
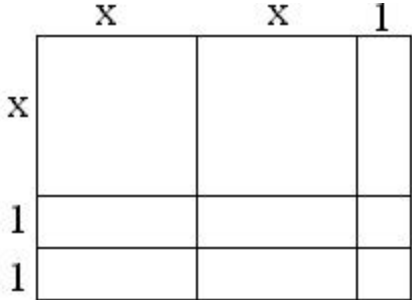

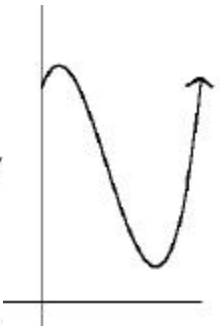
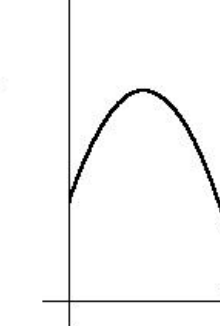
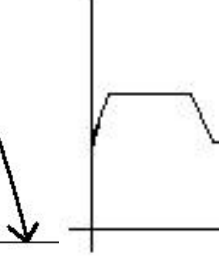

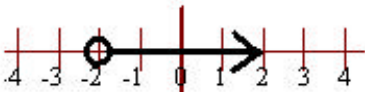


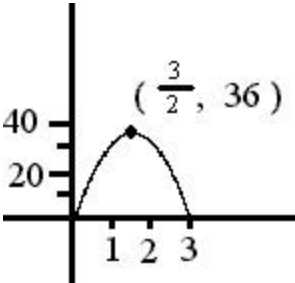
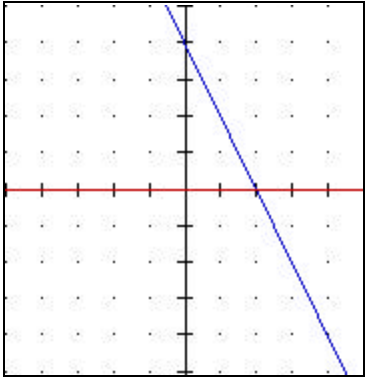
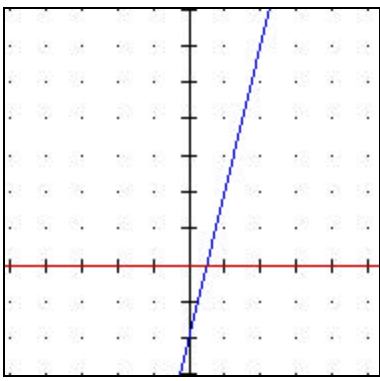
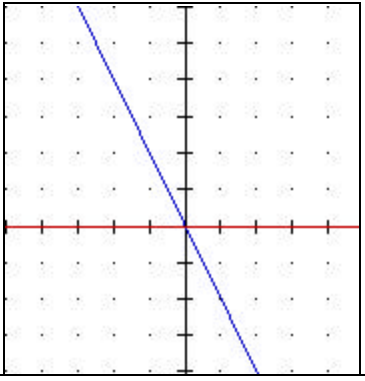
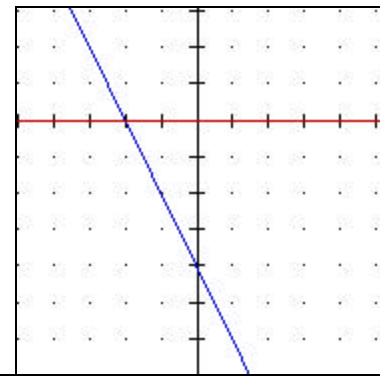

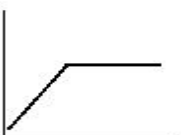


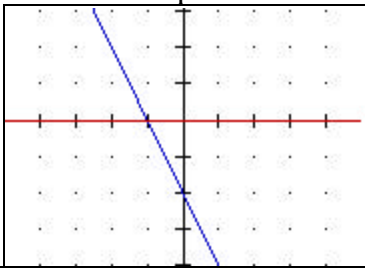
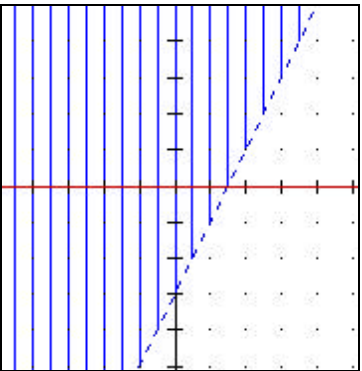
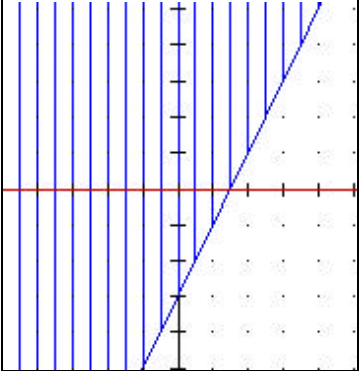
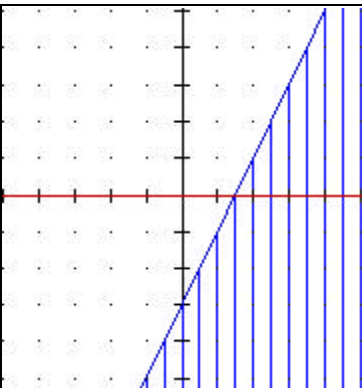
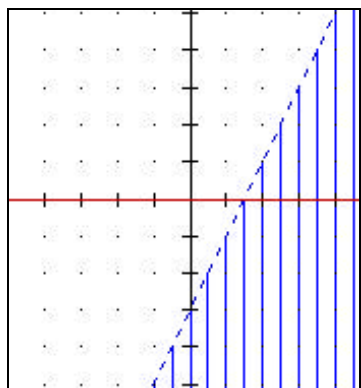
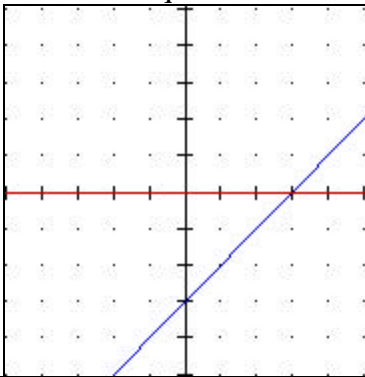


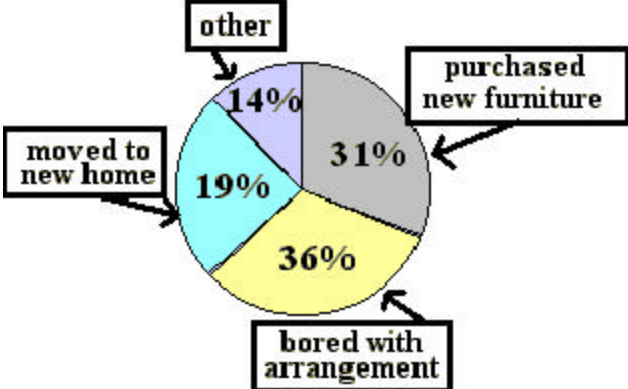
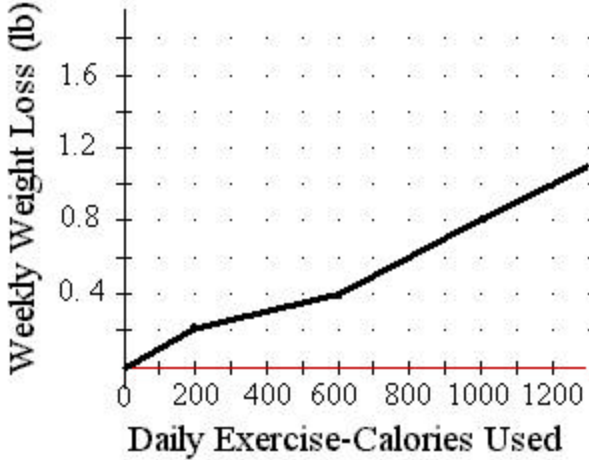
<b>GATEWAY PRACTICE TEST</b> prepared by Anderson County Teachers based on Gateway Performance Objectives modified by L. Howe, 2001, posted at <a href="http://www.howe-two.com">http://www.howe-two.com</a>		State Performance Objective <b>HOWE-TWO</b> <b>ACTIVITY</b> for practice
1.	What is $-\sqrt{121}$ ?  A. -11    B. 11    C. 12    D. -12	I. determine the square root of a perfect square less than 169;  <b>RADICALS.</b>
2.	What is the opposite of -5?  A. -1/5    B. 5    C. -5    D. 1/5	I. identify the opposite of a rational number; <b>RECIPROCAL &amp; OPPOSITES</b>
3.	What is the coordinate of point B?   A. 2    B. 1/2    C. 3/2    D. 3	I. select the best estimate for the coordinate of a given point on a number line (only rational);  <b>NUMBER LINE</b>
4.	Write in exponential form: $2x \cdot 2x \cdot 2x \cdot 2x$  A. $(2x)^4$ B. $(2x)^{-4}$ C. $(2x)^3$ D. $(2x)^{-3}$	I. use exponents to simplify a monomial written in expanded form. <b>(INTRO TO) EXPONENTS</b>
5.	Write in order from least to greatest $\frac{-5}{2}$ , 2, 0, -2, 1.2  A. 0, 1.2, 2, -5/2, -2                      B. -2, -5/2, 0, 1.2, 2 C. 2, 1.2, 0, -5/2, -2                      D. -5/2, -2, 0, 1.2, 2	I. order a given set of rational numbers (both fraction and decimal notations);  <b>ORDER</b>
6.	What is the reciprocal of 7?  A. -7    B. -1/7    C. 1/7    D. 7/1	identify the reciprocal of a rational number; <b>RECIPROCAL &amp; OPPOSITES</b>
7.	The ratio of the Stone Mountain sculpture to actual size is 20 to 1. The length of a horse's head is 2 1/2 feet. What is the length of a horse's head in the sculpture?  A. 15 ft.    B. 8 ft.    C. 1/8 ft.    D. 50 ft.	I. select ratios and proportions to represent real-world problems (e.g. scale drawings, sampling, etc.). <b>EVERYDAY MATH</b>
8.	It is 220 miles from Johnson City to Putnam. The elevation of Johnson City is 3000 Feet. The elevation of Putnam is 3500 feet. What is the average rate of increase in elevation per mile from Johnson City to Putnam?  A. .03    B. 29.5    C. 2.3    D. .44	I. apply the concept of slope to represent rate of change in a real-world situation.  <b>EVERYDAY MATH</b>
9.	Simplify: $13 + (3 \times 2)^2 - 8$  A. 41    B. 17    C. 353    D. 1016	I. apply order of operations when computing with integers using no more than two sets of grouping symbols and exponents 1 and 2; <b>ORDER OF OPERATIONS</b>
10.	Greg lives in a state where speeders are fined \$15 for each mile per hour over the speed limit. Greg was given a ticket for \$180 for speeding on a road where the speed limit is 45 miles per hour. How fast was Greg driving?  A. 12 mph    B. 57 mph    C. 54 mph    D. 9 mph	I. apply the concept of slope to represent rate of change in a real-world situation. <b>EVERYDAY MATH</b> <b>ALICE'S DATA</b>

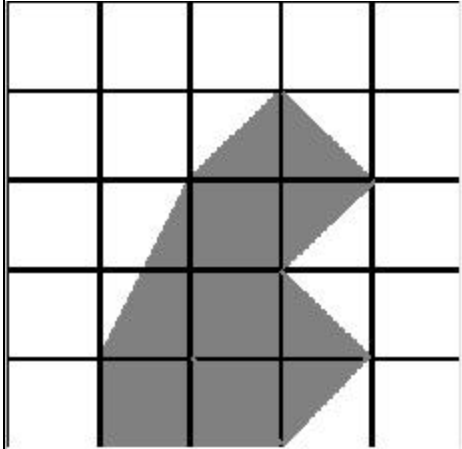
11.	Simplify: $(x^2 + 3x - 5) - (2x^2 + x - 3)$ A. $-x^2 + 4x - 8$ B. $3x^2 + 4x - 8$ C. $-3x^2 + 3x + 2$ D. $-x^2 + 2x - 2$	II. add and subtract algebraic expressions;  COMBINE LIKE TERMS
12.	You have 126 feet of 1" by 8" wood. If one birdhouse takes $4\frac{1}{2}$ feet of wood, how many birdhouses can you make. A. 36    B. 28    C. 5    D.	II. use estimation to determine a reasonable solution for a tedious arithmetic computation. EVERYDAY MATH
13.	Multiply and simplify: $(x - 3)(3x + 1)$ A. $9x^2 - 3$ B. $3x^2 - 3$ C. $3x^2 - 8x - 3$ D. $9x^2 + 3$	II. multiply two polynomials with each factor having no more than two terms; MULTIPLY BINOMIALS
14.	Estimate $36.075 - 1.057$ A. 35    B. 18    C. 360    D. 24	II. use estimation to determine a reasonable solution for a tedious arithmetic computation. DANCING DECIMALS
15.	Algebra Tiles are arranged as pictured. What product is being modeled?  A. $3x^2 + 3x + 2$ B. $2x^2 + 5x + 2$ C. $2x^2 + 4x + 2$ D. $x^2 + 5x - 2$	II. select the area representation for a given product of two one-variable binomials with positive constants and coefficients.  MULTIPLY BINOMIALS
16.	What are the next two numbers in the following pattern? 1, 4, 16, 64, _____, _____ A. 72, 84    B. 256, 1024    C. 80, 96    D. 16, 64	III. extend a numerical pattern;  PATTERNS
17.	What are the next two numbers in the following pattern? 3, 6, -12, 24, _____, _____ A. 48, 96    B. -48, -96    C. -48, 96    D. 48, -96	III. extend a numerical pattern;  PATTERNS  BORDER PATTERNS  PATTERNS IN PASCAL'S Triangle
18.	What are the next two numbers in the following pattern? $\frac{1}{2}, \frac{1}{6}, \frac{1}{18}, \frac{1}{54}, \text{_____}, \text{_____}$ A. $\frac{1}{162}, \frac{1}{486}$ B. $\frac{1}{8}, \frac{1}{16}$ C. $\frac{1}{120}, \frac{1}{240}$ D. $\frac{1}{90}, \frac{1}{126}$	III. extend a numerical pattern;  PATTERNS BORDER PATTERNS PATTERNS IN PASCAL'S Triangle
19.	Evaluate the algebraic expression $R^2 + FW$ if $R = -5$ , $F = \frac{1}{2}$ , and $W = 4$ A. -23    B. 27    C. 33    D. 23	III. evaluate a first degree algebraic expression given values for one or more variables; EVALUATE QUIZ
20.	Evaluate the expression $6Q - (H + P)$ if $Q = 2$ , $H = -3$ and $P = 7$ A. -27    B. 22    C. 8    D. 16	III. evaluate a first degree algebraic expression given values for one or more variables; EVALUATE QUIZ

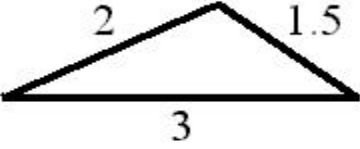
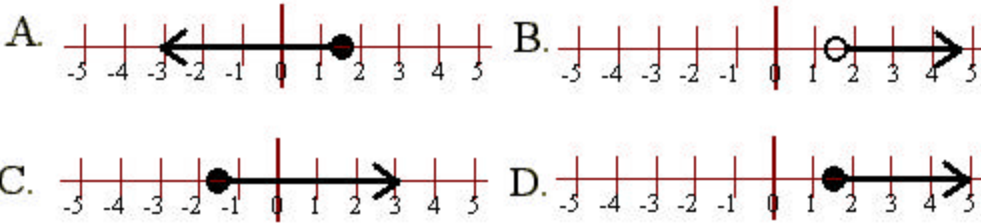
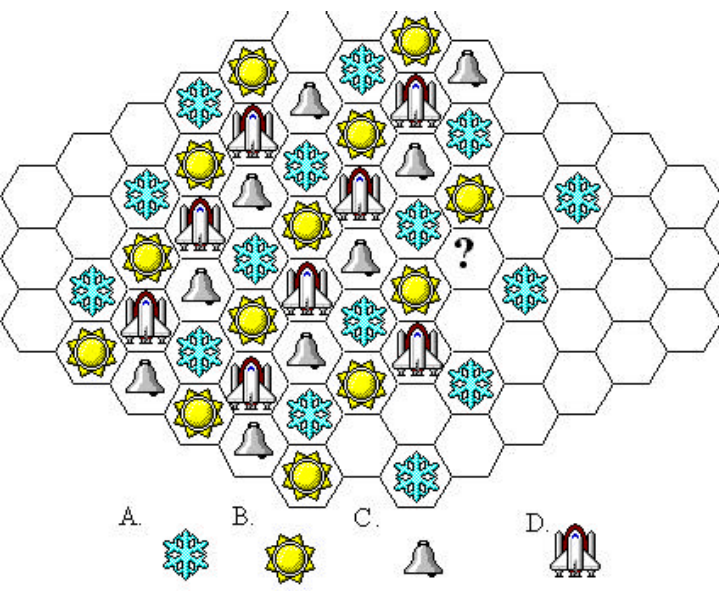
21.	<p>Write the equation of the line represented by the given data:</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 0 10px;">x</td> <td style="padding: 0 10px;">1</td> <td style="padding: 0 10px;">2</td> <td style="padding: 0 10px;">3</td> <td style="padding: 0 10px;">4</td> </tr> <tr> <td colspan="5" style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> </tr> <tr> <td style="padding: 0 10px;">y</td> <td style="padding: 0 10px;">4</td> <td style="padding: 0 10px;">8</td> <td style="padding: 0 10px;">12</td> <td style="padding: 0 10px;">16</td> </tr> </table> <p>A. <math>y = \frac{1}{4}x</math>   B. <math>y = x + 3</math>   C. <math>y = -x - 4</math>   D. <math>y = 4x</math></p>	x	1	2	3	4						y	4	8	12	16	<p>III. select the algebraic notation which generalizes the pattern represented by data in a given table;</p> <p>NAME THE RULE ALICE'S DATA</p>
x	1	2	3	4													
y	4	8	12	16													
22.	<p>Write the equation of the line represented by the given data:</p> <table style="display: inline-table; vertical-align: middle; margin-right: 20px;"> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">x</td> <td style="padding: 0 5px;">y</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">-3</td> <td style="padding: 0 5px;">5</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">-2</td> <td style="padding: 0 5px;">4</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">-1</td> <td style="padding: 0 5px;">3</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">0</td> <td style="padding: 0 5px;">2</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">1</td> <td style="padding: 0 5px;">1</td> </tr> </table> <p>A. <math>y = -x + 2</math>  B. <math>y = x - 2</math>  C. <math>y = 2x - 1</math>  D. <math>y = \frac{1}{2}x - 2</math></p>	x	y	-3	5	-2	4	-1	3	0	2	1	1	<p>III. select the algebraic notation which generalizes the pattern represented by data in a given table;</p> <p>NAME THE RULE ALICE'S DATA</p>			
x	y																
-3	5																
-2	4																
-1	3																
0	2																
1	1																
23.	<p>Translate the following into an equation:  "The Product of nine and a number is three."</p> <p>A. <math>9/x = 3</math>   B. <math>9x = 3</math>   C. <math>3x = 9</math>   D. <math>x + 9 = 3</math></p>	<p>III. translate a verbal sentence into an algebraic equation;</p> <p>TRANSLATE</p>															
24.	<p>Translate the following into an equation:  "Sixty-seven less than a number is negative twelve.</p> <p>A. <math>n - 67 = -12</math>   B. <math>67 - n = -12</math>   C. <math>67n = -12</math>   D. <math>n/67 = -12</math></p>	<p>III. translate a verbal sentence into an algebraic equation;</p> <p>TRANSLATE</p>															
25.	<p>Solve:  <math>.3 - 2.5n = 7.8</math></p> <p>A. <math>n = 1/3</math>   B. <math>n = 3</math>   C. <math>n = -3</math>   D. <math>3.24</math></p>	<p>III. solve multi-step linear equations (more than two steps, variables on only one side of the equation);  LEARN TO SOLVE</p>															
26.	<p>Solve:  <math>5x - 3 = -2(4 - 3x)</math></p> <p>A. <math>x = 5</math>   B. <math>x = 1</math>   C. <math>x = -5</math>   D. <math>x = -1</math></p>	<p>III. solve multi-step linear equations (more than two steps, with one set of parentheses on each side of the equation);  LINEAR MATHO, MATHO II</p>															
27.	<p>An airplane flies 1000 miles due east in two hours and 1000 miles due south in 3 hours. What is the average speed of the plane?</p> <p>A. 282.8 mph   B. 1000 mph   C. 400 mph   D. 316.2 mph</p>	<p>III. apply the concept of rate of change to solve real-world problems;  EVERYDAYMATH</p>															
28.	<p>Which of the following graphs best represents the path of a ball thrown into the air?</p> <p>A.     B.     C.     D. </p>	<p>III. select the non-linear graph that models the given real-world situation or vice versa;</p> <p>FAMILY OF FUNCTIONS</p>															

29.	<p>Identify the correct graph for <math>x &gt; -2</math>.</p> <p>A. </p> <p>B. </p> <p>C. </p> <p>D. </p>	<p>III. identify the graphical representation of the solution to a one variable inequality on a number line.</p> <p>INEQUALITIES</p>
30.	<p>What is the domain of this graph?</p>  <p>A. All real numbers.  B. <math>0 \leq x \leq 36</math>  C. <math>0 \leq x \leq 3</math>  D. <math>x = 1.5</math></p>	<p>III. determine the domain and/or range of a function represented by the graph of real-world situations.</p> <p>DOMAIN.EXE</p>
31.	<p>What is the range of the graph in the last problem?</p> <p>A. All real numbers.  B. <math>0 \leq x \leq 36</math>  C. <math>0 \leq x \leq 3</math>  D. <math>x = 36</math></p>	<p>III. determine the domain and/or range of a function represented by the graph of real-world situations.</p> <p>DOMAIN.EXE</p>
32.	<p>Which of the following is the graph of <math>y = -2x + 4</math> ?</p> <p>A. </p> <p>B. </p> <p>C. </p> <p>D. </p>	<p>III. select the graph that represents a given linear function expressed in slope-intercept form;</p> <p>TWO POINTS  GUESS-A-GRAPH  TWO WAYS OF GRAPHING</p>
33.	<p>Which of the following graphs best represents the statement: "The population of frogs decreased as the pond became more polluted."?</p> <p>A. </p> <p>B. </p> <p>C. </p> <p>D. </p>	<p>III. select the non-linear graph that models the given real-world situation or vice versa;</p>

34.	<p>What is the slope of the following graph?</p>  <p>A. <math>\frac{1}{2}</math>          B. 2          C. <math>-\frac{1}{2}</math>          D. -2</p>	<p>III. determine the slope from the graph of a linear equation (no labeled points)</p> <p>POINT &amp; SLOPE          TWO POINTS</p>
35.	<p>Which of the following graphs represents the inequality <math>y &gt; 2x - 3</math>?</p> <p>A. </p> <p>B. </p> <p>C. </p> <p>D. </p>	<p>III. select the appropriate graphical representation of a given linear inequality;</p> <p>GRAPH 2-D</p>
36.	<p>What is the equation of the line in the graph below:</p>  <p>A. <math>y = -x + 3</math>          B. <math>y = x - 3</math>          C. <math>y = 3x + 1</math>          D. <math>y = -3x + 1</math></p>	<p>III. select the graph that represents a given linear function expressed in slope-intercept form;</p> <p>TWO POINTS          GUESS-A -GRAPH          TWO WAYS OF GRAPHING</p>
37.	<p>Solve: <math>\frac{x}{3} + 11 = -29</math></p> <p>A. 6      B. -120          C. <math>13\frac{1}{3}</math>      D. 54</p>	<p>• solve multi-step linear equations (more than two steps, variables on only one side of the equation); LINEAR MATHO, MATHO II</p>
38.	<p>Owen's scores on the first three out of four total tests in his math class were 89, 92, 82. What score must he receive to have an average of 90 in the class?</p> <p>A. 97      B. 92      C. 90      D. 100</p>	<p>IV. determine the mean (average) of a given set of real-world data (no more than five two-digit numbers); MASTERINGMATHEMATICS INTRO TO DATA</p>

39.	<p>You rode your bike to and from school each day for one week. Your daily riding times are given below. What was your average riding <b>time per day</b>?</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Monday</th> <th>Tuesday</th> <th>Wednesday</th> <th>Thursday</th> <th>Friday</th> </tr> </thead> <tbody> <tr> <td>to school</td> <td>12 min</td> <td>15 min</td> <td>15 min</td> <td>13 min</td> <td>13 min</td> </tr> <tr> <td>from school</td> <td>14 min</td> <td>14 min</td> <td>14 min</td> <td>14 min</td> <td>14 min</td> </tr> </tbody> </table> <p>A. 18 min    B. 14 min    C. 27.6 min    D. 20 min</p>		Monday	Tuesday	Wednesday	Thursday	Friday	to school	12 min	15 min	15 min	13 min	13 min	from school	14 min	14 min	14 min	14 min	14 min	<p>IV. determine the mean (average) of a given set of real-world data (no more than five two-digit numbers);  <b>MASTERING MATHEMATICS INTRO TO DATA</b></p>
	Monday	Tuesday	Wednesday	Thursday	Friday															
to school	12 min	15 min	15 min	13 min	13 min															
from school	14 min	14 min	14 min	14 min	14 min															
40.	<p>Find the median of the following numbers: 4, 6, 6, 8, 1, 1, 3, 4, 6, 7</p> <p>A. 6    B. 5    C. 4.6    D. 7</p>	<p>IV. determine the median for a given set of real-world data (even number of data).  <b>MASTERING MATHEMATICS INTRO TO DATA</b></p>																		
41.	<p>If 5 people can sit at the head table for a banquet and there are 10 people to choose from, how many different seating arrangements can be made?</p> <p>A. 55    B. 900    C. 16,025    D. 30,240</p>	<p>IV. • apply counting principles of permutations or combinations in real-world situations.  <b>COUNTING</b></p>																		
42.	<p>Using the graph below, determine how many people rearrange their furniture due to being bored with the arrangement if 10,000 people were surveyed.</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>A. 360,000</p> <p>B. 2,780</p> <p>C. 3,600</p> <p>D. 278</p> </div> </div>	<p>IV. • interpret circle graphs (pie charts) representing real-world data;.  <b>CIRCLE &amp; BAR GRAPHS</b></p>																		
43.	<p>Using the graph below, determine the approximate weight a person will lose each week if his/her exercise uses 150 calories per day.</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>A. 0.7 pounds</p> <p>B. 0.4 pounds</p> <p>C. 0.8 pounds</p> <p>D. 0.2 pounds</p> </div> </div>	<p>IV. • make a prediction from the graph of a real-world linear data set;  <b>ALICE'S DATA</b></p>																		

44.	<p>Find the area of the following geometric figure:</p>  <p>A. 7.5 square units B. 7 square units C. 12.8 square units D. 8.5 square units</p>	<p>V. • estimate the area of irregular geometric figures on a grid; ESTIMATE AREA</p>
45.	<p>Find the area of a rectangle with a length of 26 centimeters and a width of 17 centimeters.</p> <p>A. 442 cm<sup>2</sup>   B. 86 cm<sup>2</sup>   C. 43 cm<sup>2</sup>   D. 221 cm<sup>2</sup></p>	<p>V. apply the given formula to determine the area or perimeter of a rectangle. VOLUME &amp; AREA</p>
46.	<p>Find the perimeter of a rectangle with a length of 38 ft and a width of 23 ft.</p> <p>A. 61 ft   B. 874 ft<sup>2</sup>   C. 122 ft<sup>2</sup>   D. 122 ft</p>	<p>V. apply the given formula to determine the area or perimeter of a rectangle. VOLUME &amp; AREA</p>
47.	<p>Find the distance between the two points (2, 5) and (8, 1) given the Pythagorean Theorem <math>c^2 = a^2 + b^2</math> where c is the hypotenuse of the right triangle and a and b are the legs.</p> <p>A. 10   B. 5   C. 7.2   D. 52</p>	<p>V. calculate the distance between two points given the Pythagorean Theorem and the distance formula. PYTHAGOREAN DISTANCE &amp; MIDPOINT</p>
48.	<p>Find the distance between the two points (3,-1) and (0, 3) using the distance formula: <math>D = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}</math></p> <p>A. 4   B. 5   C. 7.2   D. 52</p>	<p>V. calculate the distance between two points given the Pythagorean Theorem and the distance formula. PYTHAGOREAN DISTANCE &amp; MIDPOINT</p>
49.	<p>Find the area of a circle with a diameter of 14 inches. (<math>A = \pi r^2</math>)</p> <p>A. 153.86 in<sup>2</sup>   B. 615.44 in<sup>2</sup>   C. 43.96 in<sup>2</sup>   D. 21.98 in<sup>2</sup></p>	<p>V. apply the given formula to find the area of a circle, the circumference of a circle, or the volume of a rectangular solid; VOLUME</p>
50.	<p>Find the circumference of a circle if the diameter is 5.5 meters.</p> <p>A. 8.64 m   B. 17.27 m   C. 94.99 m   D. 17.27 m<sup>2</sup></p>	<p>V. apply the given formula to find the area of a circle, the circumference of a circle, or the volume of a rectangular solid; VOLUME</p>
51.	<p>Find the volume of sand in a sandbox that measures 6 feet long, 4 feet wide, and 2 feet high if the box is completely full.</p> <p>A. 48 ft<sup>3</sup>   B. 88 ft<sup>3</sup>   C. 2304 ft<sup>3</sup>   D. 96 ft<sup>3</sup></p>	<p>V. apply the given formula to find the area of a circle, the circumference of a circle, or the volume of a rectangular solid; VOLUME</p>
52.	<p>Sam is building a workshop that is 16 feet long and 12 feet wide. He wants to use the fact that the diagonals of a rectangle are equal to insure that the corners of his workshop are right angles. What should the diagonals measure?</p> <p>A. 14 ft   B. 28 ft   C. 192 ft   D. 20 ft</p>	<p>V. illustrate the Pythagorean Theorem by measuring the length, width, and diagonals of rectangular objects apply the given Pythagorean Theorem to a real life problem illustrated by a diagram (no radicals in answer); PYTHAGOREAN</p>

53.	<p>You are designing a flower garden that is in the shape of a triangle. You have drawn a blueprint that looks like the diagram below. If the ratio of the blueprint to the actual flower garden is 1:10, what is the length of the longest side of the actual flower garden?</p> <p>A. 20 feet    B. 15 feet C. 65 feet    D. 30 feet</p> 	<p>V. apply proportion and the concepts of similar triangles to find the length of a missing side of a triangle.</p> <p>EVERYDAY MATH</p>
54.	<p>Evaluate the algebraic expression <math>x + y - z</math> if <math>x=16</math>, <math>y=2.6</math> and <math>z = -5</math>.</p> <p>A. 23.6    B. 13.6    C. 18.4    D. 29</p>	<p>III. • evaluate a first degree algebraic expression given values for one or more variables; QUIZ EVALUATE</p>
55.	<p>Solve the following equation: <math>5x - 3 = -2(4 - 3x)</math></p> <p>A. -5    B. 11    C. 5    D. -11</p>	<p>III. solve multi-step linear equations (more than two steps, with one set of parentheses on each side of the equation); LINEAR MATHO, MATHO</p>
56.	<p>Jesse is driving an average speed of 55 mph. How far will he travel in <math>4\frac{1}{2}</math> hours?</p> <p>A. 12.2 miles    B. 247.5 miles    C. 220 miles    D. 1000 miles</p>	<p>III. apply the concept of rate of change to solve real-world problems; EVERYDAY MATH</p>
57.	<p>Identify the correct graph for <math>x \geq 1.5</math></p> 	<p>III. select the appropriate graphical representation of a given linear inequality; INEQUALITIES</p>
58.	<p>The icons are being arranged in a pattern. If the pattern is continued which icon should be placed in the hexagon marked with a question mark?</p> 	<p>III. Extend a geometric pattern.</p> <p>PATTERNS IN PASCAL'S TRIANGLE</p> <p>TRANSFORMATIONAL GEOMETRY</p>

## ANSWERS

1. A
2. B
3. C
4. A
5. D
6. C
7. D
8. C
9. A
10. B
11. D
12. B
13. C
14. A
15. B
16. B
17. D
18. A
19. B
20. C
21. D
22. A
23. B
24. A
25. C
26. A
27. C
28. C
29. B
30. C
31. B
32. A
33. C
34. D
35. A
36. B
37. B
38. A
39. C
40. B
41. D
42. C
43. C
44. A
45. A
46. D
47. C
48. B
49. A
50. B
51. A
52. D
53. D
54. A
55. C
56. B
57. D
58. D