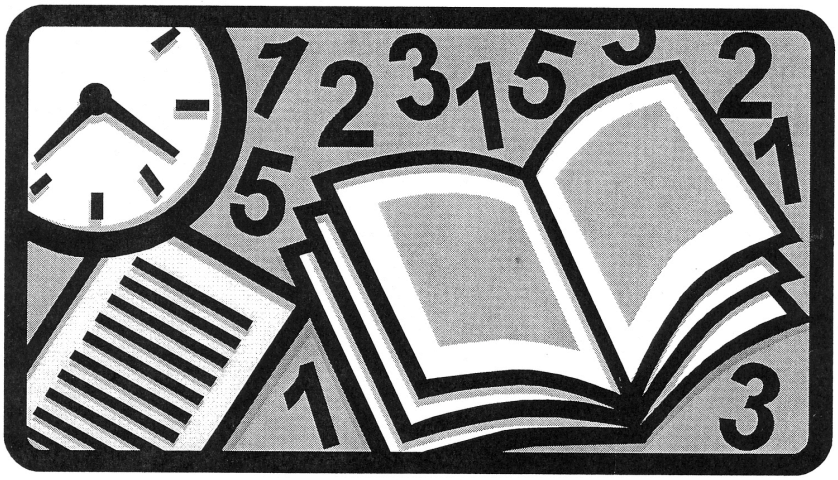
SUMMER MATH PACKET

FOR STUDENTS COMPLETING

ALGEBRA 1 – GRADE 8
ALGEBRA 1
ESSENTIALS OF ALGEBRA 1 – B



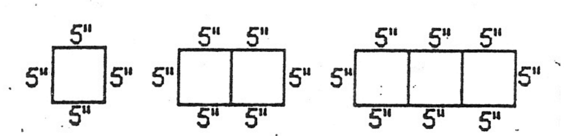
NAME:_____

TEACHER:_____

DATE COMPLETED:_____

DIRECTIONS: Complete each problem, **showing all work in the space provided below** it. You MUST show work, or explain your solution in order to receive credit for the answer. There are hints for each problem in the right hand margin of the page.

QUESTION	HINT
1. If 4 x + 35 = 49.8, then 7 x =	1. Solve for x, then find 7x
2. After a 15% discount, a pair of running shoes costs $102.00. How much were the shoes before the discount was taken?	2. If there was a 15% discount, what was the % paid? Write an equation to solve.
3. If 40% of some number is 34, what is 68% of that same number?	3. Remember $\frac{P}{100}(N) = R$
4. If you lined up 20 squares in a row with each side equal to 5 inches, what would the perimeter measure?	4. Use the squares in the diagram to find a pattern with the number of squares and the number of sides to predict the perimeter.

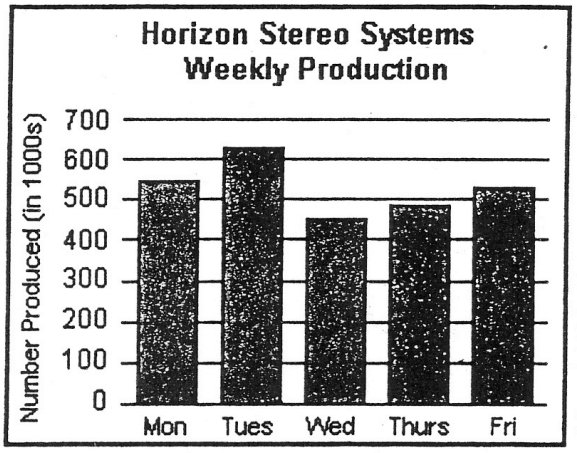


QUESTION	HINT
5. Consider the following pattern in which to exponents are integers: $0^0, 1^1, 2^2, 3^3, \ldots$ What is the value of the seventh term in this pattern? A. 3, 125 B. 46,656 C. 279,936 D. 823,543	5. Think about what the seventh term would look like, then calculate it on your calculator.
6. Bardoll's Market sells pecans at $4.95 for a ten ounce bag. At this rate, the cost of one pound of pecans would be between A. $6.90 and $7.00 B. $7.90 and $8.00 C. $8.90 and $9.00 D. $9.90 and $10.00	6. Find the cost of 1 ounce of pecans. Remember that there are 16 ounces in one pound.
7. What is the rate of 66 feet per second expressed as miles per hour? A. 43 mph B. 44 mph C. 45 mph D. 46 mph	7. 5280 feet = 1 mile 3600 seconds = 1 hour
8. How many different three letter words can be made out of the letters of the word LEARN (not all of the words have to make sense)? A. 6 B. 60 C. 90 D. 120	8. How many possible letters could you use for the first letter of the "word"? How many possible letters could you use for the second letter? How many for the third letter?

QUESTION	HINT
9. The numbers 1 to 100 are written on index cards and placed in a box. After the box is thoroughly shaken, Fred, who is blindfolded, picks an index card. A. What is the probability that the number drawn is greater than 65?	9. The probability that something is likely to occur = $\frac{\text{number of outcomes in the event}}{\text{number of outcomes in the sample space}}$
B. Out of the same 100 index cards, what is the probability that the number drawn is divisible by 3?	
10. Thirty slips of paper, numbered 1 to 30, are placed in a box. What is the probability of picking a slip of paper with a number that has a 4 as one of the digits?	10. Look at #9
11. In drawing the plans for a house, the architect makes a scale drawing where 1/8 inch = 1 foot. If the actual dimensions of a room are to be 15 feet by 30 feet, what are the scale dimensions? A. 1.625 inches by 3.25 inches B. 1.875 inches by 3.75 inches C. 2 inches by 4 inches D. 2.125 inches by 4.25 inches	11. Set up a proportion for each dimension, comparing the size in the scale drawing to the size in the room.
12. One cubic foot will hold 7.5 gallons of water. If Geraldo's waterbed mattress measures 7 feet by 6 feet by 6 inches, how many gallons of water will he need to fill the mattress?	12. Volume = length X width X height

13. The chart shows Horizon Stereo Systems' weekly production. The approximate per cent of decrease in stereo production on Thursday as compared to Tuesday is between

A. 19% and 25%
B. 30% and 37%
C. 39% and 45%
D. 48% and 56%



13. Percent of increase or decrease is given by the formula:

$$\frac{\text{Change in value}}{\text{Original value}} \times 100$$

14. What is the missing value in the table below?

x	0.5	1	1.5	2	2.5	...	37.5
y	0.75	1.5	2.25	3	3.75	...	?

Find a relationship between x and y for the other pairs, and use that to find the missing value.

15. For this list of scores:

125, 136, 127, 142, 151, 127, 136, 127, 200, 214, 145

determine

A. the mean _____
B. the range _____
C. the mode _____
D. the median _____

If a score of 220 were added to the list, determine the new values for each.

15. Mean is the average
Range is the difference from the highest to lowest score
Mode is the most frequent score
Median is the middle score, if they are arranged in order. If there is an even number of scores, it is the average of the two middle scores.

QUESTION	HINT
16. Pierre wants to order a T-shirt with "Pierre" printed on it. The T-shirt costs $7.99. There is a charge of $.59 for each letter printed on it. Find the total cost, including a 6% sales tax. (Round the final answer up to the nearest cent) A. $3.76 B. $11.53 C. $9.10 D. $12.22	16. Calculate the total cost of the T-shirt and all letters. Then calculate the sales tax on that total. Remember that 6% is .06
17. Consider the following three statements: I. Every year we spend $5 million on exercise programs and $20 million on hot dogs. II. Every year we spend 1/5 as much on exercise programs as we do on hot dogs. III. Every year we spend 1/4 as much on exercise programs as we do on hot dogs. Which statements above are equivalents to each other? A. I and II only B. I and III only C. II and III only D. I, II, and III	17. Set up a ratio of exercise to hot dogs to see which statements are equivalent.
18. Howard works in an electronics store. For every item he sells, he earns a 10% commission. If Howard sold the following items, how much total commission would he earn? computer $2790 2 packs of disks $12.50 camera $420	18. Calculate the Howard's total sales, then find 10% of that total. Remember the formula $\frac{P}{100}$ (N) = R

QUESTION	HINT
19. Coco and Mariko went to the count fair together. They brought $50 in all. Coco brought $8 less than Mariko. How much money did Mariko bring? A. between $1 and $10 B. between $10 and $20 C. between $20 and $30 D. between $30 and $40	19. Write an equation to represent this situation. Let x represent the amount of money Mariko brought. Write an expression for the amount of money Coco brought, then write an equation and solve.
20. An old fashioned 45 rpm vinyl record revolves on a turntable 45 times each minute. How long does it take for a record to revolve once on its turntable? A. .75 second B. 1 second C. 1.25 seconds D. 1.33 seconds	20. Use equivalent statements to solve this: 45 times in 1 minute 1 time in ___ minute
21. At $12 an hour, how much does Kirsten earn in one week if she works the following hours: Monday - 9 AM to 3 PM Tuesday - 9:30 AM to 4:30 PM Wednesday - 10 AM to 12 NOON Thursday - 11 AM to 5 PM Friday - 10:30 AM to 3 PM Kirsten has one hour for lunch (12 NOON to 1 PM) She is not paid for this hour. A. $246 B. $252.50 C. $258 D. $318	21. Calculate the total time she worked each day, remember to subtract the time for lunch. Then multiply that total by the amount she makes each hour to find the total she made.

QUESTION	HINT
22. Max Lee, a stockbroker, earns a salary of $1660.98, plus a commission of 3% of the value of the stocks he buys and sells for his clients. He sold 100 shares of stock priced at $22.69 per share. How much commission will Mr. Lee earn?	22. Calculate the total price of the stock. Use that to calculate the commission.
23. On Monday, Lena ran a 440-yard race in 1 minute, 20 seconds. On Friday, she ran a 100-yard race in 15 seconds. On which day's race did Lena run at a faster average speed, and what was her average speed during that race? A. Monday, 16.5 feet per second B. Monday, 11 feet per second C. Friday, 20 feet per second D. Friday, 25 feet per second	23. Find her speed in yards per second, then compare which is faster and by how much.
24. What is the next term in the following sequence? 10, 11, 14, 19, 26,... A. 32 B. 33 C. 34 D. 35	24. Look for a pattern to get from one term to the next. If you are not adding or multiplying by the same number each time, look for a pattern .
25. In m/3 = 60, what is the value of 3m?	25. Solve for m, then find 3m

HIGH SCHOOL PROFICIENCY ASSESSMENT
MATHEMATICS REFERENCE SHEET

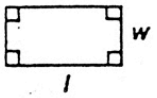
Use the information below, as needed, to answer questions on the Mathematics Section of the High School Proficiency Assessment.

$\pi = 3.14$ or $\frac{22}{7}$

Circle

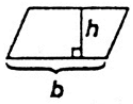
Area = πr^2
Circumference = $2\pi r$

Rectangle



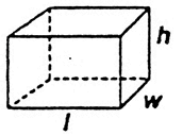
Area = lw
Perimeter = $2(l + w)$

Parallelogram



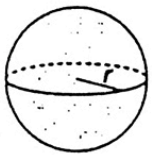
Area = bh

Rectangular Prism



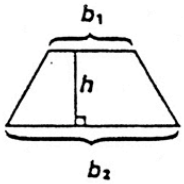
Volume = lwh
Surface Area = $2lw + 2wh + 2lh$

Sphere



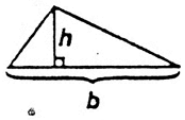
Volume = $\frac{4}{3}\pi r^3$

Trapezoid



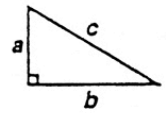
Area = $\frac{1}{2}(b_1 + b_2)h$

Triangle



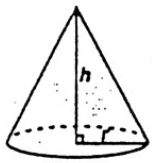
Area = $\frac{1}{2}bh$

Pythagorean Formula



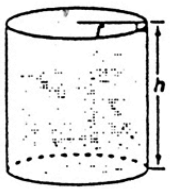
$c^2 = a^2 + b^2$

Cone



Volume = $\frac{1}{3}\pi r^2 h$

Cylinder



Volume = $\pi r^2 h$

The sum of the measures of the interior angles of a triangle = 180°

The measure of a circle is 360° or 2π radians

Distance = rate • time Interest = principal • rate • time

Compound Interest Formula: $A = p\,(1+\frac{r}{k})^{kt}$

A = amount after t years; p = principal; r = annual interest rate; t = number of years; k = number of times compounded per year

The number of combinations of n elements taken r at a time is given by $\frac{n!}{(n-r)!r!}$

The number of permutations of n elements taken r at a time is given by $\frac{n!}{(n-r)!}$

Use the following equivalents for your calculations.

12 inches = 1 foot
3 feet = 1 yard
36 inches = 1 yard
5,280 feet = 1 mile
1,760 yards = 1 mile

100 centimeters = 1 meter
1000 meters = 1 kilometer

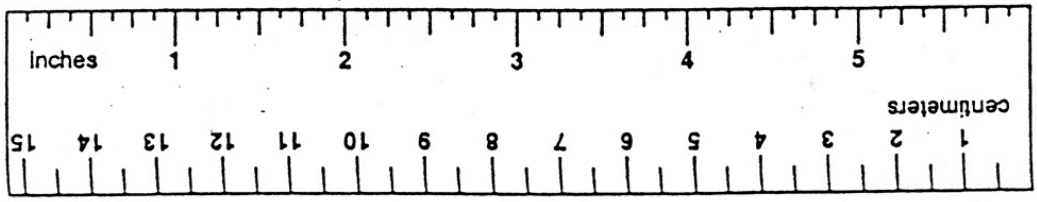
1000 milliliters (mL) = 1 liter (L)

60 seconds = 1 minute
60 minutes = 1 hour
24 hours = 1 day
7 days = 1 week
52 weeks = 1 year

1000 watt hours = 1 kilowatt hour

1000 milligrams = 1 gram
100 centigrams = 1 gram
10 grams = 1 dekagram
1000 grams = 1 kilogram

8 fluid ounces = 1 cup
2 cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon



ISO4035

REFERENCES FOR SUMMER MATH PACKET

If you are have questions about any of the problems on the Summer Math Packet, here are some useful references.

1. EMAIL:

summermath@rutherfordschools.org

You can email the math department and someone will respond with assistance. Please be specific as to which packet and problem number you are doing.

2. HERE ARE SOME ADDITIONAL HELPFUL WEBSITES:

a. On this site you can search for help with particular topics in Algebra.

www.purplemath.com

b. This site has a scientific calculator you can use

www.lanl.gov.projects/cctc/resources/tools/calculator.html

c. At the Dr. Math site, you can email them a question, or search for a particular question

http://mathforum.org/dr.math/

d. Here you can post a question, and get a reply also:

http://www.webcalc.net