

5th Grade Problem Solving, Round 1

1.	James has 37 baseball cards. Paul has 23 more cards than James and 15 more than Ronald. How many baseball cards do the boys have all together?										
2.	<p>Fill in the grid using these clues:</p> <ul style="list-style-type: none"> a) All of the prime numbers less than 29 are used b) The first space has the only prime factor of 27 c) The next space to the right has the only prime factor of 25 d) The bottom row has 3 consecutive prime numbers e) The numbers in one diagonal all have a 3 in the ones place f) The numbers in the other diagonal are all between 10 and 20 g) The right column contains the only even prime <div style="text-align: center; margin-top: 10px;"> <table border="1" style="border-collapse: collapse; width: 200px; height: 60px;"> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td></tr> <tr><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td></tr> </table> </div>										
3.	Marcy has a locker at school. The locker number is a two-digit number. Each digit could be a 1,2,3, or 7. The digits are different. The number is a prime number that is 1 greater than a multiple of 8. What could the locker number be?										
4.	Marta's father wants to put a fence around the dog house in the back yard. The fence will be a rectangle whose length is twice as long as the width. The area is 72 square meters. How much fencing should they buy?										

TEAM NUMBER _____

SCORE _____ / 40

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament 2011

5th Grade Problem Solving, Round 2

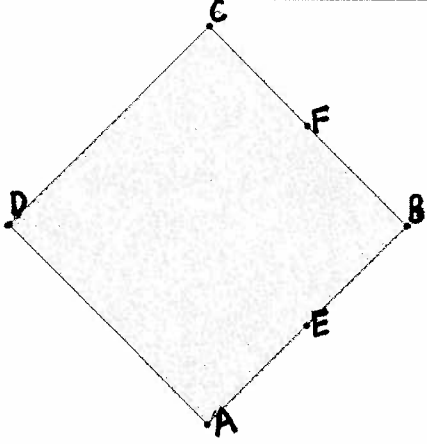
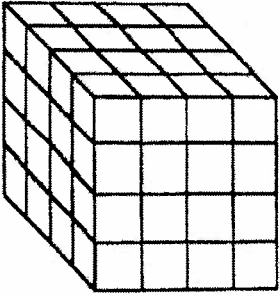
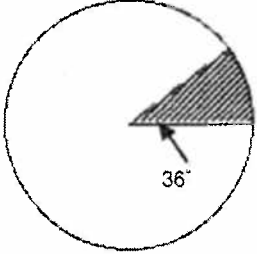
1.	The Empire State Building in New York City is 1,453 feet 9 inches tall. How many toothpicks, 3 inches long would it take to reach from the ground to the top of the building?	
2.	The students at the elementary school are excited about the new playground at their school. The dimensions of the playground are 300 yards by 600 yards. $\frac{1}{3}$ of the playground will be used for a soccer field. $\frac{1}{2}$ of the playground will be used for playground equipment. The rest will be used for a school garden. What will the area of the school garden be?	
3.	Write an expression equal to 100 that uses exactly seven 4s and as many addition signs as desired. No other math symbols may be used. (Note: two-digit numbers are acceptable)	
4.	A nurse has 54 bandages. $\frac{2}{9}$ of them are white, and the rest are brown. How many bandages are brown?	

TEAM NUMBER _____

SCORE _____ /40

6

6th Grade Problem Solving, Round 1

1.	<p>ABCD is a square with an area of 16 square meters. Point E is half way between point A and point B. Point F is halfway between point B and C. What is the area of the shape AEFCD? Express your answer in square meters.</p>		
2.	<p>A cube measuring 4 cubes by 4 cubes by 4 cubes is dipped into a can of red paint. How many unit cubes have some paint on them?</p>		
3.	<p>The entire circle shown represents 2,750 televisions sold. What is the number of televisions represented by the shaded sector of the circle?</p>		
4.	<p>Lydia works at a dog kennel. She uses 5 pounds of dog food to feed 3 dogs for 4 days. At the same feeding rate, how many one-pound bags of dog food will Lydia need, to feed 12 dogs for 1 week?</p>		

TEAM NUMBER _____

SCORE _____ / 40

④

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament 2011

6th Grade Problem Solving, Round 2

1.	Kate's father is a baker. After making several batches of muffins, he had to throw away 2 dozen that had burned. Then he gave $\frac{1}{4}$ of those left to Kate to take to school. Next, he wrapped up $\frac{1}{2}$ of the remaining muffins and sold them to the coffee shop next door. Then, he wrapped up $\frac{1}{3}$ of the remaining muffins and sold them to a grocery store. That left Kate's father with a dozen muffins to sell at his bakery. How many total muffins did Kate's father bake originally?	
2.	Joe and Sue open a bank account on the same day. Joe initially deposits \$100 and Sue initially deposits \$55. Joe adds \$6 to his account at the end of every two weeks beginning two weeks after he opens his account. Sue adds \$1 to her account every day beginning the day after she opens her account. If they compare their accounts once every two weeks on the day that Joe makes his deposit, how many weeks will it take for Sue to have more money than Joe?	
3.	There are 2 neighbors asking you to walk their dog everyday for two weeks. Neighbor Joe says he will pay you \$.02 the first day and double that wage for each additional day's work. Neighbor Sally says she will pay you \$10 per day. What is the difference in pay?	
4.	Angles A and B are supplementary. Angle B is 8 times angle A. What is the measure of angle B?	

TEAM NUMBER _____

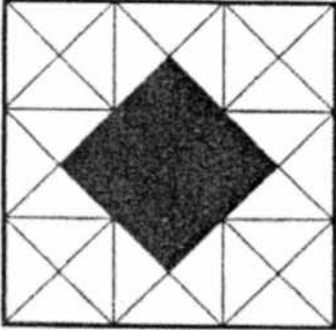
SCORE _____ /40

⑧

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament 2011

5th & 6th Grade – Number Sense

1 per student

1.	I am a 2 digit number that is both a square and a cube. What number am I?	
2.	What fraction of the square is shaded in?	
3.	If Jim and three of his friends fill 40% of the seats in a row, how many seats are in the row?	
4.	How many three-fourths are in 15?	
5.	What is the sum of 150 tenths plus 1700 hundredths?	
6.	Students voted for or against having a school dance. 22% of the boys voted yes and 78% of the girls voted no. If everyone voted, did the dance pass <u>or</u> fail?	
7.	If 100 pennies weigh 9.5 ounces, how many ounces would a million pennies weigh?	
8.	Which is the greatest quotient? A. $35 \div 0.2$ B. $35 \div 0.7$ C. $35 \div 0.5$ D. $35 \div 0.05$	

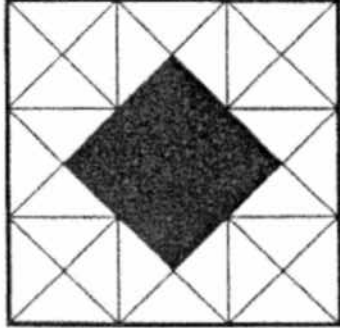
TEAM NUMBER 5-

SCORE 8

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament 2011

5th & 6th Grade – Number Sense

1 per student

1.	I am a 2 digit number that is both a square and a cube. What number am I?	
2.	What fraction of the square is shaded in?	
3.	If Jim and three of his friends fill 40% of the seats in a row, how many seats are in the row?	
4.	How many three-fourths are in 15?	
5.	What is the sum of 150 tenths plus 1700 hundredths?	
6.	Students voted for or against having a school dance. 22% of the boys voted yes and 78% of the girls voted no. If everyone voted, did the dance pass or fail?	
7.	If 100 pennies weigh 9.5 ounces, how many ounces would a million pennies weigh?	
8.	Which is the greatest quotient? A. $35 \div 0.2$ B. $35 \div 0.7$ C. $35 \div 0.5$ D. $35 \div 0.05$	

TEAM NUMBER 6-

SCORE 1/8

GCCTM Problem Solving Tournament
Gr. 5/6
Team Construction Activity

2011

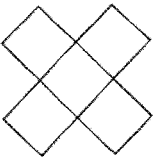
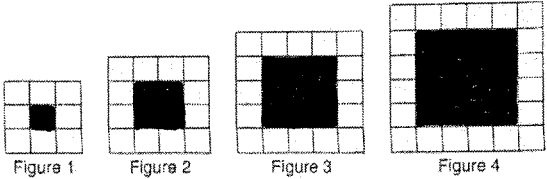
2 per team

Read through all instructions first.

1. On your paper, **center*** a square that has an area of 25 sq. inches, and whose sides are parallel to the sides of your paper.
(*The square's center point is also the paper's center point)
2. Draw the shortest line of symmetry of the square.
3. Determine and mark the center point of the square. Label it 'A'.
4. Within the square, draw an isosceles triangle whose base is formed by one whole side of the square. The height of the triangle should lie on the square's line of symmetry. The height should measure 2.5 inches.
5. Determine the area of one of the trapezoids in the square. Inside the trapezoid, write the measure of its area.
6. In the other trapezoid, near each vertex, write the measure of each interior angle of the trapezoid.

80 points

5th Grade – Pile of 10

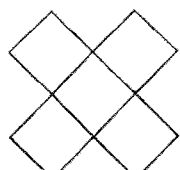
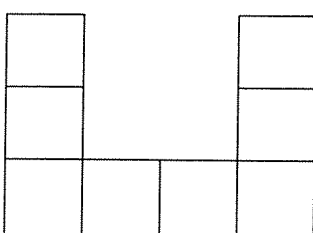
1.	<p>How many different rectangles are in this drawing?</p> 	
2.	<p>A rectangle has a perimeter of 20 meters and an area of 24 square meters. What are the dimensions of the rectangle?</p>	
3.	<p>What is the sum of the measures of the angles in an isosceles trapezoid?</p>	
4.	<p>How many small squares will be used to make figure 6 in the pattern?</p> 	
5.	<p>Ling, Eddie, Blake, and Jade are in line at the cafeteria for lunch. Jade says that she would like to be the first and the others agree she can be. How many ways can the 4 students stand in line with Jade first?</p>	
6.	<p>Jason, Rachel, and Siena baked a total of 15 dozen oatmeal cookies for the bake sale. Jason baked $\frac{2}{5}$ of the cookies. Rachel baked $\frac{1}{3}$ of the cookies, and Siena baked the rest. Who baked the most cookies?</p>	
7.	<p>There are 40 marbles in a bag. Three out of every 5 marbles are red. How many marbles in the bag are <i>not</i> red?</p>	
8.	<p>In a 5 inch by 8 inch grid of square inches, 30% of the square inches are shaded. How many square inches are shaded?</p>	
9.	<p>Write an expression that equals 40, using each number below exactly once and exactly three operation signs (+, -, ÷, x) : 2, 3, 5, 7</p>	
10.	<p>You want to fence in your flower bed that is 4 ft. by 4 ft. If you put a fence post every 2 feet, how many posts will you need?</p>	

TEAM NUMBER 5-

SCORE 80

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament 2011

6th Grade – Pile of 10

1.	How many different rectangles are in this drawing? 	
2.	The product of my three digits is 15, the sum of the first and third is twice the second. The sum of the second and third is one less than the first. What number am I?	
3.	The figure below is formed by eight squares of the same size. The area of the figure is 128 square feet. The perimeter of the figure is how many feet. 	
4.	The median of a set of eight integers is 10; seven of the numbers are 2,2,7,8,13,15,16. What is the missing number in the set?	
5.	Chocolates are packaged in: boxes that hold 1 chocolate, boxes that hold 5 chocolates, and boxes that hold 25 chocolates. How many boxes are needed to fill an order for exactly 116 chocolates if the fewest number of boxes are used and each box is completely filled?	

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament 2011

6.	36 students are going to a picnic. Mr. Jordan can buy hamburgers in bags of 8. He can buy buns in bags of 12. He wants to buy enough so each student has the same amount, without any leftovers. How many bags of hamburgers and buns should Mr. Jordan buy?	
7.	Felipe's offers burritos with chicken, beef, or vegetables, and a choice of red, green, or fire salsa. Customers also have a choice of yellow or white cheese. How many different combinations of burritos does Felipe's offer?	
8.	Jim and Sabrina each had \$50 to spend on school supplies. Jim still has $\frac{2}{5}$ of his money left. Sabrina has $\frac{3}{10}$ of her money left. Who spent less money on school supplies?	
9.	Dominic, Olivia, Brandon, and Kayla each have a favorite number. Their favorite numbers are 2, 4, 5, and 10. Olivia's favorite number is a prime number. Dominic's favorite number is an odd number. Brandon's favorite number is a factor of 30. What is Kayla's favorite number?	
10.	What is the sum of all the whole numbers from 1 to 100?	

TEAM NUMBER 6-

SCORE 80 ^{over} 196

5th Grade Problem Solving, Round 1

1.	James has 37 baseball cards. Paul has 23 more cards than James and 15 more than Ronald. How many baseball cards do the boys have all together?	<u>142</u>									
2.	<p>Fill in the grid using these clues:</p> <p>a) All of the prime numbers less than 29 are used</p> <p>b) The first space has the only prime factor of 27</p> <p>c) The next space to the right has the only prime factor of 25</p> <p>d) The bottom row has 3 consecutive prime numbers</p> <p>e) The numbers in one diagonal all have a 3 in the ones place</p> <p>f) The numbers in the other diagonal are all between 10 and 20</p> <p>g) The right column contains the only even prime</p> <div style="text-align: center; margin-top: 10px;"> <table border="1" style="border-collapse: collapse; width: 200px; height: 60px;"> <tbody> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> <tr><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td><td style="width: 33%; height: 20px;"></td></tr> </tbody> </table> </div>										<u>3,5,11</u> <u>7,13,2</u> <u>17,19,23</u>
3.	Marcy has a locker at school. The locker number is a two-digit number. Each digit could be a 1,2,3, or 7. The digits are different. The number is a prime number that is 1 greater than a multiple of 8. What could the locker number be?	<u>17 or 73</u>									
4.	Marta's father wants to put a fence around the dog house in the back yard. The fence will be a rectangle whose length is twice as long as the width. The area is 72 square meters. How much fencing should they buy?	<u>36 meters</u>									

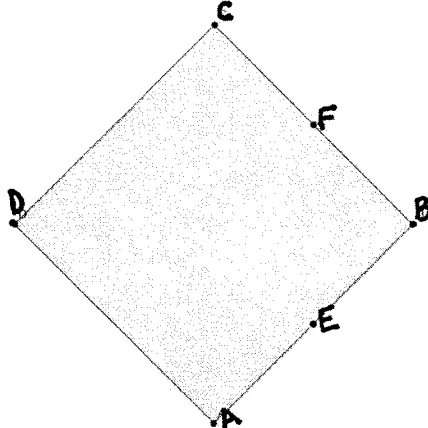
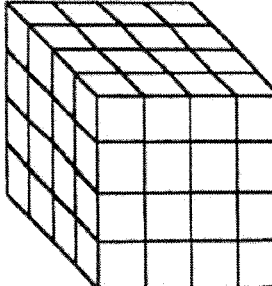
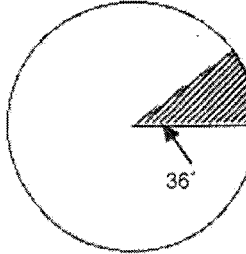
TEAM NUMBER _____

SCORE _____ /40

(20)

6th Grade Problem Solving, Round 1

Answers

1.	<p>ABCD is a square with an area of 16 square meters. Point E is half way between point A and point B. Point F is halfway between point B and C. What is the area of the shape AEFCD? Express your answer in square meters.</p>		<u>14</u>
2.	<p>A cube measuring 4 cubes by 4 cubes by 4 cubes is dipped into a can of red paint. How many unit cubes have some paint on them?</p>		<u>56</u>
3.	<p>The entire circle shown represents 2,750 televisions sold. What is the number of televisions represented by the shaded sector of the circle?</p>		<u>275</u>
4.	<p>Lydia works at a dog kennel. She uses 5 pounds of dog food to feed 3 dogs for 4 days. At the same feeding rate, how many one-pound bags of dog food will Lydia need, to feed 12 dogs for 1 week?</p>	<u>35</u>	

TEAM NUMBER _____

SCORE 40

5th Grade Problem Solving, Round 2

1.	The Empire State Building in New York City is 1,453 feet 9 inches tall. How many toothpicks, 3 inches long would it take to reach from the ground to the top of the building?	<u>5815</u>
2.	The students at the elementary school are excited about the new playground at their school. The dimensions of the playground are 300 yards by 600 yards. $\frac{1}{3}$ of the playground will be used for a soccer field. $\frac{1}{2}$ of the playground will be used for playground equipment. The rest will be used for a school garden. What will the area of the school garden be?	<u>30,000</u> <u>Yards²</u>
3.	Write an expression equal to 100 that uses exactly seven 4s and as many addition signs as desired. No other math symbols may be used. (Note: two-digit numbers are acceptable)	<u>$= 44 + 44$</u> <u>$+ 4 + 4 + 4$</u>
4.	A nurse has 54 bandages. $\frac{2}{9}$ of them are white, and the rest are brown. How many bandages are brown?	<u>42</u>

TEAM NUMBER _____

SCORE 40

(22)

6th Grade Problem Solving, Round 2

Answers

1.	<p>Kate's father is a baker. After making several batches of muffins, he had to throw away 2 dozen that had burned. Then he gave $\frac{1}{4}$ of those left to Kate to take to school. Next, he wrapped up $\frac{1}{2}$ of the remaining muffins and sold them to the coffee shop next door. Then, he wrapped up $\frac{1}{3}$ of the remaining muffins and sold them to a grocery store. That left Kate's father with a dozen muffins to sell at his bakery. How many total muffins did Kate's father bake originally?</p>	<u>72</u>
2.	<p>Joe and Sue open a bank account on the same day. Joe initially deposits \$100 and Sue initially deposits \$55. Joe adds \$6 to his account at the end of every two weeks beginning two weeks after he opens his account. Sue adds \$1 to her account every day beginning the day after she opens her account. If they compare their accounts once every two weeks on the day that Joe makes his deposit, how many weeks will it take for Sue to have more money than Joe?</p>	<u>12</u> <u>weeks</u>
3.	<p>There are 2 neighbors asking you to walk their dog everyday for two weeks. Neighbor Joe says he will pay you \$.02 the first day and double that wage for each additional day's work. Neighbor Sally says she will pay you \$10 per day. What is the difference in pay?</p>	<u>\$187.66</u>
4.	<p>Angles A and B are supplementary. Angle B is 8 times angle A. What is the measure of angle B?</p>	<u>160</u> <u>degrees</u>

TEAM NUMBER _____

SCORE _____ / 40

5th & 6th Grade – Mental Math

Answers

1.	An octagon and a pentagon have how many sides all together?	<u>13</u>
2.	If 12 counters are $\frac{3}{4}$ of a set, how many counters are in one whole set?	<u>16</u>
3.	If 2000 pounds equals one ton, how many pounds would equal three and one-half tons?	<u>7000</u>
4.	Sam has red, white, and blue socks in his drawer. How many socks must be pulled out to assure that he has two socks of the same color?	<u>4</u>
5.	Is the number 2011 divisible by 3?	<u>No</u>
6.	110 students go to camp on buses which hold up to 50 students each. How many buses are required?	<u>3</u>
7.	Rename the mixed numeral, three and four-fifths , as a fraction.	<u>19/5</u>
8.	If you have 60 eggs, how many dozen eggs do you have?	<u>5</u>
9.	Sally ate $2\frac{1}{2}$ brownies at lunch. At dinner she ate another $1\frac{3}{4}$ brownies. How many brownies did she eat in total?	<u>4 $\frac{1}{4}$</u>
10.	What is the least common multiple of 6 and 15?	<u>30</u>

fold back

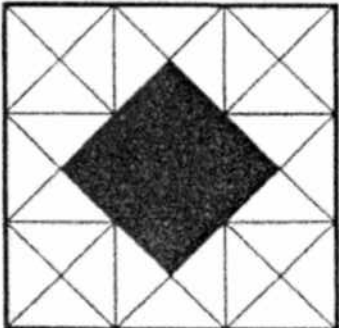
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SCORE _____

10

24

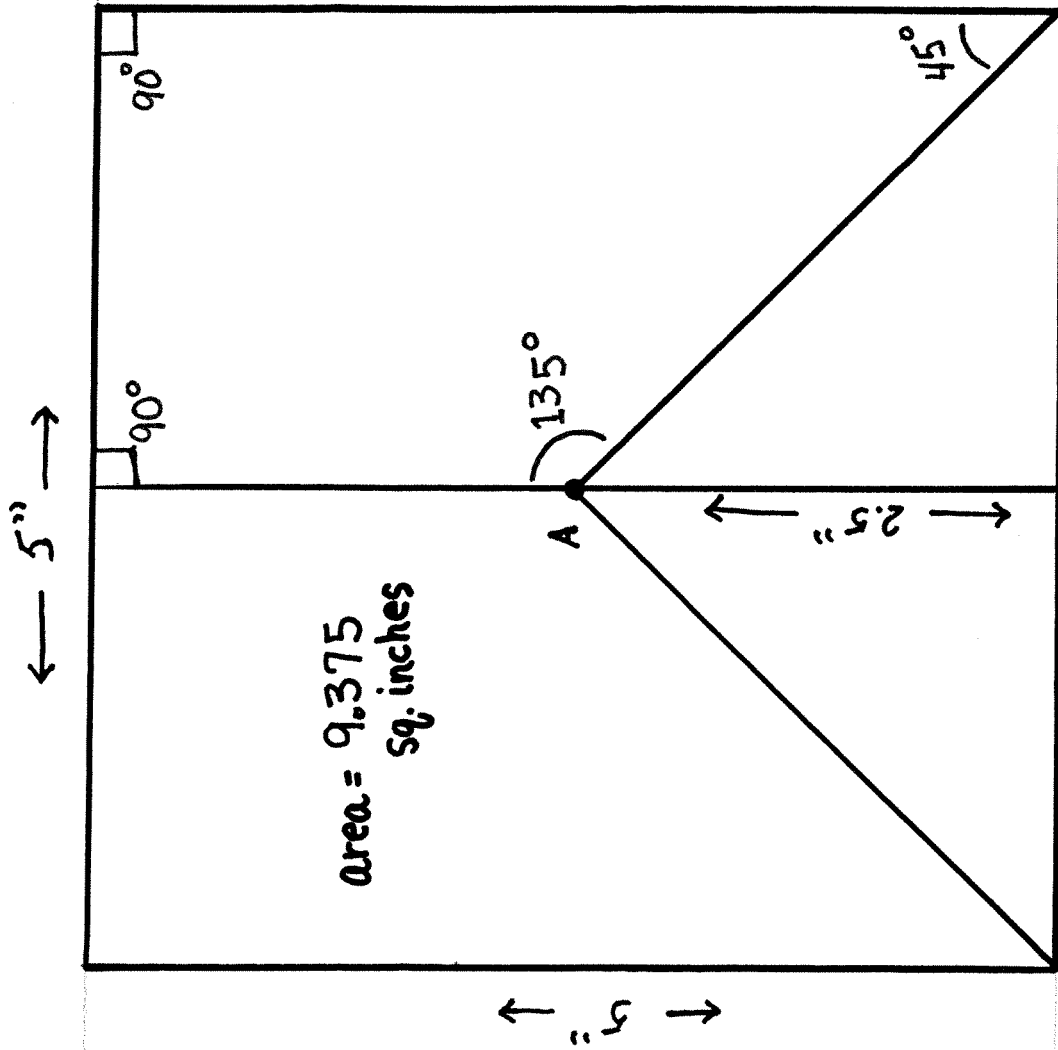
5th & 6th Grade – Number Sense

1.	I am a 2 digit number that is both a square and a cube. What number am I?	<u>64</u>
2.	What fraction of the square is shaded in?	<u>2/9</u>
		
3.	If Jim and three of his friends fill 40% of the seats in a row, how many seats are in the row?	<u>10</u>
4.	How many three-fourths are in 15?	<u>20</u>
5.	What is the sum of 150 tenths plus 1700 hundredths?	<u>32</u>
6.	Students voted for or against having a school dance. 22% of the boys voted yes and 78% of the girls voted no. If everyone voted, did the dance pass <u>or</u> fail?	<u>Fail</u>
7.	If 100 pennies weigh 9.5 ounces, how many ounces would a million pennies weigh?	<u>95,000</u>
8.	Which is the greatest quotient? A. $35 \div 0.2$ B. $35 \div 0.7$ C. $35 \div 0.5$ D. $35 \div 0.05$	<u>D</u>

TEAM NUMBER _____

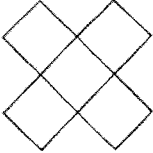
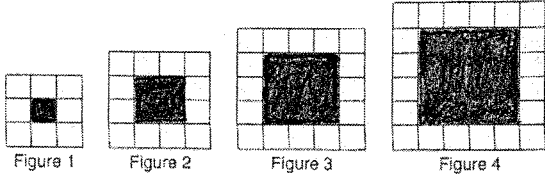
SCORE _____ / 8

Construction Key
2011



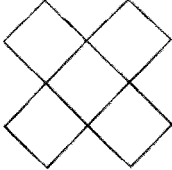
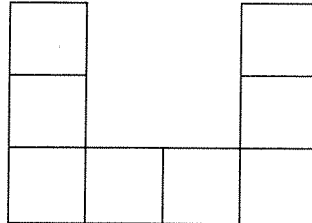
5th Grade – Pile of 10

Answers

1.	How many different rectangles are in this drawing? 	<u>11</u>
2.	A rectangle has a perimeter of 20 meters and an area of 24 square meters. What are the dimensions of the rectangle?	<u>6x4</u>
3.	What is the sum of the measures of the angles in an isosceles trapezoid?	<u>360°</u>
4.	How many small squares will be used to make figure 6 in the pattern? 	<u>28</u>
5.	Ling, Eddie, Blake, and Jade are in line at the cafeteria for lunch. Jade says that she would like to be the first and the others agree she can be. How many ways can the 4 students stand in line with Jade first?	<u>6</u>
6.	Jason, Rachel, and Siena baked a total of 15 dozen oatmeal cookies for the bake sale. Jason baked $\frac{2}{5}$ of the cookies. Rachel baked $\frac{1}{3}$ of the cookies, and Siena baked the rest. Who baked the most cookies?	<u>Jason</u>
7.	There are 40 marbles in a bag. Three out of every 5 marbles are red. How many marbles in the bag are <i>not</i> red?	<u>16</u>
8.	In a 5 inch by 8 inch grid of square inches, 30% of the square inches are shaded. How many square inches are shaded?	<u>12</u>
9.	Write an expression that equals 40, using each number below exactly once and exactly three operation signs (+, -, ÷, x) : 2, 3, 5, 7	<u>$5 \times 7 + 2 + 3$</u>
10.	You want to fence in your flower bed that is 4 ft. by 4 ft. If you put a fence post every 2 feet, how many posts will you need?	<u>8</u>

TEAM NUMBER 5-

SCORE 80

1.	How many different rectangles are in this drawing? 	<u>11</u>
2.	The product of my three digits is 15, the sum of the first and third is twice the second. The sum of the second and third is one less than the first. What number am I?	<u>531</u>
3.	The figure below is formed by eight squares of the same size. The area of the figure is 128 square feet. The perimeter of the figure is how many feet. 	<u>72</u>
4.	The median of a set of eight integers is 10; seven of the numbers are 2,2,7,8,13,15,16. What is the missing number in the set?	<u>12</u>
5.	Chocolates are packaged in: boxes that hold 1 chocolate, boxes that hold 5 chocolates, and boxes that hold 25 chocolates. How many boxes are needed to fill an order for exactly 116 chocolates if the fewest number of boxes are used and each box is completely filled?	<u>8</u>

6.	36 students are going to a picnic. Mr. Jordan can buy hamburgers in bags of 8. He can buy buns in bags of 12. He wants to buy enough so each student has the same amount, without any leftovers. How many bags of hamburgers and buns should Mr. Jordan buy?	<u>9 bags</u> <u>HB</u> <u>&</u> <u>6 bags</u> <u>buns</u>
7.	Felipe's offers burritos with chicken, beef, or vegetables, and a choice of red, green, or fire salsa. Customers also have a choice of yellow or white cheese. How many different combinations of burritos does Felipe's offer?	<u>18</u>
8.	Jim and Sabrina each had \$50 to spend on school supplies. Jim still has $\frac{2}{5}$ of his money left. Sabrina has $\frac{3}{10}$ of her money left. Who spent less money on school supplies?	<u>Jim</u>
9.	Dominic, Olivia, Brandon, and Kayla each have a favorite number. Their favorite numbers are 2, 4, 5, and 10. Olivia's favorite number is a prime number. Dominic's favorite number is an odd number. Brandon's favorite number is a factor of 30. What is Kayla's favorite number?	<u>4</u>
10.	What is the sum of all the whole numbers from 1 to 100?	<u>5050</u>

TEAM NUMBER 6-

SCORE 80

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