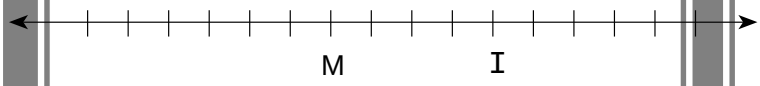
(Review)

Algebra Alley

Mr. Ellen had the following exercise on the overhead projector for his class to do when they came in Monday morning. What was his message to the class? Look at or draw this number line and fill in the letters given in the instructions. The first one is done for you.



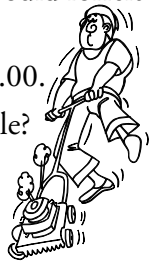
M to I is +4
I to O_1 is –8
O_1 to N_1 is +7
N_1 to N_2 is +2
N_2 to O_2 is –8
O_2 to O_3 is +4
O_3 to G_1 is –6
G_1 to D is +3
D to G_2 is +8
G_2 to R is –4

What's The Problem?

Jamal was hired to do some lawn work for $40 a day on the condition that for every day he was idle, he would forfeit $15.50.

At the end of 20 days he had $467.00.

How many days had Jamal been idle?



(1.02)

Mathematically Speaking

$2.5 \times 10^2 =$ _____ $\times 10^3$

Explain how you know your answer is correct.

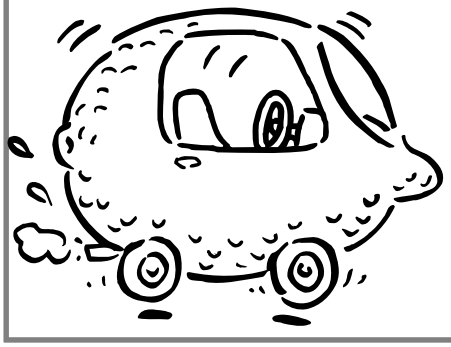
(Review)

All About Data

At the circus a very popular attraction is the Clown and Funny Car act. The following stem-and- leaf plot records the number of clowns in the Funny Car for one week.

1	2 6 7
2	2 3 4 4

What is the difference between the mean and the median?



(4.01)

Geometry Wrap Up

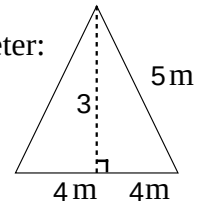
A prism with a square base has a height of 45 centimeters and its volume is 7,200,000 cm^3. Find the area of the base.

(Review)

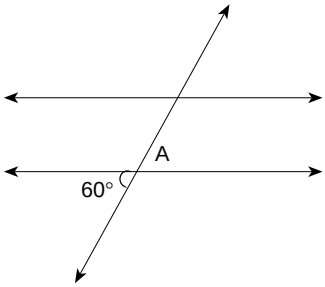
Keeping Skills Sharp

Write answers here:

1. $3 + 2 - 1 \times 4 =$ 1. _____
2. Find the perimeter: 2. _____



3. Find the measure of angle *A*. 3. _____
4. 5% of 34 = 4. _____



5. $0.3 \bullet 0.4 =$ 5. _____
6. Express 7.4% as a fraction and a decimal. 6. _____
7. Solve for *n*: $12n = 84$ 7. _____
8. $25 + [48 \div (12 + 4)] - 16 =$ 8. _____
9. Solve for *x*: $x + 2 = 6$ 9. _____
10. Between which two consecutive numbers is the product: $2.96 \bullet 5.67$? 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 4

Algebra Alley

"GOOD MORNING"

What's the Problem?

6 days idle $14 \bullet \$40 = \$560$
$6 \bullet \$15.5 = \$\ 93$
$\$467$

Mathematically Speaking

$2.5 \times 10^2 = 0.25 \times 10^3$

The two numbers are equivalent, so if we multiply one of them by ten by increasing the exponent, then we must also divide it by ten which shifts the decimal point in 2.5 one place to the left.

Geometry Wrap Up

160,000 cm^2

All About Data

3 $\frac{2}{7}$ clowns!!

Keeping Skills Sharp

1. 1
2. 18 meters
3. 60°
4. 1.7
5. .12
6. $\frac{37}{500}$ and 0.074
7. 7
8. 12
9. 4
10. 16 and 17

Mental Math

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

1. .7 + .02 + 4
2. What is the LCM of 8 and 12?
3. What is the GCF of 8 and 12?
4. Give the angle measur that is 5^0 degrees less than twice the size of a 30° angle.
5. $(0.03)^2$
6. Write 1.7×10^5 in standard form.
7. Multiply: $0.25(12x + 32)$
8. $7 \bullet 2 + 6 \div 3$
9. Solve for k:

   $\frac{2}{3} = \frac{8}{k}$
10. Write 0.75 as a common fraction.

Mental Math

1. 4.72
2. 24
3. 4
4. 55°
5. 0.0009
6. 170,000
7. $3x + 8$
8. 16
9. 12
10. $\frac{3}{4}$

Algebra Alley

A hat, *H*, and a scarf, *S*, cost $20.00. The hat costs $2.00 more than the scarf. How much does the scarf cost?

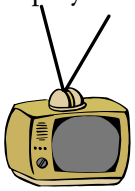
Write an equation to model this situation. how much *does* the scarf cost?

(1.02)

What's The Problem?

(1.02)

At a local store, the price of all televisions was reduced 25%. Store employees are given an additional 20% discount on sale prices. What would be the cost a store employee would pay for a television originally priced at $360?



1997-98 Mathcounts Handbook

Mathematically Speaking

A poll asks students 3 questions:

Do you play tennis?

Do you swim?

Do you ride a bike?

The results are tallied, and the percentage of students who participate in each sport is found. Why would these data not be presented in a circle graph?

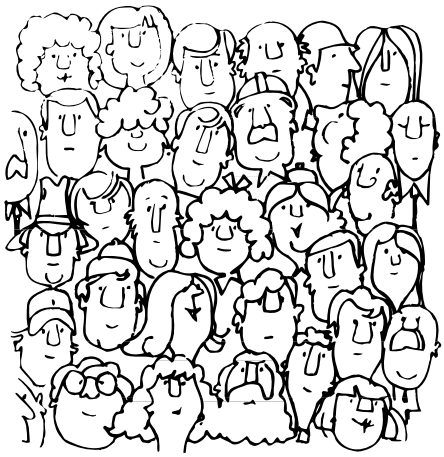
(4.01)

All About Data

Draw a stem-and-leaf plot for the following ages of attendees at a family reunion.

48 54 45 60 50 70 66 69 40 61 50 60
58 47 40 8 7 6 6 27 23 17 14 40 28
52 33 19 28 35

Determine the range, mean and median.



(4.01)

Geometry Wrap Up

If cube has a surface area of 294 cm^2, what are its dimensions and what is its volume?

(3.01)

Keeping Skills Sharp

Write answers here:

1. How many inches are in 19 yards?
2. $12 - 3.987 =$
3. Four pencils and one pen cost $1.25. Two pencils and three pens cost $2.25. What is the cost of one pen?
4. $\frac{3}{4} - \frac{5}{12} =$
5. Write the next two numbers in this pattern: 3, 4, 7, 11, ____, ____
6. Using the distributive property, write an expression equivalent to $4(x + 3)$.
7. Express 100,000 in scientific notation.
8. Find the area of a rectangle 6" by 4" .
9. Write in simplest form: $\frac{10}{16}$
10. Which is greater: $\frac{1}{2}$ or $\frac{1}{3}$?

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. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Answer Key

Grade 8 WEEK 5

Algebra Alley

$S + (S + 2) = 20$; The scarf costs $9.00

What's the Problem?

$216

Mathematically Speaking

Each student may participate in more than one or in none of the sports. The percentages might not add up to be exactly 100%.

Geometry Wrap Up

343 cm^3 7cm x 7cm x 7cm

All About Algebra

range - 64; mean - 38.7; median - 40

Keeping Skills Sharp

1. 684 inches
2. 8.013
3. $0.65
4. $\frac{4}{12} = \frac{1}{3}$
5. 18, 29
6. $(4 \cdot x) + (4 \cdot 3)$
7. 1×10^5
8. 24 sq. in
9. $\frac{5}{8}$
10. $\frac{1}{2}$

Mental Math

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

1. Simplify: $98 \cdot 3 + 2 \cdot 3$
2. Write 1.31 as a percent.
3. Find the volume of a cube with sides measuring 2 centimeters.
4. Find the surface area of a cube with sides measuring 2 centimeters.
5. Which distance is greater: 5.1 km or 5001 m?
6. Nearest hundredth: 25.9878
7. Solve for x: $2x + 3 = 7$
8. What is the mean for the following set of numbers {7, 4, 7}?
9. What is 80% of 50?
10. Simplify: $x - 7y + 4x - 2y$

Mental Math

1. 300
2. 131%
3. 8 cm^3
4. 24 cm^2
5. 5.1 km
6. 25.99
7. $x = 2$
8. 6
9. 40
10. $5x - 9y$

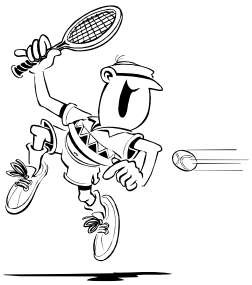
Algebra Alley

Margie had an average of 87 on her first five test scores. On the next two tests she improved. She earned 1 point higher on the seventh test than she did on the sixth. Her average on all seven tests was now 90. What were her two new test scores?

(Review)

What's The Problem?

There are 16 tennis players in a single elimination tournament. How many tennis matches will be played during the tournament?



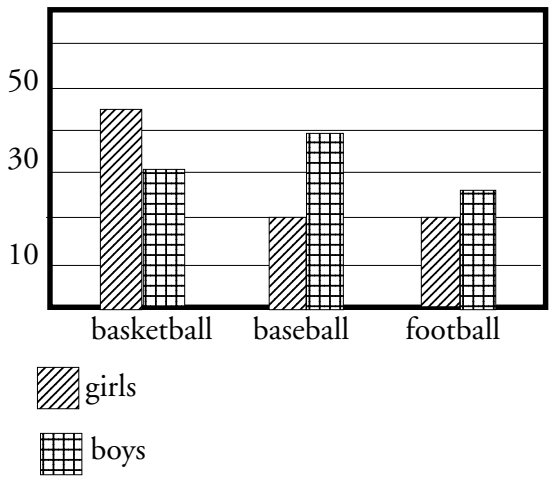
(1.02)

Mathematically Speaking

A student's scores on four math tests were 89, 92, 95, and 85. What will he need to make on the 5th test to have an average of 93? Is this possible?

(1.02)

All About Data



Larry, Curley, and Moe looked at this graph. Larry said, "The average number of students voting was 60." Curly said, "A circle graph would give more accurate information." Moe said, " The average vote for a sport was 30."

Is anyone right? How do you know?

(4.01)

Geometry Wrap Up

In a triangle, the largest angle is 29 degrees more than the smallest. The third angle is 13 degrees larger than the smallest. What is the smallest angle in the triangle? What kind of triangle is it?

(Review)

Keeping Skills Sharp

Write answers here:

1. Write all the prime numbers between 15 and 25.
2. 3 is to 15 as 4 is to ____.
3. Express $\frac{1}{3}$ as a decimal.
4. $3\frac{1}{3} \cdot 4\frac{1}{8}$
5. 40,320 ÷ 1.5
6. Evaluate $2a + 7b$ if $a = 5$ and $b = 3$.
7. $\sqrt{16} + 2^3$
8. Find the prime factorization of 120.
9. Find the perimeter of a rectangle 2.5 cm by 1.5 cm.
10. Complete the table:

Input	Output
3	7
4	9
0	1
7	

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. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Answer Key

Grade 8
WEEK 6

Algebra Alley

97 and 98

What's the Problem?

15

Mathematically Speaking

104. This is only possible if there is a bonus problem on the test.

Geometry Wrap Up

46 degrees; acute scalene

All About Data

They are all wrong for different reasons.

Keeping Skills Sharp

1. 17, 19, 23
2. 20
3. $\overline{.3}$
4. $\frac{55}{4}$ or $13\frac{3}{4}$
5. 26,880
6. 31
7. 12
8. $2^3 \cdot 3 \cdot 5$
9. 8 cm
10. 15

Mental Math

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

1. Evaluate if $x = 3$: $3x^2 + 2$
2. Solve for z: $\frac{z}{3} = \frac{7}{21}$
3. $(2^3)^2$
4. Simplify: $2(x - 3y)$
5. What percent of a day is 18 hours?
6. Find the area of a right triangle that measures 3cm by 4cm by 5cm
7. True or false: $-7 < -\sqrt{49}$
8. $-3 - (-8)$
9. 14 grams = ? kg
10. $12 \cdot 13 - 12 \cdot 3$

Mental Math

1. 29
2. 1
3. 2^6 or 64
4. $2x - 6y$
5. 75%
6. 6 cm^2
7. False, the two are equal.
8. 5
9. 0.014 kg
10. 120