

Human Services

Application Packet

General Math



Applied Problems Fractions

1. An infant grew $7/16$ " during October. During the next month, the baby grew $3/8$ ". How many inches did the baby grow during October and November?
2. $1/4$ of a grant's funding is for remodeling and $1/3$ of the funds going for equipment purchases. What fraction of the grant expenses will be used for the remaining part, which is education and training?
3. Because of recent increases in expenses, the average daily cost of a room at Keller's Psychiatric Care Facility rose by $1/9$ of the original cost. If the daily cost for a room was \$270, find the new price after the price increase was applied.
4. The staff at North Side Clinic treats $8/19$ as many patients as the staff at South Side Clinic. If South Side Clinic treats 152 patients, how many patients are treated at North Side Clinic?
5. A sealed bottle of cough syrup contains $7\frac{1}{2}$ ounces of liquid. If $3\frac{3}{4}$ ounces are administered from the bottle, how many ounces are remaining?
6. An assistant fills a storage cabinet at Rest House with 14 bottles of mouthwash. Each bottle is filled with $16\frac{2}{3}$ oz. How many total ounces of mouthwash are in the cabinet?

7. Currently, there are 15 billion cigarettes smoked worldwide everyday. If $\frac{1}{3}$ of the cigarettes smoked in the world today are smoked in China, how many cigarettes are smoked?
8. In 2000, Children's Service Society of Wisconsin spent $\frac{3}{80}$ of their total expenses on adoption costs. If total expenses equal \$18,310,251, find the dollar amount spent on adoption. (Round to nearest dollar.)
9. Program expenses for the annual budget have been determined: $\frac{3}{5}$ for salaries and benefits, $\frac{1}{10}$ for supplies, $\frac{1}{10}$ for equipment, $\frac{3}{20}$ for liability insurance and for $\frac{1}{20}$ miscellaneous. If total expenses are \$78,300, find the following:
- Dollar amount for annual salaries and benefits.
 - Dollar amount for annual supplies.
 - Dollar amount for annual equipment.
 - Dollar amount for liability insurance.
 - Dollar amount for miscellaneous expenses.
 - If an average of 1,560 clients are served annually, calculate the actual dollar amount each client must pay to cover the total annual expenses, assuming all clients receive comparable services? (Round to nearest penny.)
10. Westside Clinic has $605\frac{1}{2}$ total square feet of floor space. Offices occupy $123\frac{1}{4}$ square feet and the counseling department occupies $173\frac{5}{8}$ square feet. If the remainder of the floor space is for rehabilitation services, what is the square footage for rehabilitation services?

11. Brad joined a Mass Watchers group and recorded the following weekly weight losses in pounds: $2\frac{1}{2}$, $2\frac{1}{8}$, $4\frac{1}{4}$, $\frac{7}{8}$, and $3\frac{3}{8}$. Find the total pounds lost by Brad.
12. A \$500 grant was received at Safe House. $\frac{1}{12}$ of the grant is used for administrative expenses. How much money was left after administrative expenses were subtracted? (Round to nearest penny.)
13. What fraction of a \$27,000 grant is spent on remodeling if the remodeling cost is \$7500? (Reduce fraction to lowest terms.)
14. Lucy bought a lot near the school. The sides of the lot measure $104\frac{1}{2}$ feet, $71\frac{3}{4}$ feet, $112\frac{1}{8}$ feet, and $87\frac{1}{4}$ feet. If the lot is to be fenced, what is the perimeter (distance around) her lot?
15. Marge, Sheila, and David are the peer counselors for West Side Clinic. Marge has $\frac{1}{9}$ of the caseloads, Sheila has $\frac{1}{4}$. What fraction of the caseloads does David have?
16. An audit revealed that $\frac{3}{8}$ of the total patients were seen by peer counselors with the remaining by family practice. If there were 3456 total patients, how many were seen by family practice?

Applied Problems Decimals

1. A pair of eyeglasses costs a total of \$347.89. The frames of the glasses are \$187.23. How much do the lenses of the eyeglasses cost?
2. The ratio of sales of cigarettes reduced by an anti-smoking media campaign to an additional 25-cent California State tax increase is $\frac{232}{819}$. Express this fraction as a decimal, rounded to three decimal places.
3. In 1930, the lung cancer death rate for men was 4.9 per 100,000. Round the number of men dieing from cancer to a whole number.
4. Medical service cost at a clinic averages \$53.45 per visit. How many patients must be served each month to cover the clinic's monthly expenses of \$185,005?
5. The recommended daily allowance of riboflavin (vitamin B2) for teenage boys is 1.8 mg. How many milligrams of riboflavin are needed for a 30-day supply?

6. A patient chews nicotine polacrilex (gum), while trying to quit smoking. Each piece of gum contains 2.2 mg of nicotine. During the course of a day the patient chews 3 pieces, 1 piece, 2 pieces, 4 pieces, 1 piece, 1 piece, 4 pieces and 1 piece. How many total mg of nicotine are consumed while chewing the gum?

7. Find the total monthly expenses for a single person: Rent--\$475.00,
Car payment--\$243.67, Monthly car insurance--\$45.72, Gasoline--\$84.51,
Food--\$209.11, Retirement fund--\$43.10, Entertainment--\$74.54,
Telephone--\$54.89, Clothes--\$108.13.

8. Find the total monthly cost for the following car expenses: Car payment--\$187.92,
Insurance--\$43.25, Gasoline--\$76.55, Oil change--\$21.73.

9. The Safe House is planning the annual reception for benefactors. The basic Italiano meal to be served includes house green salad with Italian dressing, rolls and butter, chicken and spinach lasagna or Portobello mushroom lasagna for \$8.00/ serving. The catering service charges \$44.00 for ten pounds of red potato salad, which serves 40 people. Linen can be ordered for the dining tables for \$7.50 per cloth. Additional janitorial hours, heat/lighting expense, and thank you gifts total \$308.46. If 32 tables are prepared for the 250 guests attending, calculate the total reception cost.

10. A nurse recorded the following intakes during an 8-hour shift for a patient: 0.250 L, 0.200 L, 0.100 L, 0.075 L and 0.340 L. The output for the same period of time was 0.465.
- What is the total intake for this period of time?
 - How does output compare with the intake (greater than, equal to, less than) and by how much?
11. Laura is a peer counselor earning \$12.25 per hour.
- How much does she earn for a 40-hour workweek?
 - Find the overtime rate assuming a time and a half rate.
 - Find the total pay if Laura works 44.5 hours.
12. Four children were weighed at a day care center. Their weights were 15.45 kg, 22.5 kg, 13.96 kg, and 21.04 kg.
- What is the total weight of these four children?
 - Find the average weight for these children, round answer to nearest hundredth.
Note: *Average = total weight divided by number of children*
 - Find the average weight for these children, round answer to nearest tenth.
13. If fifteen people with tuberculoses are each treated with a 1.25 mL of streptomycin sulfate,
- How many milliliters are needed?
 - If a small vial of streptomycin sulfate each costs \$0.1052, find the total price for eight-dozen vials. (Round to nearest penny.)

14. Sauk County Human Services is having a year-end party. The catered meal costs \$15.65 including a tip. The planning committee has hired a band for \$500 and needs \$235 for door prizes and table decorations.
- If 98 people attend the party, how much should each person be charged to cover expenses?
 - Find the total bill for the party.
15. Joan rents a car after flying into Cleveland, OH to attend a family advocacy conference. The car rental charges \$39.99/day and \$0.29/mile. Joan used the car five days and drove a total of 114 miles. Calculate the total rental charge.
16. Doug went to Abbie's and bought five bags of potato chips at \$2.98 each and 12-2 L bottles of soda at \$1.19 each for a small party.
- What was the total cost of the items?
 - If Doug used 2-\$20 bills to pay, how much change did he get?
17. Pathways rented a truck for two days. The base rental is \$37.95 per day plus 23.3 cents per mile. Pathways drove 183.8 miles. Find the total charge for renting the truck.

Applied Problems Percents

1. Carolyn is working on a grant for an after school program. She got the following values for expenses: 0.239—food, 0.637—equipment, and 0.124—materials and supplies. Convert each of the decimals into equivalent percentages.
2. In the Midwest, 49% of children living in urban areas are more likely to live in low-income families according to a study published in 2003. Convert this percentage to a decimal.
3. A new report by the National Center for Children in Poverty, entitled The Geography of Low Income Children and Families shows that two-thirds of children in low-income families live in the West or the South. Convert this fraction to a percent. (Round answer to nearest tenth.)
4. A self-administered survey concerning welfare, employment, and substance abuse services was sent to 50 States and territories. 51 out of 54 jurisdictions responded. Express the response rate as a percent. (Round answer to nearest tenth.)
5. Congenital heart defects occur in approximately 0.8% of the 4 million children born annually in the United States. How many new cases of congenital heart defects are there each year?

6. The Adoption and Safe Families Act of 1997, has contributed to the substantial increase in adoptions in recent years--from 31,000 in fiscal year 1997 to approximately 51,000 in fiscal year 2002. Find the percent increase from 1997 to 2002. (Round answer to nearest tenth.)

7. Before leaving care, 47 percent were receiving some kind of counseling or medication for mental health problems; that number dropped to 21% after leaving care. (Source: Courtney and Piliavin, 1998) Find the percent decrease in counseling/medical care. (Round answer to nearest tenth.)

8. In 1930, lung cancer death rate for men was 4.9 per 100,000. That number rose to 75.6 per 100,000 in 1990. Find the percent increase. (Round to nearest tenth.)

9. A medical supplier is advertising 12% off all items during the month of April. If \$5,423 worth of supplies is ordered at regular price, what is the savings?

10. Shel had the oil changed on her car for \$19.95. What is the total amount owed if sales tax is 5.5%?

11. There were 281,000 children in foster care in 1986. By the end of 1995, there were 483,000 children in foster care. Find the percent increase. (Source: VCIS, APHSA, 1995) (Round to nearest tenth.)

12. In 1994, there were 49 suspects from western Wisconsin arrested for federal drug charges. In 2001, there were 77 suspects arrested for federal drug charges. Find the percent increase. (Round to nearest tenth.)

13. States expected to administer 450,000 small pox vaccinations to healthcare workers, but only 40,000 have been vaccinated. Find the percent vaccinated. (Source: "USA Today", 10/16/03) (Round to nearest tenth.)

14. It has been found in a certain city that 35% of children entering foster care were in poor health. If there were 125 children with poor health during one year, find the total number of children entering foster care.

Applied Problems Measurements

1. Phenobarbital is prescribed for a patient experiencing epileptic seizures. The patient is to take one 50 mg tablet three times each day.
 - a. How many total milligrams will be taken in one day?
 - b. How many tablets are required to provide a 30-day supply?
 - c. How many total mg will be taken in 30 days?

2. 1.8 mg of riboflavin is the recommended daily allowance for teenage boys. How many daily doses are contained in 1 gram of riboflavin?

3. The vitamin pill taken daily by Rose contains 18 milligrams of iron. How many grams of iron does she take in one year? (Round to nearest hundredth.)

4. A roll of gauze is 35 m in length. How many 50-centimeter lengths can be obtained from the roll?

5. A patient takes Nitrostat for angina pain. Each tablet is 3.0 mg. If a bottle contains 30 tablets, find how many total grams of Nitrostat are contained in the 30 tablets.

6. The doctor orders 0.5 g of Ampicillin. The dosage available is in 250 mg capsules. How many capsules are needed for this order to be administered twice daily for 10 days?

7. Convert the following values:

- a. 0.07 g = _____ mg b. 6 mg = _____ g c. 0.5 g = _____ mg
d. 5000 mg = _____ g e. 1.7 g = _____ mg f. 750 mg = _____ g
g. 0.03 g = _____ mg h. 12,000 mg = _____ g

8. A Tylenol (acetaminophen) 500 mg tablet is taken every 3 hours for 5 days. How many total grams of Tylenol are needed?

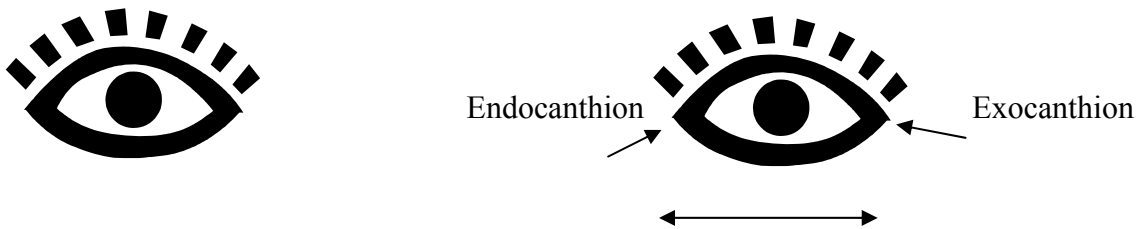
9. An infant is placed in foster care and is on formula. The infant drinks 4 ounces of formula every three hours. If formula comes in quart containers, how many quarts are needed for a 7-day supply?

Palpebral fissure length to inner canthal distance

One of the facial indicators of an infant with fetal alcohol syndrome is the wider than normal distance between the eyes. The distance between eyes, inner canthal distance, is measured from inner corner of eye to inner corner of the other eye.



The inner canthal distance is not used alone to determine whether the eyes are spaced further apart than normal. Another measurement that is used to determine eye spacing is the length of the eye or palpebral fissure length. The palpebral fissure length is the distance across the eye from the endocanthion to the exocanthion.



The palpebral fissure length divided by the inner canthal distance should be 90-95% for Caucasians and Afro-Americans and approximately 80% or greater for Asian and Indian descent. A smaller percentage is considered to be a characteristic of fetal alcohol syndrome.

For example, a 3 month old, Caucasian infant has a palpebral fissure length of 1.8 cm and an inner canthal distance of 2.0 cm. Finding the ratio would involve...

$$\frac{\text{Palpebral fissure length}}{\text{Inner canthal distance}} = \frac{1.8 \text{ cm}}{2.0 \text{ cm}} = .90 = 90\%$$

which falls within the normal percentage range for a Caucasian. However, if an Afro-American infant has a palpebral fissure length of 1.6 cm and an inner canthal distance of 1.9, the ratio would be...

$$\frac{\text{Palpebral fissure length}}{\text{Inner canthal distance}} = \frac{1.6 \text{ cm}}{1.9 \text{ cm}} = .84 = 84\%$$

which is smaller than the normal percentage range (90-95%) for an Afro-American. Therefore, this ratio would be an indication for fetal alcohol syndrome.

	Age	Race	Palpebral fissure length (cm)	Inner canthal distance (cm)	Ratio	%	Fetal Alcohol Syndrome Yes/No
8.	3 ½ y	Cauc.	2.1	2.6			
9.	3 ½ y	Afro-	2.1	2.3			
10.	27 yr	Asian	2.3	3.0			

Applied Problems Data

1. Display the following data in a circle graph using Microsoft Excel:
{Source: Current Population Survey Food Security Supplement, Dec., 2002}

Weekly Household Food Spending Per Person	
Food Security Status	Median Weekly Food Spending/Person
Food Secure	\$38.57
Food Insecure	\$27.50
w/o hunger	\$26.67
with hunger	\$30.00

2. Display the following data in a bar graph using Microsoft Excel: {Source: US Department of Health and Human Services}

WI Adoptions	
Year	Total
1998	643
1999	642
2000	736
2001	754

3. Display the following data in a bar graph using Microsoft Excel:
Note: Percentages may total greater than 100% because of overlaps in race reporting.

2000 Child Maltreatment Reported Cases		
Race	WI	National
African American	18.90%	45%
Am. Indian/Alaska Native	2.90%	1.60%
Asian/Pacific Islander	1.40%	2.10%
White	70%	50.60%
Multiple Race	0%	0.60%
Hispanic	5.20%	14.20%
Unknown	1%	7.10%

Interpreting Data

Data can be misleading depending on several factors including how it is displayed, sample size, and information it is based upon. The following graphs show the best states for taxes (Source: The Tax Foundation, 2002):

10 States with Lowest Total Tax Burdens (Including federal taxes)

State	Income Tax (in %)
1. Alaska	27.0
2. Oklahoma	29.0
3. W. Virginia & Alabama	29.1
5. Tennessee	29.2
6. North Dakota	29.5
7. South Dakota	29.7
8. Mississippi & Montana	29.8
10. Louisiana	30.1

10 States with Lowest Total Tax Burdens (Excluding federal taxes)

State	Income Tax (in %)
1. Alaska	6.3
2. Tennessee	8.4
3. New Hampshire	8.6
4. Texas	9.0
5. Alabama/Colorado/So. Dakota	9.1
8. Nevada/Florida	9.3
10. Oregon	9.4

Both graphs show ten states with the lowest total tax burdens. However, when federal taxes are taken into consideration, the states with the lowest total tax burden shifts. Alaska is the only state that is unaffected by including or excluding federal taxes into the figures. Oklahoma, West Virginia, North Dakota, Mississippi, and Montana disappear from the top ten list when federal taxes are excluded. Alabama drops from third lowest to fifth lowest with federal taxes excluded while Tennessee and South Dakota both rise in standings for states with lowest total tax burden. New Hampshire, Texas, Colorado, Nevada, Florida, and Oregon make the top lowest total tax burden list when federal taxes are not part of the calculations.

The graphs are both based on accurate figures. Someone making the case for people to move to their state because of low taxes could disregard one table in favor of the other to reflect positively on their state.

It is an important skill to carefully analyze data to determine how it was collected, what it was based on and how it was displayed. As Mark Twain once said, “There are three kinds of lies: lies, damn lies, and statistics.” When using data to support a grant or for reporting purposes, one needs to safeguard against criticism of misuse of data.

Applied Problems Statistics

1. The ages of 40 Medicare patients treated in one day at the Quality Insights Clinic are listed below:

27	5	61	73	12	78	14	22	44	10
66	83	72	15	73	44	57	61	61	12
49	5	62	43	80	89	71	77	33	56
67	66	45	57	8	7	79	90	15	84

- Find the range. _____
- Find the mean. _____
- Find the median. _____
- Find the mode. _____
- Find the standard deviation. _____
- Classify the ages of the patients into the following categories:

<u>Category</u>	<u>Number (frequency)</u>
-----------------	---------------------------

- Children (less than 19): _____
 - Young adults (20-39): _____
 - Middle adults (40-55): _____
 - Seniors (56-75): _____
 - Elderly (76+): _____
- For this particular day, which category had the largest number of patients? _____
 - Which measure best represents the age of the patients? _____
Why? _____

2. At Mass Watchers, several patients recorded the following weight loss for one week:

Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
6.5 lbs	8.5 lbs	1.0 lb	3.75 lbs	3.0 lbs

- a. Find the mean weight loss for the five patients. _____
- b. Find the mode weight loss for the five patients. _____
- c. Find the median weight loss for the five patients. _____
- d. Find the range. _____
- e. Find the standard deviation. _____

1. Nicigorette Gum, 2 mg, comes packaged in 3 packs for \$88.92, 6 packs for \$161.65 or 12 packs for \$306.76. If there are 105 pieces of gum per pack, find the unit cost for the 3-, 6- and 12-packs. (Round to the nearest penny.)

2. Nicigorette 10 mg inhaler combo pack is advertising a special price of \$118.57 for the 15- cartridge pack. The one hundred sixty-two cartridge pack costs \$142.69. Which pack is the better deal? Find the unit cost for both cartridge pack sizes and indicate which pack has the lower cost. (Round to the nearest penny.)

3. Sara is on a tight budget and needs to buy dog food. She can buy a 25-pound bag of dog food for \$7.99, which includes 3 additional pounds free. The same brand dog food comes in a 22-pound bag for \$7.74 with a \$2.00 redeem now coupon stuck on the bag. Find the cost per pound for both bags of dog food and determine which has the lower cost/pound.

4. If thermometers cost a clinic \$3.25, how much should a patient be charged if the thermometer is marked up 95%?

Applied Problems Algebra

1. A woman's \$21,000 estate is to be divided so that her husband receives twice as much as her son. How much will each receive?
2. The outpatient clinic in Prairie du Chien has 12 more patients than the outpatient clinic in Viroqua. Together, the two clinics have 36 patients. How many patients does each clinic have?
3. Hannah and Mariah are social workers. Hannah's case load in the past four years is three times as large as Mariah's. Together, they have had 400 cases in the last four years. Find the number of cases for each social worker.
4. Chuck smokes five more cigarettes a day than Phil. If together they smoke thirteen cigarettes daily, find the number of cigarettes smoked daily by both men.

Human Services Applied Problems Answer Key

Fractions

- 13/16
- 5/12
- \$300
- 64
- $3\frac{3}{4}$
- 233 $\frac{1}{3}$
- 3 billion
- \$686,634
- a. \$46,980
b. \$7,830
c. \$7,830
d. \$11,745
e. \$3,915
f. \$50.19
- 308 $\frac{5}{8}$
- 13 $\frac{1}{8}$
- \$458.33
- $\frac{5}{18}$
- $375\frac{5}{8}$
- $\frac{23}{36}$
- 2,160

Decimals

- \$535.12
- 0.283
- 5
- 3,461
- 54 mg
- 37.4 mg
- \$1,338.67
- \$299.45
- \$2,856.46
- a. 0.965
b. less, 0.5
- a. \$490.00
b. \$18.38
c. \$572.71
- a. 72.95 kg
b. 18.24 kg
c. 18.2 kg
- a. 18.75 mL

- b. \$10.10
- a. \$23.15
b. \$2268.70
- \$233.01
- a. \$29.18
b. \$10.82
- \$118.73

Percents

- Food: 23.9%
Equipment: 63.7%
Materials/Supplies: 12.4%
- 0.49
- 66.7%
- 94.4%
- 32,000
- 64.5%
- 55.3%
- 1442.9%
- \$650.76
- \$21.05
- 71.9%
- 57.1%
- 8.9%
- 357

Measurements

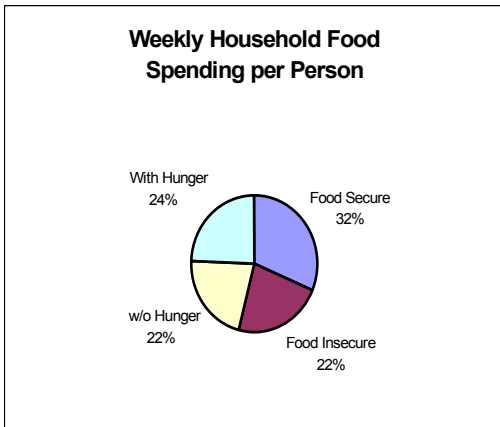
- a. 150 mg
b. 90 tablets
c. 4500 mg
- 555
- 6.57 g
- 70
- 0.09 g
- 40
- a. 70 mg
b. .006 g
c. 500 mg
d. 5 g
e. 1700 mg
f. 0.75 g
g. 30 mg
h. 12 g
- 20 g
- 7 qts.

Formulas

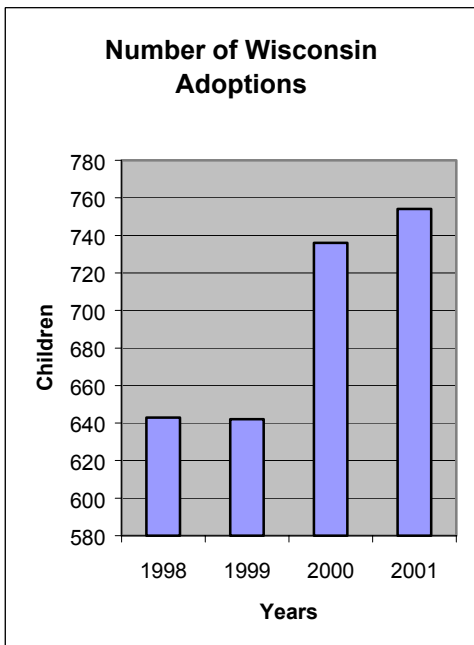
1. $\frac{1}{2}$
2. $\frac{1}{9}$
3. a. $\frac{17}{51}$
b. $\frac{51}{68}$
4. 5 hrs. 40 min.
5. \$630
6. 136
7. 576
8. 0.808, 80.8%, yes
9. 0.913, 91.3%, no
10. 0.767, 76.7%, yes

Data

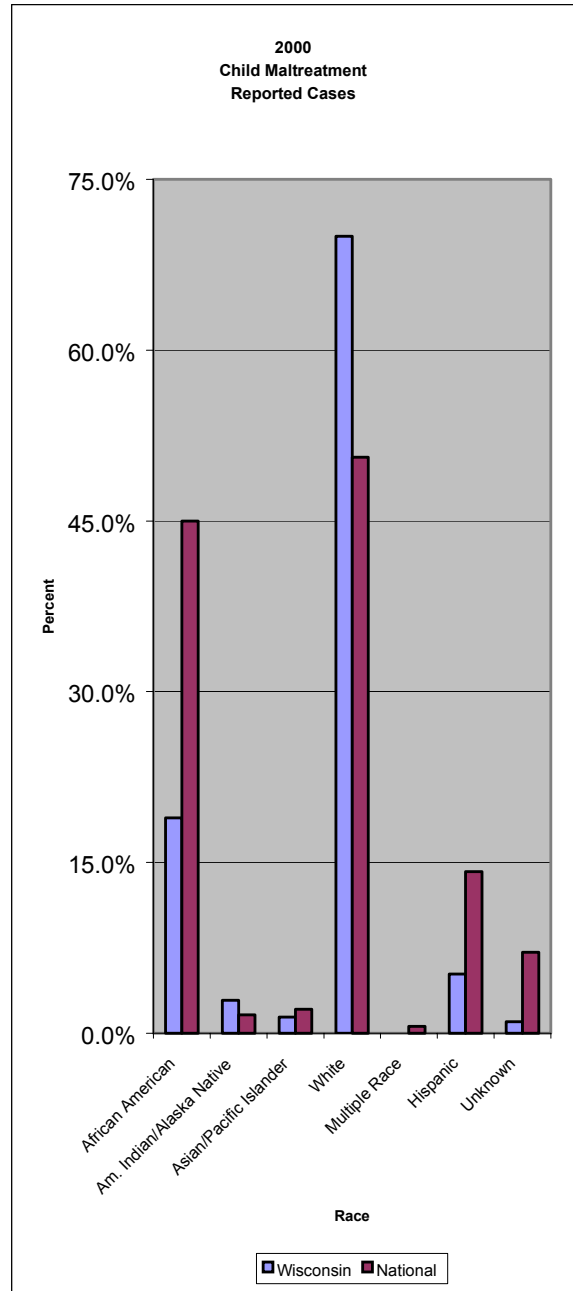
1.



2.



3.



Statistics

1. a. 85
b. 49.3
c. 57
d. 61
e. 27.6
f. i. 10, ii. 3, iii. 5, iv. 14, v. 8
g. Seniors (56-75)
 - a. Mode (Closer to the category with the largest number of patients.)
2. a. 4.55
b. No mode
c. 3.75
d. 7.5
e. 2.96

Finance

1. 3 pack: \$.28; 6 pack: \$.26; 12 pack: \$.24
2. 150 pack: \$.79/cartridge; 162 pack: \$.88/cartridge; 150 pack better deal
3. 25 lb: \$.29/lb; 22 lb: \$.26/lb; 22 lb. with \$2.00 coupon
4. \$6.34

Algebra

1. Son: \$7,000; Husband: \$14,000
2. Viroqua: 12; Prairie du Chien: 24
3. Mariah: 100; Hannah: 300
4. Phil: 4; Chuck: 9

Applied Problems—Quiz

Fractions

1. Suzy worked the following hours during one month as a volunteer at the Suicide Hot Line: $3\frac{1}{4}$, $2\frac{3}{4}$, $1\frac{1}{2}$, $2\frac{3}{4}$, and $4\frac{1}{4}$. Find the total hours she worked.
2. In 2002, Children's Service Society of Wisconsin spent $\frac{4}{21}$ of their total expenses on adoption costs. If total expenses equal \$21,444,394, find the dollar amount spent on adoption. (Round to the nearest dollar.)
3. Eastside Clinic has $702\frac{3}{8}$ total square feet of floor space. Offices occupy $192\frac{1}{4}$ square feet and the counseling department occupies $347\frac{1}{8}$ square feet. If the remainder of the floor space is for rehabilitation services, what is the square footage for rehabilitation services?
4. What fraction of a \$33,000 grant is spent on training, if the training cost is \$12,000?
5. Minnie Mae, Anne, and Gilbert are the peer counselors for East Side Clinic. Minnie Mae has $\frac{2}{7}$ of the case loads, Anne has $\frac{3}{8}$. What fraction of the case loads does Gilbert have?

Applied Problems—Quiz

6. An audit revealed that $\frac{4}{7}$ of the total patients seen at Outreach have a substance abuse problem with the remaining victims of domestic violence. If there are 2492 total patients, how many are victims of domestic violence?

7. In 2000, there were 34,800,000 Americans age 65 or older. About $\frac{9}{20}$ of these older Americans had annual incomes greater than \$15,000. How many older Americans had incomes of less than \$15,000? (Source: US Census Bureau)

8. Program expenses for the annual budget have been determined: $\frac{3}{10}$ for treatment foster care, $\frac{1}{5}$ for adoption, $\frac{1}{5}$ for counseling services, $\frac{1}{10}$ for prevention, $\frac{1}{10}$ for other out-of-home care, and $\frac{1}{10}$ for miscellaneous. If total expenses are \$20,205,000, find the following:
 - a. Dollar amount for annual treatment foster care.
 - b. Dollar amount for annual adoption.
 - c. Dollar amount for annual counseling services.
 - d. Dollar amount for prevention.
 - e. Dollar amount for other out-of-home care.
 - f. Dollar amount for miscellaneous expenses.
 - g. If an average of 404,100 clients are served annually, calculate the actual dollar amount each client must pay to cover the total annual expenses, assuming all clients receive comparable services?

Applied Problems—Quiz

Decimals

1. In 1990, the lung cancer death rate for men was 75.6 per 100,000. Round the number of men dieing from cancer to a whole number.
2. The recommended daily requirement of calcium for adults is 1500 mg. How many milligrams of calcium are needed for a 30-days?
3. Find the total monthly cost for the following car expenses: Car payment--\$212.03, Insurance--\$51.24, Gasoline--\$109.45, Car maintenance--\$72.91.
4. James rents a car after flying into Dayton, OH to attend a domestic violence conference. The car rental charges \$42.27/day and \$0.31/mile. James used the car four days and drove a total of 176 miles. Calculate the total rental charge.
5. Darlene went to Goodie's and bought 8 bags of potato chips at \$2.97 each and 15-2 L bottles of soda at \$1.29 each for a small party.
 - a. What was the total cost of the items?
 - b. If Darlene used 3-\$20 bills to pay, how much change did she get?
6. Pathways rented a truck for two days. The base rental is \$46.75 per day plus 45.5 cents per mile. Pathways drove 73.6 miles. Find the total charge for renting the truck.

Applied Problems—Quiz

7. The I.M.O.K. Rehabilitation Care Facility is planning the annual reception for benefactors and volunteers. The meal to be served includes house green salad with dressing, rolls and butter, scalloped potatoes, peas, and ham steak for \$10.75/ serving. The catering service charges \$54.00 for an horsd'oeuvre platter, which serves 30 people. Linen can be ordered for the dining tables for \$7.50 per cloth. Additional janitorial hours, heat/lighting expense, and thank you gifts total \$345.50. If 32 tables are prepared for the 250 guests attending, calculate the total reception cost.
8. Lindsey is a peer counselor earning \$13.05 per hour.
- a. How much does she earn for a 40-hour work week?
 - b. Find the overtime rate assuming a time and a half rate. (Round to nearest penny.)
 - c. Find the total pay if Laura works 46.75 hours. (Round to nearest penny.)
9. Four children were weighed at a day care center. Their weights were 34.4 lbs., 49.75 lbs., 30.75 lbs., and 46.2 lbs.
- a. What is the total weight of these four children?
 - b. Find the average weight for these children, round answer to nearest hundredth.
Note: *Average = total weight divided by number of children*
 - c. Find the average weight for these children, round answer to nearest tenth

Applied Problems—Quiz

Percents

1. Cliff is working on a grant for a youth retreat. He got the following values for revenue: 0.456—registration fees, 0.125—donations, 0.233—corporate sponsors, and 0.186—miscellaneous. Convert each of the decimals into equivalent percentages.

Registration fees: _____%

Donations: _____%

Corporate sponsors: _____%

Miscellaneous: _____%

2. According to Child Welfare Outcomes, during 1999, Wisconsin has 9.3% of the child population living in poverty. Convert this percentage to a decimal.

3. Marra had the muffler replaced on her car for \$234.95 including labor costs. What is the total amount owed if sales tax on parts and labor is 5.5%? (Round to nearest penny.)

4. Every year, approximately 18,000 youth will emancipate — or "age-out"— from the foster care system when they reach age 18 or finish high school. Youth in foster care often do not get the help they need with high school completion, employment, accessing health care, continued educational opportunities, housing and transitional living arrangements. According to a 1998 study by Courtney and Piliavin, after aging out of foster care, 27% of males and 10% of females were incarcerated within 12 to 18 months. How many males and females will be incarcerated after leaving foster care at age 18?

Applied Problems—Quiz

5. According to studies, of the 18,000 youth that emancipate or “age-out”, 5,950 youth will receive public assistance. Find the percentage of emancipated youth receiving public assistance. (Round answer to the nearest tenth.)

6. Between 1989 and 1991, 90% of children receiving a health screen upon entering foster care in a certain city had at least one abnormality. If there were 1266 children with one or more abnormalities, how many total children were screened?

7. Children’s Service Society of Wisconsin had 2,322 out of home care cases in 2001. If they had 1,332 out of home care cases in 2000, what is the percent increase in cases? (Round answer to one decimal point.)

8. The average number of manufactured cigarettes smoked per man per day in China was four in 1972. In 1996, the number of cigarettes smoked per man per day in China rose to 15. Find the percent increase.

9. A food distributor is advertising a 5% discount if an order is paid in cash rather than charged. The Avenue Women’s Shelter orders \$327.45 worth of food and plans to pay cash. What will the bill be after the discount is applied? (Round answer to nearest penny.)

Applied Problems—Quiz

10. According to the 1999 Child Welfare Outcomes, 9,637 children were in Wisconsin's foster care. If the total number of children under 18 years of age living in Wisconsin during 1999 was 1,348,268, find the percentage of children in foster care. (Round answer to the nearest tenth of a percent.)
11. In 1994, there were 171 suspects from western Wisconsin arrested for federal offences. In 2001, there were 207 suspects arrested. Find the percent increase. (Round to nearest tenth.)

Measurements

1. Naltrexone, a prescription drug, enhances a patient's response to infection by HIV, the virus that causes AIDS. The optimal adult dosage of naltrexone has been found to be a 4.5mg pill taken daily.
- a. How many total milligrams will be taken in 30 days?
 - b. If a 30-day supply of naltrexone costs \$38, what is the cost per pill? (Round to nearest penny.)
2. 1500 mg of calcium is the recommended daily dosage for adults. How many daily doses are contained in 30 grams of calcium?
3. Shannon purchased a 55 m roll of red ribbon. She needs 30-centimeter lengths of ribbon to make bows for a Red Ribbon Week observance. How many 30-cm lengths can be obtained from the roll?

Applied Problems--Quiz

4. Codeine sulfate tablets each contain 30 mg. If 2 tablets are taken twice a day, how many grams are needed for a 10-day prescription?

5. The doctor orders 0.1 g of Lopressor. The dosage available is in 50 mg tablets. How many tablets are needed for this order to be administered twice daily for 10-days?

6. Convert the following values:
 - a. 2.5 g = _____ mg
 - b. 81 mg = _____ g
 - c. 0.75 g = _____ mg

 - d. 7500 mg = _____ g
 - e. 3 g = _____ mg
 - f. 480 mg = _____ g

7. A bottle of Tylenol (acetaminophen) contains 150 tablets. Each Tylenol tablet comes in a strength of 325 mg per tablet. How many total grams of Tylenol are contained in the bottle?

8. An infant is placed in foster care and is on formula. The infant drinks 8 ounces of formula every four hours. If formula comes in quart containers, how many quarts are needed for a 7-day supply?

Applied Problems—Quiz

Formulas

1. The average length of a child's foster stay in foster care in California from 1988 to 1993 was 18 months. The average length of a child's foster stay in foster care was 9 months in Texas. What is the ratio of average foster stay in Texas to average foster stay in California?
2. United Way contributed \$2 million of the \$22 million dollar revenue reported for children's Service Society of Wisconsin in 2002. Express the ratio of United Way's contribution to the total revenue in lowest terms.
3. During one week, 26 new patients were admitted to a psychiatric care facility, while 52 patients were dismissed.
 - a. What is the ratio of those admitted compared to those dismissed?
 - b. What is the ratio of those dismissed compared to all patients admitted and dismissed?
4. Mortality rates show the annual death rate for a certain community to be one person per 1500. If the population is 215,211, how many people should be expected to die during the next 12 months?
5. Daily processing of patient records and billing requires 20 minutes of computer-operator time per newly admitted patient. Using this ratio, calculate the amount of time, in hours and minutes, required to process 26 patient records.

Applied Problems--Quiz

6. Safe House deposited a \$5000 grant into an account paying 4.3% annual interest. How much interest will be earned in 3 years? (Simple Interest = Principal x Rate x Time)

7. The case load in one ward is determined to be 12 patients for each 2 counselors. To have an equal case load, how many counselors would be required for a 70-patient ward?

8. For every 100 children in Wisconsin's foster care, six are adopted. If there are 10,200 children currently in foster care, how many will be adopted?

Complete the table:

	Age	Race	Palpebral fissure length (cm)	Inner canthal distance (cm)	Ratio	%	Fetal Alcohol Syndrome Yes/No
9.	1 wk.	Cauc.	1.0	1.2			
10.	3 mo.	Afro-	1.9	2.1			
11.	3 mo.	Asian	2.1	2.3			
12.	3 mo.	Cauc.	1.9	2.8			

Applied Problems—Quiz

Data

1. The following tables both show a list of the 10 states with the highest total taxes for 2002. Write a paragraph describing the similarities and differences of the tables. (Attach the paragraph to the application packet.)

10 States with Highest Total Tax Burdens (Including federal taxes)

State	Income Tax (in %)
50. Connecticut	36.7
49. Washington	35.6
48. New York	34.7
47. New Jersey	34.3
46. Wyoming	34.1
45. Wisconsin	33.2
44. Minnesota	32.9
43. Michigan/Illinois	32.8
41. California	32.7

10 States with Highest Total Tax Burdens (Excluding federal taxes)

State	Income Tax (in %)
50. Maine	12.8
49. New York	12.3
48. Wisconsin	12.0
47. Hawaii	11.6
46. Minnesota/Rhode Island	11.3
44. Utah/Ohio	11.2
42. Vermont	11.0
41. Connecticut	10.9

2. Approximately 3% of waiting children have waited less than a month to be adopted after the termination of parental rights, 16% waited 1-5 months, 30% waited 6-11 months, 20% waited 12-17 months, 12% waited 18-23 months, 7% waited 24-29 months, 4 % waited 30-35 months, 7% waited 3-4 years, and 2% waited 5+ years. Display this data using Microsoft Excel in an appropriate chart including title, values, and labels. (Attach the chart to the back of this packet.)

Applied Problems—Quiz

3. Between 1983 and 1993, the number of children in foster care increased 154% in California, 158% in Illinois, 123% in Texas, 120% in New York and 67% in Michigan. (Source: Multistate Data Archive) Display this data in an appropriate chart using Microsoft Excel including title, values, and labels. (Attach the chart to the back of this packet.)

Statistics

1 At Mass Watchers, several patients recorded the following weight loss for one week:

Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
4.75 lbs	2.5 lbs	4.75 lbs	7.0 lbs	3.5 lbs

- Find the mean weight loss for the five patients.
 - Find the mode weight loss for the five patients.
 - Find the median weight loss for the five patients.
 - Find the range for the five patients.
 - Find the standard deviation for the five patients.
2. The ages of 12 patients visiting a counselor are listed below: 21, 53, 78, 62, 63, 68, 69, 83, 91, 32, 88, 78.
- Find the range. _____
 - Find the mean. _____
 - Find the median. _____
 - Find the mode. _____
 - Find the standard deviation. _____

Applied Problems—Quiz

f. Classify the ages of the patients into the following categories:

<u>Category</u>	<u>Number (frequency)</u>
i. Children (less than 19):	_____
ii. Young adults (20-39):	_____
iii. Middle adults (40-55):	_____
iv. Seniors (56-75):	_____
v. Elderly (76+):	_____

g. For this particular day, which category had the largest number of patients? _____

Which measure best represents the age of the patients? _____

Why? _____

Finance

1. Nicorette Gum, 4 mg, comes packaged in 3 packs for \$84.10, 6 packs for \$137.87 or 12 packs for \$244.72. If there are 96 pieces of gum per pack, find the unit cost for the 3-, 6- and 12-packs. (Round to nearest penny.)

2. Nicorette 10 mg inhaler combo pack is \$142.69 for a 162 cartridge pack. Neincigarette 10 mg inhaler pack contains 18 inhaler cartridges and costs \$13.29 per pack. Which pack is the better deal? Find the unit cost for both products and indicate which pack has the lower cost. (Round to nearest penny.)

Applied Problems—Quiz

3. Fifty 400 mg Tagamet pills cost \$65.70. The generic version of this same medicine costs \$112.10 for one hundred 400 mg pills. Find the cost per pill for the name brand and generic medicine and determine which has the lower cost/pill. (Round to nearest penny.)
4. If disposable razors cost a clinic \$0.23, how much should a patient be charged if the razor is marked up 150%? (Round to nearest penny.)

Algebra

1. Martin and Stan commute to their jobs at the courthouse. Martin drives twice as far as Stan. Together, they drive 120 miles per week. Find how far Martin drives per week.
2. A computer cpu and monitor are worth \$1200. The cpu is worth seven times as much money as the monitor. Find the value of the cpu and monitor.
3. During four days of following the Mass Reducers Program, Alice accumulated ten fewer points than Darlene. Together, both women's points for the four days totaled 154. How many points did Darlene accumulate during the four days.