



## Algebra Alley

For each of the following, solve for the variable indicated.

a)  $P = 2l + 2w$ ; solve for  $w$

b)  $V = \frac{1}{3} \pi r^2 h$ ; solve for  $r$

(5.04)



## What's The Problem?

In a cafeteria survey of 100 students:

- 50 students ate pizza
- 60 students ate salad
- 70 students ate fruit
- 20 students ate pizza and salad
- 25 students ate pizza and fruit
- 45 students ate salad and fruit
- 10 students ate pizza, salad and fruit

What percent of the students ate either salad or fruit?

(1.02)



## Mathematically Speaking

Explain, in words, how you would solve

$$3(h - 9) + 5 = -16.$$

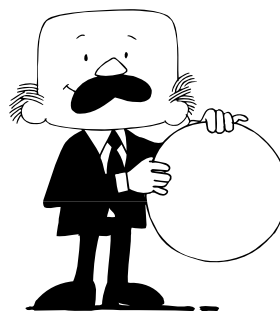
(5.02)



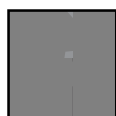
## All About Data

Use 6 circular container lids of various sizes and some dried beans. Collect the data for each of the following, record the data, and make scatter plots. Are any of the relationships linear? positive?

- Diameter of lid; Number of beans to go around edge of the lid
- Diameter of lid; Number of beans needed to cover lid
- Diameter of lid; Number of lids needed to make a chain one meter in length

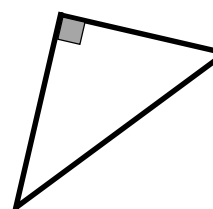


(4.01)



## Geometry Wrap Up

The hypotenuse of a right triangle measures 90 meters and one leg measures 72 meters. Find the area of the triangle.



(3.02)



# Keeping Skills Sharp

Write answers here:

1. Write in scientific notation: 3,286,000,000. 1. \_\_\_\_\_
2. Simplify:  $3p + 5(2p - 4) + 16p \div 2^3$  2. \_\_\_\_\_
3. How many minutes are in a week? 3. \_\_\_\_\_
4. Draw an angle whose measure is between  $90^\circ$  and  $180^\circ$ . 4. \_\_\_\_\_
5. Order from least to greatest: 1, 0.1, 0.001, 0.01, 0.0001. 5. \_\_\_\_\_
6. Is  $\pi$  a rational number? 6. \_\_\_\_\_
7. Write 300 as a product of prime factors. 7. \_\_\_\_\_
8. Write 20% as a fraction and a decimal. 8. \_\_\_\_\_
9.  $0.285 + 0.49 + 2.04 + 20.5 =$  9. \_\_\_\_\_
10.  $V = \frac{1}{3}Bh$ ; solve for  $B$ . 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  
3 4

## What's the Problem?

85%

## Geometry Wrap-Up

1,944 m<sup>2</sup>

## All About Data

The relationship between the diameter of the lid and the number of beans needed to go around the edge appears to be linear and positive.

The relationship between the diameter of the lid and the number of beans needed to cover the lid appears to be positive but not linear.

The relationship between the diameter of the lid and the number of lids needed to make a chain 1 meter in length is neither linear or positive.

## Algebra Alley

a)  $w = \frac{P - 2l}{2}$       b)  $r = \sqrt{\frac{3V}{\pi h}}$

## Mathematically Speaking

Answers will vary.

## Keeping Skills Sharp

- $3.286 \times 10^9$
- $15p - 20$
- 10,080 minutes
- any obtuse angle
- 0.0001, 0.001, 0.01, 0.1, 1
- No
- $3 \cdot 2^2 \cdot 5^2$
- $\frac{1}{5}, 0.2$
- 23.315
- $B = 3V \div h$

## Mental Math

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

- Use the formula  $d = rt$  to solve for  $d$  if  $r = 60$  mph and  $t = 2.5$  hours.
- 36 feet = \_\_\_\_ yards
- Simplify:  $4^2 \cdot 2^2$
- Name the first 5 multiples of 15.
- Is 126 divisible by 6?
- Find the volume of a cube with edges of 5 cm.
- Simplify:  $-3(2x - 4)$
- Solve for  $y$ :  $2y + 1 = 5$
- Which is more: 22 quarts or 5 gallons?
- 3 is to 9 as \_\_\_\_ is to 21.

## Mental Math

- $d = 150$  miles
- 12
- 64
- 0, 15, 30, 45, 60
- yes
- $125 \text{ cm}^3$
- $-6x + 12$
- $y = 2$
- 22 quarts
- 7



## Algebra Alley

Graph and write an equation of the line through  $A(1, 5)$  and  $B(-3, -1)$ .

(5.02)



## What's The Problem

What is the greatest number of 4-inch by 6-inch rectangular pieces of glass that can be cut from a rectangular sheet of glass measuring 2 feet by 4 feet?



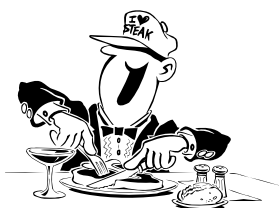
(1.02)



## Mathematically Speaking

What is wrong with this survey question:

How many good restaurants are near you?

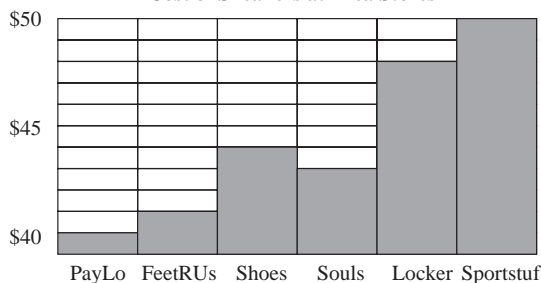


(Review)



## All About Data

Cost of Sneakers at Area Stores



Explain why the graph is misleading.

What error was made in the construction of the graph?

(4.03)



## Geometry Wrap Up

Quadrilateral  $ABCD$  with coordinates:  $A(3, 1)$ ,  $B(8, 2)$ ,  $C(6, -2)$ , and  $D(1, -2)$  is transformed according to the rule  $(x', y') = (0.5x, 0.5y)$ . Graph the image of quadrilateral  $ABCD$  and give the coordinates of the vertices of  $A'B'C'D'$ .

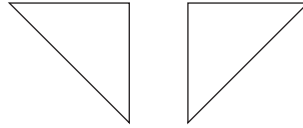


(3.03)



# Keeping Skills Sharp

- Every horizontal line has \_\_\_\_\_ slope.
- Graph triangle ABC in the 1st quadrant and then graph its reflection over the y-axis.
- 47.75 feet = \_\_\_\_\_ inches
- Is the second figure a reflection, translation, or rotation of the first?
- Insert grouping symbols to make the number sentence true:  
 $7 \cdot 8 - 6 + 3 = 17$ .
- Solve for y:  $2.3y - 4.7 = -10.7y + 27.8$
- $3\frac{1}{2} \cdot 5\frac{6}{7} =$
- $3 \times 8 + 6 \div 2 = 21$  Add parentheses to make the statement true.
- Find the average of the first five counting numbers that are perfect squares.
- $F = \frac{n}{3} + 37$ ; solve for  $n$ .



Write answers here:

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



# Mental Math

Directions to Students:  
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- |         |          |
|---------|----------|
| 1 _____ | 6 _____  |
| 2 _____ | 7 _____  |
| 3 _____ | 8 _____  |
| 4 _____ | 9 _____  |
| 5 _____ | 10 _____ |

# Answer Key

Grade 8

WEEK  
35

## What's the Problem?

48 pieces of glass

## Algebra Alley

$$y = 1.5x + 3.5$$

## Mathematically Speaking

The words "good" and "near" are subjective. Some may define good as excellent, others may think good just means passable. Near may be within walking distance for some, but within a days drive for others. In writing survey questions, ambiguous terms should be avoided.

## All About Data

All units on vertical scale are not equal. Locker looks 4 times as much as FeetRUs when it is actually only \$6 more.

## Geometry Wrap-Up

$A'$  (1.5, 0.5),  $B'$  (4, 1),  $C'$  (3, -1),  $D'$  (0.5, -1)

## Keeping Skills Sharp

1. zero
2. Answers will vary.
3. 573
4. reflection or a rotation and a translation
5.  $7 \cdot (8 - 6) + 3 = 17$
6. 2.5
7.  $20\frac{1}{2}$
8.  $3(8 + 6) \div 2 = 21$
9. 11
10.  $n = 3(F - 37)$

## Mental Math

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

1.  $5 \div \frac{1}{2}$
2. Express in simplest form:  $\frac{2}{3} \cdot \frac{3}{4}$
3. 75% of 800
4. List 5 multiples of 7.
5. Solve for  $m$ :  $5.62 = m - 6$ .
6.  $2 \times 5\frac{2}{3}$
7.  $2^3 + \underline{\quad} = 23$
8.  $-2^3 + 3^2$
9. Solve for  $n$ :  $\frac{n}{7} = 8$ .
10. Change to a percent: .875

## Mental Math

1. 10
2.  $\frac{1}{2}$
3. 600
4. 0, 7, 14, 21, 28,...
5.  $m = 11.62$
6.  $11\frac{1}{3}$
7. 15
8. 1
9.  $n = 56$
10. 87.5%



### Algebra Alley

In the function  $y = Ax + B$ , how does changing the value of  $A$  change the graph of the function?  
(5.01)



### What's The Problem?

In basketball, the equation  $P = 2x - x^2$ , describes a player's probability of scoring at least one point in a two-shot free-throw situation.  $P$  is the probability of scoring and  $x$  is the player's current free-throw percentage.

If Tony is a 40% free-throw shooter what is the probability he will score at least one point the next time he is in a two-shot situation?



(1.02)



### Mathematically Speaking

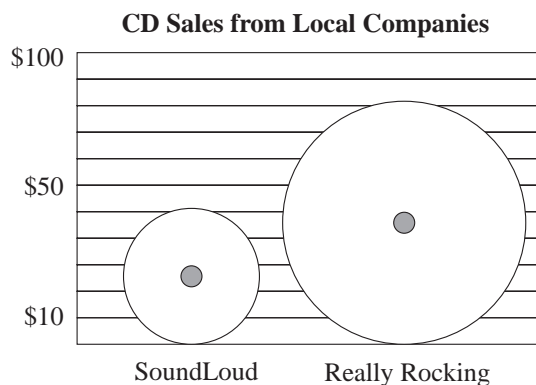
A student conducted a poll and from the results made the following statement: "Four out of five people polled say that if they have to choose between Macs and PCs, they will choose PCs." Comment on the student's statement.

(4.03)



### All About Data

Explain why the following graph is misleading:



(4.03)



### Measurement Wrap Up

Marie is 64 inches tall and casts a shadow that is 72 inches long. At the same time, a nearby flag pole casts a shadow that is 45 feet long. How tall is the flagpole?



(2.02)



# Keeping Skills Sharp

1. Estimate:  $6.08 \cdot 3.99 \div 7.96$

2.  $\frac{2}{3} \cdot 6\frac{3}{5} =$

3.  $\left(2 \cdot \frac{5}{2}\right) \cdot \frac{3}{4} =$

4.  $5 \div -1\frac{1}{3} =$

5. Evaluate if  $k = -5$ :  $3k^2 - 14k + 2$

6. Write the next three terms: 8, 4, 2, 1, ...

7. Solve for  $k$ :  $\frac{k}{-1.3} = -4.7$

8. Express 0.00000892 in scientific notation.

9. Solve for  $w$ :  $\frac{5w - 2}{7} = -12$

10. Solve for  $y$ :  $-8y + 13.7 = 5y - 60.4$

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  
36

## What's the Problem?

64%

## Mathematically Speaking

One problem is not knowing how many people were polled. This is meaningless if only five people were asked. Also, were the people selected randomly, or were they chosen from a biased sample such as employees of a company that uses only PCs?

## All About Data

Really Rocking is supposed to have twice the sales of SoundLoud, but using the CD icon makes it appear much bigger.

## Measurement Wrap-Up

40 feet

## Algebra Alley

$A$  determines the slope of the line.

## Keeping Skills Sharp

- 3
- $4\frac{2}{5}$       3.  $\frac{15}{4} = 3\frac{3}{4}$
- $-\frac{15}{4} = -3\frac{3}{4}$
- 147
- $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$
- 6.11      8.  $8.92 \times 10^{-6}$
- $w = -16.4$
- $y = 5.7$

## Mental Math

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

- Evaluate when  $a = -1$  and  $b = -3$ :  $2ab + b$ .
- $0.008 \times 0.9$
- Simplify:  $3(a + 2a)$ .
- Solve for  $n$ :  $-25 = -5 + n$ .
- $\angle A$  and  $\angle B$  are complementary angles. If the measure of  $\angle A$  is  $37^\circ$ , what is the measure of  $\angle B$ ?
- 50% of 18.5
- $5.6 + (-3.2)$
- Solve for  $m$ :  $m + n = p$ .
- Write using exponents:  $5 \cdot 5 \cdot 5 \cdot 3 \cdot 3 \cdot 2$
- List the factors of 36.

## Mental Math

- 3
- 0.0072
- $9a$
- 20
- $53^\circ$
- 9.25
- 2.4
- $m = p - n$
- $5^3 \cdot 3^2 \cdot 2$
- 1, 2, 3, 4, 6, 9, 12, 18, 36