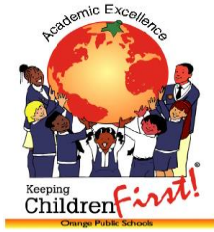


8th Grade Mathematics

2014 Spring Break Packet



ORANGE PUBLIC SCHOOLS
OFFICE OF CURRICULUM AND INSTRUCTION
OFFICE OF MATHEMATICS



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Dear Parents/Guardians:

The Orange Public Schools provides this spring recess mathematics packet to help your child retain his/her learning and strengthen his/her understanding of mathematics over the break from classes. The task(s) within should provide a different view of the ways mathematics can be used to make sense of quantities. Your child will be completing problems and tasks in the content domains identified by the state of New Jersey as essential mathematics skills and concepts required for his/her particular grade.

Completion of this packet should require about three hours of your child's time. If you would like to assist or discuss any part of the packet with your child, your participation is welcome.

These tasks depend more on logical reasoning and basic understanding of mathematics than on knowledge of complex formulas or specialized vocabulary.

The problems and tasks will be graded and discussed in your child's math class when he/she returns to school. Please remind your child that he/she will be expected to provide reasons and explanations for the answers, and may be asked to present solution(s) to the class.

Thank you for your assistance in assuring that your child completes this spring recess packet thoroughly and thoughtfully.

Enjoy the Spring Break!

Sincerely,

The Orange Public Schools' Mathematics Team

The Orange Public Schools' Mathematics Team

Grade 8 2014 Spring Break Packet

The Grant Center for Outdoor Education gives student groups experience in studying nature and helping to restore the environment for plants and animals.

1. The budget for the Grant Center assumes a linear relationship between the number of student visitors and the daily operating cost of the center. Some sample (number of students, operating cost) values are given in the table below.

Number of Students	0	10	20	40
Daily Operating Cost	\$450	\$600	\$750	\$1,050

- a. Use the given data to write an equation showing how operating cost, C , depends on the number of students, x . Explain or show how you found the equation.

For parts (b)–(d), write equations or inequalities for each question. Then do the required calculations or solve the equation to find each answer.

- b. For what number of student visitors will the daily operating cost be \$690?

- c. What will be the operating cost on a day with 12 student visitors?

- d. How many students can visit the center if the operating cost is to be at most \$1,000?

2. Find an equation to relate each set of conditions.

a. A line with slope 3.5 and y-intercept (0, -4).

b. Earnings, E , of a disk jockey who charges \$25 for travel to an event and \$20 per hour of time worked, h .

c. A line through (2, 15) and (6, 7).

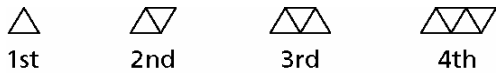
d. Base b and height h of rectangles with area 100 cm^2 .

3. Diane started working at an ice cream shop for \$6/hour. She will receive a \$2 raise for every year she works at the shop.

a. Write an equation that expresses her hourly wage in terms of years spent working at the ice cream shop.

b. Use this equation to find Diane's hourly wage after five years of working at the ice cream shop.

4. Toothpicks were used to make the pattern below.



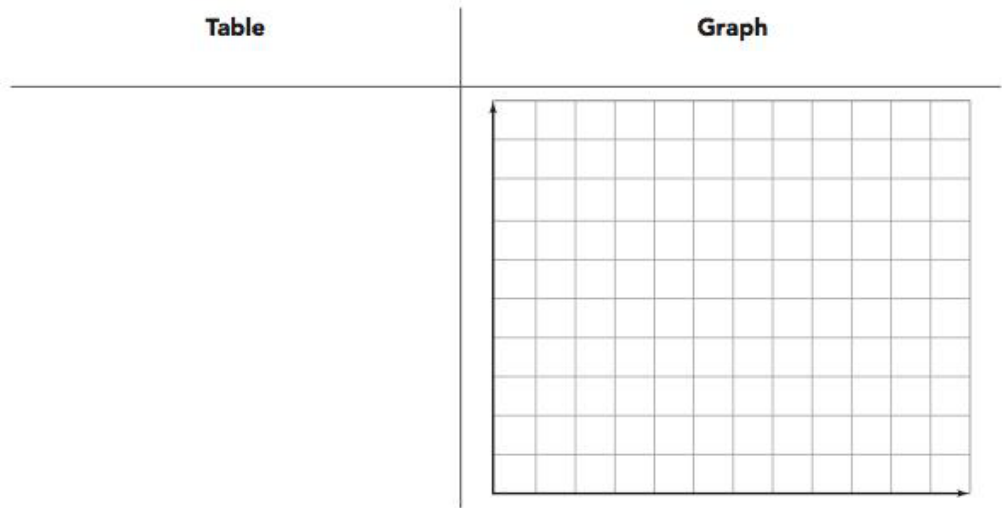
a. How many toothpicks will be in the 5th figure? In the 6th figure?

b. Write an equation for the number of toothpicks t needed to make the n th figure.

c. Identify and describe the figure in this pattern that can be made with exactly 61 toothpicks.

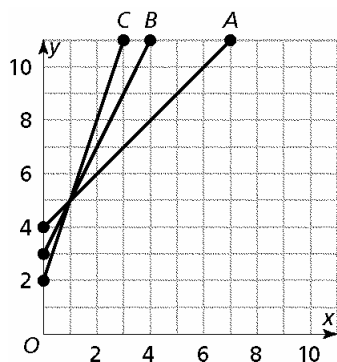
d. Describe the pattern in words.

e. Make a graph of the data.



f. Is the pattern linear or not linear? How do you know?

5. Below are the graphs of three lines.



a. Match each line with its rule.

$$y = x + 4$$

$$y = 2x + 3$$

$$y = 3x + 2$$

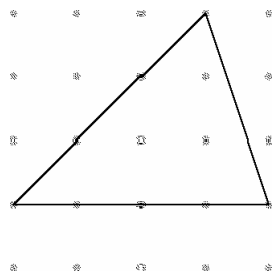
b. What are the y-values when $x = 3$? When $x = 4$?

Draw a right triangle with a hypotenuse of the given length.

6. $3\sqrt{5}$

7. What is the length of the line segment that connects points $(-2, 0)$ and $(0, 2)$?

Find the perimeter of the right triangle. Express the perimeter in two ways: (1) as the sum of a whole number and square roots, and (2) as a single value after using decimal approximations to the nearest tenth for the square roots. An example is done for you.



The perimeter of this figure is

$$4 + \sqrt{10} + \sqrt{18} \approx 4 + 3.2 + 4.2 \approx 11.4 \text{ units.}$$

8.

