Earn credit by showing your work
No work = NO credit

Practice CRT Test

Intermediate Algebra

Name: Key
period: _____

1. Solve $\sqrt{x-2}+3=7$. (Hint: **step 1** is to subtract three, **step 2** square both sides of equal sign.)

   a. *x=98*
   b. *x=12*
   c. *x=102*
   d. *x=18*

You must show your work to earn credit

2. Simplify $\sqrt{12x^2}$.

   a. $4x\sqrt{3}$
   b. $2x\sqrt{3}$
   c. $2x\sqrt{3x}$
   d. $4x^2\sqrt{3x}$

3. Nyles has $300.00 in the bank and his job pays $10.50/hr. Which function describes his situation?

   a. N(h) = 300 + 10.5h
   b. N(h) = 300h + 10.5h
   c. N(h) = 300h + 10.5
   d. N(h) = 300 + 10.5

4. Solve $\sqrt[3]{x+1}=2$. Hint: the first step is to **"undo"** the cube root!

   a. 1
   b. 3
   c. 5
   d. 7

5. Find $[f(g(x)]$ with $f(x)=x+1$ and $g(x)=2x+1$.

   a. $3x+2$
   b. $2x+2$
   c. $3x+3$
   d. $2x+3$

6. Find $f(g(-2))$ with $f(x) = x + 1$ and $g(x) = 2x^2 + 1$.

a. -2
b. -6
c. 7
d. 10

7. Find $f(x) - g(x)$ when $f(x) = 2x + 6$ and $g(x) = -x + 1$.

a. $3x + 5$
b. $3x + 7$
c. $x + 5$
d. $x + 7$

8. Simplify $\left(\frac{3x^2}{y^3}\right)^2$

a. $\frac{3x^4}{y^5}$ c. $\frac{3x^4}{y^6}$

b. $\frac{9x^4}{y^{\frac{2}{3}}}$ d. $\frac{9x^4}{y^6}$

9. Write this fraction without negative exponents: $\frac{x^2y^{-4}}{z^{-5}}$

a. $x^2y^4z^5$ c. $\frac{x^2z^5}{y^4}$

b. $\frac{x^2y^4}{z^5}$ d. $\frac{y^4z^5}{x^2}$

10. Expand $(\sqrt{x}+4)^2$

This means multiply $(\sqrt{x}+4)(\sqrt{x}+4)$

a. $x+16$

b. $x+\sqrt{x}+16$

c. $x+8\sqrt{x}+16$

d. $\sqrt{x}+8\sqrt{x}+4$

11. Solve: $3|x+10|=60$

a. $x=-30,\ 10$

b. $x=10$

c. $x=-70,\ 50$

d. No Solution

12. Solve: $|x+2|<3$

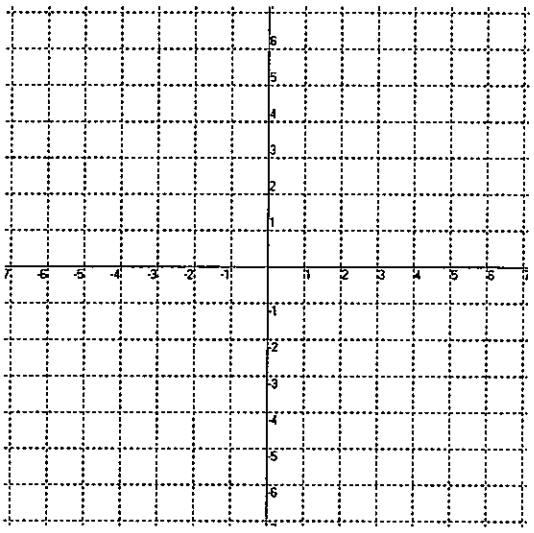
a. $x<3$

b. $-5<x<1$

c. $x<-5$ or $x>1$

d. $-3\le x\le 3$

13a. Graph (not multiple choice): $y=-(x+4)^2+4$



13b. Find the zeros (or roots) **using algebra**!

$x=-2,-6$

14. Solve: $|x|+5=0$

a. $x=5$
b. $x=\pm 5$
c. $x=10$
d. No Solution

15. For which of the following angles is the tangent ratio undefined?

a. 0^0
b. 30^0
c. 60^0
d. 90^0

16. In which two quadrants is the sine ratio negative?

a. I and IV
b. II and III
c. II and IV
d. III and IV

17. Give the exact value of $\cos\left(\frac{2\pi}{3}\right)$

a. $-\frac{\sqrt{3}}{2}$
b. $-\frac{1}{2}$
c. $\frac{\sqrt{3}}{2}$
d. $\frac{1}{2}$

18. Solve: $\tan x = 1$

a. $x = 30^0$

b. $x = 45^0$

c. $x = 60^0$

d. $x = 90^0$

19. Given an angle θ in a right triangle, $\cot\theta = \frac{3}{1}$, find $\cos\theta$.

a. 3

b. $\sqrt{10}$

c. $\frac{3\sqrt{10}}{10}$

d. $\frac{\sqrt{10}}{3}$

20. Give the exact value of $\sec\left(\frac{\pi}{6}\right)$

a. 2

b. $\frac{1}{2}$

c. $\frac{\sqrt{3}}{2}$

d. $\frac{2\sqrt{3}}{3}$

21. Solve the equation by factoring: $14x^2 - 28x = 0$

a. $x = 0$ or $x = 4$

b. $x = 2$ or $x = 4$

c. $x = 0$ or $x = 2$

d. $x = -2$ or $x = 4$

22. Write the expression in factored form: $2x^2 - 5x - 3$

a. $(2x-1)(x+3)$

b. $(2x+3)(x-1)$

c. $(2x-3)(x+1)$

d. $(2x+1)(x-3)$

23. Write the expression in factored form: $4x^2 - 9$?

a. $(2x-9)(2x+1)$

b. $(2x-3)(2x+3)$

c. $(4x-3)(x+3)$

d. $(4x+1)(x-9)$

24. Solve the equation by factoring. $x^2 + 7x - 18 = 0$

a. $x = 2$ or $x = 9$

b. $x = -2$ or $x = -9$

c. $x = 2$ or $x = -9$

d. $x = -2$ or $x = 9$

25. Solve the equation by factoring. $x^2 - 3x = 4$

a. $x = 1$ or $x = 4$

b. $x = -1$ or $x = -4$

c. $x = 1$ or $x = -4$

d. $x = -1$ or $x = 4$

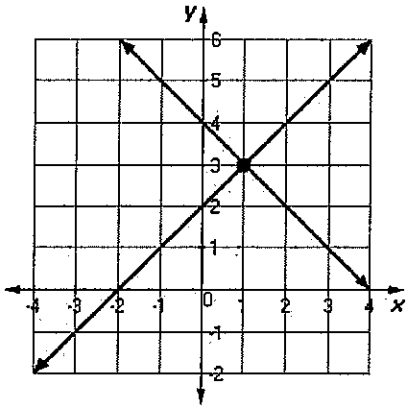
26. Identify the solution of the system graphed below.

a. $x=2, y=4$

b. $x=1, y=3$

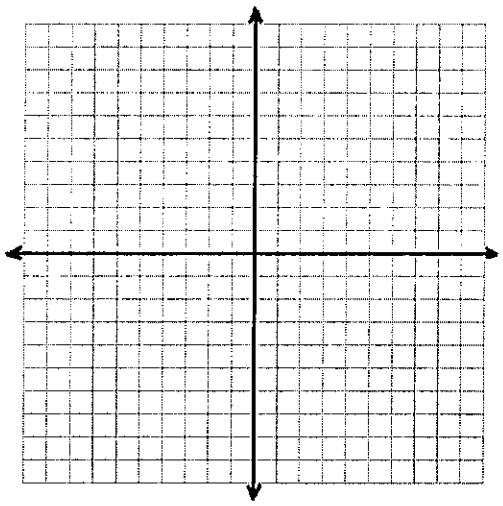
c. $x=-2, y=4$

d. $x=3, y=1$



27. Solve the system by graphing.

$$\begin{cases} y=-x+5 \\ y=2x-1 \end{cases}$$



a. $x=2, y=3$

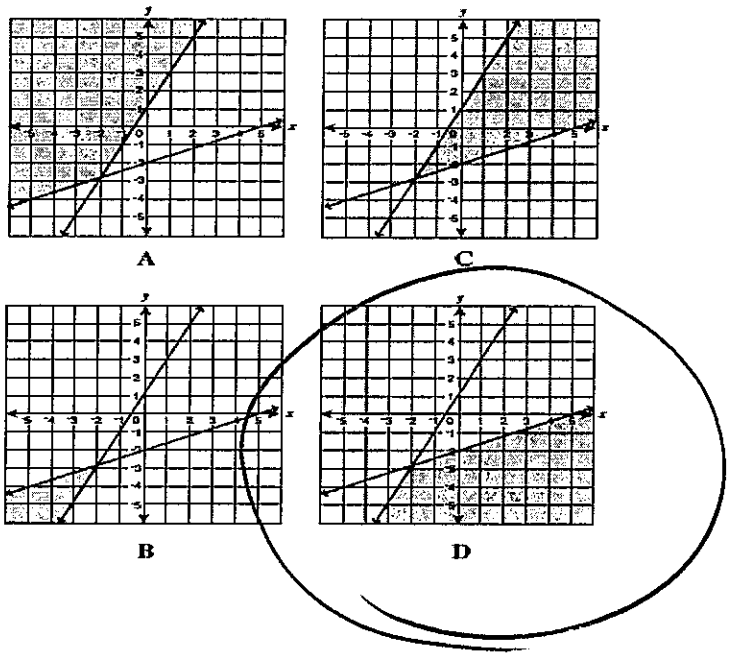
b. $x=3, y=2$

c. $x=4, y=1$

d. $x=1, y=4$

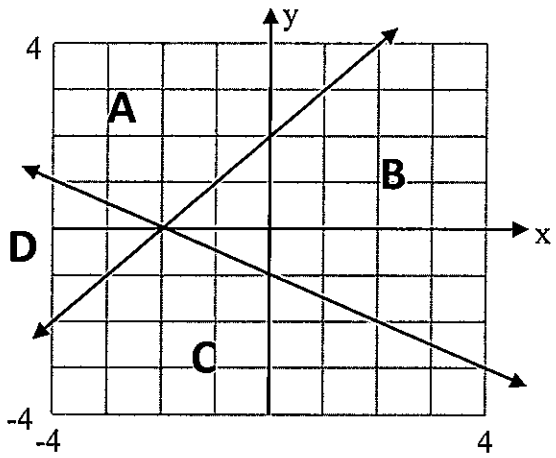
28. Identify the solution to the system of inequalities.

$$\begin{cases} y \le 2x+1 \\ y \le \frac{2}{5}x-2 \end{cases}$$



29. Which region, if shaded, satisfies the system of inequalities?

$$\begin{cases} y \ge x+2 \\ y \le -\frac{1}{2}x-1 \end{cases}$$



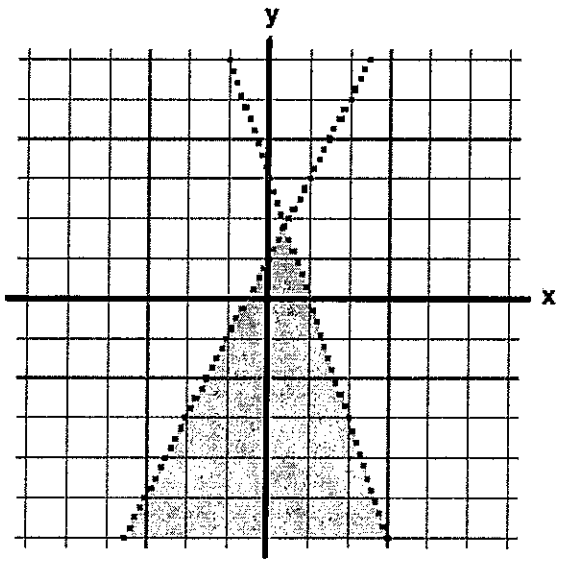
a. Region A

b. Region B

c. Region C

d. Region D

30. Identify the system represented by the graph below.



a. $\begin{cases} y \le 2x+1 \\ y \le -3x+3 \end{cases}$

b. $\begin{cases} y > 2x+1 \\ y < -3x+3 \end{cases}$

c. $\begin{cases} y > 2x+1 \\ y > -3x+3 \end{cases}$

d. $\begin{cases} y < 2x+1 \\ y < -3x+3 \end{cases}$

31. Identify the equation which matches the table.

x	y
-2	8
-1	6
0	4
1	2

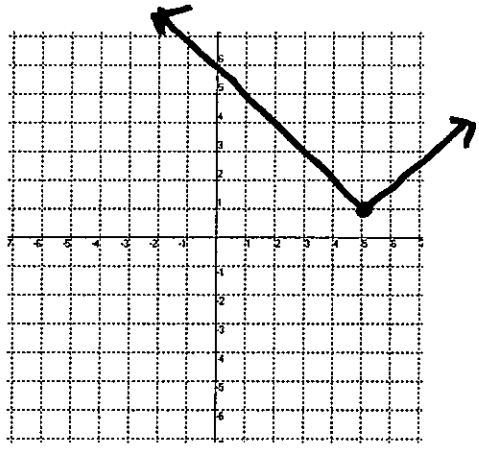
a) $y = 3x - 2$

b) $y = -2x + 4$

c) $y = 8 - 1x$

d) $y = -2x + 8$

32. Graph: $y = |x - 5| + 1$



33. Given a table, write the equation:

x	y
0	2
1	5

$y =$

Simplifying Algebraic Expressions

34. Simplify: $8a+4a-2a=$ $10a$

35. Simplify: $4+8y-(2y-8)=$

36. Simplify: $3x^2+7x+2x=$ $3x^2+9x$

Using the Distributive Property

37. Distribute: $3(5x+10)=$

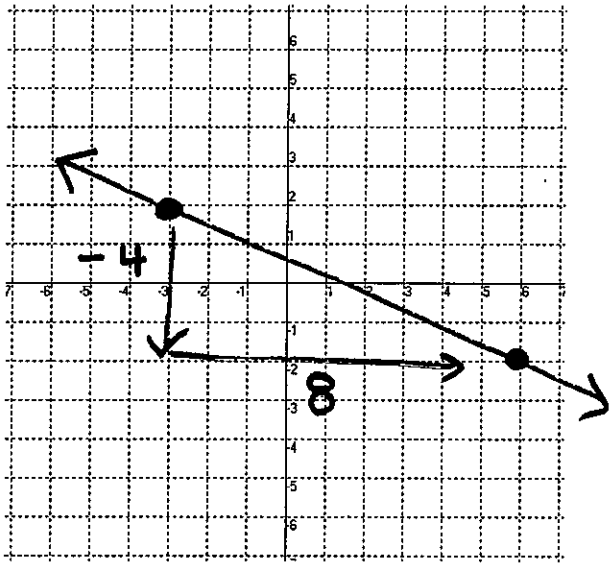
38. Distribute: $5(8-3a^2)=$ $40-15a^2$

39. Distribute: $-2(5x-4)=$

Finding the equations of a line

40.

a) Plot the point (5, -2) on the graph.



b) Plot the point (-3, 2) on the graph.

c) What is the slope between the points? $-\frac{4}{8} = -\frac{1}{2}$

d) Write the equation in point-slope form: $y - y_1 = m(x - x_1)$

$y-(-2) = -\frac{1}{2}(x-5)$

e) Identify the ***y*-intercept** (Hint: set ***x*** equal to zero and solve)

$(0, \frac{1}{2})$

Show your work

f) Write the equation in slope-intercept form: $y = mx + b$

$y = -\frac{1}{2}x + \frac{1}{2}$