Title: Partying with Proportions and Percents

Brief Overview:

Using real life experiences, such as buying produce, planning a party, and taking a survey, students will be able to calculate unit rates, write and solve proportions, and identify percentages in degrees on a circle graph.

NCTM Content Standard/National Science Education Standard:

NCTM Content Standards for Grades 6 – 8: Number and Operations

- Work flexibly with fractions, decimals, and percents to solve problems;
- Understand and use ratios and proportions to represent quantitative relationships;
- Develop meaning for integers and represent and compare quantities with them.

NCTM Content Standards for Grades 6 – 8: Measurement

- Understand, select, and use units of appropriate size and type to measure angles.

NCTM Content Standards for Grades 6 – 8: Data Analysis

- Formulate questions, design studies, and collect data different characteristics within one population.

NCTM Communication Standard for Grades 6 – 8:

- Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.

Grade/Level:

Grades 6/7

Duration/Length:

Five 45 - minute periods

Student Outcomes:

Students will:

- Be able to calculate unit rates
- Be able to write and solve proportions
- Be able to identify on a circle graph percentages in degrees

Materials and Resources:

Pencils, worksheets, Group Menu/Price Task Cards, calculators, chart paper, colored markers, miscellaneous objects (paper clips, wooden blocks, etc.), protractor, sticky notes, chalkboard, chalk, string, centimeter grid paper, and meter stick

For the Group Menu/Price List task cards, copy and mount on tag board without the answers. You may want to have the menu and price lists on separate cards.

Explanation of "Pass the Problem" Activity:

Students need previous experience with this activity before Lesson 2 of this unit. This activity works well with concepts that involve multi-step calculations, so that students can understand each step in the process.

Students need to be in groups of 3 or 4. Each student should have a different colored pencil for this activity. For each group, they would need a set of four (or more) worksheets with a skill that you want them to practice, such as division or solving equations. Each worksheet would have only one problem on it. Begin by illustrating on the board using different colored chalk. Work a problem, switching to different colored chalk for each step. Explain that each color represents a "Pass" to another student in each group. For example, the skill is division, 3-digit by 1 digit. Student 1 has a blue pencil and begins the first step of dividing. He then passes the problem to Student 2 who, using a red pencil, completes the second step of multiplying. Passing the problem to Student 3, who has a green pencil, Student 3 completes the next step of subtracting. Student 4 can then continue, bringing down the next digit, using a brown pencil. Then, he passes it back to Student 1 to continue the process.

```
   4
2 )868
  -8
   06
```

Development/Procedures:

Lesson 1 Preassessment –

Have students complete the "What Do You Know About Ratios?" worksheets. As students are completing the worksheet, circulate the room to observe how each student is doing.

Launch –

Have students do a think-pair-share. Ask students how long it takes them to make it to school in the mornings and their modes of transportation. Have students compare time and modes. Ask pairs to consider why it takes different times for each one to make it school. Ask pairs if one student is slower or faster than the other and how they would know.

Teacher Facilitation –

Building on the launch, inform students that they will be determining the unit rate. Ask students if anyone knows the definition of unit rate. Help students form the definition of unit rate using the example from the launch. The definition is a ratio comparing two different units. Ask students to predict what the unit rate would be for traveling to school. As an example, students may predict miles per hour.

Briefly review with students that a ratio is the division of whole numbers. Demonstrate to students how to find the unit rate. Make a transparency of the worksheet, "Determining Unit Rate Part A." Give each student a copy of the worksheet. Using the worksheet explain to students how to find the unit rate of example 1. Tell students that to find the cost of one eraser, the money has to be divided into four equal parts. On the transparency circle two dimes and draw a line to one eraser. Have students do the same on their worksheet. Write a statement explaining reasoning: 20 cents/one eraser. Finish the worksheet for all of the dimes and erasers. Ask students to write a sentence interpreting the rate. An example would be one eraser costs 20 cents.

Before moving to example 2, explain to students that according to the definition of unit rate that they can use division to find the unit rate. Help students to set up a ratio of money to erasers; 80 cents to 4 erasers or $\frac{80}{4}$. Inform them that this means 80 divided by 4, which is 20 so that

each eraser would cost 20 cents as they discovered by circling dimes to erasers.

Demonstrate example 2 for students the same way as example 1.

Student Application –

Students will work in teams of two to determine the unit rate of several groups of objects. Pass out the "Determining the Unit Rate Part B" worksheets to the students. Give each team several groups of objects. Some groupings that could be used are 10 plastic straws, 32 paper clips, 8 paper plates, 13 wooden blocks etc. Read the instructions on the worksheet to the students and have students work together to complete the worksheet.

After completing "Determining the Unit Rate Part B," have students work together on completing "Determining the Unit Rate Part C" worksheet. Read the directions on the worksheet to the students.

While students are working on the worksheets, circulate the room and observe students' progress.

Embedded Assessment –

Have the students complete the journal worksheet "Unit Rate Letter." Students will write letters to a friend explaining how to find the unit rate and defining unit rate.

Reteaching/Extension –

For students who do not understand how to determine the unit rate, give them more practice problems. Give problems that relate to real life experiences.

For students who do understand how to determine the unit rate and are finished early, have them work with students who do not understand how to determine the unit rate. The early finishers could explain how to determine the unit rate in their own words to those who are having difficulty. Also, these students could make up their own word

problems and switch with someone else and work on solving the problems.

Lesson 2

Preassessment –

Students should have prior knowledge of ratios, equivalent ratios, and unit rates, as well as experience with the **"Pass the Problem"** activity. See the explanation at beginning of this unit. Also, as students enter the room have them complete the "Survey of Favorite Party Menus". Explain that this will be used for a project later in the unit. Have the Party Menu cards taped on the chalkboard for students to preview. Using post it notes, students will place their name under the menu of their choice. Students will complete the "Warm Up Day 2". While they are working on the warm up, record the results of the survey. As a homework and review assignment, the students can then complete the worksheet "Survey of Favorite Party Menus", calculating the fraction, decimal, and percent of the data collected for their class. Let them know that the "degree" column will be completed after Lesson 4 of this unit. Collect these and keep them for use in Lesson 4.

Launch –

Remind students of the previous lessons of ratios and units rates. Give them the scenario of advertising in which claims such as 4 out of 5 dentists recommend a certain brand of chewing gum. If there were 250 dentists at a conference, how many would recommend this gum? Record all responses of how to solve this problem.

Teacher Facilitation –

Tell the students that today's lesson will show them a method of how to solve the above problem. Set up the problem first using words, then the numbers.

<u>Dentists that like the gum</u>

Number of dentists

$$\frac{4}{5} = \frac{x}{250}$$

At this point, ask "Do you see a relationship between any of the numbers?" Guide them to see that 5 times 50 equals 250, so applying the same principles when finding equivalent fractions, we would then multiply 4 times 50 which is 200. Therefore, 200 of the 250 dentists at this conference would recommend that brand of chewing gum. Continue with another example such as there are 12 girls and 15 boys in this class. If this is typical of all the other classes in our school, what would be the number of boys in our school, if we have 240 girls? Spend another few minutes having the students generate additional problems to model on the board. Then give them an example which does **not** lend itself readily to multiplying the numerator and denominator evenly. Explain that these situations have a **proportional** relationship. Define proportions as two equivalent ratios, and another way to solve for a missing number is to use **cross multiplication**. Demonstrate this by using the same problem as above.

$$\frac{\text{Girls}}{\text{Boys}} = \frac{12}{15} = \frac{240}{x}$$

Student Application –

After working several of the examples together, place students in groups of four and distribute the "Pass the Problem" Proportion worksheets. Illustrate on the board, using different colored chalk, the steps of solving a proportion, as well as reviewing the "Pass the Problem" activity.

Embedded Assessment –

After the students have completed the worksheets, have student volunteers go to the board and select a problem to demonstrate the process.

Reteaching/Extension –

"Party Time" project: Place students in groups of the Party Menu they chose at beginning of this lesson. Distribute the Price Lists for the Party Menu they selected. As a homework assignment, each group is to complete the "Party Time Proportion Unit" worksheet. Have them leave questions 5, 6, and 7 blank to be completed after Lesson 4 of this unit.

Lesson 3 PreAssessment-

As the students enter the classroom have each student write their name on a sticky note and put it on the blackboard in the column labeled not finished. As the warm-up is passed out count the number of students in the class and write this amount on the board (this is the total of the data). Have each student work on the warm-up and as students finish have him or her move their sticky note over from the "not finished column" to the "finished column". Announce the percents as they increase using the benchmark percents. Also, include discussion of fractional parts. When the students have completed the warm-up go over it having different groups act as the leaders in the discussion.

Included in the discussion of the warm-up reference the data points at which 25% of the students were done and then 50% - how many students did this constitute, 75%, and then finishing it with 100% meaning everyone.

Launch –

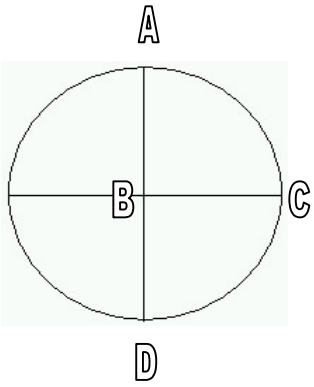
THINK-PAIR-SHARE: have the students in pairs. Looking at the circle graph decide the percents that the different sections of the circle graph represent. Encourage the use of vocabulary and fraction descriptions.

Have the students pair up and discuss their findings. Bring the groups back together to share their ideas and during the discussion create a Word Splash (similar to Word Webs) on the board.

Teacher Facilitation –

Begin the lesson by discussing the Launch activity. Brainstorm real world scenarios where the students would see this application (examples: pizza, wait time for a program to load, and clock). Discuss the percents that different benchmark times represent. For instance 3 o'clock would represent 90^0.

In their notes have the students write out the process of changing a percent to a fraction to a degree.



Example:

A) $\angle$ ABC = 90^0 = 25% = $\frac{1}{4}$ of the circle (section I)

B) $\angle$ ABD = 180^0 = 50% = $\frac{1}{2}$ of the circle (section I & IV)

C) Sections I & IV & III = 270^0 = 75% = $\frac{3}{4}$

D) Sections I & IV & III & II = 360^0 = 100% = $\frac{4}{4}$ = 1 whole

(1 out of 4) $\frac{1}{4} = \frac{x}{360}$ then $4x = 1 \bullet 360$ $x = 90^0$

(2 out of 4) $\frac{2}{4} = \frac{x}{360}$ then $4x = 4 \bullet 360$ $x = 180^0$

(3 out of 4) $\frac{3}{4} = \frac{x}{360}$ then $4x = 3 \bullet 360$ $x = 270^0$

(4 out of 4) $\frac{4}{4} = \frac{x}{360}$ then $4x = 4 \bullet 360$ $x = 360^0$

Try this on your own: If the portion of the circle is $\frac{1}{8}$ then what would the degree be using the procedure discussed above?

Student Application –

The students are going to make a “Human Line Plot”. List categories on the board of the following colors: Red, Blue, Black, Green, and Orange. Have the students line up in front of their favorite color. Record this data on the board in a line plot for their use later on. Count off the number of students in the data group to get a total.

Next have the students, still staying in their color sections, form a circle. The teacher will stand in the middle acting as the center point and holding various strings. At the beginning of each color hand the other end of the string to

the student representing the color. When the string divides all colors have everyone observe the sizes of the sections of the circle. Have each color group ESTIMATE the percent and degree of the circle that they represent. Remember this estimation for their use on the follow-up paper.

Embedded Assessment –

EXIT CARD: Have the students calculate the degrees from the color survey. Use the "Color Survey Exit Card".

Reteaching/Extension –

Have students return to a line and create a human box and whisker plot. Use a meter stick to separate the median and the upper and lower quartiles. Discuss the concept that each quadrant represents 25% and how many pieces of data are in each quadrant.

Lesson 4

Preassessment/Launch –

Distribute the warm-up/pre-assessment on circle graphs and finding degrees.

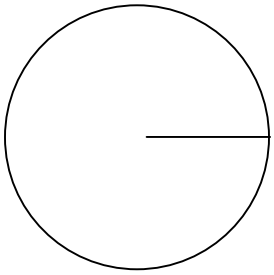
Circulate around the classroom assessing the students' mastery of the use of a protractor.

Go over answers using the overhead.

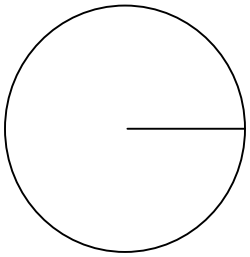
Teacher Facilitation –

Have the students make a bar graph of the data of the color survey from the previous lesson on centimeter grid paper. Cut each section apart and tape end to end to form a circle.

Using this *bar graph made circle* as a perimeter mark on the circle graph the different angles that represent the different categories of colors. Draw the lines to the center to construct the circle graph.



In the other circle graph, using a protractor, find the actual angles on the circle graph. Be sure to remember TAILS (Title, Axis, Increments, Labels, Spacing) and label each section and provide a title.



Student Application -

Using the "Survey of Favorite Party Menu worksheet" from Lesson 2, the students can work in pairs to complete the last column "degrees" in the chart.

Embedded Assessment –

EXIT CARD: Have the students work individually on constructing a circle graph to represent the data of the survey. Remind them to label each angle with the appropriate percent.

Summative Assessment:

Directions: Upon completion of Lesson Four, the students can now complete the "Party Time Proportion Unit" worksheet, questions 5, 6, and 7. Additional assessments can be the chapter or unit tests from the student textbook that aligns with these outcomes.

Authors:

Brenda Fogle
Neelsville Middle School
Montgomery County Public Schools

Felicia V. Rodriguez
Wilde Lake Middle School
Howard County Public Schools

Michelle Simons
MacArthur Middle School
Anne Arundel County Public Schools

Name_____
Date_____
Period_____

What Do You Know About Ratios?

Directions: Circle the correct answer or fill in the grid with the correct answer.

1. What could be a value of x in the follow expression? $x = \frac{4}{6}$

A. $\frac{1}{7}$ B. $\frac{2}{3}$

C. $\frac{1}{2}$ D. $\frac{2}{5}$

2. Jameka has a cookie divided into 9 equal pieces and Michael has cookie divided into 8 equal pieces. If each one eats 3 pieces from their cookie, who ate the most cookie?

   a. Jameka
   b. Michael
   c. Neither, they ate the same amount.

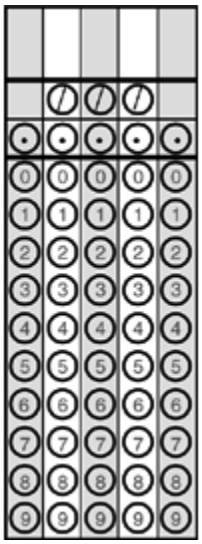
3. Hannah bicycled $\frac{12}{21}$ of a mile to school, while Devin bicycled $\frac{4}{7}$ of a mile to school. Who lives the farthest away from school?

   a. Hannah
   b. Devin
   c. Neither, the distance for each from school is equal.

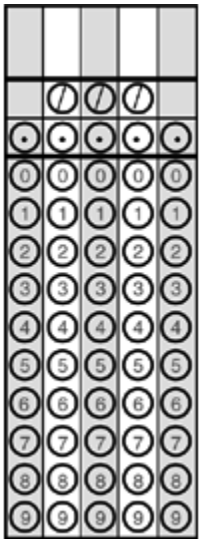
4. Jeff had a birthday party and served cookies and punch. Jeff and Kylie ate five cookies, while Ashley and Jimmy ate seven cookies each. What is the average amount of cookies eaten at the party?

A. eight B. nine
C. five D. six

5. At Jeff's party, everyone plays a game that has a spinner. The spinner has the numbers one to six on it. What are the chances that someone would spin a five? Put the answer in the grid below.



6. Javy ate five slices of pizza in two hours. What is the average number slices of pizzas Javy ate in one hour? Put the answer in the grid.



Name_____
Date_____
Period_____

****ANSWER KEY** What Do You Know About Ratios?**

1. What could be a value of x in the follow expression? $x = \frac{4}{6}$

A. $\frac{1}{7}$

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

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

D. $\frac{2}{5}$

2. Jameka has a cookie divided into 9 equal pieces and Michael has cookie divided into 8 equal pieces. If each one eats 3 pieces from their cookie, who ate the most cookie?

a. Jameka
b. Michael
c. Neither, they ate the same amount.

3. Hannah bicycled $\frac{12}{21}$ of a mile to school, while Devin bicycled $\frac{4}{7}$ of a mile to school. Who lives the farthest away from school?

a. Hannah
b. Devin
c. Neither, the distance for each from school is equal.

4. Jeff had a birthday party and served cookies and punch. Jeff and Kylie ate five cookies, while Ashley and Jimmy ate seven cookies each. What is the average amount of cookies eaten at the party?

A. eight

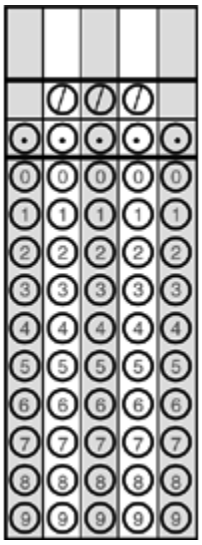
B. nine

C. five

D. six

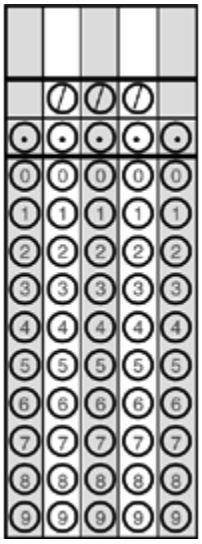
5. At Jeff's party, everyone plays a game that has a spinner. The spinner has the numbers one to six on it. What are the chances that someone would spin a five? Put the answer in the grid below.

ANSWER: $\frac{1}{6}$



6. Javy ate five slices of pizza in two hours. What is the average number slices of pizzas Javy ate in one hour? Put the answer in the grid.

ANSWER: $\frac{5}{2}$ or 2.5

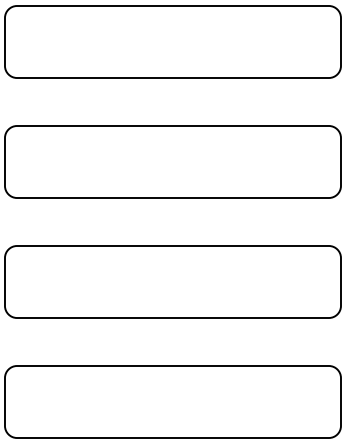


Name_____
Date_____
Period_____

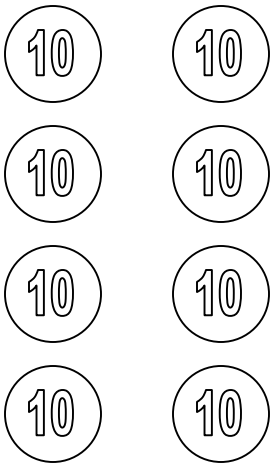
Determining Unit Rate Part A

Example 1: At the school store, students can buy 4 erasers for 80 cents. How much will students pay for one eraser?

Erasers

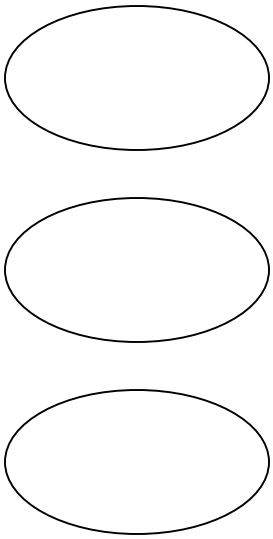


Money

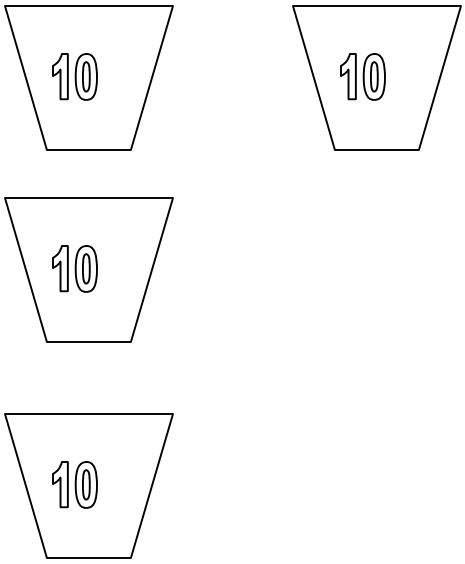


Example 2: Three watermelons weigh 40 pounds. How much does each watermelon weigh?

Watermelons



Weights



Name_____
Date_____
Period_____

Determining the Unit Rate B

Problem 1: Count the number of objects in group A. If the objects in group A cost $0.50, what is the unit rate?

Amount of objects:_____ ***Show all work:***

Ratio used:_____

Unit Rate:_____

Problem 2: Count the number of objects in group B. If the objects in group B cost $0.83, what is the unit rate?

Amount of objects:_____ ***Show all work:***

Ratio used:_____

Unit Rate:_____

Problem 3: Count the number of objects in group C. If the objects in group C weigh one pound and 29 ounces, what is the unit rate?

Amount of objects:_____ ***Show all work:***

Ratio used: _____

Unit Rate: _____

Problem 4: Count the number of objects in group D. If the objects in group D weigh 17 ounces, what is the unit rate?

Amount of objects:_____ ***Show all work:***

Ratio used: _____

Unit Rate: _____

Name_____
Date_____
Period_____

Determining the Unit Rate C

Directions: Work in teams of two. Both partners solve the problem and show work. After both partners have solved the problem, check each other's work. Put your initials in the agree or disagree box depending on if you think your partner has the correct answer.

1. It took Roberto 3 hours to walk 11 miles. What was the unit rate per hour?

Unit rate:_____ Agree ☐ Disagree ☐

2. Kevin has six bags of sugar that weigh 30 pounds. What is the unit rate per bag?

Unit rate:_____ Agree ☐ Disagree ☐

3. Lacy own a new car. She filled the gas tank with 12 gallons of gas that cost $24.69. What is the unit rate for gas per gallon?

Unit rate:_____ Agree ☐ Disagree ☐

Name_____
Date_____
Period_____

Answer Key Determining the Unit Rate C

Directions: Work in teams of two. Both partners solve the problem and show work. After both partners have solved the problem, check each other's work. Put your initials in the agree or disagree box depending on if you think your partner has the correct answer.

1. It took Roberto 3 hours to walk 11 miles. What was the unit rate per hour?

$\frac{11}{3}$ **or** $3\frac{2}{3}$ **or 3.67** **Unit rate: 3.67 miles per hour**

Unit rate:_____ Agree ☐ Disagree ☐

2. Kevin has six bags of sugar that weigh 30 pounds. What is the unit rate per bag?

$\frac{30}{6}$ **or 5** **Unit rate 5 pounds per bag**

Unit rate:_____ Agree ☐ Disagree ☐

3. Lacy own a new car. She filled the gas tank with 12 gallons of gas that cost $24.69. What is the unit rate for gas per gallon?

$\frac{24.69}{12}$ **or 2.06** **Unit rate $2.06 per gallon**

Unit rate:_____ Agree ☐ Disagree ☐

Name_____
Date_____
Period_____

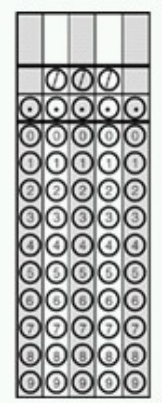
Unit Rate Letter

Directions: On the lines below, write a letter to friend explaining how to find the unit rate of 25 tennis balls in 5 cans. Make sure to include the definition of unit rate and to write out the steps in finding the unit rate.

Warm Up Day 2

Standard 1.0 Algebra, Patterns, and Functions

1. What is the value of the expression $12x - 6$ when $x = 8$?
   A. 24
   B. 38
   C. 90
   D. 112

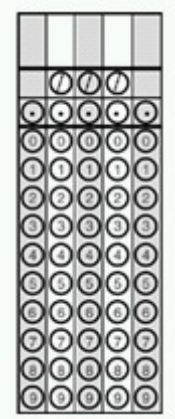


Standard 2.0 Geometry

2. If an angle has a measure of 36^0, what is the measure of the 2nd angle if the two angles are supplementary?
   F. 54^0
   G. 64^0
   H. 134^0
   I. 144^0

Standard 3.0 Measurement

3. Wilde Lake Middle School is putting in a new fence around the soccer Field. If the dimensions of the field are 60m by 40m, how much fencing will need to be ordered?



   A. 240m
   B. 250m
   C. 200m
   D. 210m

Warm Up Day 2

Standard 4.0 Statistics

4. What is the mean grade of Ms. Fogle's students?

Name	**Grade**
Jill	88
Michelle	86
Todd	75
Matt	78
Manuel	89
Kamille	90

A. 85.5
B. 86
C. 85.7
D. 87.5

Standard 5.0 Probability

5. Find the total number of outcomes for tossing an 8 sided number cube and spinning the spinner.

A. 24
B. 42
C. 78
D. 80

Standard 6.0 Number Relationships and Computation

6. Write this rate as a unit rate: 60 trees trimmed in 12 days.
   A. 3 trees per 3 days
   B. 4 trees per day
   C. 6 trees per day
   D. 5 trees per day

ANSWER KEY

Warm Up Day 2

Standard 1.0 Algebra, Patterns, and Functions

1. What is the value of the expression $12x - 6$ when $x = 8$?
   A. 24
   B. 38
   C. **90****
   D. 112

Standard 2.0 Geometry

2. If an angle has a measure of 36^0, what is the measure of the 2nd angle if the two angles are supplementary?
   A. 54^0
   B. 64^0
   C. 134^0
   D. 144^0 ****

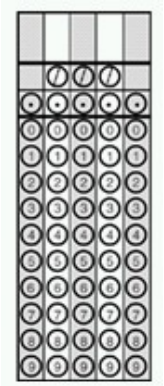
Standard 3.0 Measurement

3. Wilde Lake Middle School is putting in a new fence around the soccer Field. If the dimensions of the field are 60m by 40m, how much fencing will need to be ordered?
   A. 240m
   B. 250m
   C. **200 m****
   D. 210m

Standard 4.0 Statistics

4. What is the mean grade of Ms. Fogle's students?

Name	**Grade**
Jill	88
Michelle	86
Todd	75
Matt	78
Manuel	89
Kamille	90



A. 85.5
B. 86
C. 85.7**
D. 87.5

Standard 5.0 Probability

5. Find the total number of outcomes for tossing an 8 sided number cube and spinning the spinner.

A. 24
B. 42
C. 78
D. 80**

Standard 6.0 Number Relationships and Computation

6. Write this rate as a unit rate: 60 trees trimmed in 12 days.
   A. 3 trees per 3 days
   B. 4 trees per day
   C. 6 trees per day
   D. 5 trees per day

Name_____ Date_____

Pass the Problem
Proportion Practice

Write and solve the proportions.

1. 12 out of 15 people prefer pepperoni over cheese pizza. Suppose 75 people are coming to the party. Predict how many will prefer pepperoni pizza.

Name_____ Date_____

Pass the Problem
Proportion Practice

2 Stacey surveyed her fellow 7th grade classmates. She found that 3 out of 5 students voted for pizza instead of sub sandwiches for the class party. If there are 450 students coming to the party, how many will eat pizza?
Part A: Write the proportion and solve.
Part B: Use what you know about proportions to explain why your solution is correct. Use words and/or numbers to support your explanation.

Name_____ Date_____

Pass the Problem
Proportion Practice

3. One 20 ounce carton of ice cream costs $2.75. A 24 ounce of the same ice cream costs $4.25. Which is the better buy for the money?

Name_____ Date_____

Pass the Problem
Proportion Practice

4. 2 out of every 6 students are allergic to peanuts. Suppose 360 students are coming to the celebration. Predict how many will be allergic to peanuts.

Name_____ Date_____

Pass the Problem
Proportion Practice

5. One 24 ounce carton of lemonade is $3.20. A 32 ounce carton costs $3.60. Which is the better buy for the money?

Pass the Problem

Proportion Practice

ANSWER KEY

1. Pepperoni lovers / All guests $= \frac{12}{15} = \frac{x}{75}$

$15x = 12 \times 75$

$15x = 900$

$\frac{15x}{15} = \frac{900}{15}$

$x = 60$

2. Pizza lovers / # of students $= \frac{3}{5} = \frac{x}{450}$

$5x = 3 \times 450$

$5x = 1{,}350$

$\frac{5x}{5} = \frac{1{,}350}{5}$

$x = 270$

3. 20 oz @ \$2.75 vs. 24 oz @4.25

$\frac{2.75}{20} = 0.1375 = \$0.14$ $\frac{4.25}{24} = 0.177 = \$0.18$

Based on the above calculations of the unit rate, the 20 oz carton is a better buy.

4. Allergic to peanuts / Total # of students $= \frac{2}{6} = \frac{x}{360}$

$6x = 2 \times 360$

$6x = 720$

$\frac{6x}{6} = \frac{720}{6}$

$x = 120$

5. 24 oz @ \$3.20 vs. 32 oz @ \$3.60

$\frac{3.20}{24} = 0.13333 = \$0.13$ $\frac{3.60}{32} = 0.1125 = \$0.11$

Based on the above calculations of unit rate, the 32 oz carton is a better buy.

Warm Up Day 3

Standard 1.0 Algebra, Patterns, and Functions

1) Which pair of fractions is not proportional?

A) $\frac{1}{2} = \frac{2}{4}$

B) $\frac{3}{6} = \frac{6}{12}$

C) $\frac{4}{8} = \frac{4}{9}$

D) $\frac{1}{10} = \frac{10}{100}$

Standard 2.0 Geometry

2) An angle that measures 90^0 would represent what percent of the circle?

F) 90%
G) 50%
H) 25%
J) 75%

Standard 3.0 Measurement

3) What percent of a yard does 27 inches represent?

A) 75%
B) 100%
C) 25%
D) 27%

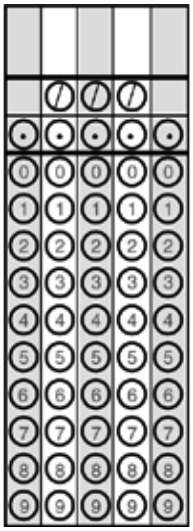
Standard 4.0 Statistics

4) Of the data 4, 6, 8, 8, 10, 10, 10, 12, what percent of the numbers are greater than or equal to 10?

F) 10%
G) 50%
H) 25%
J) 75%

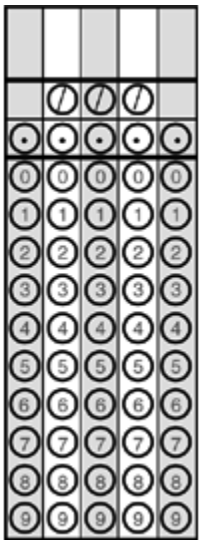
Standard 5.0 Probability

5) If there is a 55% probability that it will rain what decimal represents this data?



Standard 6.0 Number Relationships and Computation

6) Joaquin read 40 pages of his 400 page novel for his summer reading. What fraction of the book does he need to still complete? Make sure your answer is in simplest form. Show your work and grid in your final answer.



Answer Key Warm Up Day 3

Standard 1.0 Algebra, Patterns, and Functions

1) Which pair of fractions is not proportional?

A) $\frac{1}{2} = \frac{2}{4}$

B) $\frac{3}{6} = \frac{6}{12}$

C) $\frac{4}{8} = \frac{4}{9}$

D) $\frac{1}{10} = \frac{10}{100}$

Standard 2.0 Geometry

2) An angle that measures 90^0 would represent what percent of the circle?

F) 90%
G) 50%
H) 25%
J) 75%

Standard 3.0 Measurement

3) What percent of a yard does 27 inches represent?

a. 75%
b. 100%
c. 25%
d. 27%

Standard 4.0 Statistics

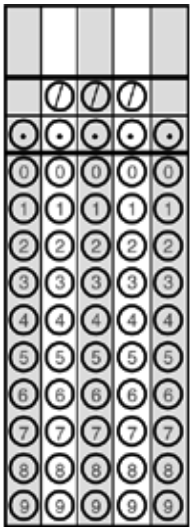
4) Of the data 4, 6, 8, 8, 10, 10, 10, 12, what percent of the numbers are greater than or equal to 10?

F) 10%
G) 50%
H) 25%
K) 75%

Standard 5.0 Probability

5) If there is a 55% probability that it will rain what decimal represents this data?

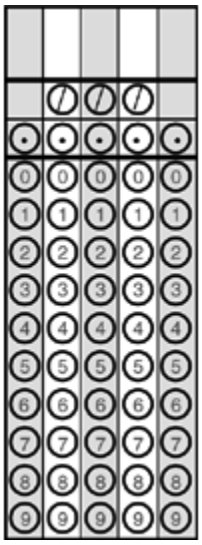
Answer: 0.55



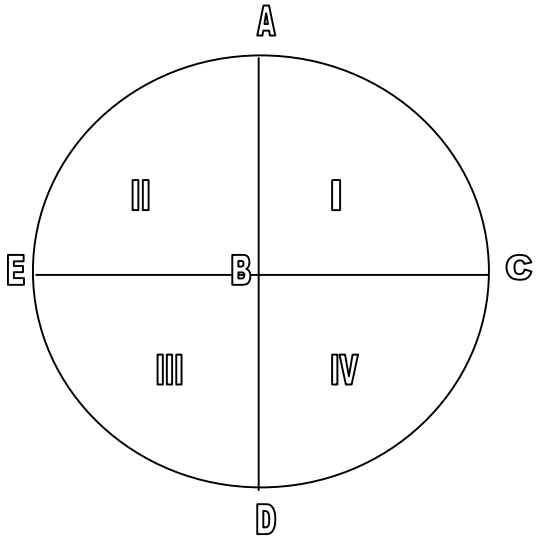
Standard 6.0 Number Relationships and Computation

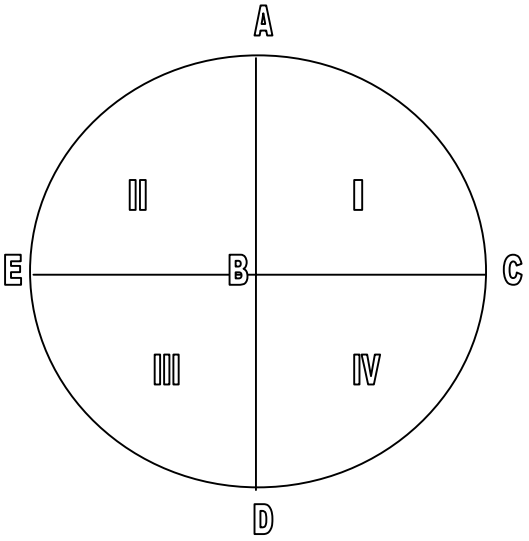
6) Joaquin read 40 pages of his 400 page novel for his summer reading. What fraction of the book does he need to still complete? Make sure your answer is in simplest form. Show your work and grid in your final answer.

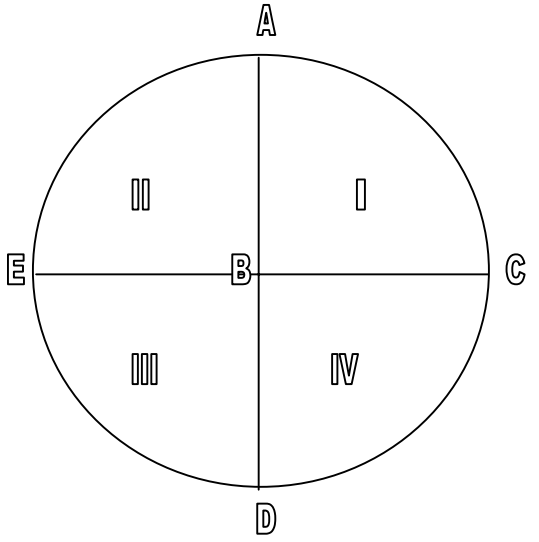
Answer: $\frac{1}{10}$

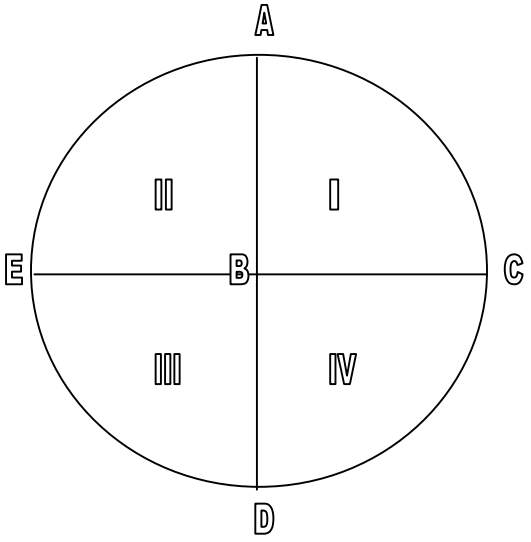


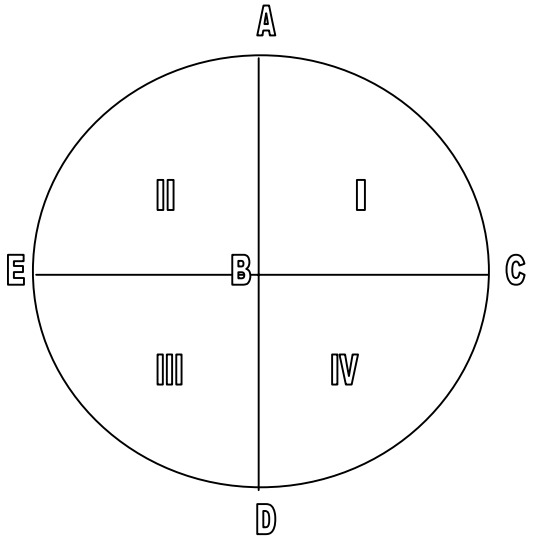
FINDING DEGREES

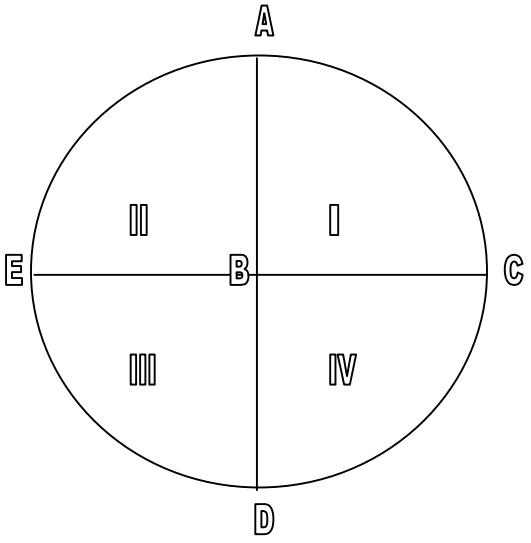






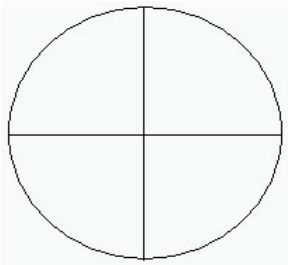






NOTES

FINDING DEGREES



A) $\angle$ ABC = 90^0 = 25% = $\frac{1}{4}$ of the circle (section I)

B) $\angle$ ABD = 180^0 = 50% = $\frac{1}{2}$ of the circle (section I & IV)

C) Sections I & IV & III = 270^0 = 75% = $\frac{3}{4}$

D) Sections I & IV & III & II = 360^0 = 100% = $\frac{4}{4}$ = 1 whole

(1 out of 4) $\frac{1}{4} = \frac{x}{360}$ then $4x = 1 \bullet 360$ $x = 90^0$

(2 out of 4) $\frac{2}{4} = \frac{x}{360}$ then $4x = 4 \bullet 360$ $x = 180^0$

(3 out of 4) $\frac{3}{4} = \frac{x}{360}$ then $4x = 3 \bullet 360$ $x = 270^0$

(4 out of 4) $\frac{4}{4} = \frac{x}{360}$ then $4x = 4 \bullet 360$ $x = 360^0$

Try this on your own: If the portion of the circle is $\frac{1}{8}$ then what would the degree be using the procedure discussed above?

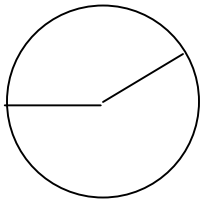
COLOR SURVEY- Exit Card

Fraction – Estimate Degrees – Actual Degrees

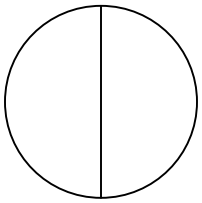
Color	RED	BLUE	BLACK	GREEN	ORANGE
Part # of students					
Fraction Need whole as the denominator					
Estimate Degree					
Actual degree					

Preassessment/Warm-up
Lesson 4

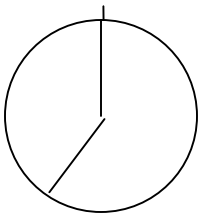
Using the protractor, determine the degrees represented on each circle graph. Then, on second page, construct circle graphs with the indicated degrees. (HINT: Extend the rays to line up on the protractor)

1) 

Degrees: _____

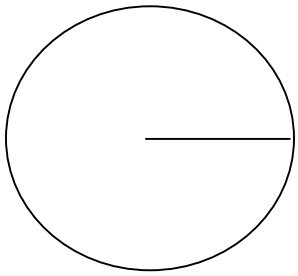
2) 

Degrees: _____

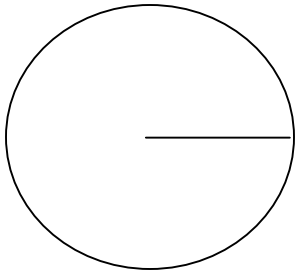
3) 

Degrees: _____

4) Construct a section of the circle that is 270^0 on the circle below.



5)



Construct a section of the circle that is 45^0.

Explain how to make a 45 degree angle.

_____

_____

_____

_____

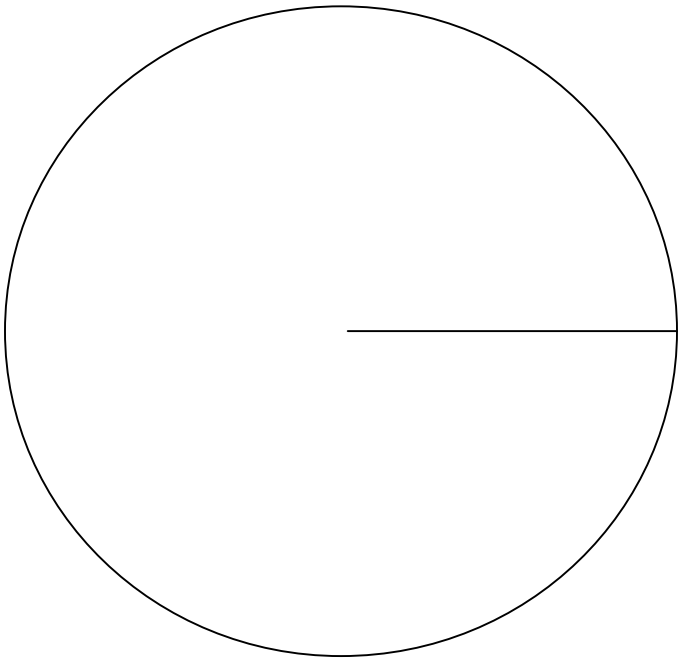
_____

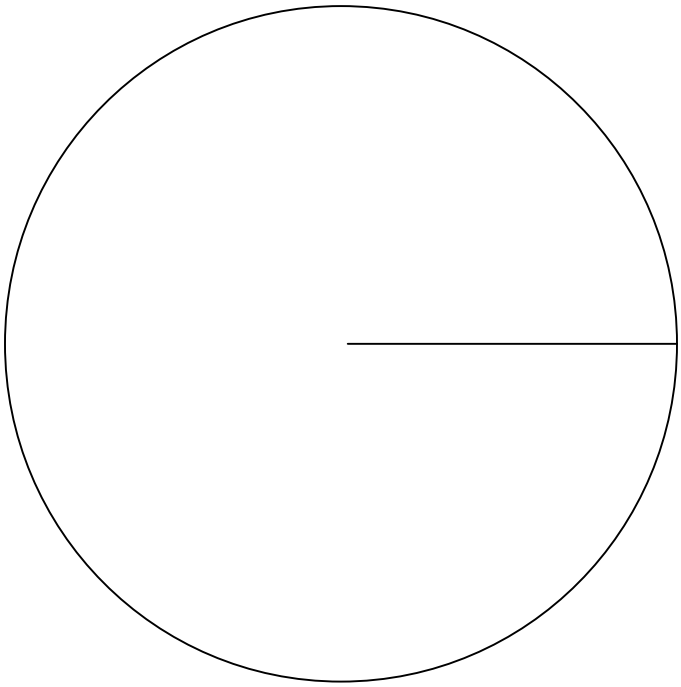
Survey of Favorite Party Menu

Food Type	**Fraction**	**Decimal**	**Percent**	**Degree**	
Hot Dog Heaven					
Perfect Pizza					
Hamburger Haven					
Wicked Wings					
Bigger and Better Barbecue					
Total					

Constructing Circle Graphs

1) Cut apart your bar graph of the color survey and tape it end to end.
2) Placing the bar graph over the circle below mark the different sectors of the circle graph.
3) Draw the lines to form the angles and label each angle





Name_____
Date_____

Party Time
Proportion Unit

Working in teams of four, complete the following tasks using your Group Menu Card that you selected. Make sure you show all calculations and thinking processes.

1. Calculate the unit rate of the main course in your menu.

2. Choose one other menu item and calculate the unit rate.

3. Calculate the cost of your party menu for a group of 25 people, 50 people, and 250 people.

4. If 3 out of the 15 guests chose not to eat your main course item, predict how many would not eat it for a party of 25 people, 50 people, and 250 people.

5. What percent of your expenses would be spent on your dessert item?

6. Compare your party menu to one other group's. Which is the better bargain?

7. Using your answer from question #5, on a circle graph, what would the percent be in degrees?

Group A
Hot Dog Heaven
Menu

Hot dogs
Chips
Soft drinks
Cookies

Prices:
1 package of frankfurters (8 in a pack)
$2.98
Hot Dog buns (8 in a pack)
$1.99
Potato Chips
3 bags (32 oz)/$8.25
Soft Drinks
12 cans/$3.49
Cookies
1 dozen/$2.99

Answer Key:

Question 1 & 2: Unit rates – hot dog – $0.62; 1 serving of chips - $0.23; soft drink - $0.29; cookie - $0.25 Total Cost per person: $1.39

Question 3: # of guests – 25 guests = $34.75; 50 guests = $69.50; 250 guests = $347.50

Question 4: $\frac{3}{15} = \frac{x}{25}$ $\frac{3}{15} = \frac{x}{50}$ $\frac{3}{15} = \frac{x}{250}$

15 x = 75 15 x = 150 15 x = 750

$\frac{15x}{15} = \frac{75}{15}$ $\frac{15x}{15} = \frac{150}{15}$ $\frac{15x}{15} = \frac{750}{15}$

x = 5 x = 10 x = 50

Question 5: Total cost for 75 guests = \$104.27

Dessert cost = \$18.75

Percentage of dessert cost to total cost = $\frac{18.75}{104.25}$ = 18%

Question 6: Student answers will vary.

Question 7: 18% = 64^0

Group B
Perfect Pizza
Menu

Pepperoni or Cheese Pizza
Lemonade
Ice Cream

Prices:
Pepperoni or Cheese Pizza
1 Large Pepperoni (serves 8) $6.50
1 Large Cheese (serves 8) $5.50
Lemonade
1 can Lemonade mix/$2.75
(Yields 25 1-cup servings)
Ice Cream
1 gallon Vanilla Ice Cream/$4.15
(Yields 24 servings)

Answer Key:

Question 1 & 2: Unit rates – 1 slice pepperoni pizza - $0.81; 1 slice cheese pizza - $0.69; Lemonade – 1 cup - $0.11; Ice cream – 1 serving - $0.17 Total cost per person - $1.78

Question 3: # of guests – 25 guests = $44.50; 50 guests = $89.00; 250 guests = $445.00

Question 4: same as Group A answers

Question 5: Total cost for 75 guests = $133.50
Dessert cost = $12.75
Percent of dessert to total cost = $\frac{12.75}{133.50}$ = 10%

Question 6: Student answers will vary.

Question 7: 10% = 36^0

Group C
Hamburger Haven
Menu

Hamburgers
Coke Floats

Prices:
Hamburger meat
2 lbs/$3.05
(Yields 10 burgers)
Hamburger buns
1 package of 8 buns/$1.99
Coke
1 liter/$1.25
(Serves 8 8-oz)
Vanilla Ice Cream
1 gallon/$4.15
(Yields 24 servings)

Answer Key:

Question 1 & 2: Unit rates – 1 hamburger on bun - $0.60; Coke Float - $0.33; Total Cost per person - $0.93

Question 3: # of guests – 25 guests = $23.25; 50 guests = $46.50; 250 guests = $232.50

Question 4: Same as Group A

Question 5: Total cost for 75 guests = $69.75

Dessert cost = $24.75

Percentage of dessert to total cost = $\frac{24.75}{69.75}$ = 35%

Question 6: Student answers will vary

Question 7: 35% = 126^0

Group D

Wicked Wings

<u>Menu</u>

Buffalo Chicken Wings

Lemonade

Apple Pie

Prices:

Buffalo Chicken Wings

1 dozen/$6.25

Lemonade

1 can Lemonade mix/$2.75

(Yields 25 one cup servings)

Apple Pie

8 inch pie/$3.95

(Yields 8 slices)

Answer Key:

Question 1 & 2: Unit Rates – Chicken Wings - $0.52; Lemonade - $0.11; Apple Pie – 1 slice - $0.49 Total Cost per person - $1.12

Question 3: # of guests – 25 guests = $28.00; 50 guests = $56.00; 250 guests = $280.00

Question 4: Same as Group A

Question 5: Total cost for 75 guests = $84.00

Dessert cost = $36.75

Percentage of dessert cost to total cost = $\frac{36.75}{84}$ = 44%

Question 6: Student answers will vary

Question 7: 44% = 158^0

Group E
Bigger –n- Better Barbeque
Menu

Barbeque Beef Sandwiches
Chips
Cherry Pie
Soft Drinks

Prices:
Barbeque Beef Sandwiches
4 sandwiches/$12.25
Potato Chips
3 bags (32 oz)/$8.25
(Yields 36 servings)
Cherry Pie
8 in Cherry Pie/$3.45
(Yields 8 slices)
Soft Drinks
12 cans/$3.49

Answer Key:

Question 1 & 2: Unit rates – 1 Barbeque sandwich - $2.56; 1 serving of Potato Chips - $0.23; 1 slice Cherry Pie - $0.43; 1 soft drink - $0.29 Total cost per person - $3.51

Question 3: # of guests – 25 guests = $87.75; 50 guests = $175.50; 250 guests = $877.50

Question 4: Same as Group A

Question 5: Total cost for 75 guests = $263.25
Dessert cost = $32.25
Percentage of dessert cost to total cost = 12%

Question 6: Student answers will vary.

Question 7: 12% = 43^0