

REVIEW



Unit 4: Expressions and Equations
Lesson: Review

DO NOW:

1. Take out HW & check
2. Begin work at stations!

TONIGHT'S HW

What to study:

- Quizizz (code: 235023)
- 12 questions from class
- E-Book p. 380-382

*(do as much as you can,
and check answers online)*

*****Unit 4 Test tomorrow*****

CLICK ME!!!!

PG 8 #4, 8, 10, 17, 19, 23, 25

TONIGHT'S HW
STUDY!!!!!!!!!!!!!!

4. $7(g - 4) = 3$

$$\begin{array}{r} 7g - 28 = 3 \\ +28 \quad +28 \\ \hline 7g = \frac{31}{7} \\ \frac{7g}{7} = \frac{31}{7} \\ g = \frac{31}{7} \text{ (OR } 4\frac{3}{7}) \end{array}$$

g

check $g = \frac{31}{7}$

$$\begin{array}{l} 7(g - 4) = 3 \\ 7(4\frac{3}{7} - 4) = 3 \\ 7(\frac{3}{7}) = 3 \\ (\frac{7}{1})(\frac{3}{7}) \\ \checkmark \\ 3 = 3 \checkmark \end{array}$$

PG 8 #4, 8, 10, 17, 19, 23, 25

TONIGHT'S HW
STUDY!!!!!!!!!!!!!!

Unit 4 Test tomorrow

8. $2(1.5m + 3) = 3.5m - 1$

$$\begin{array}{r} 3m + 6 = 3.5m - 1 \\ -3m \quad \downarrow \quad -3m \quad \downarrow \\ \hline 6 = 0.5m - 1 \\ +1 \quad \downarrow \quad +1 \\ \hline 7 = 0.5m \\ \frac{7}{0.5} = \frac{0.5m}{0.5} \\ \boxed{14 = m} \end{array}$$

check $m = 14$

$$\begin{array}{l} 2(1.5m + 3) = 3.5m - 1 \\ 2(1.5 \cdot 14 + 3) = 3.5(14) - 1 \\ 2(\checkmark 21 + 3) = \checkmark 49 - 1 \\ 2(\checkmark 24) = \checkmark 48 \\ \checkmark \\ 48 = 48 \checkmark \end{array}$$

PG 8 #4, 8, 10, 17, 19, 23, 25

10. $2\frac{1}{5}x - 5 = 2(1\frac{2}{5}x + 3)$

$$2\frac{1}{5}x - 5 = 2\frac{4}{5}x + 6$$

$$\begin{array}{r} -2\frac{1}{5}x \quad \downarrow \quad -2\frac{1}{5}x \quad \downarrow \\ \hline -5 = \frac{3}{5}x + 6 \\ -6 \quad \quad \quad -6 \\ \hline -11 = \frac{3}{5}x \\ \frac{3}{5} \quad \quad \quad \frac{3}{5} \\ \hline \end{array}$$

$-\frac{55}{3}$ OR $-18\frac{1}{3} = x$

TONIGHT'S HW
STUDY!!!!!!!!!!!!

Check $x = -\frac{55}{3}$

$$2\frac{1}{5}x - 5 = 2(1\frac{2}{5}x + 3)$$

$$2\frac{1}{5}(-\frac{55}{3}) - 5 = 2(1\frac{2}{5}(-\frac{55}{3}) + 3)$$

$$-40\frac{1}{3} - 5 = 2(-25\frac{2}{3} + 3)$$

$$-45\frac{1}{3} = 2(-22\frac{2}{3})$$

$$-45\frac{1}{3} = -45\frac{1}{3}$$

Wow.

PG 8 #4, 8, 10, 17, 19, 23, 25

17. $\frac{c}{3} + 7 > 5\frac{1}{2}$

$$\begin{array}{r} -7 \quad \quad -7 \\ \hline \end{array}$$

$$3 \cdot \frac{c}{3} > -\frac{1}{2} \cdot 3$$

$$c > -4\frac{1}{2}$$

(OR $-\frac{9}{2}$)

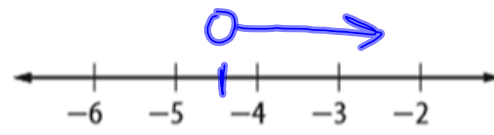
TONIGHT'S HW
STUDY!!!!!!!!!!!!
Unit 4 Test tomorrow

Check $c = 0$

$$\frac{c}{3} + 7 > 5\frac{1}{2}$$

$$\frac{0}{3} + 7 > 5\frac{1}{2}$$

$$0 + 7 > 5\frac{1}{2}$$

$$7 > 5\frac{1}{2}$$


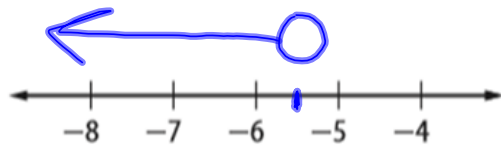
PG 8 #4, 8, 10, 17, 19, 23, 25

19. $-3(x + 3) > 7.5$

$-3x - 9 > 7.5$

$\begin{array}{r} \downarrow +9 \quad +9 \\ \hline -3x > 16.5 \\ \hline \frac{-3x}{-3} > \frac{16.5}{-3} \end{array}$

Reverse! $x < -5.5$



check $x = -7$

$-3(x+3) > 7.5$

$-3(-5+3) > 7.5$

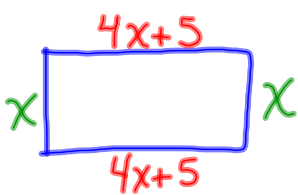
$-3(-2.5)$

$7.5 > 7.5$

TONIGHT'S HW
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PG 8 #4, 8, 10, 17, 19, 23, 25

23. The perimeter of a rectangle is 80 feet. Find the dimensions if the length is 5 feet longer than four times the width. Then find the area of the rectangle.



Let $x = \text{width}$
Let $4x+5 = \text{length}$

EQUATION:

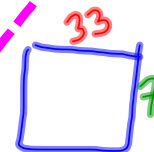
$x + x + 4x + 5 + 4x + 5 = 80$

Combine like terms!

$10x + 10 = 80$
 $\quad -10 \quad -10$

$\frac{10x}{10} = \frac{70}{10}$

$x = 7$



Area = $33 \cdot 7 = 231$

TONIGHT'S HW
STUDY!!!!!!!!!!!!!!
Unit 4 Test tomorrow

PG 8 #4, 8, 10, 17, 19, 23, 25

25. Admission to the state fair costs \$5 and each ride costs \$0.75. If Ahmed wants to spend no more than \$14 at the fair, how many rides can he ride?

let $x = \# \text{rides}$

Inequality:

$$0.75x + 5 \leq 14$$

$$\begin{array}{r} 0.75x + 5 \leq 14 \\ -5 \quad -5 \\ \hline 0.75x \leq 9 \\ \hline \frac{0.75x}{0.75} \leq \frac{9}{0.75} \end{array}$$

$$x \leq 12$$

Ahmed can ride 12 or less rides.

TONIGHT'S HW

STUDY!!!!!!!!!!!!!!

*****Unit 4 Test tomorrow*****

Lesson 8-1 Solving Equations with Rational Coefficients (pp. 324-329)

Solve each equation. Check your solutions.

- $1.2m = 2.4$
- $\frac{1}{5}x = 4$
- $-2x = 2.2$
- $0.5x = 25$
- $-\frac{1}{4}x = 16$
- $\frac{1}{6}x = -4$
- Rosa is baking granola bars for her friends. Each bar requires 4.8 ounces of dough. Write and solve an equation to find how many granola bars Rosa can make if she has 336 ounces of dough.
- Samantha has 15 packets of beads. She wants to make bracelets that use 1.5 packets of beads each. Write and solve an equation to find how many bracelets Samantha can make.

Example 1

Solve $-4x = -3.2$.

$$\begin{array}{l} -4x = -3.2 \quad \text{Write the equation.} \\ \frac{-4x}{-4} = \frac{-3.2}{-4} \quad \text{Division Property of Equality} \\ x = 0.8 \quad \text{Simplify.} \end{array}$$

Example 2

Solve $-\frac{1}{2}a = 5$.

$$\begin{array}{l} -\frac{1}{2}a = 5 \quad \text{Write the equation.} \\ -2\left(-\frac{1}{2}a\right) = -2(5) \quad \text{Multiplication Property of Equality} \\ a = -10 \quad \text{Simplify.} \end{array}$$

Lesson 8-2 Solving Two-Step Equations (pp. 333–338)

Solve each equation. Check your solutions.

9. $3 + 4c = 15$ 10. $2.1n - 5.31 = 18$
 11. $\frac{1}{3}a + 2 = 5$ 12. $\frac{1}{5}x - 3 = 7$
 13. $\frac{4}{7} + 2p = \frac{2}{7}$ 14. $0.12t - 0.6 = -0.06$
 15. Nate read 10 more books than Maren for the summer reading program. The total number of books they read is 60. Solve $x + x + 10 = 60$ to find the number of books Nate read.

Example 3Solve $3x + 5 = 29$.

$$3x + 5 = 29$$

Write the equation.

$$3x + 5 - 5 = 29 - 5$$

Subtraction Property of Equality

$$3x = 24$$

Simplify.

$$\frac{3x}{3} = \frac{24}{3}$$

Division Property of Equality

$$x = 8$$

Simplify.

Lesson 8-3 Writing Equations (pp. 339–343)

Translate each sentence into an equation. Then solve each equation.

16. Toya bought some fruit for \$5 and 3 boxes of cereal and spent a total of \$17.
 17. Six less than twice a number is -22 .
 18. Noelle spent \$36 on books and pens. She spent \$12 more on books than she did on pens. How much did she spend on books?

Example 4The product of a number and 6 is -36 . Write and solve an equation to find the number.

$$6n = -36$$

Write the equation.

$$\frac{6n}{6} = \frac{-36}{6}$$

Division Property of Equality

$$n = -6$$

Simplify.

Lesson 8-4 More Two-Step Equations (pp. 347–351)

Solve each equation.

- $3(x - 5) = 24$
- $\frac{4}{5}(c + 12) = -8$
- $0.3(5 + y) = 12$
- $2.4(b + 3.1) = 14.4$
- $\frac{3}{8}(v - 6) = \frac{1}{8}$
- $4.1(x - 2.7) = 254.2$

25. Talia buys 4 boxes of cereal. She has coupons for \$1.15 off the regular price of each box of cereal. After using the coupons, the total cost of the cereal is \$8.40. Write and solve an equation to find the regular price of each box of cereal.

26. Brady buys five T-shirts on sale for \$4 off the regular price. His total cost is \$55, before tax. Write and solve an equation to find the regular price of each T-shirt.

Example 5

Solve $\frac{2}{3}(p - 5) = -8$. Check your solution.

$$\frac{2}{3}(p - 5) = -8$$

Write the equation.

$$\frac{3}{2} \cdot \frac{2}{3}(p - 5) = \frac{3}{2} \cdot (-8)$$

Multiplication Property of Equality

$$p - 5 = -12$$

Simplify.

$$p - 5 + 5 = -12 + 5$$

Addition Property of Equality

$$p = -7$$

Simplify.

Check $\frac{2}{3}(p - 5) = -8$

$$\frac{2}{3}(-7 - 5) \stackrel{?}{=} -8$$

$$\frac{2}{3}(-12) \stackrel{?}{=} -8$$

$$-8 = -8 \checkmark$$

Lesson 8-5 Solving Equations with Variables on Each Side (pp. 356–360)

Solve each equation. Check your solutions.

- $3a + 6 = 2a$
- $10 - x = 9x$
- $8.7w - 3 = 5.5w + 3.4$
- $\frac{2}{3}x + 6 = \frac{1}{3}x - 13$
- $-5.2k + 2.9 = -12k + 30.1$
- $5x + \frac{2}{5} = x - \frac{1}{10}$

33. An online DVD rental club has two membership plans as shown. Write and solve an equation to find how many months it would take for the total cost of the two plans to be the same.

Plan	Membership Fee	Cost Per Month
A	\$20	\$5
B	\$30	\$3

34. An online video game site charges a \$10 membership fee and a \$6.00 monthly cost. Another game site charges \$6 membership fee and a \$8.00 monthly cost. Write and solve an equation to find how many months it would take for the total cost of the two sites to be the same.

Example 6

Solve $8x + 6 = 4x - 10$. Check your solution.

$$8x + 6 = 4x - 10$$

Write the equation.

$$8x - 4x + 6 = 4x - 4x - 10$$

Subtraction Property of Equality

$$4x + 6 = -10$$

Simplify.

$$4x + 6 - 6 = -10 - 6$$

Subtraction Property of Equality

$$4x = -16$$

Simplify.

$$x = -4$$

Division Property of Equality.

Check $8x + 6 = 4x - 10$

$$8(-4) + 6 \stackrel{?}{=} 4(-4) - 10$$

$$-32 + 6 \stackrel{?}{=} -16 - 10$$

$$-26 = -26 \checkmark$$

Lesson 8-6 Inequalities (pp. 361–366)

Write an inequality for each sentence.

35. Jeremiah can spend at most \$15 at the store.
36. There are more than 35 students in the band.

For the given value, state whether each inequality is true or false.

37. $x + 6 > 7$, $x = 2$ 38. $13 - a < 9$, $a = 10$
39. $16 \leq 4a$, $a = 4$ 40. $3m + 4 \geq 12$, $m = 2$
41. $6x > 18$, $x = 3$ 42. $6b + 4 > 12$, $b = 2$

Example 7State whether $x - 6 > 12$ is true or false for $x = 15$.

$x - 6 > 12$ Write the inequality.

$15 - 6 > 12$ Replace x with 15.

$9 > 12$ Simplify.

The sentence is false. So, $9 \not> 12$.**Lesson 8-7 Solving Inequalities** (pp. 367–373)

Solve each inequality. Graph the solution on a number line.

43. $a - 15 \leq 3$ 44. $x + 13 > -22$
45. $-0.3z \leq -2.4$ 46. $6h - 4 > 38$
47. $-5x < -13$ 48. $\frac{2}{3}x + 7 > 13$
49. Jose is buying books and CDs. He can spend at most \$150. He spends \$30 on books. If each CD costs \$20, write and solve an inequality to show the maximum number of CDs Jose can buy.
50. Tim can spend at most \$36 for cupcakes. If each cupcake costs \$3, write and solve an inequality to show the maximum number of cupcakes Tim can buy.

Example 8Solve $x - 3 < 10$. Then graph the solution on a number line.

$x - 3 < 10$ Write the inequality.

$x - 3 + 3 < 10 + 3$ Addition Property of Inequality

$x < 13$ Simplify.

Graph the solution.



Lesson 8-8 Solving Multi-Step Equations and Inequalities (pp. 374–379)

Solve. Check your solutions.

51. $5(x - 3) + 1 = 16$ 52. $3(c - 4) = 4(c - 6)$
 53. $2(x + 2) - 4 = 2x$ 54. $5 + 3y = 3(2 + y)$
 55. $-4g - 5 \geq -17$ 56. $18 > -12 + 6m$
 57. $24 - 3c \leq 15$ 58. $\frac{2}{3}k + 9 < 5$
59. A car sales associate receives a monthly salary of \$1700 a month plus \$140 for every car he sells. How many cars must he sell monthly to earn at least \$4500?
60. At the car wash, Xander receives \$200 a week plus \$10 for every car he details. How many cars must he detail weekly to earn at least \$350 a week?

Example 9Solve $-5m + 8 \geq 23$.

$$\begin{aligned}
 -5m + 8 &\geq 23 \\
 -5m + 8 - 8 &\geq 23 - 8 && \text{Write the inequality.} \\
 -5m &\geq 15 && \text{Subtraction Property} \\
 \frac{-5m}{-5} &\leq \frac{15}{-5} && \text{of Inequality} \\
 m &\leq -3 && \text{Simplify.} \\
 &&& \text{Division Property of} \\
 &&& \text{Inequality} \\
 &&& \text{Simplify.}
 \end{aligned}$$

Lesson 8-1 Solving Equations with Rational Coefficients (pp. 324–329)

Solve each equation. Check your solutions.

1. $1.2m = 2.4$ **2** 2. $\frac{1}{5}x = 4$ **20**
 3. $-2x = 2.2$ **-1.1** 4. $0.5x = 25$ **50**
 5. $-\frac{1}{4}x = 16$ **-64** 6. $\frac{1}{6}x = -4$ **-24**
7. Rosa is baking granola bars for her friends. Each bar requires 4.8 ounces of dough. Write and solve an equation to find how many granola bars Rosa can make if she has 336 ounces of dough. **$4.8x = 336$; 70 granola bars**
8. Samantha has 15 packets of beads. She wants to make bracelets that use 1.5 packets of beads each. Write and solve an equation to find how many bracelets Samantha can make. **$1.5x = 15$; 10 bracelets**

Example 1Solve $-4x = -3$.

$$\begin{aligned}
 -4x &= -3.2 \\
 \frac{-4x}{-4} &= \frac{-3.2}{-4} \\
 x &= 0.8
 \end{aligned}$$

Example 2Solve $-\frac{1}{2}a = 5$.

$$\begin{aligned}
 -\frac{1}{2}a &= 5 \\
 -2\left(-\frac{1}{2}a\right) &= -2(5) \\
 a &= -10
 \end{aligned}$$

Lesson 8-2 Solving Two-Step Equations (pp. 333–338)

Solve each equation. Check your solutions.

9. $3 + 4c = 15$ **3**

10. $2.1n - 5.31 = 18$ **11.1**

11. $\frac{1}{3}a + 2 = 5$ **9**

12. $\frac{1}{5}x - 3 = 7$ **50**

13. $\frac{4}{7} + 2p = \frac{2}{7}$ **$-\frac{1}{7}$**

14. $0.12t - 0.6 = -0.06$ **4.5**

15. Nate read 10 more books than Maren for the summer reading program. The total number of books they read is 60. Solve $x + x + 10 = 60$ to find the number of books Nate read. **35 books**

Lesson 8-3 Writing Equations (pp. 339–343)

Translate each sentence into an equation. Then solve each equation.

16. Toya bought some fruit for \$5 and 3 boxes of cereal and spent a total of \$17. **$3n + 5 = 17$; \$4 per box**

17. Six less than twice a number is -22 .
 $2n - 6 = -22$; -8

18. Noelle spent \$36 on books and pens. She spent \$12 more on books than she did on pens. How much did she spend on books? **\$24**

Lesson 8-4 More Two-Step Equations (pp. 347–351)

Solve each equation.

19. $3(x - 5) = 24$ **13**

20. $\frac{4}{5}(c + 12) = -8$ **-22**

21. $0.3(5 + y) = 12$ **35**

22. $2.4(b + 3.1) = 14.4$ **2.9**

23. $\frac{3}{8}(v - 6) = \frac{1}{8}$ **$6\frac{1}{3}$**

24. $4.1(x - 2.7) = 254.2$ **64.7**

25. Talia buys 4 boxes of cereal. She has coupons for \$1.15 off the regular price of each box of cereal. After using the coupons, the total cost of the cereal is \$8.40. Write and solve an equation to find the regular price of each box of cereal.

$4(p - 1.15) = 8.40$; \$3.25

26. Brady buys five T-shirts on sale for \$4 off the regular price. His total cost is \$55, before tax. Write and solve an equation to find the regular price of each T-shirt.

$5(t - 4) = 55$; \$15

Lesson 8-5 Solving Equations with Variables on Each Side (pp. 356–360)

Solve each equation. Check your solutions.

27. $3a + 6 = 2a$ **-6**

28. $10 - x = 9x$ **1**

29. $8.7w - 3 = 5.5w + 3.4$ **2**

30. $\frac{2}{3}x + 6 = \frac{1}{3}x - 13$ **-57**

31. $-5.2k + 2.9 = -12k + 30.1$ **4**

32. $5x + \frac{2}{5} = x - \frac{1}{10}$ **$-\frac{1}{8}$**

33. An online DVD rental club has two membership plans as shown. Write and solve an equation to find how many months it would take for the total cost of the two plans to be the same.

Plan	Membership Fee	Cost Per Month
A	\$20	\$5
B	\$30	\$3

34. An online video game site charges a \$10 membership fee and a \$6.00 monthly cost. Another game site charges \$6 membership fee and a \$8.00 monthly cost. Write and solve an equation to find how many months it would take for the total cost of the two sites to be the same.

Example 6

Solve $8x + 6 = 4x - 10$. Check your solution.

$$8x + 6 = 4x - 10$$

Write

$$8x - 4x + 6 = 4x - 4x - 10$$

Subtr: of Eq.

$$4x + 6 = -10$$

Simpl

$$4x + 6 - 6 = -10 - 6$$

Subtr: of Eq.

$$4x = -16$$

Simpl

$$x = -4$$

Divide

Equal

Check $8x + 6 = 4x - 10$

$$8(-4) + 6 \stackrel{?}{=} 4(-4) - 10$$

$$-32 + 6 \stackrel{?}{=} -16 - 10$$

$$-26 = -26 \checkmark$$

33. $20 + 5m = 30 + 3m$; 5 months

34. $10 + 6x = 6 + 8x$; 2 months

Lesson 8-6 Inequalities (pp. 361–366)

Write an inequality for each sentence.

35. Jeremiah can spend at most \$15 at the store.

36. There are more than 35 students in the band. $j \leq 15$

$$b > 35$$

For the given value, state whether each inequality is true or false.

37. $x + 6 > 7, x = 2$

true

38. $13 - a < 9, a = 10$

true

39. $16 \leq 4a, a = 4$

true

40. $3m + 4 \geq 12, m = 2$

false

41. $6x > 18, x = 3$

false

42. $6b + 4 > 12, b = 2$

true

Lesson 8-7 Solving Inequalities (pp. 367–373)

Solve each inequality. Graph the solution on a number line.

43–50. See margin for number lines.

43. $a - 15 \leq 3$ **$a \leq 18$** 44. $x + 13 > -22$ **$x > -35$**

45. $-0.3z \leq -2.4$ **$z \geq 8$** 46. $6h - 4 > 38$ **$h > 7$**

47. $-5x < -13$ **$x > \frac{13}{5}$** 48. $\frac{2}{3}x + 7 > 13$ **$x > 9$**

49. Jose is buying books and CDs. He can spend at most \$150. He spends \$30 on books. If each CD costs \$20, write and solve an inequality to show the maximum number of CDs Jose can buy.

$20x + 30 \leq 150; x \leq 6$

50. Tim can spend at most \$36 for cupcakes. If each cupcake costs \$3, write and solve an inequality to show the maximum number of cupcakes Tim can buy.

$3x \leq 36; x \leq 12$

Lesson 8-8 Solving Multi-Step Equations and Inequalities (pp. 374–379)

Solve. Check your solutions.

51. $5(x - 3) + 1 = 16$ **6** 52. $3(c - 4) = 4(c - 6)$ **12**

53. $2(x + 2) - 4 = 2x$ **identity; all numbers** 54. $5 + 3y = 3(2 + y)$ **null set; no solution**

55. $-4g - 5 \geq -17$ **$g \leq 3$** 56. $18 > -12 + 6m$ **$m < 5$**

57. $24 - 3c \leq 15$ **$c \geq 3$** 58. $\frac{2}{3}k + 9 < 5$ **$k < -6$**

59. A car sales associate receives a monthly salary of \$1700 a month plus \$140 for every car he sells. How many cars must he sell monthly to earn at least \$4500? **at least 20 cars**

60. At the car wash, Xander receives \$200 a week plus \$10 for every car he details. How many cars must he detail weekly to earn at least \$350 a week? **at least 15 cars**

*Example 9*Solve $-5m + 8 \geq 2$

$$-5m + 8 \geq 23$$

$$-5m + 8 - 8 \geq 23 - 8$$

$$-5m \geq 15$$

$$\frac{-5m}{-5} \leq \frac{15}{-5}$$

$$m \leq -3$$