7th 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

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Grade 7 2014 Spring Break Packet

1. Insert <, >, or = to make the statements true.

   a. $^{-}20 \square {}^{-}25$

   b. $^{-}10 \square 10$

   c. $-\frac{2}{5} \square -\frac{3}{2}$

   d. $^{-}163 \square {}^{-}162$

2. One integer added to another integer gives a sum of –9. When the smaller integer is subtracted from the greater integer, the difference is 1. What could the two integers be?

   Find the missing value.

3. $\frac{2}{3} \times ? = \frac{10}{24}$

4.

a. Which of the following tables represent linear relationships?

Table 1

Time (s)	Distance (m)
0	5
1	10
2	12
3	16
4	20

Table 2

Distance (km)	Money ($)
0	0
1	10
2	20
3	30
4	40

Table 3

Days	Money ($)
0	10
1	8
2	6
3	2
4	4

b. Write an equation for one of the tables that represents a linear relationship.

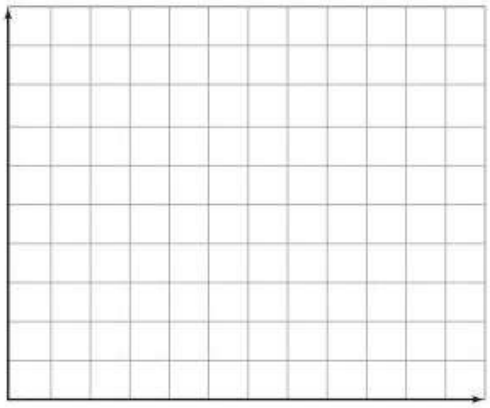
c. Which table(s, if any, represents a proportional relationship? Explain.

5. Mark opens a bank account with $20. Each week he plans to put in $5.

a. Make a table to show the ***total*** amount of money Mark has in his bank account. Show the amount he has in his account from 0 to 10 weeks.

b. Make a graph that matches the table.

Table | **Graph**



c. Write an equation to represent the ***total*** money Mark has in his account over time.

d. In which week will Mark have a total of $60. Explain your reasoning.

6. LaShawn wants to buy some music online. There are two plans to choose from. The first plan is a flat rate of $1.29 per download. The second plan has a membership fee of $21, and a fee of $0.99 per download. Let *x* be the number of downloads and *C* be the cost.

   Plan 1: $C = 1.29x$ Plan 2: $C = 21 + 0.99x$

   a. When are the costs of the two plans equal to each other? Explain.

   b. What is the *y*-intercept of the line for each equation? What does it mean in this context?

   c. What is the constant rate of change for each relationship? What does it mean in this context?

   d. For Plan 1, how many downloads are possible if the total cost is at most $15? Explain.

7. Multiple Choice
   Which of the following expressions is not equivalent to the others? Explain.

   A. $6(x-1)+5$ B. $6x-1$ C. $6(1-x)+5$ D. $5+6x-6$

8. Sam made up a set of tables based on some equations. He gave the tables to Adrian and challenged her to find the equations for each table. Adrian added two columns to each table to help her find the equations. Adrian used the extra columns to find the differences in *x* values and *y* values for each table. Below is the start of her work.

Table A

Diff. *x*	*x*	*y*	Diff. *y*
None	−2	−1	
1	−1	1	
	0	3	
	1	5	
	2	7	

Table B

Diff. *x*	*x*	*y*	Diff. *y*
	−3	−8	
	−1	0	
	1	0	
2	3	−8	
	5	−24	

Table C

Diff. *x*	*x*	*y*	Diff. *y*
	−3	$-\frac{1}{2}$	
	−1	$\frac{1}{2}$	1
	0	1	
	3	2.5	
	5	3.5	

Table D

Diff. *x*	*x*	*y*	Diff. *y*
	−2	−5	
	−1	−3	
	0	−1	
	1	1	2
	2	3	

a. Adrian used the extra columns to find the differences in *x* values and *y* values. Complete these columns for each table.

b. Describe any patterns you see in the columns of differences.

c. Find the equation of any table that represents a linear relationship.

d. Explain why Adrian added the columns to the tables Sam gave her. Do you think it helped her to find the equations? Explain your thinking.

9. a. Find r if $2r + 10 = 22$.

b. Find x if $4.5x = 45$.

c. Find z if $3z - 19 = 173$.

d. Find w if $67.1 = 29.7 - 0.2w$.