



### Algebra Alley

In triangle ABC, angle  $A = 2x^\circ$ ,  
 angle  $B = (x - 45)^\circ$  and  
 angle  $C = (x - 15)^\circ$ .

What kind of triangle is ABC?

(Review)



### All About Data

A survey of 100 volleyball players' weights had the following results:

- 120 lbs 12 students
- 125 lbs 18 students
- 130 lbs 15 students
- 135 lbs 16 students
- 140 lbs 20 students
- 145 lbs 19 students



How does the mean weight of these volleyball players compare with the median?

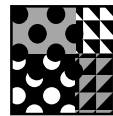
(Review)



### What's The Problem?

Four students are called to sit in four chairs on a stage. The students are Bob, Wanda, Carol, and Don. Bob and Wanda are cousins. If the students are called up in random order and take seats in the order in which they are called, what is the probability that Bob and Wanda will sit next to each other?

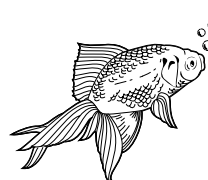
(Review)



### Geometry Wrap Up

An aquarium is 36 inches long, 24 inches wide and 16 inches tall. The aquarium is filled with distilled water to a level of 12 inches. If a cubic foot of distilled water weighs 62.4 pounds, how many pounds of water are in the aquarium? Express your answer as a decimal correct to tenths place.

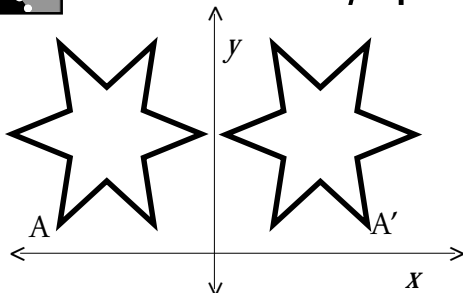
*From 1996-97 Mathcounts School Handbook*



(3.01)



### Mathematically Speaking



If the star was reflected over line  $y$ , and  $A$  has coordinates  $(-7, 3)$ , what are the coordinates of its image  $A'$ ?

(Review)



# Keeping Skills Sharp

Write answers here:

1.  $3 + 8 \cdot 2 - 5 =$

2.  $10\% \text{ of } 100 =$

3.  $9 \cdot 7 \cdot 5 =$

4.  $12 \div 4 + 5 \cdot 2 - 24 \div 6 =$

5.  $2[(4 + 11) \div (12 - 7)] =$

6.  $\frac{42 + 3}{17 - 8} =$

7.  $.97(10) =$

8.  $3\frac{1}{3} + 2\frac{1}{7} =$

9.  $.343 \div 10 =$

10.  $36 \div 0.6 =$

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  
1

## What's the Problem?

Strategy: make an organized list.

<b>B W C D</b>	<b>B W D C</b>	<b>B C W D</b>
<b>B C D W</b>	<b>B D W C</b>	<b>B D C W</b>
<b>W B C D</b>	<b>W B D C</b>	<b>W C B D</b>
<b>W C D B</b>	<b>W D B C</b>	<b>W D C B</b>
<b>C W B D</b>	<b>C W D B</b>	<b>C B W D</b>
<b>C B D W</b>	<b>C D W B</b>	<b>C D B W</b>
<b>D W C B</b>	<b>D W B C</b>	<b>D C W B</b>
<b>D C B W</b>	<b>D B W C</b>	<b>D B C W</b>

24 possible...12 they sit together...

$$\frac{12}{24} = \frac{1}{2}$$

## Geometry Wrap Up

374.4 pounds

## All About Data

median (135 is)  
slightly larger than the  
mean(133.55)

## Mathematically Speaking Algebra Alley

(7,3)

obtuse

## Keeping Skills Sharp

- 14
- 10
- 315
- 9
- 6
- 5
- 9.7
- $5\frac{10}{21}$
- .0343
- 60

## Mental Math

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

- $(5 + 3)5$
- $(2)(5)(0)(7)(8)$
- Write 0.03 as a fraction.
- Write  $0.\bar{3}$  as a fraction.
- Solve for y:  $\frac{1}{3}y = 3$
- True or False:  $522 \div 18 = 18 \div 522$
- $5 - 12 + (-3.5)$
- Write 25,000 in scientific notation.
- $2^8 \cdot 2^2$
- Simplify:  $2x + 5y - 7x + 2xy$

## Mental Math

- 40
- 0
- $\frac{3}{100}$
- $\frac{1}{3}$
- 9
- False
- 10.5
- $2.5 \times 10^4$
- $2^{10}$
- $-5x + 2xy + 5y$



### Algebra Alley

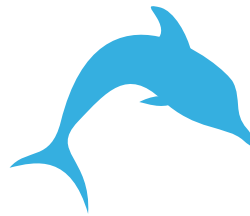
An estate valued at \$62,000 is left by a will as follows: to each of two grandchildren a certain sum, to the son twice as much as to the two grandchildren together, and to the widow \$2,000 more than to the son and grandchildren together. How much goes to each?

(1.02)



### All About Data

Ten dolphins at the aquarium are fed fresh fish each day. The two smallest dolphins eat three fish apiece, the four middle-size dolphins each eat five fish and the largest dolphins eat seven fish each. What is the average number of fish eaten by the dolphins each day?



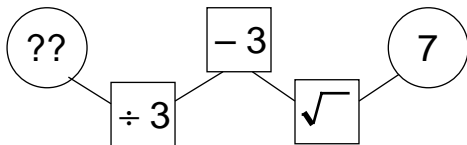
(Review)



### What's The Problem?

Working Backwards

Find the starting number on this flow chart



(1.02)



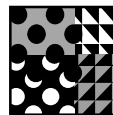
### Mathematically Speaking

For what value of  $a$  and  $b$  will these two expressions be equal?

$$(a + b)^2 \text{ and } a^2 + b^2$$

Explain.

(Review)



### Geometry Wrap Up

A square is folded in half to form a rectangle. If the resulting rectangle has a perimeter of 15 inches, what is the area of the original square?



(Review)



# Keeping Skills Sharp

Write answers here:

1.  $5 + 3 \cdot 2 + 12$

1. \_\_\_\_\_

2.  $2^2 + 4 - 2^3 \div 4$

2. \_\_\_\_\_

3. Order these numbers from least to greatest:  $-\frac{1}{2}, 0, -3, 1, -1$

3. \_\_\_\_\_

4.  $8 = \square^3$

4. \_\_\_\_\_

5. Compare:  $\frac{1}{3}$  ?  $\frac{1}{4}$

5. \_\_\_\_\_

6. Compare:  $\frac{15}{28}$  ?  $\frac{19}{42}$

6. \_\_\_\_\_

7. List all the factors of 36.

7. \_\_\_\_\_

8. What is the prime factorization of 51?

8. \_\_\_\_\_

9.  $3^0 = \underline{\hspace{2cm}}$

9. \_\_\_\_\_

10. Half of a dozen

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  
2

## Algebra Alley

The grandchildren each get \$5,000; the son gets \$20,000; and the widow gets \$32,000.

## What's the Problem?

156

## Mathematically Speaking

The two expressions are not always the same. Only when one number is 0 and the other is 1 will they be equal.

## Geometry Wrap Up

25 inches<sup>2</sup>

## All About Data

5.4 fish

## Keeping Skills Sharp

- 23
- 6
- $-3, -1, -\frac{1}{2}, 0, 1$
- 2
- $>$
- $-3, -1, -\frac{1}{2}, 0, 1$
- (1, 2, 3, 4, 6, 9, 12, 18, 36)
- $3 \cdot 17$
- 1
- 6

## Mental Math

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

- In what quadrant would you find the ordered pair  $(-2, -3)$ ?
- 15% is what common fraction?
- $8 - 3 + 2 - 7 + 12$
- $\sqrt{60}$  falls between what two consecutive integers?
- $5 \cdot 8 \cdot 5$
- $7 - 1\frac{3}{4}$
- Write the next number in this pattern:  
3, 9, 27, 81, \_\_\_\_
- $\frac{12}{15} = \frac{?}{5}$
- True or false:  $2 \cdot 3 \cdot 7 = 3 \cdot 7 \cdot 2$
- $7 \div \frac{1}{3}$

## Mental Math

- III
- $\frac{3}{20}$
- 12
- 7 and 8
- 200
- $5\frac{1}{4}$
- 243
- 4
- True
- 21



### Algebra Alley

Triangles ABC and RST are similar triangles. Angle A =  $2(x + 15)^\circ$ , angle S =  $3x^\circ$ , and angle C =  $x^\circ$ . What are the measures of angles B, R and T? What kind of triangles are they?

(5.04)



### All About Data

The high temperatures in Raleigh for the first two weeks of July were:

10	1 1 3
9	2 3 5 6 7 7
8	6 8 8 9 9

What were the mean, the median and the range of these temperatures?



### What's The Problem?

During Bully's first week working in a china shop he breaks a vase that costs \$45.89, two glasses that cost \$16.25 each, and a platter that costs \$135.49. If he makes \$5.25 an hour, how many hours will he have to work to pay for the things he broke?



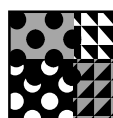
(1.02)



### Mathematically Speaking

Will the expression  $\frac{5}{x}$  always be less than 5? Explain.

(Review)



### Geometry Wrap Up

Tom has some cubes that are 2 cm on each side. How many of them will fit into a box that is a cube with each side 4 cm long?

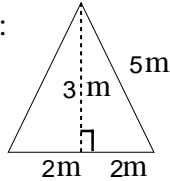
(3.01)



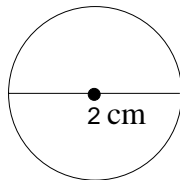
# Keeping Skills Sharp

Write answers here:

- $0.765 + 3.876 + 5$
- Write 0.5 as a common fraction in simplest form.
- Find the area:



- Find the area:



- $\frac{3}{7} = \frac{x}{14}$  Solve for  $x$ .

- Three loaves of bread cost \$3.87. How much do two loaves cost?
- Find 55% of 480.
- 6 out of 40 is equivalent to \_\_\_ out of \_\_\_.
- $4 + 3 \cdot 6 \div 9 - 8$
- $15 + 0.5$

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



# 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

## Algebra Alley

Angle B =  $75^\circ$ , angle R =  $80^\circ$ , angle T =  $25^\circ$ .

The triangles are acute scalene.

## What's the Problem?

41 hours

## Mathematically Speaking

No. If  $x$  is less than one,  $x$  will divide into 5 more than 5 times. Note: if  $x$  is negative,  $\frac{5}{x}$  will be negative and definitely less than 5.

## Geometry Wrap Up

8

## All About Data

median =  $94^\circ$ , mean =  $93.9^\circ$ , range =  $17^\circ$ .

## Keeping Skills Sharp

- 9.641
- $\frac{1}{2}$
- 6 square meters
- 3.14 square centimeters
- 6
- \$2.58
- 264
- Answers will vary: 3 out of 20, 12 out of 80 etc.
- 2
- 15.5

## Mental Math

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

- What is 25% of 20?
- $2 \times 10^3$
- Solve for  $x$ :  $12x = 36$
- $\frac{1}{2} - \frac{1}{3}$
- Multiply three tenths by two tenths.
- Compare  $\frac{1}{2}$  and .50.
- $3x + 7x + 3y$
- Solve for  $x$ :  $x^2 = 25$
- Express 0.08 as a fraction in simplest form.
- If you simplified  $(-3)(4)(-7)(-8)(2)(-15)$ , would your answer be positive or negative?

## Mental Math

- 5
- 2000
- 3
- $\frac{1}{6}$
- .06
- $\frac{1}{2} = .50$
- $10x + 3y$
- 5, 5
- $\frac{8}{100} = \frac{2}{25}$
- positive