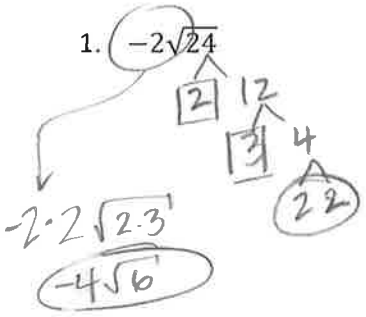
Name: Date: key Hour:

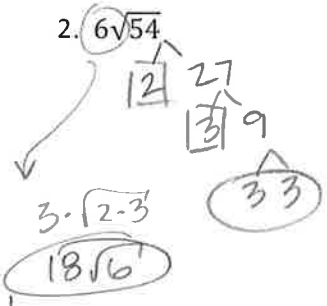
Algebra 1
Unit 1 Review

Simplify each radical expression.

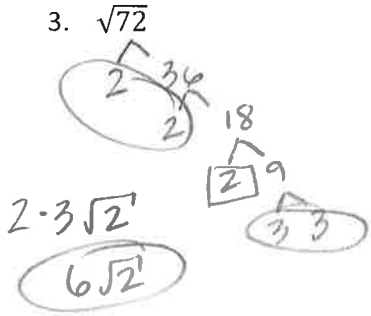
1. $-2\sqrt{24}$



2. $6\sqrt{54}$



3. $\sqrt{72}$



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

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

$10x - 8 = 12 + 5x$

$+8 \quad +8$

$10x = 20 + 5x$

$-5x \quad -5x$

$5x/5 = 20/5$

$x = 4$

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

$6x - 15 = 6x - 4$

$-6x \quad -6x$

$-15 \neq -4$

$\emptyset$ or no soln.

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

$-2x \quad -2x$

$2x - 3 = 5$

$+3 \quad +3$

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

$x = 4$

8. $\frac{2}{3}x - 6 = \frac{4}{5}$

$10x - 90 = 12$

$+90 \quad +90$

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

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

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?

$1000 - 25x = 650 + 15x$

$-650 \quad -650$

$350 - 25x = 15x$

$+25x \quad +25x$

$350 = 40x$

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

$8.75 = x$ weeks

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

Statements	Reasons
$25 = 5(x - 3)$	1. given
2. $25 = 5x - 15$ $+15 \quad +15$	2. Distributive Prop
3. $\frac{40}{5} = \frac{5x}{5}$	3. Add. POE
4. $8 = x$	4. Div. POE
5. $x = 8$	5. Symmetric POE

Solve each inequality. Then graph.

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

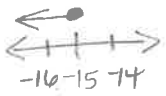
$+5 \quad +5$

$-120 \geq 8p$

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

$-15 \geq p$

$p \leq -15$



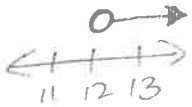
12. $\frac{x}{3} + 9 > 13$

$\cdot 3 \quad \cdot 3$

$x + 27 > 39$

$-27 \quad -27$

$x > 12$



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

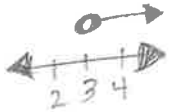
$98 < 21x + 35$

$-35 \quad -35$

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

$3 < x$

$x > 3$



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

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

$-11n - 5 \leq 83$

$+5 \quad +5$

$-11n \leq 88$

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

$n \geq -8$

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

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

$31x - 40 < 16 + 3x$

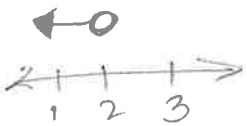
$-3x \quad -3x$

$28x - 40 < 16$

$+40 \quad +40$

$28x < 56$

$x < 2$



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

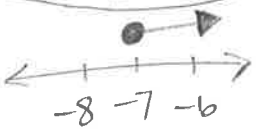
$3x + 3 \geq -4 + 2x$

$-2x \quad -2x$

$x + 3 \geq -4$

$-3 \quad -3$

$x \geq -7$



Solve each compound inequality and graph its solution.

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

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

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

$-5 < x \leq 9$

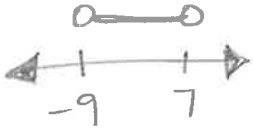
18. $-15 < -3(x-2) < 33$

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

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

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

$7 > x > -9$

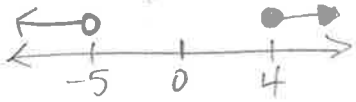


19. $-7x + 7 > 42$ or $2 - x \leq -2$

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

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

$x < -5$ OR $x \geq 4$

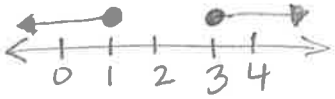


20. $8x + 4 \geq 20$ or $5x - 1 \leq 4$

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

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

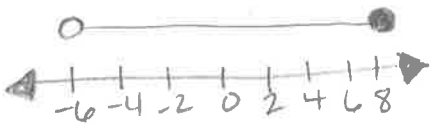
$x \geq 3$ OR $x \leq 1$



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

$8 \geq x > -6$

$-6 < x \leq 8$



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?

$x - 155 \geq 250$

$+155 \quad +155$

$x \geq 405$

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.

$200 \leq x + 125 \leq 450$

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

$75 \leq x \leq 325$

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

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

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

29. $(y^4x^{-3}y^2)^3$ $y^{12}x^{-9}y^6 = x^{-9}y^{18} = \frac{y^{18}}{x^9}$

30. $(3x^9y^8)^{-2}$ $3^{-2}x^{-18}y^{-16} = \frac{1}{3^2x^{18}y^{16}} = \frac{1}{9x^{18}y^{16}}$