Nam _____

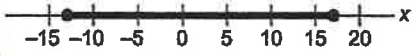
EOC Review

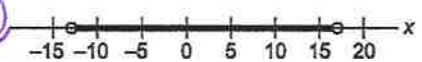
18) Find the solution set of $|x - 2| < 6$.

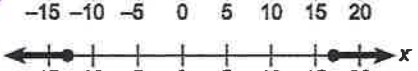
A. $\{x \mid -8 < x < 4\}$
B. $\{x \mid -4 < x < 8\}$
C. $\{x \mid x < 4\}$
D. $\{x \mid x < 8\}$

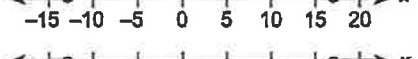
$x-2<6$ $x-2>-6$
$x<8$ $x>-4$

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

A.


B.


C.


D.


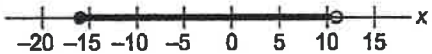
$-16 < x-3 < 14$
$-13 < x < 17$

20) Which graph represents this statement?

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

A.


B.


C.


D.


$-12 < x+4 \leq 15$
$-16 < x \leq 11$

23) Which inequality represents this statement?

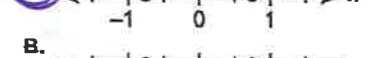
On the real number line, x is less than 3 units away from 5.

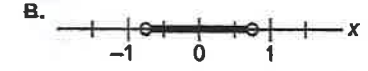
A. $x - 5 < 3$
B. $x - 3 < 5$
C. $|x - 5| < 3$
D. $|x - 3| < 5$

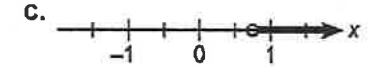
$|x-5|<3$

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

A.


B.


C.


D.


$4|x| - 3 > 0$
$4|x| > 3$
$|x| > 3/4$
$x > 3/4$ OR $x < -3/4$

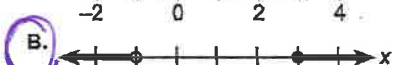
22) What is the solution set to the inequality $|3x - 2| < 7$?

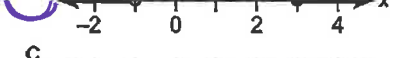
A. $\{x \mid -\frac{5}{3} < x < 3\}$
B. $\{x \mid -3 < x < \frac{5}{3}\}$
C. $\{x \mid x > 3 \text{ or } x < -\frac{5}{3}\}$
D. $\{x \mid x > \frac{5}{3} \text{ or } x < -3\}$

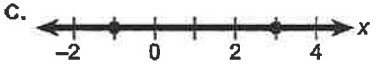
$3x-2<7$ $3x-2>-7$
$3x<9$ $3x>-5$
$x<3$ $x>-5/3$

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

A.

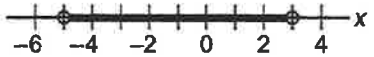

B.


C.


D.


$2x-10<-12$ $4-3x \leq -5$
$2x<-2$ $-3x \leq -9$
$x<-1$ OR $x \geq 3$

26) 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. $|x - 1| < 4$

$x > -5$ and $x < 3$
$|x+1|<4$
$x+1<4$ $x+1>-4$
$x<3$ $x>-5$

27) Kickball games last a maximum of 60 minutes and ties are allowed. However, there is a "mercy" rule. A game will end if at least 40 minutes have passed and one team is ahead by at least 10 points. If t is time, in minutes, and d is the difference in points, what compound inequality describes the "mercy" rule?

A. $t \geq 40$ and $d \geq 10$
B. $40 \leq t < 60$ and $d \geq 10$
C. $t \leq 40$ or $d \geq 10$
D. $40 \leq t < 60$ or $d \geq 10$

$t < 60$ (max 60 min.)
$t \geq 40$ and
$d \geq 10$

29) 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. $\{d \mid 24.025 \leq d \leq 23.975\}$

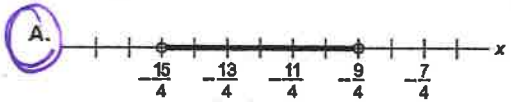
$|d - 24.000| \leq .025$
$d \leq 24.025$
$d \geq 23.975$

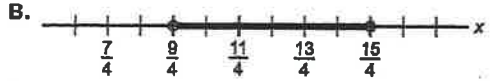
30) Solve $|x - \frac{5}{2}| > \frac{5}{2}$.

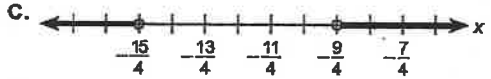
A. $x < 0$ or $x > 5$
B. $x < -5$ or $x > 0$
C. $0 < x < 5$
D. $-5 < x < 0$

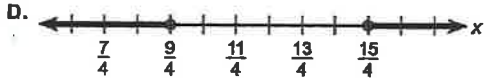
$x - 5/2 > 5/2$ $x - 5/2 < -5/2$
$x > 5$ OR $x < 0$

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

A.


B.


C.


D.


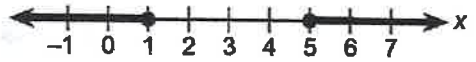
$x + 3 < 3/4$ $x + 3 > -3/4$
$x < -9/4$ $x > -15/4$

32) 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. $|r| \leq 120$

$|r - 141| \leq 21$

34) Which inequality describes this number line?



A. $|x + 3| \leq 2$
B. $|x + 3| \geq 2$
C. $|x - 3| \leq 2$
D. $|x - 3| \geq 2$

$x \leq 1$ or $x \geq 5$
$|x-3| \geq 2$ $x - 3 \leq -2$ $x - 3 \geq 2$
$x \leq 1$ $x \geq 5$

35) 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. $\{x \mid -2 < x < 10\}$

$2x - 4 < 6$ $2x - 4 > -6$
$2x < 10$ $2x > -2$
$x < 5$ $x > -1$

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

$x^2 > 3$
$x > \sqrt{3}$ and $x < 2$
$x < -\sqrt{3}$

39) 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. $[-6, -3]$

$2x + 9 \geq 3$ $2x + 9 \leq -3$
$2x \geq -6$ $2x \leq -12$
$x \geq -3$ $x \leq -6$

Name _____

Review EOC #2

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

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

3x4 put into matrix in calculator → evaluate rref and look at last column

* Hon. Alg. 2 - can also use Cramer's Rule & evaluate det.

A. (2,-1,3)
B. (0,1,1)
C. (12,2,7)
D. (6,1,6)

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

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

* Still a 3x4 matrix plug in zeros where variables are missing

A. -6
B. -2
C. 1
D. 3

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

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

* calculator - 3x4 matrix

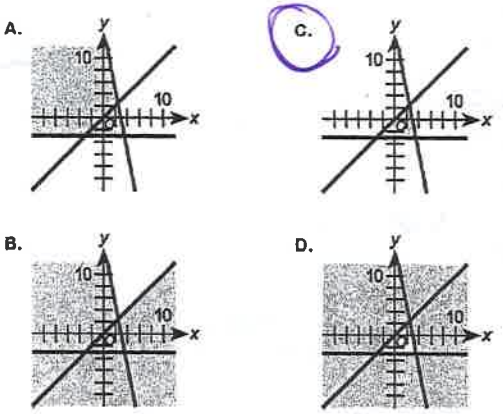
x - dump
y - cement

$x+y \le 9$
$x \ge 0 \quad x \le 7$
$y \ge 0 \quad y \le 5$
$6x+10y=360$

A. -9
B. -4
C. 0.45
D. 3

40) Which graph represents the solution set to this system of equations?

$$\begin{cases} y \le x \\ y \ge -3 \\ y \le 15-5x \end{cases}$$



graph in calculator - then look at shading or can change settings in calculator to do inequal.

41) Given:

$x+y \le 6 \rightarrow y \le -x+6$
$x-y \le 6 \rightarrow y \ge x-6$
$x \ge 0$
$y \ge 0$

Which point maximizes the objective function $P(x,y) = 3x + 4y$?

A. (0,0)
B. (0,6)
C. (4,0)
D. (8,1)

can also plug each of these in, but be careful that each vertex is part of the system

Graph & find vertices of intersections
(0,0) = 0
(0,6) = 24
(6,0) = 18
plug in to P(x,y)

42) Hunter's Transport Company has 7 dump trucks, 5 cement trucks, and 9 drivers. Dump trucks haul 6 tons, while cement trucks haul 10 tons. The company has a contract to transport 360 tons of gravel and cement per day to a road construction site. The dump trucks can make 8 trips a day, while the cement trucks can make 6 trips a day. A dump truck costs $30 per day, and a cement truck costs $42 per day. If all 9 drivers work on this job, using how many trucks of each type will minimize the cost?

profit function: $P(x,y) = 30x+42y$

A. 4 dump and 5 cement trucks 330
B. 5 dump and 4 cement trucks 318
C. 6 dump and 3 cement trucks 306
D. 7 dump and 2 cement trucks 294 ← min.

plug in each option but all must be vertices

43) The Gala Events Center has a rectangular parking lot measuring 30 m by 50 m. Only 80% of the lot is usable space. Each parked car requires 6 m^2 of space and each bus requires 30 m^2. The attendant can handle no more that 100 vehicles. It costs $5 to park a car and $15 to park a bus. What is the maximum income for a full lot?

A. $ 500
B. $ 750
C. $1,000
D. $1,500

50 × 30 ▭ x .80 = 1200 m^2

b = bus c = car $b \geq 0$ $c \geq 0$

$b + c \leq 100$

$6c + 30b \leq 1200$

$5c + 15b = P(x,y)$

Graph, find vertices, plug in to $P(x,y)$ to find max.

44) Country Crafts makes round tables and rectangular tables. Each round table requires 2 hours on Machine X and 3 hours on Machine Y. A rectangular table requires 4 hours on Machine X and 1 hour on Machine Y. Machine X has a limit of 20 hours a day, and Machine Y has a limit of 15 hours a day. The profit for a round table is $24, and the profit for a rectangular table is $30. To maximize the profit, how many tables of each kind should Country Crafts make daily?

	x	y
Round	2x	3y
Rect.	4y	1y

$2x + 4y \leq 20$
$3x + 1y \leq 15$
$x \geq 0$
$y \geq 0$

$P(x,y) = 24x + 30y$

A. 3 round and 4 rectangular 192
B. 4 round and 3 rectangular 186
X C. 2 round and 5 rectangular 198
D. 5 round and 2 rectangular 180

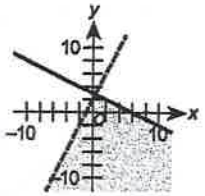
can plug in each of these - but make sure all are vertices first

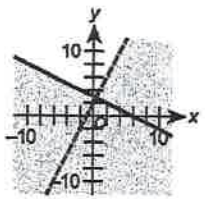
45) Which graph represents the solution set of this system of inequalities?

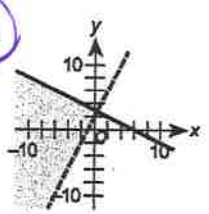
$\begin{cases} x + 2y \leq 6 \\ 2x - y < -2 \end{cases}$

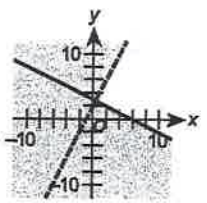
$y \leq -\frac{x}{2} + 3$

$y > 2x + 2$

A.


C.


B.


D.


46) What are the minimum and maximum values of the function $f(x,y) = 2x - 3y$ for the region $x \geq -2$, $2 \leq y \leq 5$, $y \geq x + 1$?

A. Minimum: −7; Maximum: −10
B. Minimum: −7; Maximum: −4
C. Minimum: −19; Maximum: −4
D. Minimum: −19; Maximum: −1

graph each, find vertices, plug in to profit eq.

50) These 3 lines intersect in the x-y plane at 3 distinct points:

$7y - 3x = -12$ $y = \frac{3}{7}x - \frac{12}{7}$
$5y - 8x = 9$ $y = \frac{8}{5}x + 9/5$
$2y + 5x = 20$ $y = -5/2\,x + 10$

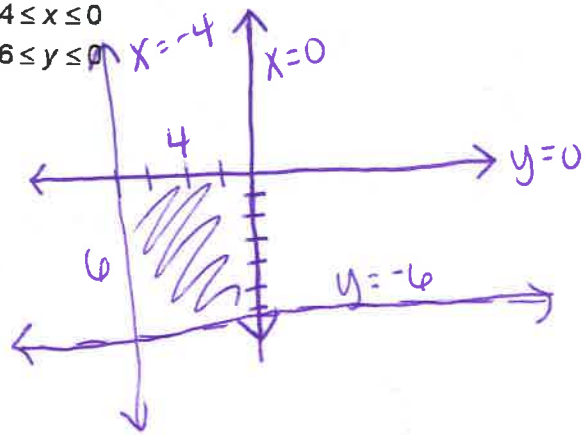
What are the coordinates of the intersection point with the greatest y-coordinate?

A. (4,0)
B. (2,5)
C. (−1,6)
D. (−3,−3)

graph + find intersect.

51) What is the area of the figure determined by this system of inequalities?

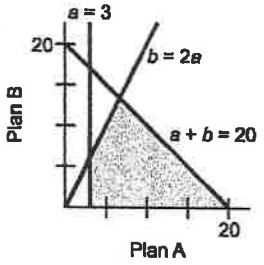
$\begin{cases} -4 \leq x \leq 0 \\ -6 \leq y \leq 0 \end{cases}$



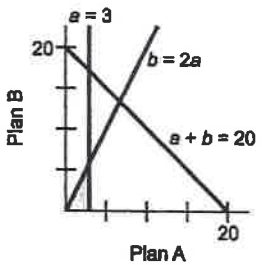
A. 6
B. 15
C. 24
D. 28

52) Hy[illegible] at most $20,000 to invest. She wants to inv[illegible] least $3,000 in Plan A and the rest in Plan B. H[illegible] Plan B investment must be at least twice as large as her Plan A investment. Which graph, with axes in terms of thousands of dollars, represents all possibilities for her two investments?

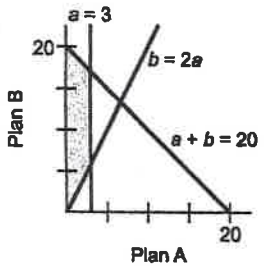
A.



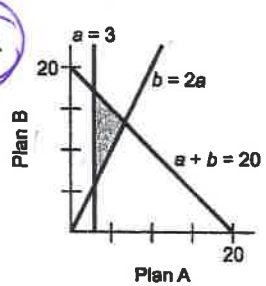
C.



B.



D.

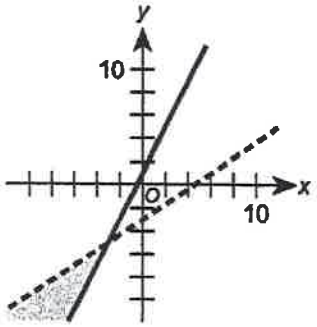


$a \geq 3{,}000$

$a + b = 20{,}000$

$b \geq 2a$

53) Which system of inequalities describes this graph?



A. $y > 2x + 1$ and $y \leq \frac{2}{3}x - 3$

B. $y < 2x + 1$ and $y \leq \frac{2}{3}x - 3$

C. $y \geq 2x + 1$ and $y < \frac{2}{3}x - 3$

D. $y \leq 2x + 1$ and $y > \frac{2}{3}x - 3$

55) José-Luis maintains a landscaping business, mowing lawns for $10 per hour and tending gardens for $24 per hour. He would like to maximize his profit. One of his restrictions is time: he has only 40 hours per week to work. Mowing a lawn takes 2 hours, and tending a garden takes 5 hours. Let x represent the number of lawns José-Luis mows per week, and let y represent the number of gardens he tends per week. Which of the following inequalities expresses José-Luis's time restriction?

A. $2x + 5y \geq 40$

B. $5x - 2y \leq 40$

C. $2x + 5y \leq 40$

D. $5x + 2y \geq 40$

$2x + 5y \leq 40$

2 hrs/lawn, 5 hrs/garden, total time

77) Which graph represents the solution set of this system of inequalities?

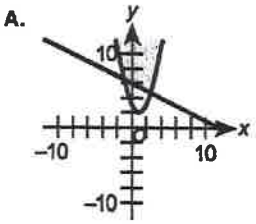
$$\begin{cases} y \geq x^2 - 2x + 3 \\ x + 2y \leq 12 \end{cases}$$

$y \leq \frac{1}{2}x + 6$

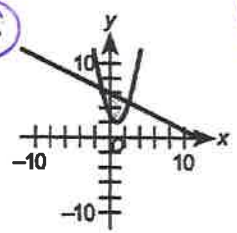
graph each

Check Inequal signs for Shading

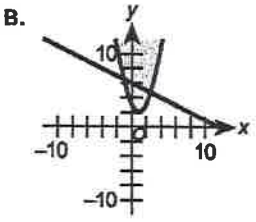
A.



C.



B.



D.