

5th Grade Problem Solving, Round 1

1.	Jesse gave half of his stamps to Jorge. Jorge gave half of his stamps to Sarah. Sarah gave $\frac{1}{4}$ of the stamps given to her to Thomas and kept the remaining 12. How many stamps did Jesse start with?	
2.	A salesman bought a case of 48 backpacks for \$576. He sold 17 of them for \$18 at the swap meet, and the rest were sold to a department store for \$25 each. How much was the salesman's profit?	
3.	The GCF of two numbers less than or equal to twelve is 2. Their LCM is twenty. What are the two numbers.	
4.	John's age is a multiple of 10. Last year, his age was a multiple of 7. If John's age is between 1 and 100, how old is John?	

Team Number _____

Score _____ / 40

5th Grade Problem Solving, Round 1 Answers

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2017

1.	Jesse gave half of his stamps to Jorge. Jorge gave half of his stamps to Sarah. Sarah gave $\frac{1}{4}$ of the stamps given to her to Thomas and kept the remaining 12. How many stamps did Jesse start with?	<u>64</u>
2.	A salesman bought a case of 48 backpacks for \$576. He sold 17 of them for \$18 at the swap meet, and the rest were sold to a department store for \$25 each. How much was the salesman's profit?	<u>\$505</u>
3.	The GCF of two numbers less than or equal to twelve is 2. Their LCM is twenty. What are the two numbers.	<u>2 and 10</u>
4.	John's age is a multiple of 10. Last year, his age was a multiple of 7. If John's age is between 1 and 100, how old is John?	<u>50</u>

Team Number _____

Score _____ / 40

5th Grade Problem Solving, Round 2

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2017

1.	Ben usually walks from home to the school and returns on a bike. It takes him 40 minutes altogether, One day he biked from home to the school and back, which took him 32 minutes. How much time will it take Ben if he walks from home to school and back?	
2.	Graph the ordered pair (2,2) (0,4) (2,6) and (4,4). Connect the points in the order given. Then reverse the x and y coordinates in the ordered pairs Graph the new set of points and connect them in the order given.	
3.	At the grocery store, turkey burgers are sold in packages of eight. Whole grain buns are sold in packages of six. What is the least number of packages of burgers and buns Joe has to buy to have an equal number of burgers and buns?	
4.	The ribbon on a spool is 15 yards long. How many 9- inch pieces of ribbon can be cut from the spool?	

Team Number _____

Score _____ / 40

5th Grade Problem Solving, Round 2 Answers

Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2017

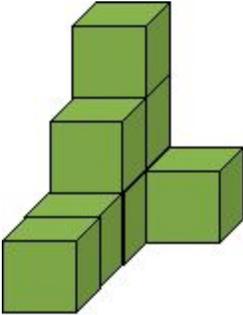
1.	Ben usually walks from home to the school and returns on a bike. It takes him 40 minutes altogether, One day he biked from home to the school and back, which took him 32 minutes. How much time will it take Ben if he walks from home to school and back?	<u>48 min.</u>
2.	Graph the ordered pair (2,2) (0,4) (2,6) and (4,4). Connect the points in the order given Then reverse the x and y coordinates in the ordered pairs Graph the new set of points and connect them in the order given.	a tilted rectangle with a line through the middle
3.	At the grocery store, turkey burgers are sold in packages of eight. Whole grain buns are sold in packages of six. What is the least number of packages of burgers and buns Joe has to buy to have an equal number of burgers and buns?	<u>3 packages of burgers, 4 packages of buns</u>
4.	The ribbon on a spool is 15 yards long. How many 9- inch pieces of ribbon can be cut from the spool?	<u>60 pieces</u>

Team Number _____

Score _____ / 40

6th Grade Problem Solving, Round 1

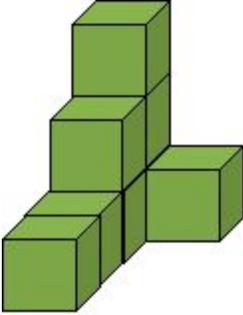
Greater Cleveland Council of Teachers of Mathematics
5th and 6th Grade Problem Solving Tournament - 2017

1	<p>Speedy Green Lawn Service will fertilize a lawn at a rate of \$0.59 per 100 square feet. What is the price, to the nearest dollar, that Speedy Green will charge to fertilize a rectangular lawn that is 125 feet by 140 feet?</p>	
2	<p>The 28 students in Mr. P's class took a vote determine which kind of cookie, chocolate chip or peanut butter, was preferred. The ratio of votes for chocolate chip compared with votes for peanut butter was 4:3. How many students in the class voted for chocolate chip cookies as their favorite?</p>	
3	<p>What is the surface area of the following structure made of 8 cubes glued together. The side of each cube is 1 inch.</p> 	
4	<p>A clown made 3 times as many red balloons as green balloons. He made 4 more green balloons than yellow balloons. Write an algebraic expression in terms of yellow balloons for the number of red balloons the clown made.</p>	

Team Number _____

Score _____ / 40

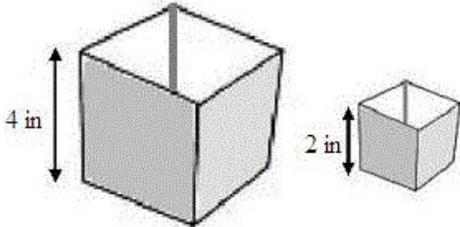
6th Grade Problem Solving, Round 1 Answers

1	Speedy Green Lawn Service will fertilize a lawn at a rate of \$0.59 per 100 square feet. What is the price, to the nearest dollar, that Speedy Green will charge to fertilize a rectangular lawn that is 125 feet by 140 feet?	<u>\$103</u>
2	The 28 students in Mr. P's class took a vote determine which kind of cookie, chocolate chip or peanut butter, was preferred. The ratio of votes for chocolate chip compared with votes for peanut butter was 4:3. How many students in the class voted for chocolate chip cookies as their favorite?	<u>16 students</u>
3	What is the surface area of the following structure made of 8 cubes glued together. The side of each cube is 1 inch. 	<u>32 square units</u>
4	A clown made 3 times as many red balloons as green balloons. He made 4 more green balloons than yellow balloons. Write an algebraic expression in terms of yellow balloons for the number of red balloons the clown made.	<u>3 (4 + y)</u>

Team Number _____

Score _____ / 40

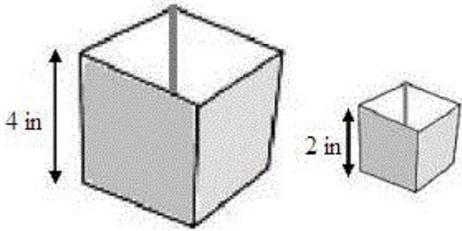
6th Grade Problem Solving, Round 2

1.	The GCF of two numbers less than 100 is twelve. The difference between the numbers is 36. The greater number is a multiple of ten. What are the numbers?	
2.	Bill's investment has been doing well. His investment has doubled in value every year in the last 5 years. If his investment is worth \$1600 right now, how much money was his investment worth 2 years ago?	
3.	Lauren spent $\frac{3}{4}$ of her savings on furniture. She then spent $\frac{1}{2}$ of her remaining savings on a fridge. If the fridge cost her \$150, what were her original savings?	
4.	<p>If Ray uses a 2-inch cube container to fill his fish tank, he will have to fill it 32 times. If he uses a 4-inch cube container, how many times will he have to fill it?</p> 	

Team Number _____

Score _____ / 40

6th Grade Problem Solving, Round 2 Answers

1.	The GCF of two numbers less than 100 is twelve. The difference between the numbers is 36. The greater number is a multiple of ten. What are the numbers?	<u>24 and 60</u>
2.	Bill's investment has been doing well. His investment has doubled in value every year in the last 5 years. If his investment is worth \$1600 right now, how much money was his investment worth 2 years ago?	<u>\$400</u>
3.	Lauren spent $\frac{3}{4}$ of her savings on furniture. She then spent $\frac{1}{2}$ of her remaining savings on a fridge. If the fridge cost her \$150, what were her original savings?	<u>\$1200</u>
4.	<p>If Ray uses a 2-inch cube container to fill his fish tank, he will have to fill it 32 times. If he uses a 4-inch cube container, how many times will he have to fill it?</p>  <p>The diagram shows two cubes. The larger cube on the left has a vertical dimension line to its left labeled '4 in'. The smaller cube on the right has a vertical dimension line to its left labeled '2 in'.</p>	<u>4 times</u>

Team Number _____

Score _____ / 40

2017 GCCTM 5th / 6th Grade Team Construction Activity

Start with an 11 x 8.5 inch piece of paper.

Directions:

1. Draw a rectangle that is 7.5 inches wide by 10 inches long centered on your paper.
2. Turn your paper so it is oriented horizontally. Label the top left corner of the rectangle **A**. Moving clockwise, label the remaining 3 corners **B**, **C**, and **D**.
3. Starting 2 inches below point A, draw a horizontal line segment 5.5 inches long. Label this line segment EF.
NOTE: All line segments are to be labeled left to right or bottom to top.
4. Draw an identical parallel line segment 1 inch below the line segment EF. Label this line segment GH.
5. Connect point F with a point 2 inches to the left of **B**. Label this point I.
6. Connect point **H** with a point 6 inches below **B**. Label this point J.
7. Draw a 3rd diagonal line segment from a point 5 inches below **A** to a point, 4 inches to the left of **B**. Label this line segment KL.
8. Draw a vertical line segment, starting 1.5 inches to the left of **C**. Draw up until you reach the diagonal line segment HJ. Label this line segment MN.
9. Starting one-half inch left of MN, draw 4 vertical and parallel line segments, each one-half inch to the left of the previous vertical line segment. Stop each line segment at HJ.
10. Lightly shade in three **different** polygons that do not overlap each other. Write the name of each shape inside the polygon.

Team Number _____

Score _____/75

2017 5th/6th Grade ~ Team Construction Activity ~ Scoring Rubric

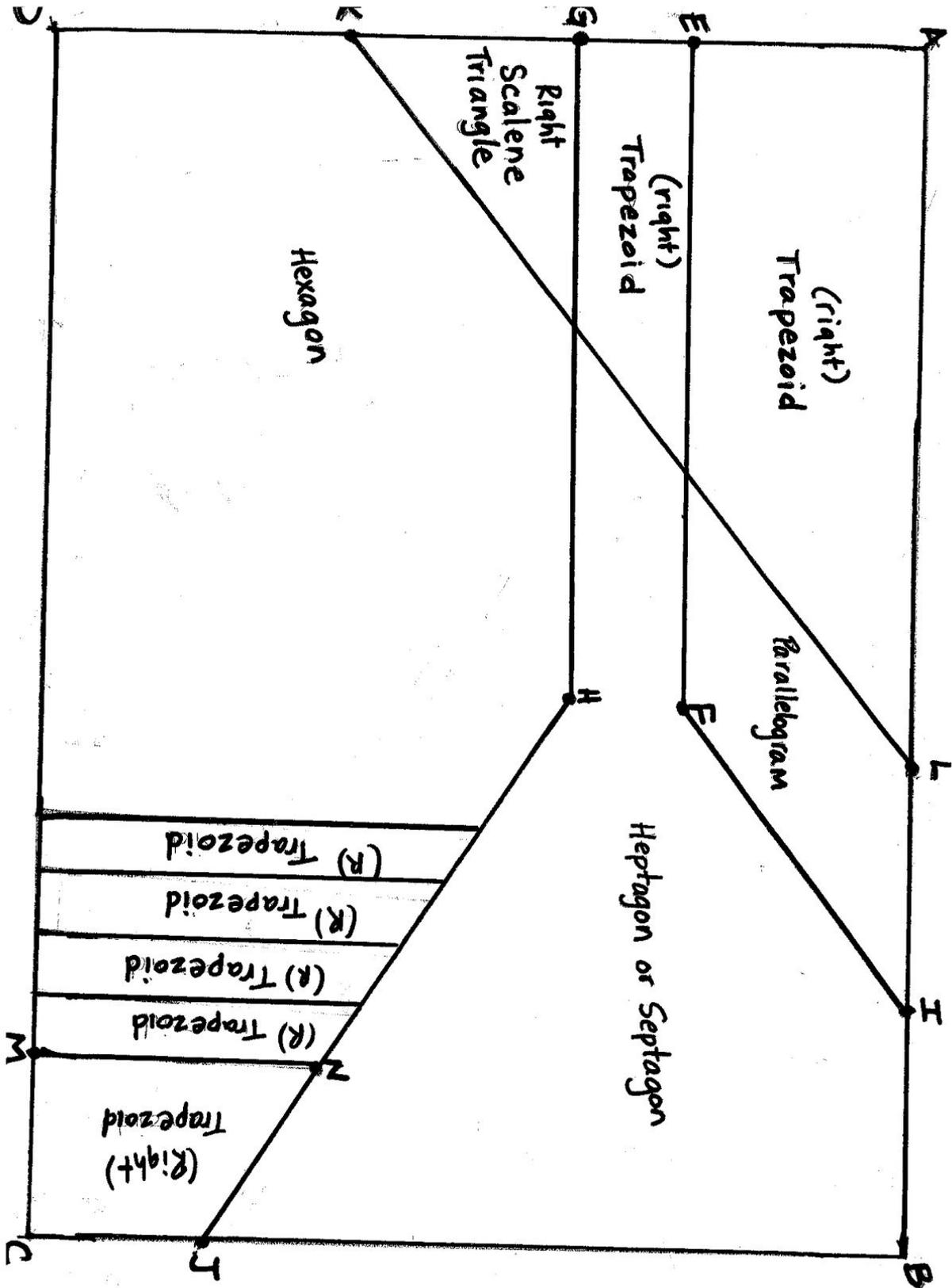
Graders: Please work through the construction activity in order to understand the scoring rubric. Extra working marks are perfectly acceptable. One scoring suggestion for the Construction Activity is to assign one individual to grade certain requirements, and then pass it to another individual to grade the next requirements, and so on.

Each of the requirements below must be executed completely and correctly in order to earn the available points. Incorrect or incomplete attempts earn 0 points, **unless the scorers at the site choose to award partial credit on a consistent basis.**

1. Rectangle is centered on paper and is 7.5 wide by 10 inches long. _____/5
2. Paper is oriented horizontally and labeled from top left corner, clockwise, **A, B, C, D** _____/5
3. A horizontal line segment is drawn 5.5 inches long, starting 2 inches below point **A** . It is labeled **EF**. _____/10
4. An identical parallel line segment is drawn 1 inch below the line segment **EF**. It is labeled **GH**. _____/10
5. Point **F** is connected to a point 2 inches to the left of **B**. It is labeled **I**. _____/5
6. Point **H** is connected to a point 6 inches below **B**. It is labeled **J**. _____/5
7. A diagonal line segment is drawn 5 inches below **A** and 4 inches left of **B**. It is labeled **KL**. _____/10
8. A vertical line segment is drawn 1.5 inches to the left of **C** and up to **HJ** It is labeled **MN**. _____/5
9. 4 vertical and parallel line segments are drawn one-half inch apart and stop at line segment **HJ**. _____/10
10. Three different polygons are shaded and labeled inside the polygon. Possible polygons named: **(right) trapezoid, right (scalene) triangle, heptagon (or septagon), parallelogram**
(Note: graders will make determination of what is acceptable) _____/10

Team Number _____

Score _____/75



** Note this is not to scale**

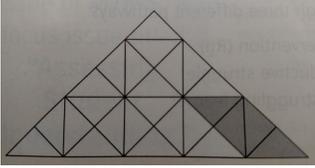
5th Grade Pile of 10

1.	Two bags each contain a collection of marbles. Bag A contains 2 red marbles out of 5 total, and bag B contains 5 red marbles out of 9 total. Which bag has a greater fraction of red marbles?	
2.	The toll for a highway is 7 cents for every 5 miles traveled. What is the toll for a trip that is 250 miles on this highway?	
3.	A card store received a shipment of 12 cartons of sports cards. Each carton contains 20 boxes. Each box has 30 packages. Each package contains 10 cards. How many cards were in the shipment?	
4.	When selecting 2 different numbers from the set {5, 7, 11, 13, 17}, how many different products are possible?	
5.	At Sally's Sub Shop, five turkey sandwiches cost \$27.50. At Sam's Sandwich Store, three turkey sandwiches cost \$16.35. Which store has the better buy?	
6.	A recipe for one loaf of bread calls for $\frac{2}{3}$ cup of white flour for each cup of whole wheat flour. Suzie wants to make 4 loaves of bread. How much white flour will she need?	
7.	Compare the values of each expression using $>$, $<$, or $=$: $\frac{24}{4} \times (6 - 2) + 1 \quad \text{○} \quad 54 - (32 + \frac{10}{2}) \times 3$	
8.	The Phillips family wants to fence in their rectangular backyard. They know that the yard has a perimeter of 24 meters and an area of 32 meters. What is the yard's length and width?	
9.	Andrea picked 21 pounds of peaches in her orchard. She divided the peaches evenly between 4 large baskets. How many ounces of peaches did Andrea put in each basket?	
10.	A rectangular prism aquarium has a volume of 9,000 cubic cm. The aquarium is 12 cm wide and 30 cm tall. How long is the aquarium?	

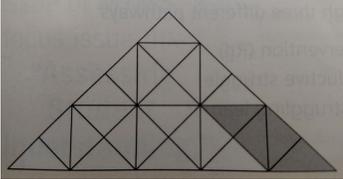
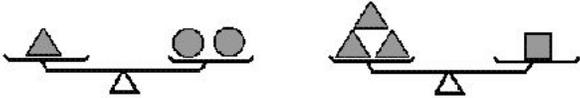
5th Grade Pile of 10 Answers

1.	Two bags each contain a collection of marbles. Bag A contains 2 red marbles out of 5 total, and bag B contains 5 red marbles out of 9 total. Which bag has a greater fraction of red marbles?	Bag B
2.	The toll for a highway is 7 cents for every 5 miles traveled. What is the toll for a trip that is 250 miles on this highway?	\$3.50
3.	A card store received a shipment of 12 cartons of sports cards. Each carton contains 20 boxes. Each box has 30 packages. Each package contains 10 cards. How many cards were in the shipment?	72,000 cards
4.	When selecting 2 different numbers from the set {5, 7, 11, 13, 17}, how many different products are possible?	10 products
5.	At Sally's Sub Shop, five turkey sandwiches cost \$27.50. At Sam's Sandwich Store, three turkey sandwiches cost \$16.35. Which store has the better buy?	Sam's Sandwich Store
6.	A recipe for one loaf of bread calls for $\frac{2}{3}$ cup of white flour for each cup of whole wheat flour. Suzie wants to make 4 loaves of bread. How much white flour will she need?	$2\frac{2}{3}$ cup
7.	Compare the values of each expression using $>$, $<$, or $=$: $\frac{24}{4} \times (6 - 2) + 1 \quad \bigcirc \quad 54 - (32 + \frac{10}{2}) \times 3$	$25 < 51$
8.	The Phillips family wants to fence in their rectangular backyard. They know that the yard has a perimeter of 24 meters and an area of 32 meters. What is the yard's length and width?	8 meters and 4 meters
9.	Andrea picked 21 pounds of peaches in her orchard. She divided the peaches evenly between 4 large baskets. How many ounces of peaches did Andrea put in each basket?	84 ounces
10.	A rectangular prism aquarium has a volume of 9,000 cubic cm. The aquarium is 12 cm wide and 30 cm tall. How long is the aquarium?	25 cm

6th Grade Pile of 10

1.	<p>What percentage of the large triangle below is shaded?</p> 	
2.	<p>After the first 4 games of the basketball season, Rashida has scored 16 points. Assuming that she keeps up the same rate, how many points will Rashida have scored after the first 10 games?</p>	
3.	<p>The toll for a highway is 7 cents for every 5 miles traveled. What is the toll for a trip that is 250 miles on this highway?</p>	
4.	<p>Two squares each with an area of 16 square units are placed side by side to form a rectangle. What is the perimeter of the rectangle?</p>	
5.	<p>Solve the number riddle: If you multiply me by 7 then subtract 7 from the product, you will have 70. What number am I?</p>	
6.	<p>A train is 1 mile long. If it is moving at a speed of 60 miles per hour, how many minutes does it take to pass a telephone pole?</p>	
7.	<p>The following two scales are in balance.</p>  <p>How many  are needed to be used to balance one ?</p>	
8.	<p>Girls are occupying exactly $\frac{1}{4}$ of the seats in a cafeteria and boys are occupying exactly $\frac{3}{7}$ of the seats in the same cafeteria. What is the minimum number of seats in the cafeteria?</p>	
9.	<p>Suzie finds a pair of jeans she would like to buy for 20% off at the mall. She also has a \$12 off coupon for any purchase at the store. If the jeans are regularly \$45, how much will Suzie pay for the jeans?</p>	
10.	<p>George spent 60% of his birthday money at the mall. If he spent \$45 at the mall, how much money did he receive for his birthday?</p>	

6th Grade Pile of 10 Answers

1.	<p>What percentage of the large triangle below is shaded?</p> 	16 percent
2.	<p>After the first 4 games of the basketball season, Rashida has scored 16 points. Assuming that she keeps up the same rate, how many points will Rashida have scored after the first 10 games?</p>	40 points
3.	<p>The toll for a highway is 7 cents for every 5 miles traveled. What is the toll for a trip that is 250 miles on this highway?</p>	\$3.50
4.	<p>Two squares each with an area of 16 square units are placed side by side to form a rectangle. What is the perimeter of the rectangle?</p>	24 Units
5.	<p>Solve the number riddle: If you multiply me by 7 then subtract 7 from the product, you will have 70. What number am I?</p>	11
6.	<p>A train is 1 mile long. If it is moving at a speed of 60 miles per hour, how many minutes does it take to pass a telephone pole?</p>	1 minute
7.	<p>The following two scales are in balance.</p>  <p>How many  are needed to be used to balance one ?</p>	6 circles
8.	<p>Girls are occupying exactly $\frac{2}{7}$ of the seats in a cafeteria and boys are occupying exactly $\frac{3}{7}$ of the seats in the same cafeteria. What is the minimum number of seats in the cafeteria?</p>	35 seats
9.	<p>Suzie finds a pair of jeans she would like to buy for 20% off at the mall. She also has a \$12 off coupon for any purchase at the store. If the jeans are regularly \$45, how much will Suzie pay for the jeans?</p>	\$24
10.	<p>George spent 60% of his birthday money at the mall. If he spent \$45 at the mall, how much money did he receive for his birthday?</p>	\$75