Topic: Review Material for Algebra II End of Course Exam

Since students are familiar with using the Common Core ACT packets for Algebra I they will be exploring similar problems in Algebra II. Topics will include solving 3 equations with 3 variables, solving compound inequalities, solving absolute value equations and inequalities, and reading graphs. These topics will also serve as a primary foundation to solve problems involving higher level math.

Materials Needed: Computer

Students will be able to access the assignment for Calamity day eight on my webpage under the files page or they may access the assignment from Mr. McCorkle's webpage.

Students may use their textbook to review the topics that are covered in this packet. Students may also visit the website Khan Academy and search the topics discussed previously (www.khanacademy.org). There are videos with step by step procedures to review the topics covered in this assignment.

Assignment:

Students will print the Algebra II end of Course Exam packet and complete the 20 multiple choice questions. Students must show their work on each problem in order to receive full credit for the assignment. Students may do their work on a separate sheet of notebook paper or they may do their work on the packet. Students must follow the directions given and turn in the assignment by the appropriate due date in order to receive full credit. If you have a question about what is expected of you for this assignment, you may consult with me before the due date.

Linear Expressions Equations Inequalities D. (a-c) L1 L2

Name: Date:
Teacher: Class/Period:

1) Find the solution set of $|x - 2| < 6$.

A. $\{x \mid -8 < x < 4\}$

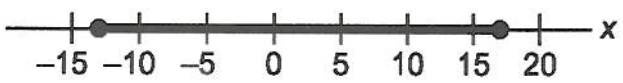
B. $\{x \mid -4 < x < 8\}$

C. $\{x \mid x < 4\}$

D. $\{x \mid x < 8\}$

2) Which graph represents the solution set of $-16 < x - 3 < 14$?

A.



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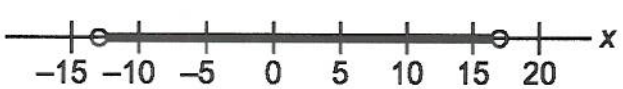

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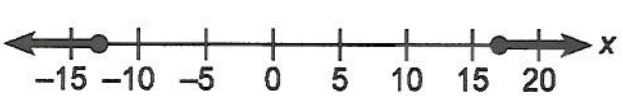

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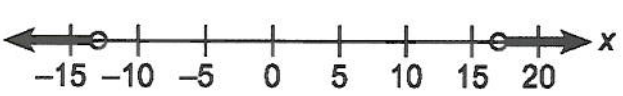
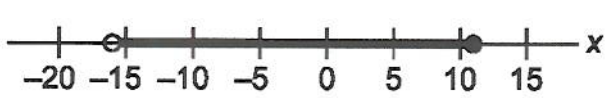


3) Which graph represents this statement?

-12 is less than $x + 4$, and $x + 4$ is less than or equal to 15.

A.



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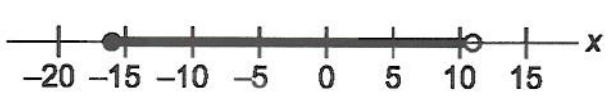

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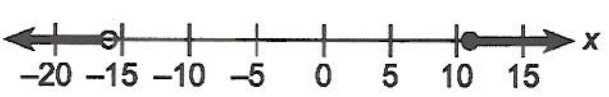

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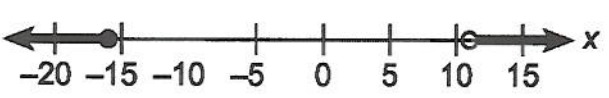
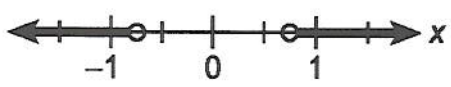


4) Which graph represents the solution set of $4|x| - 3 > 0$?

A.



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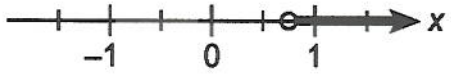
C.



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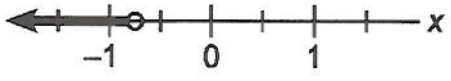


5) What is the solution set to the inequality $|3x - 2| < 7$?

A. $\{x \mid -\frac{5}{3} < x < 3\}$

B. $\{x \mid -3 < x < \frac{5}{3}\}$

C. $\{x \mid x > 3 \text{ or } x < -\frac{5}{3}\}$

D. $\{x \mid x > \frac{5}{3} \text{ or } x < -3\}$

6) Which inequality represents this statement?

On the real number line, x is less than 3 units away from 5.

A. $x - 5 < 3$

B. $x - 3 < 5$

C. $|x - 5| < 3$

D. $|x - 3| < 5$

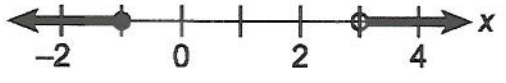
7) Which is the graph of the solution set for $2x - 10 < -12$ or $4 - 3x \leq -5$?

A.

B.

C.

D.



8) Which inequality represents the set of numbers shown by this number line?

A. $|x + 1| < 8$

B. $|x - 1| < 8$

C. $|x + 1| < 4$

D. $|x - 1| < 4$

9) What ordered triple is the solution to this system?

$$\begin{cases} 3a + 4b + c = 5 \\ a - 6b + 2c = 14 \\ \frac{1}{2}a - 2b + \frac{1}{3}c = 4 \end{cases}$$

A. (2,−1,3)

B. (0,1,1)

C. (12,2,7)

D. (6,1,6)

10) A company wants to make ball bearings that have a standard diameter, d, of 24.000 mm. Acceptable ball bearings measure within ±0.025 mm of this standard. Determine the solution set for the diameter of these ball bearings.

A. $\{d \mid 24.025 \geq d \text{ or } d \leq 23.975\}$

B. $\{d \mid 23.975 \leq d \leq 24.025\}$

C. $\{d \mid d = 24.025\}$

D. $\{d \mid 24.025 \leq d \leq 23.975\}$

11) Solve $|x - \frac{5}{2}| > \frac{5}{2}$.

A. $x < 0$ or $x > 5$

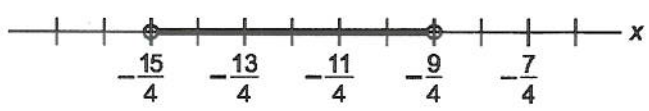
B. $x < -5$ or $x > 0$

C. $0 < x < 5$

D. $-5 < x < 0$

12) Which number line shows the solution for $|x + 3| < \frac{3}{4}$?

A.



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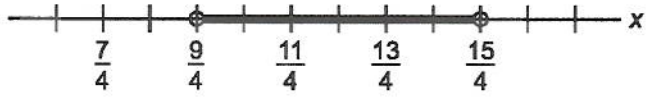

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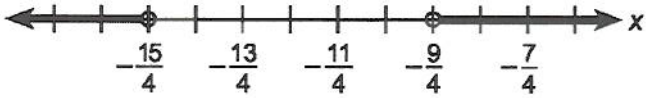

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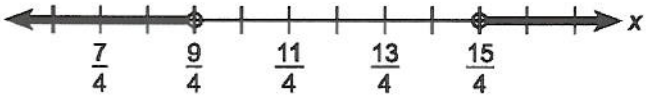


13) The target heart rate range during physical activity for a certain 16-year-old girl of average fitness is within 21 beats per minute of 141 beats per minute. Which inequality represents this target range?

A. $|r - 141| \leq 21$

B. $|r - 141| \leq 162$

C. $|r| \leq 21$

D. $|r| \leq 120$

14) The graph of a quadratic function passes through the points (−1,5), (1,11), and (3,1). Which system of linear equations in terms of a, b, and c can be used to find the function?

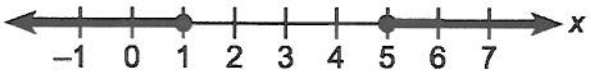
A. $\begin{cases} a-b+c=5 \\ a+b+c=11 \\ 9a+3b+c=1 \end{cases}$

C. $\begin{cases} a-b+c=5 \\ a+b+c=11 \\ 3a+3b+c=1 \end{cases}$

B. $\begin{cases} a+b+9c=5 \\ -a+b+3c=11 \\ a+b+c=1 \end{cases}$

D. $\begin{cases} -a+b+3c=5 \\ -a+b+3c=11 \\ a+b+c=1 \end{cases}$

15) Which inequality describes this number line?



A. $|x + 3| \leq 2$

B. $|x + 3| \geq 2$

C. $|x - 3| \leq 2$

D. $|x - 3| \geq 2$

16) What is the solution set to $|2x - 4| < 6$?

A. $\{x \mid x < 1\}$

B. $\{x \mid x < 5\}$

C. $\{x \mid -1 < x < 5\}$

D. $\{x \mid -2 < x < 10\}$

17) What is the solution set to the compound inequality $x^2 > 3$ and $x < 2$?

A. $\{x \mid 2 < x < \sqrt{3}\}$

B. $\{x \mid \sqrt{3} < x < 2\}$

C. $\{x \mid x < -\sqrt{3} \text{ or } \sqrt{3} < x < 2\}$

D. $\{x \mid -\sqrt{3} < x \text{ and } x < \sqrt{3}\}$

18) What is the value of y in the solution to this system of equations?

$$\begin{cases} 2x+y=0 \\ 3x-z=4 \\ x-y+z=2 \end{cases}$$

A. −6

B. −2

C. 1

D. 3

19) Determine the value of x in the following system of equations.

$$\begin{cases} 4x-y+z=2 \\ x-2y-3z=3 \\ -5y-4z=-14 \end{cases}$$

A. −9

B. −4

C. 0.45

D. 3

20) What is the solution set for $|2x+9| \geq 3$?

A. $[3,\infty)$

B. $(-\infty,-6] \cup [-3, \infty)$

C. $(-\infty,3] \cup [6, \infty)$

D. $[-6,-3]$

QualityCore™

Reference Sheet for the QualityCore™
Algebra II End-of-Course Assessment

Equations of a Line

Standard Form	$Ax + By = C$	A, B, and C are constants with A and B not both equal to zero.
Slope-Intercept Form	$y = mx + b$	(x_1,y_1) is a point.
Point-Slope Form	$y - y_1 = m(x - x_1)$	m = slope b = y-intercept

Quadratics

Standard Form of a Quadratic Equation	$ax^2 + bx + c = 0$	a, b, and c are constants, where $a \neq 0$.
Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	

Conic Sections

Circle	$(x - h)^2 + (y - k)^2 = r^2$	center (h,k) r = radius	
Parabola	$y = a(x - h)^2 + k$	axis of symmetry $x = h$ directrix $y = k - \frac{1}{4a}$	vertex (h,k) focus $\left(h, k + \frac{1}{4a}\right)$
Parabola	$x = a(y - k)^2 + h$	axis of symmetry $y = k$ directrix $x = h - \frac{1}{4a}$	vertex (h,k) focus $\left(h + \frac{1}{4a}, k\right)$
Ellipse	$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$	foci $(h \pm c, k)$ where $c^2 = a^2 - b^2$, center (h,k)	
Ellipse	$\frac{(y-k)^2}{a^2} + \frac{(x-h)^2}{b^2} = 1$	foci $(h, k \pm c)$ where $c^2 = a^2 - b^2$, center (h,k)	
Hyperbola	$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$	foci $(h \pm c, k)$ where $c^2 = a^2 + b^2$, center (h,k)	
Hyperbola	$\frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1$	foci $(h, k \pm c)$ where $c^2 = a^2 + b^2$, center (h,k)	

Lines and Points

Slope	$m = \frac{y_2 - y_1}{x_2 - x_1}$	(x_1,y_1) and (x_2,y_2) are 2 points. m = slope M = midpoint d = distance
Midpoint	$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$	
Distance	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	

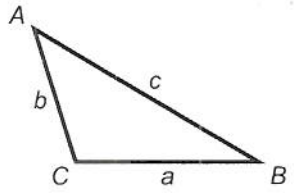
continued

Miscellaneous

Distance, Rate, Time	$D = rt$	D = distance r = rate t = time
Simple Interest	$I = prt$	I = interest p = principal
Compound Interest	$A = p\left(1 + \frac{r}{n}\right)^{nt}$	A = amount of money after t years n = number of times interest is compounded annually
Pythagorean Theorem	$a^2 + b^2 = c^2$	a and b = legs of right triangle c = hypotenuse

Laws of Sines and Cosines

Law of Sines	$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$
Law of Cosines	$a^2 = b^2 + c^2 - 2bc \cos A$



Sequences, Series, and Counting

Arithmetic Sequence	$a_n = a_1 + (n - 1)d$
Arithmetic Series	$s_n = \frac{n}{2}(a_1 + a_n)$
Geometric Sequence	$a_n = a_1(r^{n-1})$
Geometric Series	$s_n = \frac{a_1 - a_1 r^n}{1 - r}$ where $r \neq 1$
Combinations	${}_kC_m = C(k,m) = \frac{k!}{(k-m)!\,m!}$
Permutations	${}_kP_m = P(k,m) = \frac{k!}{(k-m)!}$

$a_n = n^{\text{th}}$ term
n = number of the term
d = common difference
s_n = sum of the first n terms
r = common ratio
k = number of objects in the set
m = number of objects selected

Circumference, Area, and Volume

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$
Circle	$A = \pi r^2$ $C = \pi d$
General Prism	$V = Bh$
Right Circular Cylinder	$V = \pi r^2 h$
Pyramid	$V = \frac{1}{3}Bh$
Right Circular Cone	$V = \frac{1}{3}\pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$

A = area
b = base
h = height
r = radius
C = circumference
d = diameter
V = volume
B = area of base
$\pi \approx 3.14$

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