



### Algebra Alley

Matthew loaned three friends a total of \$27. All he can remember is that he loaned the second friend \$5 more than the first and the third friend twice as much as the second. Write and solve an equation to determine how much he loaned each friend. (5.03)



### What's The Problem?

At a carnival, the dart game uses a circular board with diameter 4 feet. To win, your dart must land in one of four non-overlapping rectangles on the board. They measure 8" x 1.5', 1' x 1', 9" x 0.75', and 1.5' x 21".

If your dart lands on the board, what is the probability it lands in one of the rectangles? Show the model you used to solve the problem.



(3.02)



### Mathematically Speaking

Why is nine called a square number? List the square numbers between 100 and 400 that are divisible by three. (1.02)

(1.02)



### All About Data

Carlos collected these data on cars and average gas consumption. Use a scatterplot to graph the data. Are there any valid conclusions that can be drawn from his study?

(model year, average miles per gallon)

('89, 20); ('05, 40); ('98, 23); ('00, 18); ('01, 21); ('97, 30); ('95, 18); ('02, 31); ('03, 23); ('99, 15); ('90, 25); ('97, 32); ('96, 28); ('01, 30); ('04, 28); ('00, 24); ('91, 31).

(4.01, 4.02)



### Geometry Wrap Up

Sasha, Igor, and Gabriel went on a fishing trip. They started out heading east of the dock. They went 3 miles before Sasha decided to turn north. They went 5 miles north and turned the engine off. They drifted south for 2 miles. Gabriel then realized that he needed to get back to the dock quickly. Igor decided to go directly to the dock with no turning. How far is it from the point they are now to the dock? (Give your answer to the nearest tenth of a mile.)



(3.02)



# Keeping Skills Sharp

Write answers here:

- Solve for  $t$ :  $\frac{2}{3}t = 8$
- Order from least to greatest: 7, -8, 0, -29, -23, 14
- Simplify:  $2.5(10x - 30) + 1.5(17x + 9)$
- $(-3)^3 =$
- Find the radius of a circle with an area of  $254.34 \text{ cm}^2$ .
- $\frac{1}{8} \div 1\frac{1}{5} =$
- $9 - 2\frac{2}{3} =$
- 25% of \$225 =
- Solve for  $m$ :  $m = \left(\frac{1}{4} + \frac{1}{10}\right) \div 1\frac{1}{3}$
- Solve for  $x$ :  $-5x + 10 > 25$

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



# Mental Math

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

- |                |                 |
|----------------|-----------------|
| <b>1</b> _____ | <b>6</b> _____  |
| <b>2</b> _____ | <b>7</b> _____  |
| <b>3</b> _____ | <b>8</b> _____  |
| <b>4</b> _____ | <b>9</b> _____  |
| <b>5</b> _____ | <b>10</b> _____ |



# Answer Key

Grade 8

WEEK  
3 1

## What's the Problem?

Diagrams will vary. Rectangles have areas of  $144 \text{ in}^2$  ( $1 \text{ ft}^2$ ),  $81 \text{ in}^2$  ( $\frac{9}{16} \text{ ft}^2$ ), and  $378 \text{ in}^2$  ( $2 \frac{5}{8} \text{ ft}^2$ )

The circular board has area  $\sim 1,810 \text{ in}^2$  ( $\sim 12.6 \text{ ft}^2$ )

P(you win)  $\sim 41\%$

## Mathematically Speaking

144, 225

## Geometry Wrap-Up

4.2 miles

## All About Data

Answers will vary.

## Algebra Alley

Let  $x$  = the amount loaned to the first friend

$$x + (x + 5) + 2(x + 5) = 27$$

1st friend - \$3, 2nd friend - \$8, 3rd friend - \$16

## Keeping Skills Sharp

- 12
- 29, -23, -8, 0, 7, 14
- $50.5x - 61.5$
- 27
- about 9cm
- $\frac{5}{48}$
- $6\frac{1}{3}$
- \$56.25
- $\frac{21}{80}$
- $x < -3$

## Mental Math

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

- 25% of 4
- $5 + 3 \cdot 2 + 12$
- $\frac{3}{8} = \frac{?}{24}$
- 6.93621 to the nearest tenth is \_\_\_\_.
- Write all the factors of 16.
- Write 700 in scientific notation.
- Simplify:  $6 - 14 + 3x - 2$
- Simplify:  $\frac{35}{20}$
- 150% of 64
- Solve for  $w$ :  $-w + 4 = 10$

## Mental Math

- 1
- 23
- 9
- 6.9
- 1, 2, 4, 8, 16
- $7.0 \times 10^2$
- $3x - 10$
- $1\frac{3}{4}$
- 96
- $w = -6$



### Algebra Alley

Graph and write an equation for each of the following lines:

- a) line  $q$  through point  $A(-7, 3)$  with slope zero.
- b) line  $m$  with  $y$ -intercept  $(0, -3)$  and a slope of negative three-fourths.

(5.02)



### All About Data

The following data represent the winning point totals for Glendale Middle School's basketball team: 25, 18, 24, 49, 26, 23, 24, 26, 28, 18, 20, 22, 47, 27, 16, 19, 30, 47, 23, 20, 27, 40, 28, 31, 28, 23.

- A. Organize the data and display them in two different graphs.
- B. Find  $Q_1$  (lower quartile), the median, and  $Q_3$ , upper quartile.
- C. Find the range, mean and mode



(4.01)



### What's The Problem?

The Glenwood Middle School Math Whiz Team entered a contest which consisted of twenty problems. Three points were given for each correct answer, one point was subtracted for every incorrect answer, and no points were given for unanswered problems. The team scored 48. How is this possible?

(1.02)



### Mathematically Speaking

When rolling two fair number cubes labeled one to six, and finding the sum, how many different outcomes are possible? What sum is most likely to occur? What sum is least likely to occur?

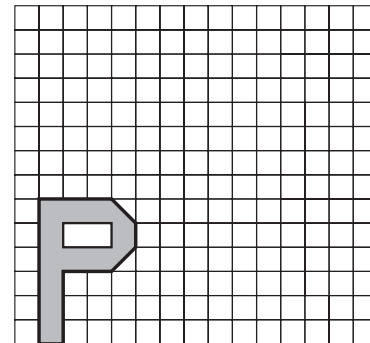


(Review)



### Geometry Wrap Up

On graph paper, draw one of your initials using block letters as shown. Now create a dilation of your initial using a scale factor of 2. How does the area of the dilation compare to the area of the original letter?



(2.01, 3.03)



# Keeping Skills Sharp

- |  |                     |
|--|---------------------|
| 1. Solve for $d$ : $28d = 620$   | Write answers here: |
| 2. Order the following numbers from least to greatest:<br>1.14, -1.18, -1.2, 1.1, -8.7, -8.72, 1.02    | 1. _____            |
| 3. Simplify: $2(x + 5) + 2x - 7$ .   | 2. _____            |
| 4. Find the height in inches of a wall that is 6 inches less than 12 feet tall.                        | 3. _____            |
| 5. Find the length of a side of a square whose area is 625 square inches.                              | 4. _____            |
| 6. Find the base of a parallelogram whose height is 2.5 m and whose area is $46 \text{ m}^2$ .         | 5. _____            |
| 7. Find the length of the diameter of a circle to the nearest tenth, with an area of 42 square meters. | 6. _____            |
| 8. Write in standard form: $(3 \times 10^3) + (2 \times 10^2) + (1 \times 10^1)$ .                     | 7. _____            |
| 9. Find the sales tax on a \$18.75 pair of gloves if the tax rate is $6\frac{1}{2}\%$ .                | 8. _____            |
| 10. Find the percent of decrease: original price \$300, sales price \$175.                             | 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  
32

## What's the Problem?

16 correct answers and 4 unanswered questions OR  
17 correct answers and 3 incorrect answers

## Mathematically Speaking

11 different outcomes; a sum of 7 is most likely to occur and sums of 2 or 12 are least likely to occur

## Geometry Wrap-Up

Drawings will vary, however the area of the dilation will be four times the area of the original initial.

## All About Data

A. Answers will vary.

B.  $Q_1 = 22$ , median = 25.5,  $Q_3 = 28$

C. range = 33, mean =  $\sim 27.27$ , bi-modal: 23 and 28

## Algebra Alley

a)  $y = 3$ ; b)  $y = -\frac{3}{4}x - 3$

## Keeping Skills Sharp

- $22\frac{1}{7}$
- 8.72, -8.7, -1.2, -1.18, 1.02, 1.1, 1.14
- $4x + 3$
- 138 inches
- 25 inches
- 18.4 meters
- 7.3 m
- 3,210
- \$1.22 tax
- $41.\overline{6}\%$  or  $41\frac{2}{3}\%$

## Mental Math

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

- Find the next 3 terms in the sequence:  
1, 4, 9, 16, \_\_\_\_, \_\_\_\_, \_\_\_\_
- $3 \times 20 \div 12 - 8$
- Write as a fraction: .07
- What is 75% of 100?
- Forty-five is 25% of what number?
- Solve the proportion:  $\frac{7}{3} = \frac{x}{6}$
- $13\frac{3}{4} + 10.5$
- 36 inches = \_\_\_\_ feet
- 51 is about what percent of 76?
- Solve for  $x$ :  $5x = 300$

## Mental Math

- 25, 36, 49
- 3
- $\frac{7}{100}$
- 75
- 180
- $x = 14$
- 24.25
- 3
- 67%
- $x = 60$



## Algebra Alley

$$F(x) = 3x - 10$$

Evaluate this function for

$$\{x: x = -1, 0, 1, 2, 3\}$$

Identify the domain and the range of this function. Is it a linear function?

(5.01)



## All About Data

1. Students collect graphs from newspapers, magazines, and the internet.
2. Place students in groups of four. The groups work to find misleading facts with each graph.
3. Groups will present their best graph with reasons to support their choice and the worst graph with reasons to support their choice.

(4.03)



## What's The Problem?

Leslie took a 10-question test. The first four questions were true or false and the last six were multiple choice with four choices per question. If Leslie guesses at each item, how many times more likely is it that she will get all answers wrong than she will get all answers right?



(1.02)



## Geometry Wrap Up

Firefighters propped a 15 foot ladder against the top of a house that is 12 feet tall. How far from the house is the base of the ladder?



(3.02)



## Mathematically Speaking

The temperature readings on four out of five hot afternoons in July were as follows: 89°F, 93°F, 83°F and 78°F. If the average temperature for the five days was 87°F, determine the temperature on the fifth day. Explain your answer.

(Review)



# Keeping Skills Sharp

Write answers here:

1. If  $1\frac{1}{4}$  lbs. apples sell for \$2.00 and  $1\frac{1}{2}$  lbs. of oranges sell for \$2.25, which fruit is less expensive? 1. \_\_\_\_\_
2. If 64 feet of rope weighs 20 pounds, how much will 80 feet of the same rope weight? 2. \_\_\_\_\_
3. Which operation would you do first?  $13 \div 2(6 + 4)$  3. \_\_\_\_\_
4.  $-553 - (-632) + (-85) =$  4. \_\_\_\_\_
5. If  $-3.7r + 4.75 = 14$ , solve for  $r$ . 5. \_\_\_\_\_
6. At midnight, the temperature was  $30^{\circ}\text{F}$ . By 6:00 a.m. it had dropped  $15^{\circ}$ , and by noon it had increased by  $22^{\circ}$ . What was the temperature at noon? 6. \_\_\_\_\_
7.  $\frac{3[4(9 - 2)]}{12} + (16 \cdot 3) = h - 10$ , solve for  $h$ . 7. \_\_\_\_\_
8.  $-28 \div g + 2\frac{1}{3} = -1\frac{2}{3}$ ; solve for  $g$ . 8. \_\_\_\_\_
9.  $-3k + 10 > k + 2$  9. \_\_\_\_\_
10. Find the median of the following scores: 12, 5, 2, 16, 8, 9, 3, 12, 16, 20. 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  
33

## Algebra Alley

Domain =  $\{-1, 0, 1, 2, 3\}$ ; Range =  $\{-13, -10, -7, -4, -1\}$ ; it is a linear function.

## What's the Problem?

$$P(\text{all answers right}) = (0.5)^4 \times (0.25)^6$$

$$P(\text{all answers wrong}) = (0.5)^4 \times (0.75)^6$$

It is 729 times more likely that all answers will be incorrect.

## Mathematically Speaking

$92^\circ$

$$\frac{89 + 93 + 83 + 78 + x}{5} = 87$$

## Geometry Wrap-Up

9 feet

## All About Data

Answers will vary.

## Keeping Skills Sharp

1. Oranges.
2. 25 pounds
3. Addition
4.  $-6$
5. 2.5
6.  $37^\circ\text{F}$
7. 65
8. 7
9.  $k < 2$
10. 10.5

## Mental Math

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

1.  $-10^3$
2. Write 45% as a fraction in simplest form.
3.  $5\frac{1}{4} - 2\frac{3}{4}$
4. Solve for  $m$ :  $\frac{m}{9.08} = -100$
5. Write as an algebraic expression: Seven less than the product of nine and a number.
6. Write using exponents:  $6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6$ .
7. Is 513 divisible by 3?
8. About 65% of the human body is water. What percentage of a human's body is not water?
9. Write  $\frac{7}{2}$  as a decimal.
10.  $\frac{5}{0}$

## Mental Math

1. -1000
2.  $\frac{9}{20}$
3.  $2\frac{1}{2}$
4.  $m = -908$
5.  $9n - 7$
6.  $6^6$
7. yes
8. 35%
9. 3.5
10. undefined