



### Algebra Alley

Identify the graphs of each pair of equations as parallel lines, intersecting lines or the same line.

- a)  $y = 4x + 11$                       c)  $y = -0.5x + 3$   
 $12x - 3y = 15$                        $y - 2x = 8$
- b)  $y - 2x = 4$                       d)  $y = x + 4$   
 $y + 5 = 3x + 9$                        $2x - 2y = -8$       (5.01 d)



### What's The Problem?

#### Feet on the Earth, Head in the Sky

A six-foot tall person walks around the earth. How much farther does the person's head travel than the person's feet?

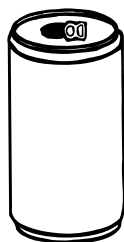
*From: Mathematical Challenges for the Middle Grades, NCCTM, 1991, p. 24*

(3.02)



### Mathematically Speaking

Describe the cross-sections that are formed when a cylinder is intersected by a plane.



(Review)



### All About Data

Materials: 1 stop watch

Have students sit in rows of five.

- Begin with 1 row of students.
- At the timer's signal, the first student stands up, waves his or her arms overhead and sits down. Then each student repeats the wave. After the last student sits down, the timer records the time in seconds.
- Repeat for 10, 15, 20 and 25 students.
- Graph the ordered pairs on a coordinate plane ( $x$ -axis = number of students;  $y$ -axis = time)

How long would it take 35 students to complete the wave? . . . 45 students? . . . the students in the 8th grade at your school?

(4.01, 4.02)



### Measurement Wrap Up

By what factor does the volume increase if the radius and the height of a cylinder are doubled?

(2.01)



# Keeping Skills Sharp

1. Solve for  $m$ :  $m \div 2 = 48 - 14$
2.  $3.72 \times 10^4 =$
3. Write as a word phrase:  $x - 18$
4. Solve for  $x$ :  $\frac{x}{12} = 0$
5. Solve for  $g$ :  $g - 0.75 = 4.26$
6. Estimate:  $1217 \div 31$
7. Solve for  $c$ :  $3 \times (c + 4) = 111$
8. If  $b = 4$  and  $c = 7$ , give the value of  $b^2 - 3c$ .
9. 
$$\begin{array}{r} 0.0072 \\ \times 0.12 \\ \hline \end{array}$$
10. Find the least common multiple of 4, 6, and 10.

Write answers here:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_



# Mental Math

Directions to Students:

Write your answers as the questions are called out. Each question will be repeated only once.

- |         |          |
|---------|----------|
| 1 _____ | 6 _____  |
| 2 _____ | 7 _____  |
| 3 _____ | 8 _____  |
| 4 _____ | 9 _____  |
| 5 _____ | 10 _____ |

# Answer Key

Grade 8

WEEK  
19

## What's the Problem?

about 38 feet. If  $r$  = radius of earth, then

$$C(\text{head}) = C(\text{earth}) + x$$

$$2\pi(r + 6) = 2\pi r + x$$

$$x = 12\pi \text{ feet}$$

## Mathematically Speaking

answers will vary

## All About Data

Answers will vary.

## Measurement Wrap Up

8

## Algebra Alley

a) parallel lines

b) and c) intersecting lines

d) same line

## Keeping Skills Sharp

1.  $m = 68$
2. 37,200
3. a number decreased by 18
4.  $x = 0$
5.  $g = 5.01$
6. 40
7.  $c = 33$
8. -5
9. 0.000864
10. 60

## Mental Math

This section provides an opportunity for sharpening students' mental computation.

1.  $8 - (-5)$
2. Change to an improper fraction:  $1\frac{9}{10}$
3. Write  $\frac{2}{3}$  as a decimal
4. Write as a fraction: 0.6
5. What is the median number of days in a year of months?
6. Which is greatest?  $\frac{3}{8}, \frac{1}{2}, \frac{1}{4}$
7. Prime or composite? 51
8. List the factors of 27.
9. Write an expression that represents "3 less than  $w$ ."
10. Write 125 as an exponential expression.

## Mental Math

1. 13
2.  $\frac{19}{10}$
3.  $0.\bar{6}$
4.  $\frac{3}{5}$
5. 31
6.  $\frac{1}{2}$
7. composite
8. 1, 3, 9, 27
9.  $w - 3$
10.  $5^3$



### Algebra Alley

A bag contains 5 orange marbles, 3 green marbles and 4 purple marbles. How many green marbles must be added so that the probability of drawing a green marble is 75%?

Write an equation to represent this situation and solve it.

(5.03)



### All About Data

The following ordered pairs represent the mass (in kg) and height (in m) of a group of visiting Martians.

(35, 0.5); (32, 0.75); (28, 1); (5, 3.9);  
 (10, 3.0); (24, 1.2); (15, 2.5); (7, 3.75);  
 (12, 2.8); (25, 1); (18, 1.8); (22, 1.75)

Using a scatterplot, what can you conclude about these visitors?

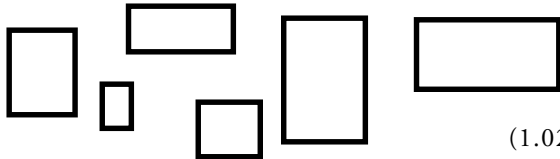


(4.01)



### What's The Problem?

Find 5 rectangles with integral, centimeter dimensions 1 through 10 (using each value once) so that you can put them together without overlapping and form a 13 by 13 square.



(1.02)

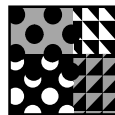


### Mathematically Speaking

A Explain when would you expect the median and mean of a distribution to be close together?

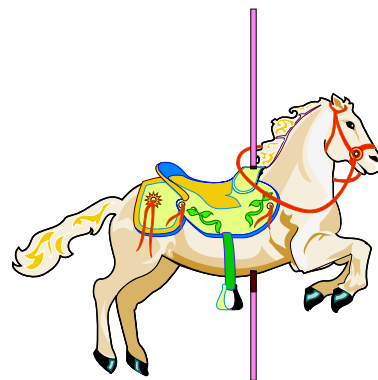
B Your math scores are 32, 100, 75, 72 and 78. Would you rather have your teacher use the mean or median on your report card? Why?

(Review)



### Geometry Wrap Up

Anna's seat on the merry-go-round is 8 feet from the center of the merry-go-round. Eric's seat is 6 feet from the center. After 5 complete revolutions of the ride, how much farther has Anna traveled than Eric?



(3.01)



# Keeping Skills Sharp

- Find the range and median:  
35¢, 10¢, 25¢, 20¢, 20¢, 20¢, 15¢
- $-85 - (-106) + 18 =$
- If  $x = 4$  and  $y = -2$ , evaluate  $4(x - 3y)$ .
- Simplify:  $9y + 6y - 2 + 10 - 3y$
- Solve for  $a$ :  $-18 = \frac{a}{6}$
- List all the factors of 90.
- Write in scientific notation: 6,432,000,000
- Simplify:  $\frac{72}{99}$
- Solve for  $j$ :  $-8 + 2j = 12$
- Write as an integer:  $8^3$

Write answers here:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



# Mental Math

Directions to Students:

Write your answers as the questions are called out. Each question will be repeated only once.

- |         |          |
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# Answer Key

## Algebra Alley

24 green marbles

$x$  = the no. of marbles to be added

$$\frac{x+3}{x+12} = \frac{75}{100}$$

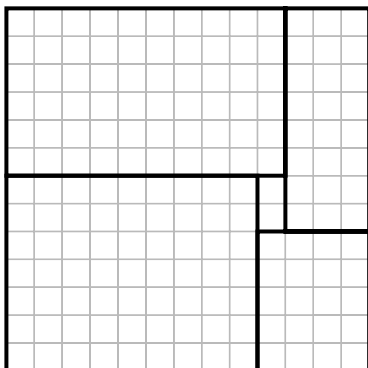
## What's the Problem?

The dimensions of the rectangles are:

6 cm  $\times$  10 cm, 7 cm  $\times$  9 cm,

3 cm  $\times$  8 cm, 4 cm  $\times$  5 cm, and

1 cm  $\times$  2 cm.



## Mathematically Speaking

A With a small range, you would expect the median and mean to be close together.

B Median;

median 75, mean 71.4

## Geometry Wrap Up

about 63 feet ( $20\pi$ )

## All About Data

The taller they are the less their mass

## Keeping Skills Sharp

- range = 25¢  
median = 20¢
- 39
- 40
- $12y + 8$
- 108
- 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90
- $6.432 \times 10^9$
- $\frac{8}{11}$
- $j = 10$
- 512

## Mental Math

This section provides an opportunity for sharpening students' mental computation.

- 75% is ( $<$ ,  $>$ , or  $=$ )  $\frac{4}{5}$
- Which is least?  $\frac{3}{4}$ ,  $\frac{2}{3}$ ,  $\frac{5}{6}$
- Write using exponents:  $7 \cdot 7 \cdot 7$
- $12 + 5^2$
- $(10 + 2)^2$
- 0.168 is ( $<$ ,  $>$ , or  $=$ ) 0.1168
- Prime or composite? 11
- $\frac{3}{4} = \frac{?}{16}$
- Simplify:  $\frac{18}{48}$
- When  $v = 2$  what is the value of:  $(-3v + 5v)^2$

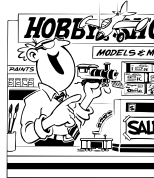
## Mental Math

- $<$
- $\frac{2}{3}$
- $7^3$
- 37
- 144
- $>$
- prime
- 12
- $\frac{3}{8}$
- 16



### Algebra Alley

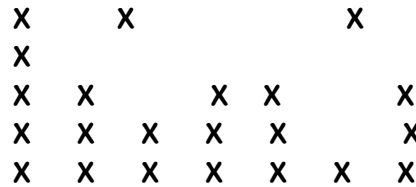
Ray's sales commission,  $C$ , is determined by the formula  $C = 25\%S + 20$ . If his commission last week was \$700, what were his sales,  $S$ ?



(5.03)



### All About Data



Give this line plot a title and complete the horizontal scale.

What is the median of the distribution?  
...the mean?

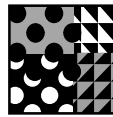
(4.01)



### What's The Problem?

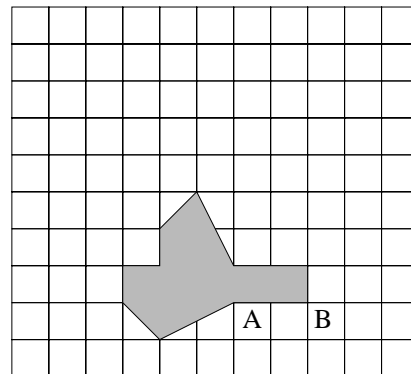
Tina and Tess go shopping together and buy identical items. Each girl buys 4 pairs of shorts, 5 shirts, and 2 pairs of shoes that can all be mixed and matched to wear. If each girl wears new clothes to school tomorrow, what is the probability that Tess shows up in exactly the same outfit as Tina?

(Review)



### Measurement Wrap Up

The polygon shown is a quilt pattern. The pattern measures 2 inches from A to B. The actual quilt block will be 8 inches from A to B. What will its area be?

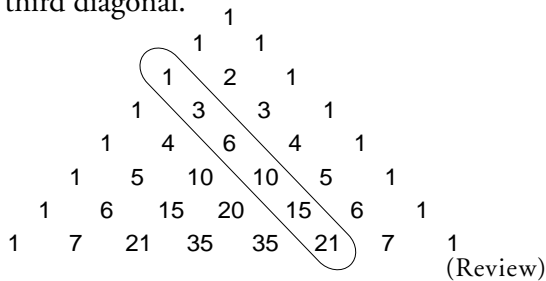


(2.01)



### Mathematically Speaking

Describe algebraically the pattern in the third diagonal.



(Review)



# Keeping Skills Sharp

Write answers here:

1. Solve for  $k$ :  $-51 = \frac{k}{-13}$  1. \_\_\_\_\_
2. Solve for  $r$ :  $-126 = 21r$  2. \_\_\_\_\_
3. Solve for  $b$ :  $\frac{252}{-7} = b$  3. \_\_\_\_\_
4. Arrange these numbers in order from least to greatest:  
 $2, 4, -1, \frac{3}{5}, -7, \frac{1}{2}, -\frac{1}{5}$  4. \_\_\_\_\_
5. Simplify this expression:  $4(m+5) + 7(2m+6)$ . 5. \_\_\_\_\_
6. Evaluate  $\frac{4(2b+c)}{2c}$  if  $b=5$  and  $c=4$ . 6. \_\_\_\_\_
7. Write as an inequality:  $y$  is less than 10. 7. \_\_\_\_\_
8. Graph the set of numbers on a number line:  $\{-3, 0, 2\}$  8. \_\_\_\_\_
9.  $I = \frac{V}{R}$  If  $I=44$  and  $R=5$ , find  $V$ . 9. \_\_\_\_\_
10. Write an inequality for the following: the amount,  $S$ , that Mrs. Phillips will spend is not more than \$56. 10. \_\_\_\_\_



# Mental Math

Directions to Students:  
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- |         |          |
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# Answer Key

Grade 8

WEEK  
21

## What's the Problem?

They have  $4 \times 5 \times 2$  or 40 outfit possibilities.  
Probability is  $1/40$ .

## Mathematically Speaking

The  $n$ th term is the  $(n-1)$ st term +  $n$ .

Ex. If the triangle is extended, the 8th term is the 7th term + 8

## Algebra Alley

\$2,720

## All About Data

answers will vary

## Measurement Wrap Up

144 square inches

## Keeping Skills Sharp

1. 663

2. -6

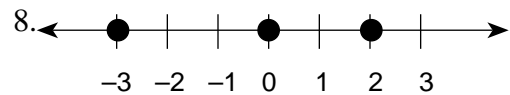
3. -36

4.  $-7, -1, -\frac{1}{5}, \frac{1}{2}, \frac{3}{5}, 2, 4$

5.  $4m + 20 + 14m + 42 = 18m + 62$

6. 7

7.  $y < 10$



9.  $V = 220$

10.  $S \leq 56$

## Mental Math

This section provides an opportunity for sharpening students' mental computation.

1. Estimate:  $2\frac{1}{8} + 3\frac{6}{7}$

2.  $-3 \cdot (-9)$

3. Which of the following is the largest: 0.438, 0.5, 0.004, 0.43?

4. Find the reciprocal of  $2\frac{1}{6}$ .

5.  $2 \div \frac{1}{9}$       6. Solve for  $b$ :  $b - (-2) = 7$

7. 30 inches = \_\_\_\_\_ feet

8.  $\frac{3}{5} \cdot \frac{1}{2}$

9.  $-5 + 9 - 8(2)$

10. Nearest hundredth to: 4.018

## Mental Math

1. 6

2. 27

3. 0.5

4.  $\frac{6}{13}$

5. 18

6.  $b = 5$

7.  $2\frac{1}{2}$  feet

8.  $\frac{3}{10}$

9. -12

10. 4.02