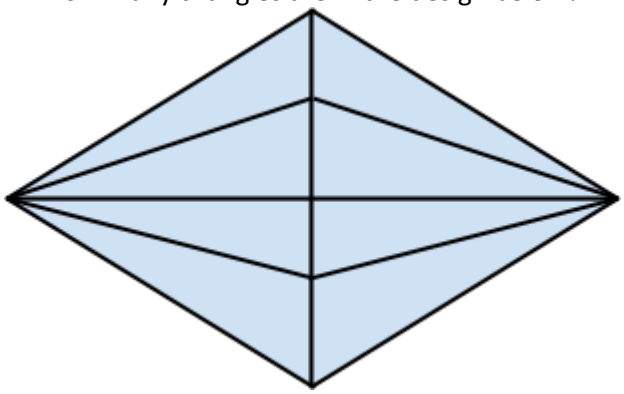
Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

5th Grade Problem Solving, Round 1

1.	Window sealer is used around the entire edge of a window to hold it in place. One tube of sealer will seal 25 feet of window edging. How many tubes of window sealer are needed to seal 9 windows that measure 5 feet by 2.5 feet.	
2.	How many triangles are in the design below? 	
3.	Calculate the sum of all the factors of 100.	
4.	A box 2 centimeters high, 3 centimeters wide, and 5 centimeters long can hold 40 grams of clay. A second box has twice the height, three times the width, and the same length as the first box. How many grams of clay can it hold?	

Team Number _____ Score _____ / 40

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

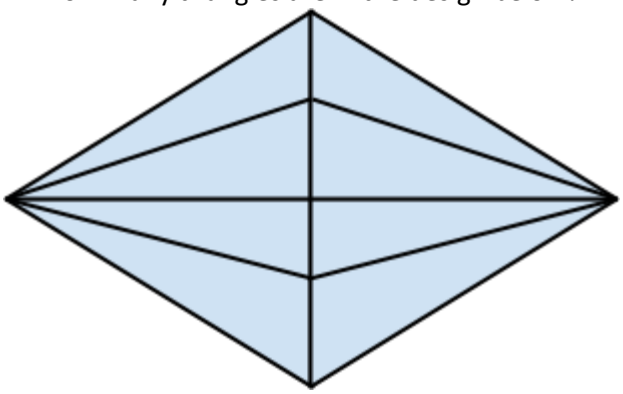
5th Grade Problem Solving, Round 2

1.	What time was it 2015 minutes after the beginning of January 1, 2015? (starting at 12:00 am)	
2.	Chavone is remodeling her bathroom. She plans to cover the bathroom floor with tiles that are each 1 square foot. Her bathroom is 5 ½ feet wide and 8 ¼ feet long. How many tiles will she need to cover the floor? Give an exact answer that includes the fraction of a tile she will need.	
3.	What is the sum of the two-digit multiples of 11?	
4.	In the product of **4 x 5 x 6 x 7**, which one of the four factors should be increased by 1 to cause the greatest increase in the product?	

Team Number _____ **Score _____ / 40**

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

5th Grade Problem Solving, Round 1

1.	Window sealer is used around the entire edge of a window to hold it in place. One tube of sealer will seal 25 feet of window edging. How many tubes of window sealer are needed to seal 9 windows that measure 5 feet by 2.5 feet.	**6 tubes**
2.	How many triangles are in the design below? 	**24**
3.	Calculate the sum of all the factors of 100.	**217**
4.	A box 2 centimeters high, 3 centimeters wide, and 5 centimeters long can hold 40 grams of clay. A second box has twice the height, three times the width, and the same length as the first box. How many grams of clay can it hold?	**240 grams**

Team Number _____ **Score _____ / 40**

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

5th Grade Problem Solving, Round 2

1.	What time was it 2015 minutes after the beginning of January 1, 2015? (starting at 12:00 am)	**9:35 am**
2.	Chavone is remodeling her bathroom. She plans to cover the bathroom floor with tiles that are each 1 square foot. Her bathroom is 5 ½ feet wide and 8 ¼ feet long. How many tiles will she need to cover the floor? Give an exact answer that includes the fraction of a tile she will need.	**45 6/16 or 45 3/8 tiles**
3.	What is the sum of the two-digit multiples of 11?	**495**
4.	In the product of **4 x 5 x 6 x 7**, which one of the four factors should be increased by 1 to cause the greatest increase in the product?	**4**

Team Number _____ Score _____ / 40

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

6th Grade Problem Solving, Round 1

1	The wrapped present shown has two loops of ribbon around it. Each loop goes completely around the box once and always runs down the middle of a face. The two loops overlap each other at a right angle, but the ends of the ribbon do not overlap when making a loop. How many inches of ribbon were used?	
2	Mo and Jo have a total of 120 coins. Bo and Ko have 153; and Mo and Bo have 127. How many coins do Jo and Ko have, in all ?	
3	What is the product of the least common multiple and the greatest common factor of 24 and 40?	
4	The prize money for the Math County Science Fair was divided among the top three projects so that the 1st place winner got as much as the 2nd and 3rd place winners combined, and the 2nd place winner got twice as much as the 3rd place winner. If the total prize money awarded was $2400, how much did the 3rd place winner receive?	

Team Number _____ **Score _____ / 40**

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

6th Grade Problem Solving, Round 1

1	The wrapped present shown has two loops of ribbon around it. Each loop goes completely around the box once and always runs down the middle of a face. The two loops overlap each other at a right angle, but the ends of the ribbon do not overlap when making a loop. How many inches of ribbon were used?	**46 in**
2	Mo and Jo have a total of 120 coins. Bo and Ko have 153; and Mo and Bo have 127. How many coins do Jo and Ko have, in all ?	**146 coins**
3	What is the product of the least common multiple and the greatest common factor of 24 and 40?	**960**
4	The prize money for the Math County Science Fair was divided among the top three projects so that the 1st place winner got as much as the 2nd and 3rd place winners combined, and the 2nd place winner got twice as much as the 3rd place winner. If the total prize money awarded was $2400, how much did the 3rd place winner receive?	**$400**

Team Number _____ **Score _____ / 40**

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

6th Grade Problem Solving, Round 2

1.	Sasha draws one square and then draws another square of the same size. The two squares overlap, as shown in (a), in such a way that the tiny square formed by their overlap has an area that is exactly one-fourth the area of each of the two original squares. If Sasha fills in the interiors of all the squares, as shown in (b), the resulting figure has an area of 567 square centimeters. What is the area of the tiny square formed by the overlap of the two original squares in figure (a)?	
2.	What is the side length of each of the two squares that Sasha drew?	
3.	Gabe incorrectly set the dial on his time-machine and ended up face to face with a Tyrannosaurus Rex. Gabe was 400 yards away from the dinosaur when it started to chase him. Gabe's stride is 6 feet long, and the Tyrannosaurus Rex's stride is 36 feet long. If they both take one stride every 1.5 seconds, how long until Gabe is caught?	
4.	The mean of three numbers is 10, and their median is 10.3. If the difference between the largest and the smallest of the three numbers is 2, what are the three numbers?	

Team Number _____ **Score _____ / 40**

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

6th Grade Problem Solving, Round 2

1.	Sasha draws one square and then draws another square of the same size. The two squares overlap, as shown in (a), in such a way that the tiny square formed by their overlap has an area that is exactly one-fourth the area of each of the two original squares. If Sasha fills in the interiors of all the squares, as shown in (b), the resulting figure has an area of 567 square centimeters. What is the area of the tiny square formed by the overlap of the two original squares in figure (a)?	**81 sq. cm**
2.	What is the side length of each of the two squares that Sasha drew?	**18 cm**
3.	Gabe incorrectly set the dial on his time-machine and ended up face to face with a Tyrannosaurus Rex. Gabe was 400 yards away from the dinosaur when it started to chase him. Gabe's stride is 6 feet long, and the Tyrannosaurus Rex's stride is 36 feet long. If they both take one stride every 1.5 seconds, how long until Gabe is caught?	**60 sec**
4.	The mean of three numbers is 10, and their median is 10.3. If the difference between the largest and the smallest of the three numbers is 2, what are the three numbers?	**8.85, 10.3, 10.85**

Team Number _____ **Score _____ / 40**

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

5th and 6th Grade Mental Math

1.	Bob and Ed went to the carnival. Ed went on 17 rides and Bob went on 4 more rides than Ed. Each ride required one ticket. Together, how many tickets did they need in all?	
2.	Maggie and Kay share a square room with side length 12 feet. If they want to divide it equally, what is the area in square feet of Maggie's share of the room's floor space?	
3.	As a simplified common fraction, what is five-sixths minus one-third?	
4.	The two legs of a right triangle measure 12 and 15 centimeters. What is the area of the triangle, in square centimeters?	
5.	What is five times eight minus the quotient of twenty-seven and nine?	
6.	As a simplified common fraction, what is the probability of getting exactly 4 heads when flipping a coin 4 times?	
7.	At 5 o'clock, what is the degree measure of the smaller angle between the two hands of an analog clock?	
8.	Stan has four dimes, five nickels, three quarters, and eight pennies. How much money does he have?	
9.	If Susan divides 60 stickers between her three friends and herself, how many stickers will she have?	
10.	Matt ate three and one-half cups of popcorn and his friend John ate two and three-fourth cups of popcorn. How many cups of popcorn did they eat altogether?	

Team Number _____ **Score**_____**/10**

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

5th and 6th Grade Mental Math

1.	Bob and Ed went to the carnival. Ed went on 17 rides and Bob went on 4 more rides than Ed. Each ride required one ticket. Together, how many tickets did they need in all?	**38**
2.	Maggie and Kay share a square room with side length 12 feet. If they want to divide the room equally, what is the area in square feet of Maggie's share of the room's floor space?	**72**
3.	As a simplified common fraction, what is five-sixths minus one-third?	**1/2**
4.	The two legs of a right triangle measure 12 and 15 centimeters. What is the area of the triangle, in square centimeters?	**90**
5.	What is five times eight minus the quotient of twenty-seven and nine?	**37**
6.	As a simplified common fraction, what is the probability of getting exactly 4 heads when flipping a coin 4 times?	**1/16**
7.	At 5 o'clock, what is the degree measure of the smaller angle between the two hands of an analog clock?	**150**
8.	Stan has four dimes, five nickels, three quarters, and eight pennies. How much money does he have?	**148 cents or $1.48**
9.	If Susan divides 60 stickers between her three friends and herself, how many stickers will she have?	**15**
10.	Matt ate three and one-half cups of popcorn and his friend John ate two and three-fourth cups of popcorn. How many cups of popcorn did they eat altogether?	**6 1/4**

Team Number _____ **Score**_____**/10**

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

5th / 6th Grade ~ Team Construction Activity
Use graph paper for this

1. Orient your 8.5" x 11" paper so that the 8.5" side is horizontal.
2. Draw a coordinate plane so the origin is in the center of the paper.

3. Graph and label the twelve given coordinates in numerical order. Connect the points as you work. (Hint: You will create a concave dodecagon :)

1. A (-3,7)
2. B (3,7)
3. C (3,5)
4. D (5,5)
5. E (5, -5)
6. F (3, -5)
7. G (3, -7)
8. H (-3,-7)
9. I (-3,-5)
10. J (-5,-5)
11. K (-5,5)
12. L (-3,5)……connect L to A

4. Rectangle LCIF defines the base of the swimming pool. Shade the base of the pool.

5. The dimensions of each square on the coordinate plane are 5 feet by 5 feet. _____
What are the dimensions of the entire pool?

6. If each square represents one block in the pool, how many cubic feet of _____
water is needed to fill the pool145blocks high?

7. One gallon of swimming pool paint covers 250 ft^2. How many gallons of paint are needed to paint all the surface areas of the pool? _____

8. A rectangular fence twenty five feet from the pool's edges surrounds the pool. There is a gate ten feet wide at the midpoint of each side of the fence. Draw the rectangular fence around the pool.

9. What is the perimeter, in feet, of the fence and gates that surround the pool? _____

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

5th / 6th Grade ~ Team Construction Activity Rubric

1. Orient your 8.5" x 11" paper so that the 8.5" side is horizontal. _____/5

2. Draw a coordinate plane so the origin is in the center of the paper. _____/5

3. Graph and label the twelve given coordinates in alphabetical order.
   Connect the points as you work. (Hint: You will create a concave dodecagon :)

A (-3,7)	G (3, -7)
B (3,7)	H (-3,-7)
C (3,5)	I (-3,-5)
D (5,5)	J (-5,-5)
E (5, -5)	K (-5,5)
F (3, -5)	L (-3,5)……connect L to A

_____/10

4. Rectangle LCIF defines the base of the swimming pool. Shade the base of the pool.

5. The dimensions of each square on the coordinate plane are 5 feet by 5 feet. _____/10
   What are the dimensions of the entire pool?

6. If each square represents one block in the pool, how many cubic feet of water are needed to fill the pool 1 45 blocks high? _____/10

7. One gallon of swimming pool paint covers 250 ft². How many gallons of paint are needed to paint all the surface areas of the pool? _____/10

8. A rectangular fence twenty-five feet from the pool's edges surrounds the pool. _____/10
   There is a gate ten feet wide at the midpoint of each side of the fence.

   Draw the rectangular fence around the pool.

   Label the gate on each side.

9. What is the perimeter, in feet, of the fence and gates that surround the pool? _____/10

Team Number: _____ **Total: _____/80**

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

5th / 6th Grade ~ Team Construction Activity

1. Orient your 8.5" x 11" paper so that the 8.5" side is horizontal.

2. Draw a coordinate plane so the origin is in the center of the paper.

3. Graph and label the twelve given coordinates in alphabetical order.
   Connect the points as you work. (Hint: You will create a concave dodecagon :)

A (-3,7)	G (3, -7)
B (3,7)	H (-3,-7)
C (3,5)	I (-3,-5)
D (5,5)	J (-5,-5)
E (5, -5)	K (-5,5)
F (3, -5)	L (-3,5)……connect L to A

4. Rectangle LCIF defines the base of the swimming pool. Shade the base of the pool.

5. The dimensions of each square on the coordinate plane are 5 feet by 5 feet. L X W X H
   What are the dimensions of the entire pool? **50 X 30 X 10**

6. If each square represents one block in the pool, how many cubic feet of water are needed to fill the pool 1 45 blocks high? 50 X 30 X 9
   13,500 cubic feet

7. One gallon of swimming pool paint covers 250 ft². How many gallons of paint are needed to paint all the surface areas of the pool? **12.4 gallons**

8. A rectangular fence twenty-five feet from the pool's edges surrounds the pool. There is a gate ten feet wide at the midpoint of each side of the fence.

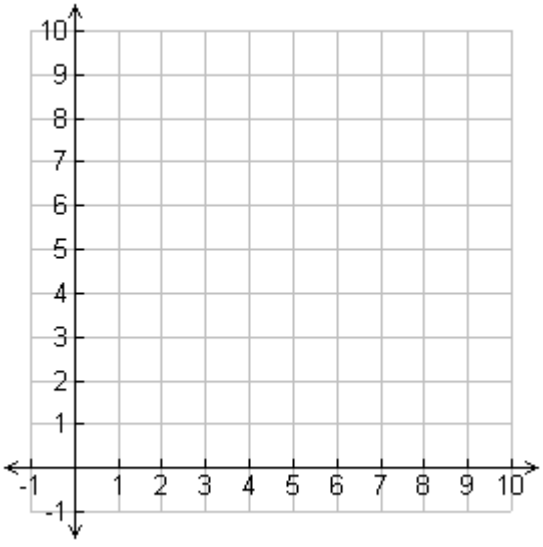
   Draw the rectangular fence around the pool.

   Label the gate on each side.

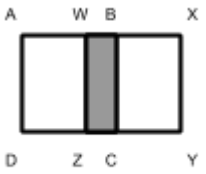
9. What is the perimeter, in feet, of the fence and gates that surround the pool? **360 feet**

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

5th Grade Pile of Ten

1.	Alex, Bryan and Chris are brothers. If they were triplets, the sum of their ages would equal thirty three. Bryan, the second oldest, is eleven years old. If the difference between the oldest and the youngest brothers is 10, what are their ages?	
2.	How many seconds are in 3.25 hours?	
3.	The same digit occupies both the thousands and tens places in a five-digit number. For what value of the missing digit will the following number be divisible by 9? **7 _ 8 _ 6**	
4.	Four points mark the vertices of a rectangle plotted on a coordinate plane. The coordinates of those points are (2,1), (9,1) and (2,7). What are the coordinates of the fourth point? 	
5.	What is the area of the triangle formed by connecting the three points given in #4?	

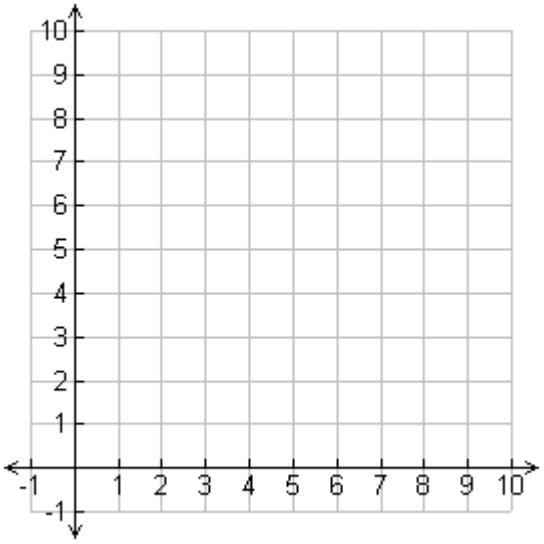
Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

6.	You are playing the Double or Half game. An amount of money is put into a pot, and you toss a coin. If heads, the money in the pot is doubled. If tails, half of the money is taken out. You play three rounds. The coin tosses turn up tails on all three rounds, leaving $4 in the pot. How much money was originally placed in the pot?	
7.	Ashwin draws a square. If he copies the side length once by adding four to it, the area is quadrupled. What is the radius of his original circle?	
8.	Solve the following: (3 + 15 + 8 + 5 + 22 + 17) 12=	
9.	Use the following side lengths to determine what fraction of the area of rectangle AXYD is shaded? AX=25, AB=15, WX=15, AD=15 	
10.	Using the equations below, find the value of D if A is 5? A - B = C B - C = D A + B + C + D = 11 $\frac{A + B + C}{D} = A + B + C$	

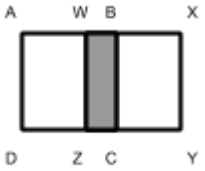
Team Number _____ _____/40

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

5th Grade Pile of Ten

1.	Alex, Bryan and Chris are brothers. If they were triplets, the sum of their ages would equal thirty three. Bryan, the second oldest, is eleven years old. If the difference between the oldest and the youngest brothers is 10, what are their ages?	6, 11, 16
2.	How many seconds are in 3.25 hours?	11,700
3.	The same digit occupies both the thousands and tens places in a five-digit number. For what value of the missing digit will the following number be divisible by 9? **7 _ 8 _ 6**	3
4.	Four points mark the vertices of a rectangle plotted on a coordinate plane. The coordinates of those points are (2,1), (9,1) and (2,7). What are the coordinates of the fourth point? 	(9,7)
5.	What is the area of the triangle formed by connecting the three points given in #4?	27 square units

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

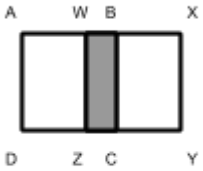
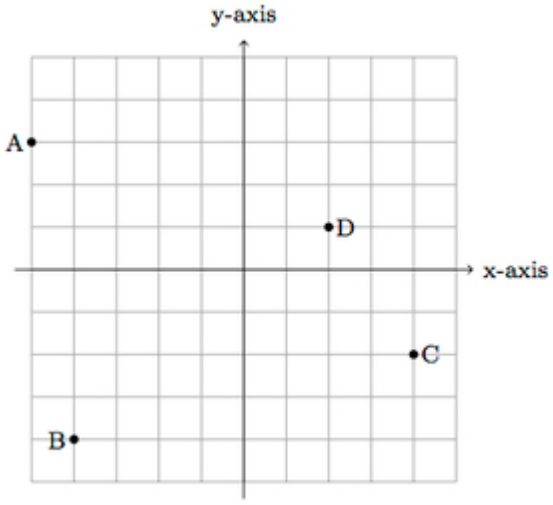
6.	You are playing the Double or Half game. An amount of money is put into a pot, and you toss a coin. If heads, the money in the pot is doubled. If tails, half of the money is taken out. You play three rounds. The coin tosses turn up tails on all three rounds, leaving $4 in the pot. How much money was originally placed in the pot?	$32.00
7.	Ashwin draws a circle. If he increases the length of its radius by 4 cm, the area is quadrupled. What is the radius of his original circle?	4 cm
8.	Using the equations below, find the value of D if A is 5? $A - B = C$ $B - C = D$ $A + B + C + D = 11$ $\frac{A + B + C}{D} = A + B + C$	D = 1
9.	Two identical squares, ABCD and WXYZ, have side length 15. They overlap, as shaded, to form the 15 by 25 rectangle AXYD shown. What fraction of the area of rectangle AXYD is shaded? 	1/5
10.	Solve the following: $(3 + 15 + 8 + 5 + 22 + 17)\ 12 =$	140

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

6th Grade Pile of Ten

1.	Ashwin draws two identical right triangles with leg lengths 2 cm and 3 cm to create a rectangle. What is the area of the rectangle?	
2.	Which number is not equivalent to the others? 1/2 19:38 0.05 3.57 50%	
3.	Shilya's noticed that her favorite jean store had a sale, "Buy one pair, get 50% off the second pair. No tax!" She took advantage of the sale, buying two pairs of jeans and spending $51.00. How much did Shilya spend on the first pair of jeans.	
4.	Using the equations below, find the value of A+B+C if A=5? A - B = C B - C = D A + B + C + D = 11 $\frac{A + B + C}{D} = A + B + C$	
5.	At 12 noon, the principal sent home ⅓ of the students plus 6. At 1 p.m., she counted the remaining students and sent home ¼ of them. At 2 p.m., she sent home the last 21 students. How many students were originally in school that day?	
6.	You are playing the Double or Half game. An amount of money is put into a pot, and you toss a coin. If heads, the money in the pot is doubled. If tails, half of the money is taken out. You play three rounds. The coin tosses turn up heads on the first round, and tails on the second and third rounds, leaving $4 in the pot. How much money was originally placed in the pot?	

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

7.	Ashwin draws two identical right triangles with leg lengths 2 cm and 3 cm to create a rectangle. What is the area of the rectangle?	
8.	The school's ratio of boys to girls is 4:5. If there are 125 girls, what is the total number of students at the school?	
9.	Use the following side lengths to determine what percent of the area of rectangle AXYD is shaded? AX=25, AB=15, WX=15, AD=15 	
10.	What are the coordinates for points A, B and C if point D is located at (6,3)? 	

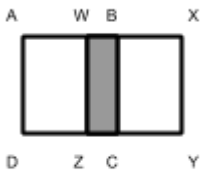
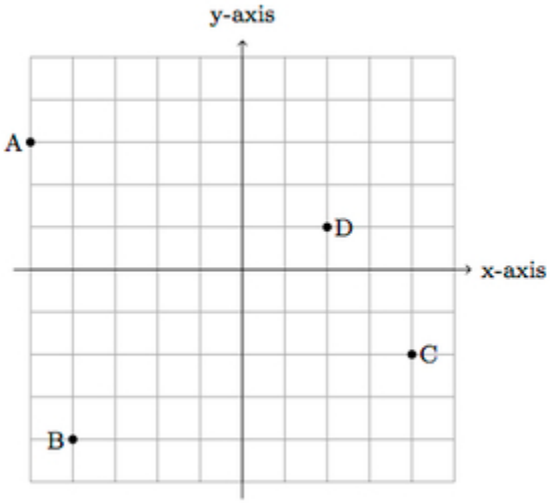
Score: _____

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

6th Grade Pile of Ten

1.	Ashwin draws two identical right triangles with leg lengths 2 cm and 3 cm to create a rectangle. What is the area of the rectangle?	6 square centimeters
2.	Which number is not equivalent to the others? 1/2 19:38 0.05 3.57 50%	0.05
3.	Shilya's noticed that her favorite jean store had a sale, "Buy one pair, get 50% off the second pair. No tax!" She took advantage of the sale, buying two pairs of jeans and spending $51.00. How much did Shilya spend on the first pair of jeans.	$34.00
4.	Using the equations below, find the value of A+B+C if A=5? A - B = C B - C = D A + B + C + D = 11 $\frac{A + B + C}{D} = A + B + C$	10
5.	At 12 noon, the principal sent home ⅓ of the students plus 6. At 1 p.m., she counted the remaining students and sent home ¼ of them. At 2 p.m., she sent home the last 21 students. How many students were originally in school that day?	51 students
6.	You are playing the Double or Half game. An amount of money is put into a pot, and you toss a coin. If heads, the money in the pot is doubled. If tails, half of the money is taken out. You play three rounds. The coin tosses turn up heads on the first round, and tails on the second and third rounds, leaving $4 in the pot. How much money was originally placed in the pot?	$8.00

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2015

7.	Ashwin draws two identical right triangles with leg lengths 2 cm and 3 cm to create a rectangle. What is the area of the rectangle?	6 square centimeters
8.	The school's ratio of boys to girls is 4:5. If there are 125 girls, what is the total number of students at the school?	225 students
9.	Use the following side lengths to determine what percent of the area of rectangle AXYD is shaded? AX=25, AB=15, WX=15, AD=15 	20%
10.	What are the coordinates for points A, B and C if point D is located at (6,3)? 	A = (-15, 9) B = (-12, -12) C = (12, -6)