

Kansas City Area Teachers of Mathematics
2012 KCATM Contest

Mathletics

Grade 5

Instructions:

- Do **NOT** turn this page until instructed to do so.
- WRITE YOUR **TEAM NUMBER** AND **SCHOOL NAME** ON THE LINE PROVIDED ON THE FRONT OF EACH SHEET EACH TIME YOU BEGIN A NEW PROBLEM.
- You **may** use calculators on this test (*not* cell phone calculators).
- Blank scratch paper can be used. Do **NOT** write on the team number card.
- You may **not** use rulers, protractors or other measurement devices on this test.

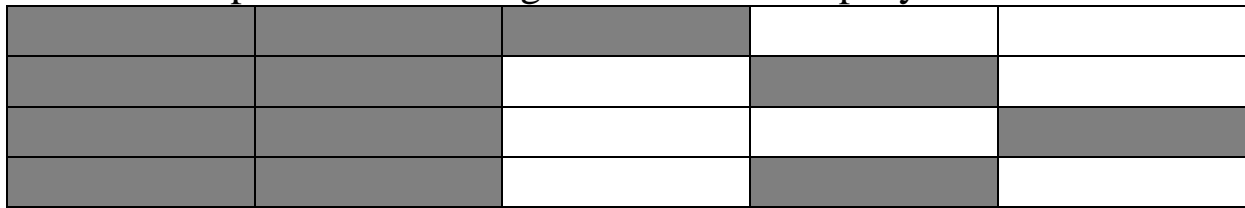
Team Number: _____ School: _____
Team Members: _____ Gr: _____
_____ Gr: _____
_____ Gr: _____

Problems # 1-3

This is a relay problem.

Problems 1-3 (3 minutes, 3 points)

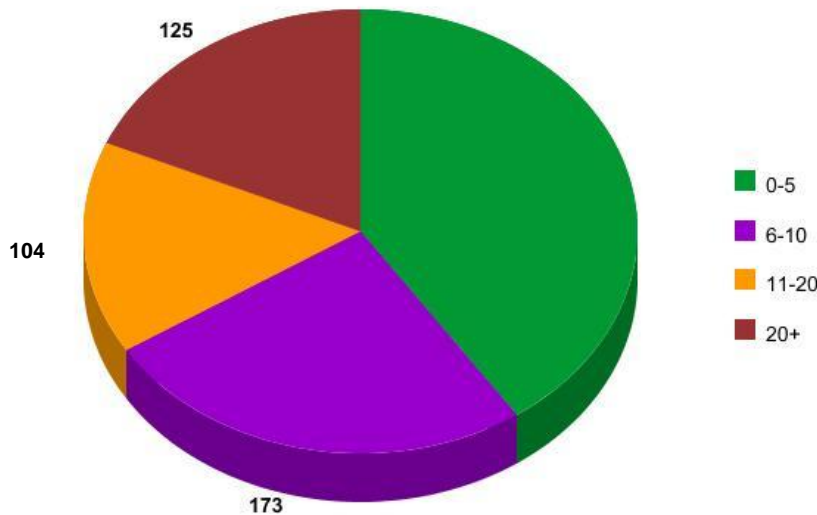
1. What fractional part of the rectangle is shaded? Simplify the fraction.



Answer: _____

2. In the pie chart below, _____ of the people that own Webkinz Kids are six and older. How many people would that be in the 0-5 range?
(answer from #1)

How Many Webkinz Kids Own



Answer: _____
people aged 0-5.

<http://kinz-land.com>

3. Lincoln Elementary is taking _____ students on a field trip to the Royals Stadium for the “Day at the K”. If each bus holds 60 students, how many buses will Lincoln Elementary need?
(answer from #2)

Answer: _____ **buses**

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Problem # 4

Do NOT turn the page until you are told to do so.

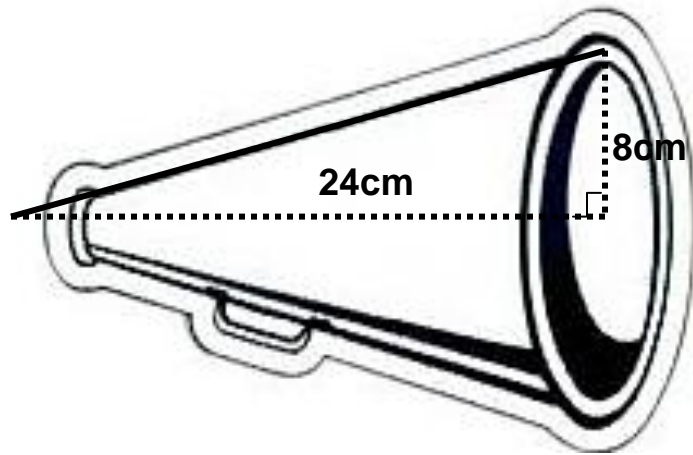
Team Number: _____ **School:** _____

Problem 4 (2 points, 2 minutes)

- a. Which has the greater volume, the cone or the sphere?
b. By how much (to the nearest cubic cm)?

Please note: Figures are NOT drawn to scale.
Use π button on your calculator.

Formulas: $V_{\text{cone}} = \frac{1}{3}\pi r^2 h$ and $V_{\text{sphere}} = \frac{4}{3}\pi r^3$



Answer: _____ by _____ cu. cm

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Problem # 5

Do NOT turn the page until you are told to do so.

Team Number: _____ **School:** _____

Problem 5 (3 minutes, 3 points)

Solve the puzzle by finding the missing numbers.

Note that the bottom row and the right-hand column have the same value.

What is that value in the lower right corner?

$\textcircled{3}$	+	$\textcircled{\quad}$	-	$\textcircled{-9}$	+	$\textcircled{-8}$	=	$\textcircled{\quad}$
\times		$-$		$+$		\div		$+$
$\textcircled{\quad}$	\div	$\textcircled{4}$	-	$\textcircled{\quad}$	-	$\textcircled{-4}$	=	$\textcircled{7}$
$+$		$+$		\div		$-$		$-$
$\textcircled{-16}$	+	$\textcircled{6}$	+	$\textcircled{10}$	+	$\textcircled{\quad}$	=	$\textcircled{-5}$
$=$		$=$		$=$		$=$		$=$
$\textcircled{8}$		$\textcircled{6}$		$\textcircled{\quad}$		$\textcircled{\quad}$	=	$\textcircled{\quad}$



Answer: _____

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Problem # 6

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Team Number: _____ **School:** _____

Problem 6 (3 minutes, 3 points)



You are running a race with 7 other competitors.

Use the following clues to find out your current position

Clues:

1. Five runners are behind #22.
2. #16 is two runners ahead of #22.
3. Runner #9 is ahead of #4 but is three runners behind you.
4. There are three runners between you and #4.
5. #7 is three runners ahead of #11.
6. #13 is just behind #11.

You are currently in ____ place.

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Problem # 7

Do NOT turn the page until you are told to do so.

Team Number: _____ **School:** _____

Problem 7 (2 minutes, 2 points)

Mystery Number



Find the mystery number with the following characteristics:

- A five-digit odd number
- Middle digit is the largest
- Eight is not one of the numbers
- Digit in the hundreds place is even
- Digit in ten thousandths place < 5
- The sum of the digits is 16
- The number is a palindrome
- The thousands digit is a prime number

Answer: _____

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Problem # 8

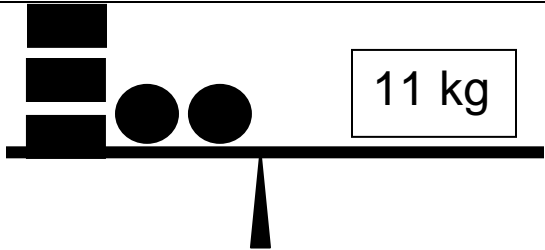
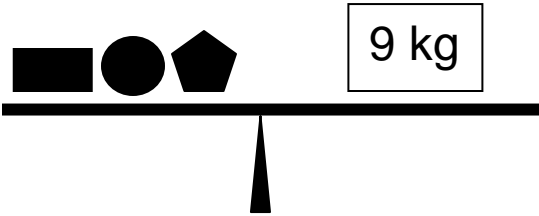
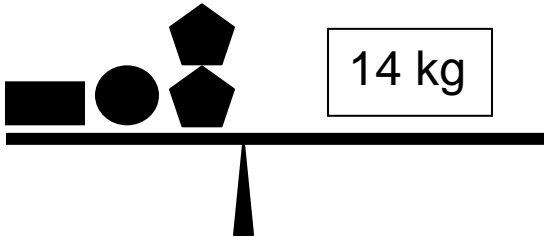



Do NOT turn the page until you are told to do so.

Team Number: _____ **School:** _____

Problem 8 (3 points, 3 minutes)

Keep Your Balance

Determine the value of the 
the 
and the 

 <p>11 kg</p>	 <p>9 kg</p>
 <p>14 kg</p>	<p>Answers:</p>   

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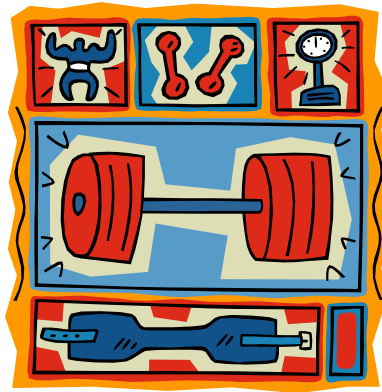
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Problem # 9

Do NOT turn the page until you are told to do so.

Team Number: _____ **School:** _____

Problem 9 (2 points, 2 minutes)



Alex went to the gym at 9:30am. **What time did Alex leave the gym?**
Use the clues below to determine the time at the gym.

- On the shoulder press, Alex set the weight at 8 pounds. Alex did 3 sets of 20 presses. Each set took 2.5 minutes, and then a 2 minute transition.
- Alex did 4 sets of 15 leg lifts. Each time Alex lifted 10 pounds. Each set took 1 minute. These exercises were followed by a 2 minute transition.
- On the abdominal machine, Alex moved 15 pounds with each repetition. Alex did 2 sets of 30 repetitions. Each set took 4 minutes.
- Alex visited the water fountain 3 times. Alex took 4 minutes each time to drink 8 ounces of water.
- The last stop was the treadmill where Alex ran at a rate of 6 miles per hour. Alex ran 3 miles.

Answer: _____ **am**

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Problem # 10

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Problem 10 (3 points, 3 minutes)



You are saving the change you have in your pocket each night. The first night you pulled 20 coins from your pocket which totalled \$2.95. You had nickels, dimes, and quarters. You had 1 more quarter than dimes, and you had two more dimes than quarters. Both the number of nickels and dimes are prime numbers.

Answer: _____ nickels
 _____ dimes
 _____ quarters

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Problem # 11

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Team Number: _____ **School:** _____

Problem 11 (2 points, 2 minutes)

A mysterious package arrived at your house. You notice a spider at the top right vertex of the package walking on the edge. The box measures 50 cm long, 30 cm wide, and 35 cm tall. What is the longest distance the spider can crawl on the edges without retracing steps?



Answer: _____ cm

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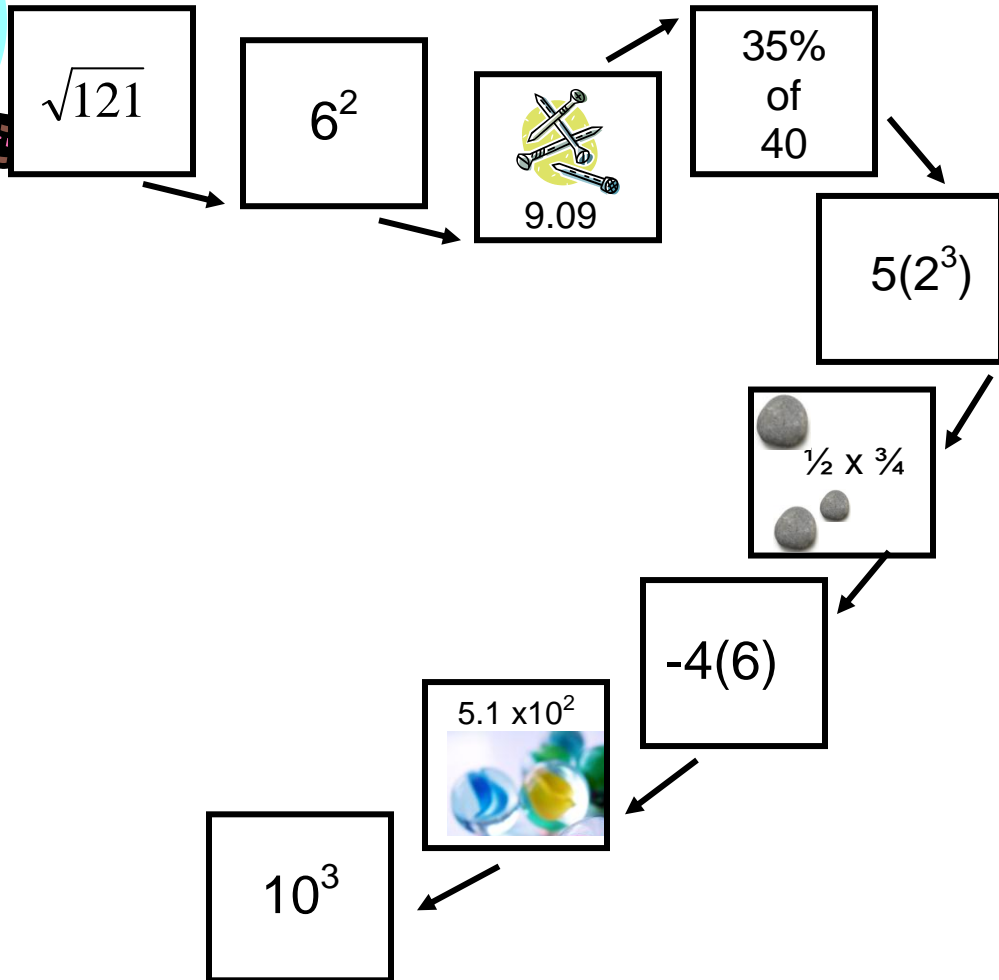
Problem # 12

Do NOT turn the page until you are told to do so.

Team Number: _____ **School:** _____

Problem 12 (3 points, 3 minutes)

Skateboard your way through the problems by adding the values except when you see an obstruction (stones, marbles, nails, etc.), jump over them and subtract the values on those blocks.



Answer: _____ (round to the nearest whole number)

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Problem # 13

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Problem 13 (3 points, 3 minutes)



The dentist Dr. Sam Miles, otherwise known as Dr. S. Miles, has new receptionist. His receptionist forgot to write down the times for 6 appointments. How many different ways could he see these 6 patients:

- Allen
- Ben
- Chase
- David
- Edgar
- Fred

see Dr. Smiles?

Answer: _____

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Problem # 14

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Problem 14 (3 points, 3 minutes)

List all 24 combinations of letters that can be formed with the following 4 letters:

M A T H

If the words were put in alphabetical order, which number would the word "MATH" be?

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Answer: _____

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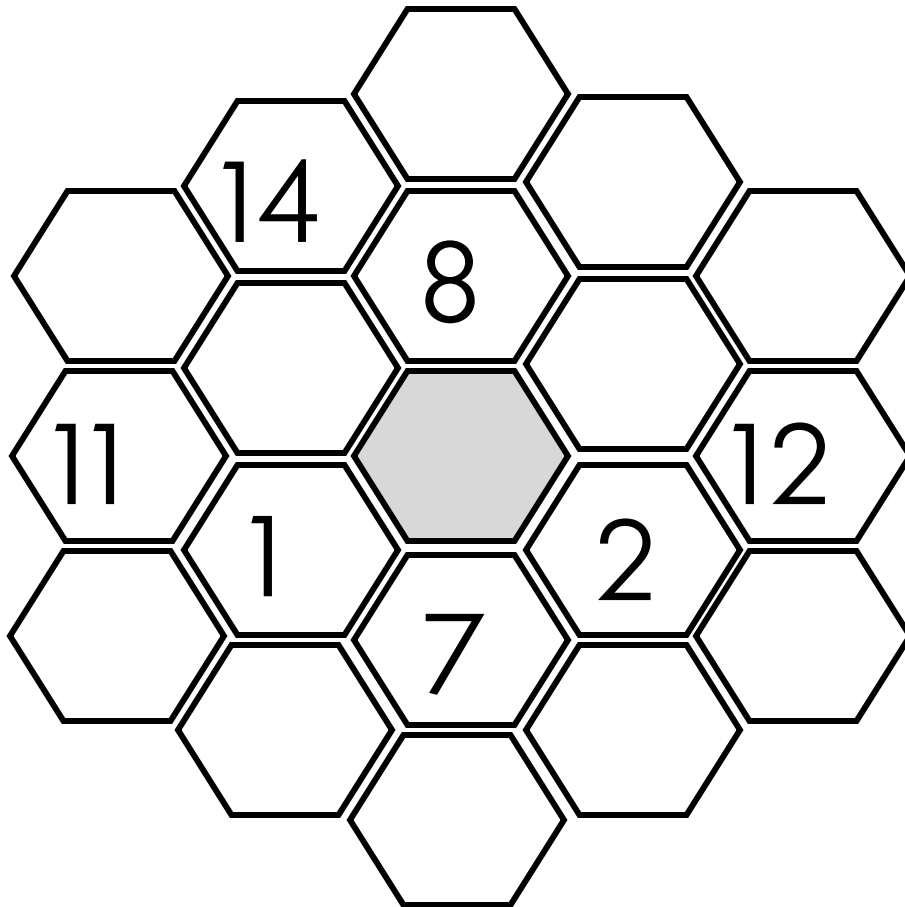
Problem # 15

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Problem 15 (3 points, 3 minutes)

Find the center value (shaded hexagon) of the puzzle where every sum in the vertical and diagonal directions is 38.



Answer: _____ **cookies**

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Problem # 16

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Answer Key

1. $\frac{3}{5}$
2. 268 people
3. 5 buses
4. Sphere by 537 cu. cm (2145 – 1608)
5. 20
6. 2nd place
7. 3 2 6 2 3
8.  : 3 kg  : 1kg  : 5 kg
9. 10:38am
10. 5 nickels, 7 dimes, 8 quarters
11. 360 cm
12. 26
13. 720 different ways
- 14.
15. 5
16.
1 11 55 145 290 442 442 290 145 55 11 1

