

Algebra 2 Wednesday, 9/10/14

Agenda

1. Begin working on the following problems in the

Review Packet:

Pg. 6 #2 – 26 evens

Pg. 13 #1 – 8 all

Pg. 14 #2 – 18 evens

Pg. 21 #2 – 24 evens

Pg. 28 #1 – 6 all

Pg. 29 #2 – 16 evens

2. Check in Homework A#1.4
page 30 # 16 - 44 evens (skip
34)

Learning Targets:

- Use the order of operations to evaluate expressions
- Use formulas
- Classify Real Numbers
- Use the properties of real numbers to evaluate expressions
- Translate verbal expressions into algebraic expressions and equations, and vice versa
- Solve equations using the properties of inequalities
- Evaluate expressions involving absolute values
- Solve absolute value equations

Success Criteria: Review worksheets

1-1**Study Guide and Intervention****Expressions and Formulas****Order of Operations**

Order of Operations	<ol style="list-style-type: none"> 1. Simplify the expressions inside grouping symbols. 2. Evaluate all powers. 3. Do all multiplications and divisions from left to right. 4. Do all additions and subtractions from left to right.
----------------------------	--

Example 1Evaluate $[18 - (6 + 4)] \div 2$.

$$\begin{aligned}
 [18 - (6 + 4)] \div 2 &= [18 - 10] \div 2 \\
 &= 8 \div 2 \\
 &= 4
 \end{aligned}$$

Example 2Evaluate $3x^2 + x(y - 5)$ if $x = 3$ and $y = 0.5$.

Replace each variable with the given value.

$$\begin{aligned}
 3x^2 + x(y - 5) &= 3 \cdot (3)^2 + 3(0.5 - 5) \\
 &= 3 \cdot (9) + 3(-4.5) \\
 &= 27 - 13.5 \\
 &= 13.5
 \end{aligned}$$

Exercises

Find the value of each expression.

1. $14 + (6 \div 2)$

2. $11 - (3 + 2)^2$

3. $2 + (4 - 2)^3 - 6$

4. $9(3^2 + 6)$

5. $(5 + 2^3)^2 - 5^2$

6. $5^2 + \frac{1}{4} + 18 \div 2$

7. $\frac{16 + 2^3 \div 4}{1 - 2^2}$

8. $(7 - 3^2)^2 + 6^2$

9. $20 \div 2^2 + 6$

10. $12 + 6 \div 3 - 2(4)$

11. $14 \div (8 - 20 \div 2)$

12. $6(7) + 4 \div 4 - 5$

13. $8(4^2 \div 8 - 32)$

14. $\frac{6 + 4 \div 2}{4 \div 6 - 1}$

15. $\frac{6 + 9 \div 3 + 15}{8 - 2}$

Evaluate each expression if $a = 8.2$, $b = -3$, $c = 4$, and $d = -\frac{1}{2}$.

16. $\frac{ab}{d}$

17. $5(6c - 8b + 10d)$

18. $\frac{c^2 - 1}{b - d}$

19. $ac - bd$

20. $(b - c)^2 + 4a$

21. $\frac{a}{d} + 6b - 5c$

22. $3\left(\frac{c}{d}\right) - b$

23. $cd + \frac{b}{d}$

24. $d(a + c)$

25. $a + b \div c$

26. $b - c + 4 \div d$

27. $\frac{a}{b + c} - d$

1-2 Study Guide and Intervention

Properties of Real Numbers

Real Numbers All real numbers can be classified as either rational or irrational. The set of rational numbers includes several subsets: natural numbers, whole numbers, and integers.

R	real numbers	{all rationals and irrationals}
Q	rational numbers	{all numbers that can be represented in the form $\frac{m}{n}$, where m and n are integers and n is not equal to 0}
I	irrational numbers	{all nonterminating; nonrepeating decimals}
N	natural numbers	{1, 2, 3, 4, 5, 6, 7, 8, 9, ...}
W	whole numbers	{0, 1, 2, 3, 4, 5, 6, 7, 8, ...}
Z	integers	{..., -3, -2, -1, 0, 1, 2, 3, ...}

Example

Name the sets of numbers to which each number belongs.

a. $-\frac{11}{3}$ rationals (Q), reals (R)

b. $\sqrt{25}$
 $\sqrt{25} = 5$ naturals (N), wholes (W), integers (Z), rationals (Q), reals (R)

Exercises

Name the sets of numbers to which each number belongs.

1. $\frac{6}{7}$

2. $-\sqrt{81}$

3. 0

4. 192.0005

5. 73

6. $34\frac{1}{2}$

7. $\frac{\sqrt{36}}{9}$

8. 26.1

9. π

10. $\frac{15}{3}$

11. $-4.\overline{17}$

12. $\frac{\sqrt{25}}{5}$

13. -1

14. $\sqrt{42}$

15. -11.2

16. $-\frac{8}{13}$

17. $\frac{\sqrt{5}}{2}$

18. $33.\overline{3}$

19. 894,000

20. -0.02

Lesson 1-2

Lesson 1-3

1-2**Study Guide and Intervention** (continued)**Properties of Real Numbers****Properties of Real Numbers**

Real Number Properties		
For any real numbers a , b , and c		
Property	Addition	Multiplication
Commutative	$a + b = b + a$	$a \cdot b = b \cdot a$
Associative	$(a + b) + c = a + (b + c)$	$(a \cdot b) \cdot c = a \cdot (b \cdot c)$
Identity	$a + 0 = a = 0 + a$	$a \cdot 1 = a = 1 \cdot a$
Inverse	$a + (-a) = 0 = (-a) + a$	If a is not zero, then $a \cdot \frac{1}{a} = 1 = \frac{1}{a} \cdot a$.
Distributive	$a(b + c) = ab + ac$ and $(b + c)a = ba + ca$	

ExampleSimplify $9x + 3y + 12y - 0.9x$.

$$\begin{aligned} 9x + 3y + 12y - 0.9x &= 9x + (-0.9x) + 3y + 12y \\ &= (9 + (-0.9))x + (3 + 12)y \\ &= 8.1x + 15y \end{aligned}$$

Commutative Property (+)
Distributive Property
Simplify.

Exercises

Simplify each expression.

1. $8(3a - b) + 4(2b - a)$

2. $40s + 18t - 5t + 11s$

3. $\frac{1}{5}(4j + 2k - 6j + 3k)$

4. $10(6g + 3h) + 4(5g - h)$

5. $12\left(\frac{a}{3} - \frac{b}{4}\right)$

6. $8(2.4r - 3.1s) - 6(1.5r + 2.4s)$

7. $4(20 - 4p) - \frac{3}{4}(4 - 16p)$

8. $5.5j + 8.9k - 4.7k - 10.9j$

9. $1.2(7x - 5) - (10 - 4.3x)$

10. $9(7e - 4f) - 0.6(e + 5f)$

11. $2.5m(12 - 8.5)$

12. $\frac{3}{4}p - \frac{1}{5}r - \frac{3}{5}r - \frac{1}{2}p$

13. $4(10g + 80h) - 20(10h - 5g)$

14. $2(15 + 45c) + \frac{5}{6}(12 + 18c)$

15. $(7 - 2.1x)3 + 2(3.5x - 6)$

16. $\frac{2}{3}(18 - 6n + 12 + 3n)$

17. $14(j - 2) - 3j(4 - 7)$

18. $50(3a - b) - 20(b - 2a)$

1-3**Study Guide and Intervention** *(continued)***Solving Equations**

Properties of Equality You can solve equations by using addition, subtraction, multiplication, or division.

Addition and Subtraction Properties of Equality	For any real numbers a , b , and c , if $a = b$, then $a + c = b + c$ and $a - c = b - c$.
Multiplication and Division Properties of Equality	For any real numbers a , b , and c , if $a = b$, then $a \cdot c = b \cdot c$ and, if c is not zero, $\frac{a}{c} = \frac{b}{c}$.

Example 1Solve $100 - 8x = 140$.

$$\begin{aligned} 100 - 8x &= 140 \\ 100 - 8x - 100 &= 140 - 100 \\ -8x &= 40 \\ x &= -5 \end{aligned}$$

Example 2Solve $4x + 5y = 100$ for y .

$$\begin{aligned} 4x + 5y &= 100 \\ 4x + 5y - 4x &= 100 - 4x \\ 5y &= 100 - 4x \\ y &= \frac{1}{5}(100 - 4x) \\ y &= 20 - \frac{4}{5}x \end{aligned}$$

Exercises

Solve each equation. Check your solution.

1. $3s = 45$

2. $17 = 9 - a$

3. $5t - 1 = 6t - 5$

4. $\frac{2}{3}m = \frac{1}{2}$

5. $7 - \frac{1}{2}x = 3$

6. $-8 = -2(z + 7)$

7. $0.2b = 10$

8. $3x + 17 = 5x - 13$

9. $5(4 - k) = -10k$

10. $120 - \frac{3}{4}y = 60$

11. $\frac{5}{2}n = 98 - n$

12. $4.5 + 2p = 8.7$

13. $4n + 20 = 53 - 2n$

14. $100 = 20 - 5r$

15. $2x + 75 = 102 - x$

Solve each equation or formula for the specified variable.

16. $a = 3b - c$, for b

17. $\frac{s}{2t} = 10$, for t

18. $h = 12g - 1$, for g

19. $\frac{3pq}{r} = 12$, for p

20. $2xy = x + 7$, for x

21. $\frac{d}{2} + \frac{f}{4} = 6$, for f

22. $3(2j - k) = 108$, for j

23. $3.5s - 42 = 14t$, for s

24. $\frac{m}{n} + 5m = 20$, for m

25. $4x - 3y = 10$, for y

1-4 Study Guide and Intervention

Solving Absolute Value Equations

Absolute Value Expressions The **absolute value** of a number is the number of units it is from 0 on a number line. The symbol $|x|$ is used to represent the absolute value of a number x .

Absolute Value	• Words For any real number a , if a is positive or zero, the absolute value of a is a . If a is negative, the absolute value of a is the opposite of a .
	• Symbols For any real number a , $ a = a$, if $a \geq 0$, and $ a = -a$, if $a < 0$.

Example 1 Evaluate $|-4| - |-2x|$ if $x = 6$.

$$\begin{aligned} |-4| - |-2x| &= |-4| - |-2 \cdot 6| \\ &= |-4| - |-12| \\ &= 4 - 12 \\ &= -8 \end{aligned}$$

Example 2 Evaluate $|2x - 3y|$ if $x = -4$ and $y = 3$.

$$\begin{aligned} |2x - 3y| &= |2(-4) - 3(3)| \\ &= |-8 - 9| \\ &= |-17| \\ &= 17 \end{aligned}$$

Exercises

Evaluate each expression if $w = -4$, $x = 2$, $y = \frac{1}{2}$, and $z = -6$.

- | | | |
|------------------------|---|----------------------------|
| 1. $ 2x - 8 $ | 2. $ 6 + z - -7 $ | 3. $5 + w + z $ |
| 4. $ x + 5 - 2w $ | 5. $ x - y - z $ | 6. $ 7 - x + 3x $ |
| 7. $ w - 4x $ | 8. $ wz - xy $ | 9. $ z - 3 5yz $ |
| 10. $5 w + 2 z - 2y $ | 11. $ z - 4 2z + y $ | 12. $10 - xw $ |
| 13. $ 6y + z + yz $ | 14. $3 wx + \frac{1}{4} 4x + 8y $ | 15. $7 yz - 30$ |
| 16. $14 - 2 w - xy $ | 17. $ 2x - y + 5y$ | 18. $ xyz + wxz $ |
| 19. $z z + x x $ | 20. $12 - 10x - 10y $ | 21. $\frac{1}{2} 5z + 8w $ |
| 22. $ yz - 4w - w$ | 23. $\frac{3}{4} wz + \frac{1}{2} 8y $ | 24. $xz - xz $ |

Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc.

1-4**Study Guide and Intervention** *(continued)***Solving Absolute Value Equations**

Absolute Value Equations Use the definition of absolute value to solve equations containing absolute value expressions.

For any real numbers a and b , where $b \geq 0$, if $|a| = b$ then $a = b$ or $a = -b$.

Always check your answers by substituting them into the original equation. Sometimes computed solutions are not actual solutions.

Example

Solve $|2x - 3| = 17$. Check your solutions.

Case 1

$a = b$

$2x - 3 = 17$

$2x - 3 + 3 = 17 + 3$

$2x = 20$

$x = 10$

CHECK

$|2x - 3| = 17$

$|2(10) - 3| = 17$

$|20 - 3| = 17$

$|17| = 17$

$17 = 17 \checkmark$

Case 2

$a = -b$

$2x - 3 = -17$

$2x - 3 + 3 = -17 + 3$

$2x = -14$

$x = -7$

CHECK $|2(-7) - 3| = 17$

$|-14 - 3| = 17$

$|-17| = 17$

$17 = 17 \checkmark$

There are two solutions, 10 and -7 .

Exercises

Solve each equation. Check your solutions.

1. $|x + 15| = 37$

2. $|t - 4| - 5 = 0$

3. $|x - 5| = 45$

4. $|m + 3| = 12 - 2m$

5. $|5b + 9| + 16 = 2$

6. $|15 - 2k| = 45$

7. $5n + 24 = |8 - 3n|$

8. $|8 + 5a| = 14 - a$

9. $\frac{1}{3}|4p - 11| = p + 4$

10. $|3x - 1| = 2x + 11$

11. $\left|\frac{1}{3}x + 3\right| = -1$

12. $40 - 4x = 2|3x - 10|$

13. $5f - |3f + 4| = 20$

14. $|4b + 3| = 15 - 2b$

15. $\frac{1}{2}|6 - 2x| = 3x + 1$

16. $|16 - 3x| = 4x - 12$

