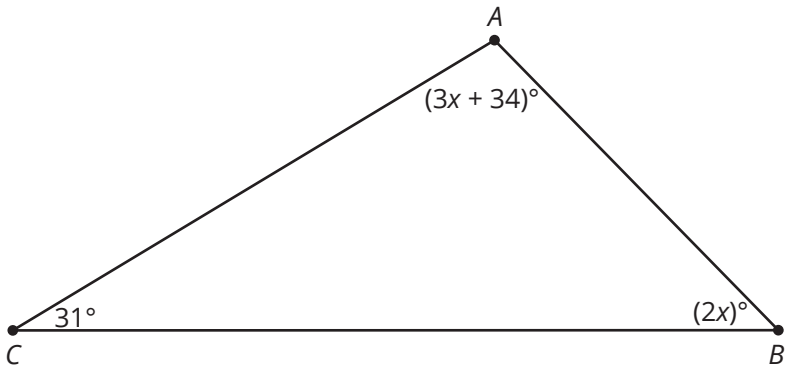
6. Elm Street, Continental Road, and Jefferson Avenue intersect at one point on the map shown. Elm Street and Continental Road are perpendicular to each other.



If m $\angle 2 = (2x + 10)°$ and m$\angle 3 = 40°$, determine the measure of $\angle 5$.

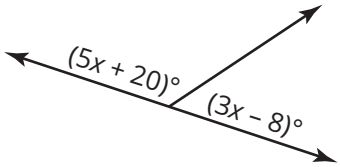
7. An isosceles triangle has base angles that each measure $x°$. The measure of the third angle is 72°. Write and solve an equation to determine the measure of each base angle of this isosceles triangle.

8. Determine the measure of each unknown angle.



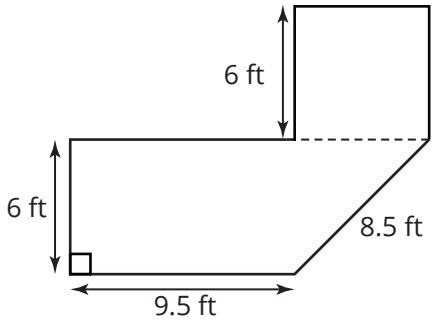
9. Angle 1 and angle 2 form a linear pair, and the measure of angle 1 is one-third the measure of angle 2. What is the measure of each angle?

10. In the figure shown, determine the measure of the larger angle.



Name _____ Date _____

1. A design for a desk is composed of a trapezoid and a square. Some side lengths of the desk design are shown.



Which expression represents the area of the desk in square feet?

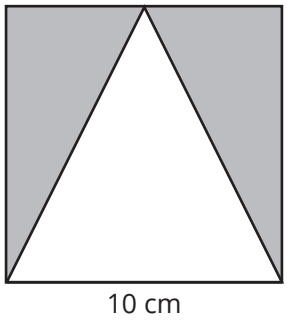
A. $36 + 75\ \text{ft}^2$

B. $24 + 75\ \text{ft}^2$

C. $36 + 57\ \text{ft}^2$

D. $24 + 57\ \text{ft}^2$

2. A triangle is drawn inside of a square that has a side length of 10 cm.



Which expression represents the area of the shaded region in square centimeters?

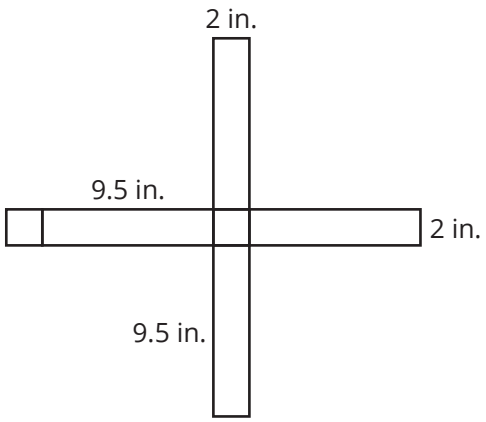
F. $50 - 100\ \text{cm}^2$

G. $100 + 50\ \text{cm}^2$

H. $50 + 50\ \text{cm}^2$

J. $100 - 50\ \text{cm}^2$

3. The net of a rectangular prism with its dimensions is shown.



What is the total surface area of the rectangular prism in square inches?

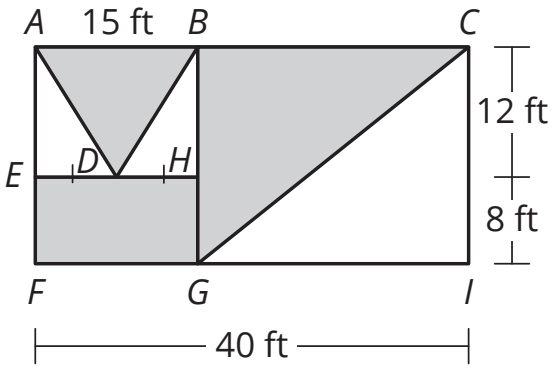
A. 76 in.^{2}

B. 84 in.^{2}

C. 90 in.^{2}

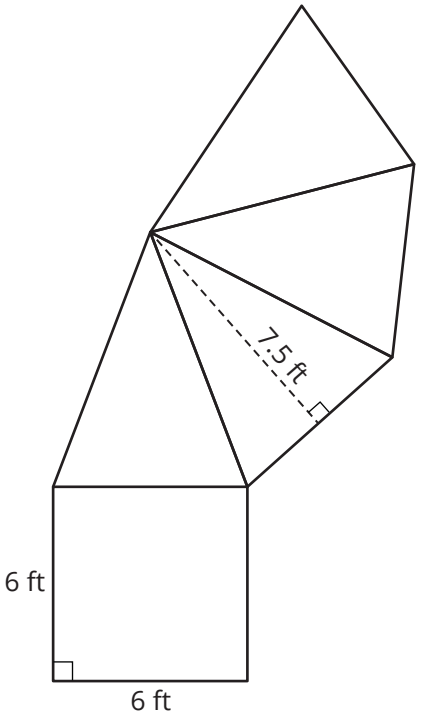
D. 92 in.^{2}

4. The figure shown is composed of rectangles and triangles.



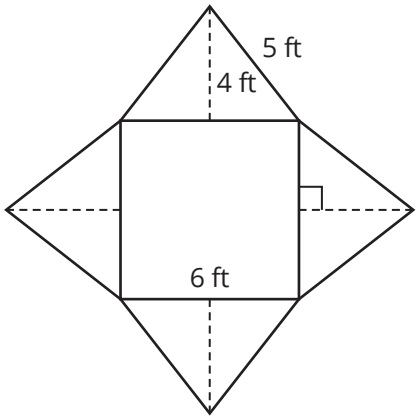
Calculate the area of the shaded region in square feet.

5. Elijah is making a cardboard structure for his children to play in. The diagram represents the net of the three-dimensional structure.



How much cardboard, in square feet, will Elijah need to build the structure?

6. The net of a square pyramid and its dimensions are shown.

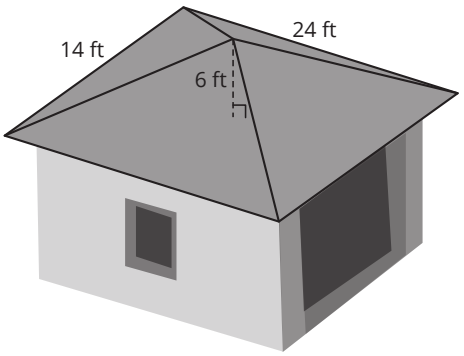


What is the lateral surface area of the pyramid in square feet?

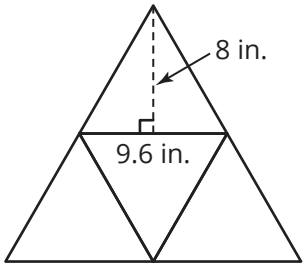
7. A sculpture in the shape of a triangular pyramid has a height of 10 feet. The area of the base of the sculpture is 12 square feet. What is the volume of the sculpture in cubic feet?

8. A container is shaped like a triangular prism. The height of the container is 15 centimeters, and the volume of the container is 180 cubic centimeters. What is the area of the base of the container in square centimeters?

9. Your uncle is building a garage. He plans to use the roof space for storage. What is the volume of the storage space in cubic feet? Explain your reasoning.



Use the information and the net to answer Questions 10 and 11.
This is a net for a triangular pyramid. The four faces of the pyramid are congruent equilateral triangles.



10. What is the total surface area of the pyramid in square inches?

11. What is the lateral surface area of the pyramid in square inches?

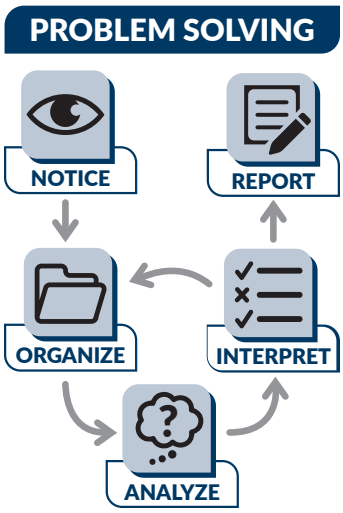
12. A refrigerator box is in the shape of a rectangular prism. The volume of the refrigerator box is 45 cubic feet. The area of the base of the box is 7.5 square feet. What is the height of the refrigerator box in feet?

GRADE 7

Rates and unit rates can be used to determine how much money someone makes per hour mowing lawns as a summer job.

Performance Tasks

1 Performance Task



Fractional Rates

Mason has a job mowing lawns. He creates a table so that he can easily tell his parents how much he is earning.

Time (hours)	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$
Amount Earned ($)							64.75		

- Complete the table.
- How much does Mason earn per hour? Explain how to determine the unit rate from the table.

- Define your variables and write an equation to represent the relationship between Mason's earnings and the time worked.

- Mason's parents tell him if he works more than 60 hours in May, they will buy him a new lawn mower. In the month of May, Mason earns $1,387.50. Use your equation to determine whether Mason's parents will buy him a new lawn mower.

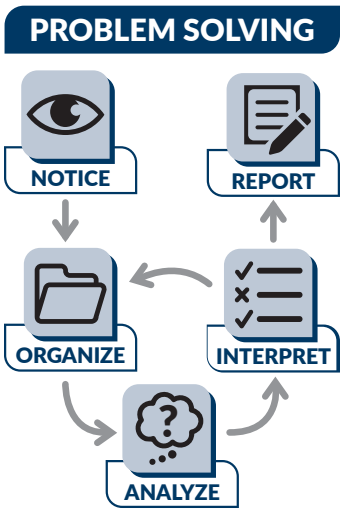
Your work should include:

- A completed table. (3 points)
- An equation representing the situation with the variables defined. (3 points)
- An explanation using math terms of how your equation relates to the table. (3 points)
- Your calculations. (3 points)
- An explanation about whether Mason's parents will buy him a new lawn mower. (3 points)

Rubric: 15 Total Points

	0 points	1 point	2 points	3 points
Table	No table is shown.	Table is shown but is incomplete or incorrect.	Table is mostly complete and correct but with minor errors.	Table is complete and correct.
Equation and Variables	There is no equation and the variables are not defined.	The equation is incorrect and/or variables are not correctly defined.	There is a minor error in the equation or the way the variables are defined.	The equation is correct and the variables are correctly defined.
Explanation	No explanation is given.	Explanation given uses no math terms.	Explanation includes math term(s) but does not correspond to the table.	Explanation corresponding to the table is complete and includes math term(s).
Calculations	No calculations are shown.	Calculations are shown but include significant errors.	Calculations are shown but include minor errors.	Calculations are shown and are complete and correct.
Statement	No statement is given.	Statement incorrectly gives Mason's unit rate.	Statement identifies correct unit rate but does not explain whether Mason's parents will buy him a new lawn mower.	Statement correctly identifies unit rate and correctly explains why Mason's parents will buy him a new lawn mower.

2 Performance Task



Proportional Relationships

Jasmine needs new winter boots. Both ShoeTown and LaceUp shoe stores carry the boots she wants to buy. The boots are regularly priced $85.95, but both stores are running sales. ShoeTown has the boots marked down 15%. LaceUp has the boots marked down 10%, plus Jasmine has a $5 coupon she can use on the boots after the markdown is applied.

Jasmine's friend, Luna, tells Jasmine there is an online shoe store called Run, Don't Walk that has the boots she wants for only $71.99. When Jasmine buys the boots in a local store, she will have to pay 7.16% sales tax on her purchase. When Jasmine buys the boots online, she won't have to pay sales tax, but she will have to pay $6.50 for shipping.

Store	Regular Price ($)	Markdown (%)	Coupon ($)	Sales Tax (%)	Shipping ($)	Total Cost ($)
ShoeTown						
LaceUp						
Run, Don't Walk						

- Fill in the appropriate values in the table based on the problem situation.
- Where should Jasmine buy her boots to get the best deal? Explain your reasoning.

- Explain how to determine the sale price before and after tax at ShoeTown and LaceUp and how to determine the total price at Run, Don't Walk.

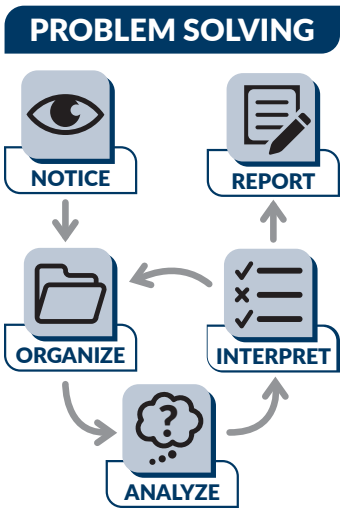
Your work should include:

- The completed table. (3 points)
- Any mathematical expressions or formulas used. (3 points)
- Accurate calculations. (3 points)
- An explanation using math terms of how you determined the sale prices before and after tax or shipping. (3 points)
- Statement explaining where Jasmine should buy her boots and how much she will pay for them. (3 points)

Rubric: 15 Total Points

	0 points	1 point	2 points	3 points
Table	Table is incomplete.	Table is incomplete or incorrect.	Table is mostly complete and correct but has minor errors.	Table is complete and correct.
Formulas and Expressions	No formulas or expressions are listed.	Expressions for determining sale price and/or sales tax are incomplete or incorrect.	Expressions for determining sale price and/or sales tax are mostly complete and correct but with minor errors.	Expressions for determining sale price and sales tax are complete and correct.
Explanation	No explanation is given.	Explanation given uses no math terms.	Explanation includes math term(s) but does not tell how to determine the total price of the boots at each store.	Explanation tells how to determine the total price of the boots at each store and includes math term(s).
Calculations	No calculations are shown.	Calculations are only partially shown and/or have significant errors.	Calculations are shown but have minor errors.	Calculations are shown and are complete and correct.
Statement	No statement is given.	Statement gives an incorrect store for the best price.	Statement identifies correct store for the best price but does not tell how much Jasmine will pay.	Statement identifies correct store for the best price and tells how much Jasmine will pay.

3 Performance Task



Two Step Equations and Inequalities

A pet store website charges $14.75 for shipping on orders of up to $90. Orders greater than $90 have a higher shipping fee.

Lucas wants to buy a new bed that costs $45 for his dog, Rusty. Lucas also wants to buy several packages of dog treats for $6 each, but he does not want to pay more than the $14.75 shipping fee. Sales tax is not applicable in this situation.

- Write an inequality that describes the possible number of packages of dog treats Lucas can purchase and still remain in the $14.75 shipping fee category. Define your variable(s) and explain how you determined your inequality.

- Solve your inequality and interpret the meaning of your solution(s).

- Graph the solution set on a number line. Choose values that fall within and outside the solution set of the inequality. Verify mathematically that each value is or is not part of the solution set.

- Suppose that Lucas also wants to purchase a dog bowl that costs $12.99. How many fewer packages of dog treats will Lucas be able to buy if he still wants to avoid the higher shipping fee?

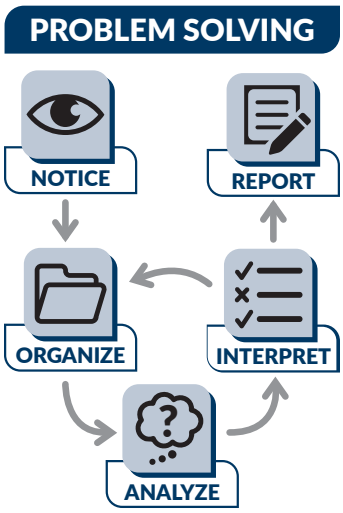
Your work should include:

- The inequality that models this situation with defined variable(s) (3 points)
- An explanation using math terms of how you determined your inequality and the processes used to solve it (3 points)
- Your calculations (3 points)
- Graph of solution set on a number line (3 points)
- Mathematical verification of solution set (3 points)
- Statement with supporting work to include purchase of dog bowl (3 points)

Rubric: 18 Total Points

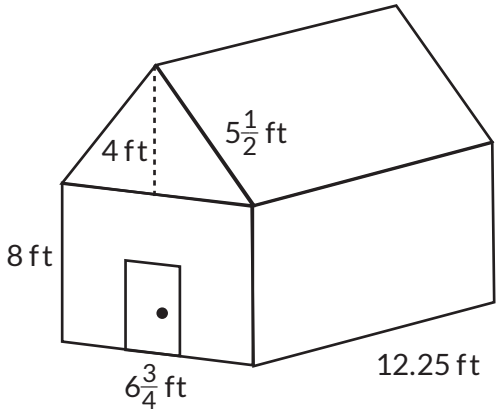
	0 points	1 point	2 points	3 points
Inequality	There is no inequality and no variable(s) is defined.	The inequality is incomplete or incorrect and/ or there is no variable(s) defined.	The inequality has minor errors or the variable(s) is not correctly defined.	The inequality is correct and the variable(s) is correctly defined.
Explanation	No explanation is given.	Explanation is incorrect and uses no math terms.	Explanation includes math term(s) but does not fully explain how the inequality was determined and solved.	Explanation includes math term(s) and fully explains how the inequality was determined and solved.
Calculations	No calculations are shown.	Calculations are only partially shown.	Calculations are completely shown but include errors.	Calculations are shown and are complete and correct.
Graph of Solution Set	There is no graph or number line.	The graph or number line is incomplete or incorrect.	The graph of number line has a minor error.	The graph or number line is complete and correct.
Mathematical Verification	There is no mathematical verification.	The mathematical verification is incomplete or incorrect.	The mathematical verification has minor errors.	The mathematical verification is complete and correct.
Statement and Supporting Work	No statement is given.	The statement or supporting work about the purchase of the dog bowl is incomplete and/or incorrect.	The statement or supporting work about the purchase of the dog bowl has minor errors.	The statement or supporting work about the purchase of the dog bowl is complete and correct.

4 Performance Task



Area, Surface Area, and Volume

Mason is planning on building a new shed for his backyard. The plans for the shed are shown with all the measurements. The shed is a right prism.



- How much can Mason store inside the new shed? Explain your reasoning.

- Mason wants to paint the outside of the shed including the shed door to match his house. Draw net(s) to represent the shed. Shade the faces that Mason will paint. How much paint will Mason need to paint the shed?

- A gallon of paint covers 200 square feet and costs $16.99. How much will it cost Mason to paint the shed?

Your work should include:

- An explanation using math terms of how you could determine how much Mason can store inside his shed (3 points)
- An explanation using a drawing of net(s) to show how much paint Mason will need to paint the shed (3 points)
- Your calculations (3 points)
- Statement explaining how much it will cost to paint the shed (3 points)

Rubric: 12 Total Points

	0 points	1 point	2 points	3 points
Explanation for the Capacity of the Shed	No explanation is given.	Explanation given uses no math terms.	Explanation includes math term(s) but does not fully explain how to determine the volume of the composite figure.	Explanation includes math term(s) and fully explains how to determine the volume of the composite figure.
Net(s) and Explanation for the Amount of Paint Required	The net(s) and/or explanation are missing.	The net(s) and/or explanation are incomplete or incorrect.	The net(s) and/or explanation have minor errors.	The net(s) and explanation are complete and correct.
Calculations	No calculations are shown.	Calculations are only partially shown.	Calculations are completely shown but include errors.	Calculations are completely shown and correct.
Statement	No statement is given.	Statement gives the correct total cost for painting the shed but no explanation on how to determine this amount.	Statement correctly explains how to determine the cost of painting the shed but gives the wrong total cost.	Statement correctly explains how to determine the cost of painting the shed and gives the correct total cost.

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Images

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