Review of Algebra 1 Name/Date_____

All work for this packet must be completed on notebook paper and stapled to this document.

Section 1: Solve the following Equations.

1. $2(x+9)=20$
2. $3(x-4)=24$
3. $24=4(y-9)$
4. $\frac{1}{2}(x+6)=3$
5. $x+16=2x+9$
6. $4y-7=2y+7$
7. $5x+9=x-5$
8. $6-2x=5x+9$
9. $\frac{-1}{2}(x-3)=\frac{2}{5}(x+2)$
10. $4(\frac{1}{2}y-3)=2(y-4)$
11. $5(x+3)-8=2(x-7)+9$
12. $x-1=\frac{3}{4}(x+\frac{1}{2})$
13. $2(m-11)=4(m+1)-7m$
14. $\frac{1}{3}(x-2)=\frac{1}{6}(x-3)$
15. $\frac{4}{x}=\frac{3}{7}$

Section 2: Solve the inequalities

1. $x+2<2x+8$
2. $2y-9>y+4$
3. $6x+8\le x+7$
4. $6-2x\ge 2x+10$
5. $-4(x+3)\ge -20$
6. $-4(3-x)>12$
7. $9-\frac{3}{5}x<1$
8. $2(x-10)\le 3(x-4)$

Section 3: Write the following as algebraic equations – do not solve

1. Eight more than a number is 12.
2. Nine more than twice the cubed root of a number.
3. Twice the sum of a number and 7 is increased by 5. The result is 25.
4. Half a number, increased by 11 is twice the same number decreased by 5.
5. Three times the difference of a number and 5 is twice the sum of the same number and 4.

Section 4: Literal equations – Solve the equation for the indicated variable.

1. P = IRT *(R)*
2. A = 2(L + W) *(L)*
3. $P=\frac{R-C}{N}$ *(R)*
4. y = mx + b *(b)*
5. ax + by = c (x)
6. $A=\frac{1}{2}h(b_1+b_2)$ (b_2)
7. $2x-3y=6$ (y)
8. $-2(x+7y)=4$ (y)
9. $a^2+b^2=c^2$ (a^2)
10. $P=2a+3b-4c$ (a)

Section 5: Solve each equation for y. Put your answer in slope-intercept form. Identify the slope and y-intercept.

1. $4x+3y=-12$
2. $2x+8y=12$
3. $2x-6y=10$
4. $-2x+5y=15$
5. $\frac{2}{3}x+y=1$
6. $2x=-3y-6$
7. $\frac{3}{4}x+\frac{1}{8}y=6$
8. $4x+6y=12$
9. $-2x-5y=20$

Section 6: Factor each expression completely.

1. $x^2-16x+64$
2. $3x^2+22x+7$
3. $24x^2+2x-1$
4. $32x^3y-98xy^3$
5. $15x^2y+20xy^2$
6. x^2+7x+6
7. $2x^2+3x-9$
8. $4x^2-9y^2$
9. $12x^{12}p^3+36x^5p^3-4x^4p^2-6x^3p^2$
10. $2p^2-98$
11. b^2-25a^2
12. $8x^2+6x-27$
13. $x^2-12x+36$
14. $6x^2-37x-35$
15. $x^2+9x-22$

Section 7: Solve By Factoring

1. $x^2-81=0$
2. $x^2-8x+7=0$
3. $12x^2-x-6=0$
4. $2x^2-6x=0$
5. $x^2+6x-27=0$
6. $x^3+5x^2-14x=0$
7. $x^2=25$
8. $6x^2=5x+6$
9. $3x^2-13x+10=0$

Section 8: Perform the indicated operations to simplify the polynomials.

1. $(x+10)(x+5)$
2. $(5a+2b)(3a-b)$
3. $(2x+4)(3x^2+6x-3)$
4. $(a+2b)^2$
5. $(x+2)(x-3)$
6. $(2x-5y)(x+4y)$
7. $(x^2-2x+4)+(3x^2-6x+11)$
8. $(x^2-6x+4)-(5x^2-2x+7)$
9. $3(p+2q+9r)+2(3p-2q+5r)$
10. $2(x^2-3x+4)-(x^2+2x+10)$

Section 9: Simplify the monomials using your rules of exponents.

1. $\frac{a^5c^4b^5}{a^2c^2b^7}$
2. $\frac{15x^{12}y^{14}z^3}{3x^3y^4z^6}$
3. $(6b^3c^2a^4)(2a^{11}b^2c^5)$
4. $(2x^{13}y^{12}z^{10})^4$
5. $(5x^3y^5z^6)(7x^9yz^5)$
6. $(4x^2y^7z^4)^2$

7. $\dfrac{(3x^2y^2)^3}{x^3y^5}$

8. $\left(\dfrac{2x^{-45}y^{12}z^{-62}}{16x^{40}y^{-67}z^{82}}\right)^0$

9. $2x^4y^3z(x^6y^3z^4)^5$

10. $\dfrac{a^{-3}c^9b^9}{a^2c^{-4}b^7}$

11. $(3x^{-3}y^{12}z^{-7})^{-2}$

12. $(2x^{19})^0+5x^0$

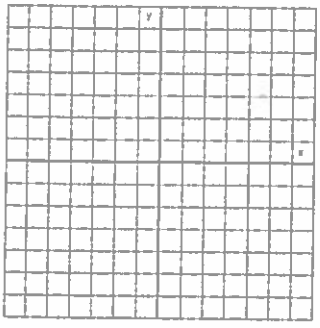
13. $x^{100}\cdot x^{200}$

14. $\dfrac{8a^2c^4b^5}{-16a^{16}b^2c^5}$

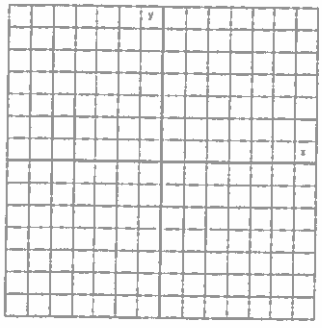
15. $(6b^3c^2a^4)(2a^{11}b^2c^5)$

Section 10: Find the solutions to the systems of equations by graphing.

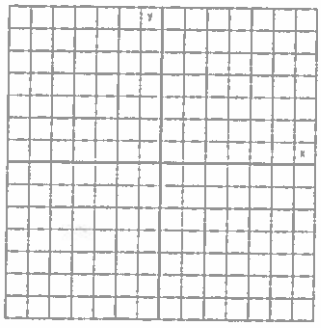
1. $\begin{cases} x+y=6 \\ y=2x-3 \end{cases}$



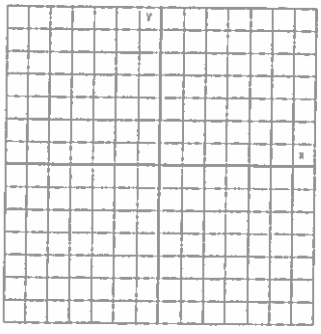
2. $\begin{cases} x-y=-2 \\ y=2x-1 \end{cases}$



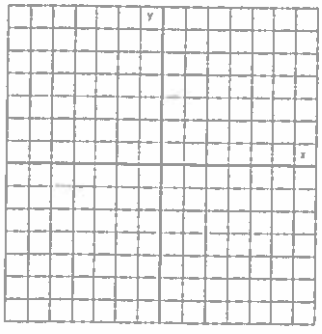
3. $\begin{cases} 4y-x=4 \\ y=-\dfrac{1}{4}x+1 \end{cases}$



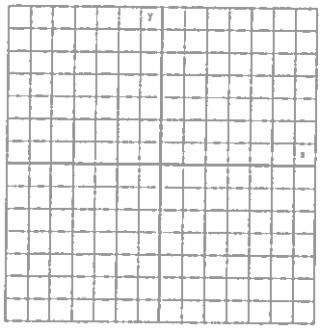
4. $\begin{cases} y=-3x+1 \\ y-2x=-4 \end{cases}$



5. $\begin{cases} 2y=-2x+8 \\ y=-x \end{cases}$



6. $\begin{cases} y=-\dfrac{2}{3}x+1 \\ y=\dfrac{4}{3}x-5 \end{cases}$



Section 11: Find the solutions to the systems of equations by Substitution or Elimination.

1. $\begin{cases} 2x+y=10 \\ 2x=4y \end{cases}$

2. $\begin{cases} y=3x-26 \\ 3x+y=10 \end{cases}$

3. $\begin{cases} x-y=5 \\ x+y=7 \end{cases}$

4. $\begin{cases} 7x-10y=4 \\ x+5y=7 \end{cases}$

5. $\begin{cases} x-3y=5 \\ -2x+6y=11 \end{cases}$

6. $\begin{cases} 4x-y=5 \\ 3x+y=9 \end{cases}$

7. $\begin{cases} 4x+2y=2 \\ 3x-y=4 \end{cases}$

8. $\begin{cases} 2x+6y=26 \\ x+4y=20 \end{cases}$

Section 12: Use the following formula to answer the questions $z=\dfrac{x-\mu}{\sigma}$.

1. Find z if $x=28$, $\sigma=4$, and $\mu=32$.
2. Find z if $x=550$, $\sigma=60$, and $\mu=600$.
3. Find x if $z=1$, $\sigma=9$, and $\mu=110$.
4. Find x if $z=-2.3$, $\sigma=15$, and $\mu=305$.
5. Find μ if $x=78$, $\sigma=13$, and $z=-.25$.
6. Find μ if $x=2640$, $\sigma=250$, and $z=1.8$.
7. Find σ if $x=95$, $z=.9$, and $\mu=88$.
8. Find σ if $x=190$, $z=-.5$, and $\mu=215$.
9. If the average test score is an 80 with standard deviation 12, what would a person's raw score be if his z-score is a 1.6?
10. If the average test score is a 430 with standard deviation 42, what would a person's raw score be if his z-score is a .75?

Section 13: Simplify the radical expressions.

1. $\sqrt{48x^6y^3}$
2. $\sqrt{x^3a^5b}$
3. $\sqrt[3]{375x^6y^7}$
4. $\sqrt{100x^7y^2}$
5. $\sqrt[3]{16b^6d^{12}}$
6. $\sqrt{288x^4y^5z^2}$
7. $\sqrt{512}$
8. $\sqrt{600}$
9. $5\sqrt{72}$
10. $\sqrt[3]{250a^9b^3}$
11. $5\sqrt{160x^7y^5}$
12. $\sqrt[3]{128c^4b^{12}}$
13. $-3\sqrt{2}+3\sqrt{20}-3\sqrt{8}$
14. $-3\sqrt{7}+4\sqrt{7}$
15. $-3\sqrt{45}+2\sqrt{12}+3\sqrt{6}-3\sqrt{20}$

Section 14: Evaluate the functional values if:

$f(x)=x^2-5$ $\quad$ $g(x)=5x^2-3x+1$ $\quad$ $h(x)=4x-1$

1. $h(-2)=$
2. $g(-3)=$
3. $f(10)=$
4. $f(-3)=$
5. $h\left(\dfrac{1}{2}\right)=$
6. $f(h(2))=$
7. $g(h(1))=$
8. $f(-5)=$
9. $h(35)=$
10. $g(-4)=$
11. $f(h(4))=$
12. $h(f(11))=$

Section 15: Linear equations.

1. What is the equation of the line through the points (2,1) and (-2,-7)?

2. What is the equation of the line if y = -3x – 2 is shifted up 6 units?

3. What is the equation of the line with slope 1/3 and passes through (6,2)?

4. What is the equation of the line that passes through (1,2) and (2,6)?

5. What is the equation of the line that is parallel to $y = \frac{1}{3}x + 1$ and passes through (6,5)?

6. Find the slope of the line that passes through (-1,2) and (-11, 5).

7. What is the slope of a horizontal line?

8. What is the slope of a vertical line?

9. What is the equation of the line perpendicular to $y = \frac{-3}{4}x + 1$ and passes through the point (6,3)?

10. What is the equation of the line with slope 1/3 and y – intercept 6?

Section 16: Simplify the rational expressions.

1. $\frac{x^2 - 144}{x - 12}$

2. $\frac{y^2 + y - 2}{y - 1}$

3. $\frac{2x^2 - 7x - 15}{2x + 3}$

4. $\frac{12x^4y - 6x^3y^6}{2xy}$

5. $\frac{4y - 1}{12y^2 - 23y + 5}$

6. $\frac{x + 5}{x^2 - 25}$

7. $\frac{x - 3}{x^2 - x - 6}$

8. $\frac{-4x^3y^4 + 2x^2y^7 + 22x^4y^8}{2x^2y^4}$

9. $\frac{24a^4 + 28a^9 + 36a^8}{4a^2}$

Section 17: Direct and inverse variation.

1. Find the constant of variation if y varies directly as x and y = 6 when x = 14.
2. Find x when y = 9, if y varies directly as x and x = 15 when y = 5.
3. Find y when x = 11, if y varies inversely as x and x = 9 when y = 13.
4. Find y when x = 8, if y varies directly as x and x = 10 when y = 7.
5. Find y when x = 13, if x varies directly as y and y = 11, when x = 6.