St. Anne's
EPISCOPAL SCHOOL

Hi everyone! Happy Summer! I can't believe I am typing your summer letter (and you're reading it which means we officially are on Summer Vacation!). It has been a wonderful year working with you all. I can truthfully say that I thoroughly enjoyed working with your class. You all should be proud of what you have achieved this year and your growth in math. I am looking forward to challenging you next year with Exeter I or Algebra 1 with Quadratics. With that being said, what I've decided for summer homework is all the material we usually cover when we get back to school in September. The first chapter of the Algebra book is a review of material we discussed towards the end of 7th grade. In order to complete the Algebra 1 book, I've decided to 'review' and relearn the chapter one material over the summer. The packet that I have put together for you represents the material in Chapter 1 of the Algebra 1 text. If you find yourself having trouble with the topics please do not hesitate to email me at KMain@saintannesschool.org. As always, all your work should be on a separate piece of paper. Please put answers only on the worksheet itself. Thanks!

Have a wonderful summer break and remember…math is everywhere!

Ms. Main

Name_____ Date _____ Class _____

Problem Solving

Solving Equations by Multiplying or Dividing

Write the correct answer.

1. John threw a surprise birthday party for his friend. Food, drinks, and a DJ cost $480 for a group of 32 people. Write and solve an equation to find the cost *c* per person.

   _____

   _____

2. One serving of soybeans contains 10 grams of protein, which is 4 times the amount in one serving of kale. Write and solve an equation to find the amount of protein *x* in one serving of kale.

   _____

   _____

3. Maria earned $10.50 per hour working at an ice cream shop. She earned $147 each week before taxes. Write and solve an equation to find the number of hours *h* she worked each week.

   _____

   _____

4. Ben is saving $\frac{1}{5}$ of his weekly pay to buy a car. Write and solve an equation to find what weekly pay *w* results in savings of $61.50.

   _____

   _____

Use the table below to answer questions 5–7. Select the best answer.
The table shows the maximum speed in miles per hour for various animals.

5. The speed of a snail is how many times that of a cat?

   A $\frac{1}{1000}$ C 100

   B $\frac{1}{100}$ D 1000

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6. A cheetah's maximum speed of 70 mi/h is x times faster than a black mamba snake's maximum speed. Which equation shows this relationship?

F $20 + x = 70$ H $70 = \frac{20}{x}$

G $20 = 70x$ J $70 = 20x$

Animal	mi/h
Falcon	200
Zebra	40
Cat (domestic)	30
Black Mamba Snake	20
Snail	0.03

7. Use your equation in problem 6 to find how many times faster a cheetah is than a black mamba snake if they are both traveling at their maximum speed.

A 0.3 times C 10 times

B 3.5 times D 50 times

Name_____ Date _____ Class _____

Problem Solving

Solving Two-Step and Multi-Step Equations

Write the correct answer.

1. Stephen belongs to a movie club in which he pays an annual fee of $39.95 and then rents DVDs for $0.99 each. In one year, Stephen spent $55.79. Write and solve an equation to find how many DVDs *d* he rented.

_____

_____

2. In 2003, the population of Zimbabwe was about 12.6 million, which was 1 million more than 4 times the population in 1950. Write and solve an equation to find the population *p* of Zimbabwe in 1950.

_____

_____

3. Maggie's brother is three years younger than twice her age. The sum of their ages is 24. How old is Maggie?

_____

4. Kate is saving to take an SAT prep course that costs $350. So far, she has saved $180, and she adds $17 to her savings each week. How many more weeks must she save to be able to afford the course?

_____

Use the graph below to answer questions 5–7. Select the best answer. The graph shows the population density (number of people per square mile) of various states given in the 2000 census.

5. One seventeenth of Rhode Island's population density minus 17 equals the population density of Colorado. What is Rhode Island's population density?

   A 425 C 714

   B 697 D 1003

6. One more than sixteen times the population density of New Mexico equals the population density of Texas. To the nearest whole number, what is New Mexico's population density?

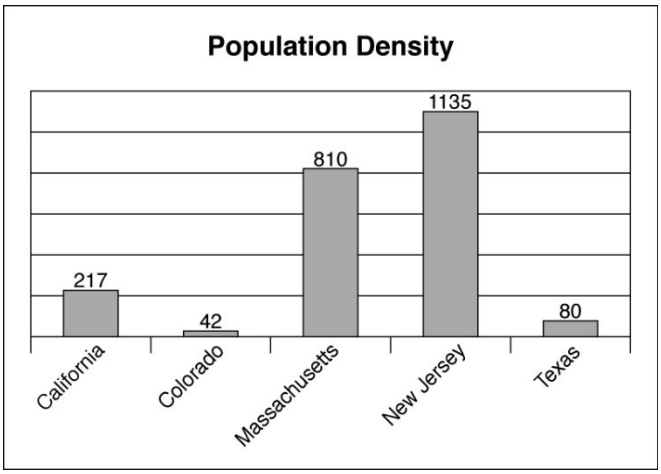
   F 5 H 13

   G 8 J 63

7. Three times the population density of Missouri minus 26 equals the population density of California. What is Missouri's population density?

   A 64 C 98

   B 81 D 729



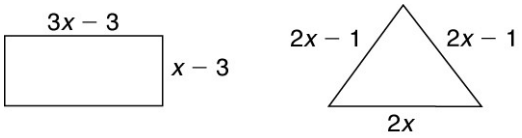
Name_____ Date _____ Class _____

Problem Solving

Solving Equations with Variables on Both Sides

Write the correct answer.

1. Claire purchased just enough fencing to border either a rectangular or triangular garden, as shown, whose perimeters are the same.



How many feet of fencing did she buy?

_____

2. Celia and Ryan are starting a nutrition program. Celia currently consumes 1200 calories a day and will increase that number by 100 calories each day. Ryan currently consumes 3230 calories a day and will decrease that number by 190 each day. They will continue this pattern until they are both consuming the same number of calories per day. In how many days will that be?

_____

3. A moving company charges $800 plus $16 per hour. Another moving company charges $720 plus $21 per hour. How long is a job that costs the same no matter which company is used?

_____

4. Aaron needs to take out a loan to purchase a motorcycle. At one bank, he would pay $2500 initially and $150 each month for the loan. At another bank, he would pay $3000 initially and $125 each month. After how many months will the two loan payments be the same?

_____

Use the table below to answer questions 5–7. Select the best answer. The table shows the membership fees of three different gyms.

Gym	Fees
Workout Now	$200 plus $45 per month
Community Gym	$50 plus $55 per month
Ultra Sports Club	$20 plus $60 per month

5. After how many months will the fees for Workout Now and Community Gym be the same?

   A 2.5 C 25
   B 15 D 30

6. Sal joined Workout Now for the number of months found in problem 5. How much did he pay?

   F $695 H $1325
   G $875 J $1550

7. After how many months will the fees for Workout Now and Ultra Sports Club be the same?

   A 7 C 12
   B 10 D 15

Name_____ Date _____ Class _____

Problem Solving

Solving for a Variable

Use the table below, which shows some track and field gold medal winners, to answer questions 1–4. Round all answers to the nearest tenth.

1. Solve the formula $d = rt$ for r.

   _____

2. Find Johnson's average speed in meters per second.

   _____

3. Find Garcia's average speed in meters per second.

   _____

4. The world record of 19.32 seconds in the 200-meter race was set by Michael Johnson in 1996. Find the difference between Johnson's average speed and Kenteris' average speed.

   _____

2000 Summer Olympics		
Gold Medal Winner	**Race**	**Time (s)**
M. Greene, USA	100 m	9.87
K. Kenteris, Greece	200 m	20.09
M. Johnson, USA	400 m	43.84
A. Garcia	110 m	13.00

Select the best answer.

5. The cost to mail a letter in the United States in 2008 was \$0.41 for the first ounce and \$0.26 for each additional ounce. Solve $C = 0.41 + 0.26(z - 1)$ for z.

   A $z = \dfrac{C - 0.41}{0.26}$

   B $z = \dfrac{C - 0.41}{0.26} + 1$

   C $z = \dfrac{C + 0.15}{0.26}$

   D $z = C - 0.67$

7. Degrees Celsius and degrees Fahrenheit are related by the equation $C = \frac{5}{9}(F - 32)$. Solve for F.

   A $F = 9C + 27$ C $F = \frac{5}{9}C + 32$

   B $F = \frac{9}{5}C$ D $F = \frac{9}{5}C + 32$

6. The formula $V = \dfrac{Bh}{3}$ shows how to find the volume of a pyramid. Solve for B.

   F $B = \dfrac{3V}{h}$ H $B = 3Vh$

   G $B = 3V - h$ J $B = 3V + h$

8. The cost of operating an electrical device is given by the formula $C = \dfrac{Wtc}{1000}$ where W is the power in watts, t is the time in hours, and c is the cost in cents per kilowatt-hour. Solve for W.

   F $W = 1000C - tc$

   G $W = \dfrac{Ctc}{1000}$

   H $W = 1000C + tc$

   J $W = \dfrac{1000C}{tc}$

Name_____ Date _____ Class _____

Problem Solving

Rates, Ratios, and Proportions

Write the correct answer.

1. A donut shop bakes 4 dozen donuts every 18 minutes. Find the unit rate to the nearest hundredth.

_____

2. At one time, the ratio of in-state to out-of-state tuition at Texas A & M University in College Station, Texas was about 3:11. About how much was the out-of-state tuition if the in-state tuition at that time was about $2400?

_____

3. The birth rate in Namibia is 35 babies to every 1000 people. In 2001, the country had a population of about 1,800,000 people. How many babies were there?

_____

4. A boat travels 160 miles in 5 hours. What is its speed in miles per minute?

_____

Use the table below to answer questions 5–8. Select the best answer. The table shows the ratio of female to male students at various institutions in 2002.

Institution	female:male
Massachusetts Institute of Technology	41:59
Tulane University	53:47
US Naval Academy	1:19
Georgia Institute of Technology	29:71
University of Massachusetts at Amherst	51:49
Baylor University	29:21

5. If there are 209 women at the US Naval Academy, how many men are there?
   - A 11
   - B 190
   - C 3971
   - D 4180

6. If there are 7282 male students at the Georgia Institute of Technology, how many females are there?
   - F 2427
   - G 2974
   - H 8282
   - J 17,828

7. If there are 4959 male students at Baylor University, which proportion can be used to find the number of female students?
   - A $\frac{21}{4959} = \frac{x}{21}$
   - B $\frac{21}{4959} = \frac{x}{29}$
   - C $\frac{21}{29} = \frac{x}{4959}$
   - D $\frac{29}{21} = \frac{x}{4959}$

8. For which institution is the ratio of female to male students the greatest?
   - F Baylor University
   - G Tulane University
   - H University of Massachusetts at Amherst
   - J US Naval Academy

Name_____ Date _____ Class _____

Problem Solving

Applications of Proportions

Write the correct answer.

1. A 4 by 5 inch photo is enlarged by multiplying every dimension by 2 to form a similar 8 by 10 inch photo. What is the ratio of the perimeter of the smaller rectangle to that of the larger? What is the ratio of the two areas?

_____

_____

2. Pamela wants to buy a suitcase whose dimensions are $1\frac{1}{2}$ times those of her $28 \times 16 \times 8$ inch suitcase. How is the ratio of the volumes related to the ratio of corresponding dimensions? What is the ratio of the volumes?

_____

_____

_____

_____

3. The Taylors plan to expand their 80 square foot garage by tripling the dimensions. What will be the area of the new garage?

_____

4. A tent has a volume of 26.25 in^3. Every dimension is multiplied by a scale factor so that the new tent has a volume of 1680 in^3. What was the scale factor?

_____

Complete the table below and use it to answer questions 5–8. Select the best answer. Assume the shadow lengths were measured at the same time of day.

Object	Length of Shadow (ft)	Height (ft)
Flagpole	8	20
Oak tree	12	
Goal post	18	
Telephone pole		17.5
Fence		6.5

5. The flagpole casts an 8 foot shadow, as shown in the table. At the same time, the oak tree casts a 12 foot shadow. How tall is the oak tree?

A 4.8 ft C 30 ft

B 24 ft D 32 ft

6. How tall is the goal post?

F 7.2 ft H 38 ft

G 30 ft J 45 ft

7. What is the length of the telephone pole's shadow?

A 5.5 ft C 25.5 ft

B 7 ft D 43.8 ft

8. What is the length of the fence's shadow?

F 1.5 ft H 16.25 ft

G 2.6 ft J 21.5 ft