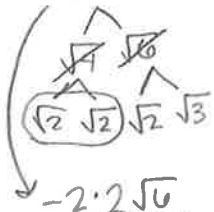
Name: Date: KEY Hour:

Algebra 1
Unit 1 Review

Simplify each radical expression.

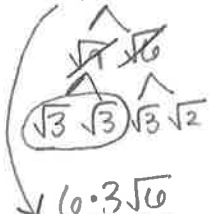
1. $-2\sqrt{24}$



$-2 \cdot 2\sqrt{6}$

$-4\sqrt{6}$

2. $6\sqrt{54}$



$6 \cdot 3\sqrt{6}$

$18\sqrt{6}$

3. $\sqrt{72}$

$3 \cdot 2\sqrt{2}$

$6\sqrt{2}$

4. Solve for x: $4(x-2)+6x=12+5x$.

$4x-8+6x=12+5x$

$10x-8=12+5x$

$-5x \quad -5x$

$5x-8=12$

$+8 \quad +8$

$5x=20$

$\frac{5x}{5}=\frac{20}{5}$

$x=4$

5. Write and solve an equation to represent the following:
The difference of twice a number and 4 is 8

$2x-4=8$

$+4 \quad +4$

$\frac{2x}{2}=\frac{12}{2}$

$x=6$

Solve each equation.

6. $3(2x-5)=2(3x-2)$

$6x-15=6x-4$

$-6x \quad -6x$

$-15 \neq -4$

No solution

7. $4x-3=2x+5$

$-2x \quad -2x$

$2x-3=5$

$+3 \quad +3$

$\frac{2x}{2}=\frac{8}{2}$

$x=4$

8. $\frac{5}{3}x-\frac{2}{5}=\frac{4}{5}\left(\frac{3}{3}\right)$

$\frac{10}{15}x-\frac{90}{15}=\frac{12}{15}$

$10x-90=12$

$+90 \quad +90$

$\frac{10x}{10}=\frac{102}{10}$

$x=\frac{102}{10}=\frac{51 \cdot 2}{5 \cdot 2}$

$x=\frac{51}{5}$

1000 − 25x

9. On the first day of the year, Alicia has $1000 in her savings account and started spending $25 a week. Her sister Kelsey had $650 in her savings account and started saving $15 a week. After how many weeks will the sisters have the same amount? What will that amount be?

650 + 15x =

x = weeks

$1000 - 25x = 650 + 15x$

$+25x \quad +25x$

$1000 = 650 + 40x$

$-650 \quad -650$

$350 = 40x$

$\frac{350}{40} = \frac{40x}{40}$

$x = 8.75$ weeks

10. Solve the equation. Write a justification for each step.

Statements	Reasons
$25 = 5(x - 3)$	Given
$25 = 5x - 15$	Dist. POE
$+15 \quad +15$	Add. POE
$40 = 5x$	Simplify
$\frac{40}{5} = \frac{5x}{5}$	Div. POE
$8 = x$	Simplify
$x = 8$	Symmetric POE

$1000 - 25x$

$= 1000 - 25(8.75)$

$= 1000 - 218.75$

$= \$781.25$

Solve each inequality. Then graph.

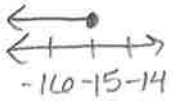
11. $-125 \geq 8p - 5$

$+5 \quad +5$

$\frac{-120}{8} \geq \frac{8p}{8}$

$-15 \geq p$

$p \leq -15$

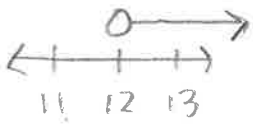


12. $9 + \frac{x}{3} > 13$

$-9 \quad -9$

$3\left(\frac{x}{3}\right) > (4) \cdot 3$

$x > 12$



13. $98 < 7(3x + 5)$

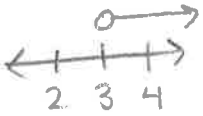
$98 < 21x + 35$

$-35 \quad -35$

$\frac{63}{21} < \frac{21x}{21}$

$3 < x$

$x > 3$



14. $-5(n + 1) - 6n \leq 83$

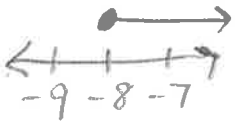
$-5n - 5 - 6n \leq 83$

$-11n - 5 \leq 83$

$+5 \quad +5$

$\frac{-11n}{-11} \leq \frac{88}{-11}$

$n \geq -8$



15. $6x - 5(8 - 5x) < 16 + 3x$

$6x - 40 + 25x < 16 + 3x$

$31x - 40 < 16 + 3x$

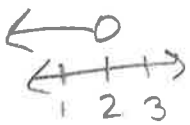
$-3x \quad -3x$

$28x - 40 < 16$

$+40 \quad +40$

$\frac{28x}{28} < \frac{56}{28}$

$x < 2$



16. $3(x + 1) \geq 2(-2 + x)$

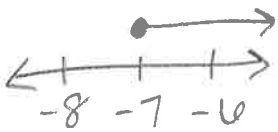
$3x + 3 \geq -4 + 2x$

$-2x \quad -2x$

$1x + 3 \geq -4$

$-3 \quad -3$

$x \geq -7$



Solve each compound inequality and graph its solution.

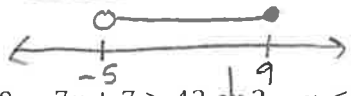
17. $33 > -8x - 7 \geq -79$

$+7 \quad +7 \quad +7$

$40 > -8x \geq -72$

$\frac{40}{-8} > \frac{-8x}{-8} \geq \frac{-72}{-8}$

$\boxed{-5 < x \leq 9}$



18. $-15 < -3(x - 2) < 33$

$-15 < -3x + 6 < 33$

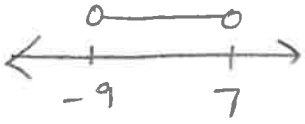
$-6 \quad -6 \quad -6$

$-21 < -3x < 27$

$\frac{-21}{-3} < \frac{-3x}{-3} < \frac{27}{-3}$

$7 > x > -9$

$\boxed{-9 < x < 7}$

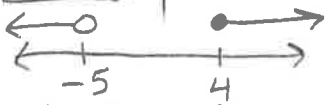


19. $-7x + 7 > 42$ *or* $2 - x \leq -2$

$-7 \quad -7 \quad -2 \quad -2$

$\frac{-7x}{-7} > \frac{35}{-7} \quad \frac{-x}{-1} \leq \frac{-4}{-1}$

$\boxed{x < -5 \text{ or } x \geq 4}$

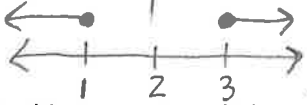


20. $8x - 4 \geq 20$ *or* $5x - 1 \leq 4$

$+4 \quad +4 \quad +1 \quad +1$

$\frac{8x}{8} \geq \frac{24}{8} \quad \frac{5x}{5} \leq \frac{5}{5}$

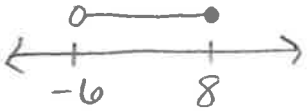
$\boxed{x \geq 3 \text{ or } x \leq 1}$



21. A number x is more than -6 and at most 8. Write this sentence as in inequality. Graph the solutions.

$x > -6 \quad x \leq 8$

$\boxed{-6 < x \leq 8}$



22. You start a small baking business, and you want to earn a profit of at least $250 in the first month. The expenses in the first month are $155. Write and solve an inequality to represent the possible revenues that you need to earn to meet the profit goal?

≥ 250

$x - 155 \geq 250$

$+155 \quad +155$

$\boxed{x \geq 405}$

Need to earn more than $405

23. Your monthly budget allows you to spend between $200 and $450, inclusively. You have already spent $125. Write and solve a compound inequality to represent how much more money you have to spend for the rest of the month.

includes

x = amount of money left to spend

$200 \leq x + 125 \leq 450$

$-125 \quad -125 \quad -125$

$\boxed{75 \leq x \leq 325}$

Negative exponents - cross the line and change the sign

Simplify each.

24. $x^2x^{-6}x^0 = x^{2+-6+0} = x^{-4} = \frac{1}{x^4}$

25. $x^{-8} = \frac{1}{x^8}$

26. $y^{12}y^3y^1 = y^{12+3+1} = y^{16}$

27. $x^{-1}y^5x^{-3}x^1y^2 = x^{-1+-3+1}\ y^{5+2}$
$= x^{-3} \quad = y^7$
$= \frac{1}{x^3} \quad = \frac{y^7}{x^3}$

28. $x^{-7}x^5 = x^{-7+5} = x^{-2} = \frac{1}{x^2}$